# FINAL REPORT

## Demonstration and Validation of Enhanced Monitored Natural Recovery at DoD Sites

## ESTCP Project ER-201368

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14. ABSTRACT The objective of this project is to foster broader understanding and acceptance of the EMNR remedy through demonstration and validation of performance and cost-effectiveness at DoD contaminated sediment sites. Broader use of EMNR has several potential benefits to DoD and the broader scientific community, including reduced material costs compared to conventional isolation capping and/or dredging, accelerated recovery and reduced long-term monitoring costs compared to MNR, elimination of removal and disposal costs associated with dredging, and elimination/reduction of impacts to benthic communities compared to conventional isolation capping and dredging remedies. Because most of the contaminated sediment at Navy/USMC and DoD sites often falls into the “moderately” contaminated classification, EMNR has the potential to find widespread application, particularly as an adjunct to other more active remedies that might be applied in areas of higher contamination at the site. With cleanup costs estimated to exceed $1B, the broader application of EMNR could save DoD tens to hundreds of million dollars. EMNR also could facilitate more rapid acceptance and site closure for DoD sites where MNR is the most appropriate remedy but agency resistance or concerns make MNR acceptance difficult.

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# Abbreviations and Acronyms

| | |
|---|---|
| % | Percent |
| µg/kg | Microgram per kilogram |
| µm | Micrometer |
| B-IBI | Benthic Index of Biotic Integrity |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CFR | Code of Federal Regulations |
| cm | Centimeter |
| CoC | Chemicals of concern |
| CTD | Conductivity, temperature, and density sonde |
| CY | Cubic yard |
| DDD | Dichlorodiphenyldichloroethane |
| DDE | Dichlorodiphenyldichloroethylene |
| DDT | Dichlorodiphenyltrichloroethane |
| DDX | The sum of DDD, DDE and DDT |
| DoD | Department of Defense |
| DoN | Department of the Navy |
| DQOs | Data Quality Objectives |
| ENMR | Enhanced monitored natural recovery |
| ENVIRON | ENVIRON International Corporation |
| ER-N | Environmental Restoration – Navy |
| ESTCP | Environment Security Technology Certification Program |
| FS | Feasibility study |
| ft | Foot or feet |
| GPS | Global Positioning System |
| HEC | Habitat Enhancement Cap |
| IDW | Investigation-Derived Waste |
| in | Inch(es) |
| IRA | Interim remedial action |
| LTMP | Long-term Monitoring Plan |
| m | Meter(s) |
| $m^2$ | Square meter(s) |
| MCB | Marine Corps Base |
| MHHW | Mean Higher High Water |
| MLLW | Mean Lower Low Water |
| mm | Millimeter(s) |
| MNR | Monitored Natural Recovery |
| MQO | Measurement Quality Objective |

| | |
|---|---|
| MSL | Mean Sea Level |
| NCP | National Contingency Plan |
| NOV | Notice of violation |
| NPDES | National Pollutant Discharge Elimination System |
| OBS | Optical back scatter |
| PAH | Polycyclic aromatic hydrocarbon |
| PCB | Polychlorinated biphenyl |
| PO | Performance Objective |
| ppb | Parts per billion |
| ppt | Parts per thousand |
| PSD | Particle Size Distribution |
| psu | Practical salinity units |
| QAPP | Quality Assurance Project Plan |
| QWS | Quantico Watershed Study |
| RD | Remedial Design |
| SARA | Superfund Amendments and Reauthorization Act |
| SEAP | Sediment Ecosystem Assessment Protocol |
| SED-FSP | Sediment Friction Sound Probe |
| SPI | Sediment Profile Imagery |
| SPME | Solid-phase microextraction |
| SSC | SPAWAR Systems Center |
| SWI | Sediment-water interface |
| t | Time |
| TLC | Thin layer capping |
| TOC | Total organic carbon |
| USMC | United States Marine Corps |
| VADEQ | Virginia Department of Environmental Quality |

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## Executive Summary

### E.S.1. Objectives of the Demonstration

This project evaluated the performance of enhanced monitored natural recovery (EMNR) as an innovative and cost effective remedy for legacy sediment contaminants. This evaluation was conducted under field conditions at the Quantico Marine Corps Base (MCB), Quantico, Virginia. The remedy involved the placement of a thin-layer cap (TLC) of clean sand to enhance natural recovery and reduce contaminant bioavailability to benthic organisms and subsequent potential threats to higher trophic levels. While clean sand was used at the Quantico Site, TLC material can include a broader range of clean material, including for example clean dredged sediment that meets the chemical criteria for reuse. In some cases, dredged sediment may be preferable to quarried sand, because it has natural organic matter to support benthic life and to help sequester and retard dissolved contaminant transport from underlying sediment.

The objective of this project is to foster broader understanding and acceptance of the EMNR remedy through demonstration and validation of performance and cost-effectiveness at DoD contaminated sediment sites. Broader use of EMNR has several potential benefits to DoD and the broader scientific community, including reduced material costs compared to conventional isolation capping and/or dredging, accelerated recovery and reduced long-term monitoring costs compared to MNR, elimination of removal and disposal costs associated with dredging, and elimination/reduction of impacts to benthic communities compared to conventional isolation capping and dredging remedies. Because most of the contaminated sediment at Navy/USMC and DoD sites often falls into the "moderately" contaminated classification, EMNR has the potential to find widespread application, particularly as an adjunct to other more active remedies that might be applied in areas of higher contamination at the site. With cleanup costs estimated to exceed $1B, the broader application of EMNR could save DoD tens to hundreds of million dollars. EMNR also could facilitate more rapid acceptance and site closure for DoD sites where MNR is the most appropriate remedy but agency resistance or concerns make MNR acceptance difficult.

### E.S.2. Technology Description

EMNR involves the placement of a thin layer (commonly, less than 30 cm) of clean sand or clean sediment over contaminated sediment, coupled with ongoing natural recovery processes and monitoring programs, to achieve ecological recovery and risk reduction at contaminated sediment sites. At most sites, effectiveness is based on the combination of the TLC and ongoing deposition processes that combine to reduce surface sediment chemical concentrations and isolate deeper sediment contaminant deposits. EMNR has emerged over the last 5-10 years as a viable hybrid of traditional capping and MNR. The development and application of the technology thus draws heavily from the lessons learned in the development of these component remedies. The remedy can be viewed in two phases including the active phase when the TLC is implemented, and the performance/recovery phase during which the effectiveness of the TLC and ongoing natural processes are gauged through monitoring. The active phase relies essentially on traditional capping with the primary difference that EMNR relies on a relatively thin cap layer; to assure effectiveness, cap thickness generally must be more carefully regulated for EMNR than for a thicker isolation cap. The performance phase integrates monitoring strategies consistent with both capping and MNR.

In general, the TLC is not designed to provide complete chemical isolation, but to provide a reasonable degree of physical isolation and to rapidly achieve low chemical concentrations targeting site-specific remedial action objectives and remedial goals; EMNR also reduces potential resuspension or transport of contaminated sediment particles (Palermo et al., 1998). The design thickness for a TLC is typically driven by the bioturbation depth for organisms that are expected to colonize the cap surface, underlying sediment chemical concentrations, and the expected contribution of natural deposition processes further to isolate sediment contaminants. Because the cap is thin, the impact on bathymetry is generally minimal, permitting application in areas where thicker caps would not be feasible without dredging.

The project site for implementation of this study was Site 99, the Quantico Embayment site, Quantico, VA. The EMNR / TLC technology was referred to as a "Habitat Enhancement Cap" (HEC). The HEC, described in this report, generally serves the same functions as EMNR. Grain sizes of the cap material were selected in the final design to be stable during both normal river flows and during periods of flood flows and storm-generated waves. Ideally, sediment sizes would be chosen to match surrounding grain sizes within the freshwater tidal systems of the Potomac River. The HEC material consisted of common sand fill material, poorly to well sorted with less than 5 percent fines passing a 200-micron sieve and with a grain size distribution characteristically between fine and coarse grain. Because it was not possible to place a perfectly uniform cap layer underwater, and to place a cap with a minimum thickness of 6 inches, construction specifications called for the placement of an average of 9 to 12 inches of material over the remedial footprint to ensure a minimum of 6 inches throughout.

### E.S.3. Demonstration Results

This project was designed to evaluate the performance and effectiveness of the Quantico EMNR remedy and the utility of available monitoring tools to address EMNR performance, short-term implementation success, the ability to project long-term remedy success, and the understanding of the mechanisms and processes that regulate EMNR effectiveness. Performance was analyzed using a combination of quantitative and qualitative tests to achieve the objectives of the project. The extent to which expected performance metrics were achieved was evaluated from data collected during the pre-construction baseline monitoring and post-construction monitoring. The performance objectives (POs) are provided in Table ES-1 below.

**Table ES-1. Performance objectives for EMNR at Quantico Embayment**

| Performance Objective | Data Requirements | Success Criteria | Success Criteria Met |
|---|---|---|---|
| PO1<br>Evaluate cap placement and determine physical stability of TLC | Sediment core profiling (visual classification) | Compare cap thicknesses with design specifications. Average cap thickness should not be less than 6 inches or a minimum cap thickness of 2 inches in the areas targeted for a 6-inch cap. | Yes |
| | Bathymetry | Compare bathymetric resolution with target thicknesses and sediment coring results. Bathymetric changes in elevation should be qualitatively consistent with cap thickness measurements made by coring.<br>Compare elevation change measured by bathymetry with cap thickness specifications at coring stations. Average elevation change should be on the order of 6 inches and the majority of the cap area should show positive elevation change from 2014 baseline. | Yes |
| | Sediment Profile Imagery (SPI) | Compare baseline and post-placement SPI images. SPI camera able to distinguish TLC from native sediment and resolve cap thicknesses less than or equal to the camera penetration depth.<br>SPI measured cap thickness should be qualitatively consistent with cap thickness measurements made by coring. | Yes |
| | Sediment Friction Sound Probe (SED-FSP) | Compare cap thicknesses with design specifications. FSP measurements should be able to distinguish TLC from native sediment and accuracy in identifying mixing depth within 50% of estimates indicated by grain size analysis of sediment cores. | Yes |
| PO2<br>Determine the extent of sediment and contaminant mixing | Sediment core profiling (visual classification) | Mixing and deposition layers are clearly visible and can be distinguished from cap material. Mixing and deposition layer thicknesses can be quantified to support interpretation of contaminant profiles. | Yes |
| | SPI camera | SPI camera able to distinguish mixing and depositional layers associated with the TLC. Provide qualitative estimates of the degree of mixing to support interpretation of contaminant profiles. | Yes |
| | SED-FSP | SED-FSP able to distinguish mixing and depositional layers associated with the TLC. Provide qualitative estimates of the extent of mixing and deposition to support interpretation of contaminant profiles. | Yes |

| Performance Objective | Data Requirements | Success Criteria | Success Criteria Met |
|---|---|---|---|
| | Surface sediment TOC, and grain size | Compare baseline, post-cap placement, and long-term monitoring results. Changes in TOC and grainsize can be used to quantify vertical mixing and deposition to support interpretation of contaminant profiles. | Yes |
| | Sediment Traps | Sediment trap mass provides quantitative estimate of new deposition. Sediment trap chemistry provides estimate of depositional flux to support interpretation of contaminant profiles. | Yes |
| | Surface sediment chemistry | Compare baseline, post-cap placement, and long-term monitoring results. Vertical mixing and deposition do not alter contaminant profiles sufficiently to cause failure of the EMNR remedy. | Yes |
| PO3<br>Evaluate surface sediment chemical concentration reductions | DDX analyses from core samples | Compare baseline, post-cap placement, and long-term monitoring results for core sample DDX levels. Significant reduction in DDX compared to baseline and/or levels should not increase beyond sediment PRGs; 650 ppb total DDX. Reduction in exposure compared to baseline is sustained over 2 years. | Yes |
| PO4<br>Evaluate reductions in chemical bioavailability and bioaccumulation | *In situ* bioaccumulation tests | Compare baseline, post-cap placement, and long-term monitoring results. Significant reduction in bioaccumulation and surface sediment porewater concentrations of DDX compared to baseline. Reduction in bioaccumulation and porewater concentrations compared to baseline levels are sustained over 2 years. | Yes |
| | DDX concentrations in sediment porewater with passive samplers (SPME) | | Yes |
| PO5<br>Determine the rate of benthic recovery | Pre- and post-cap placement benthic taxonomic surveys | Measure and compare benthic community health indices across baseline, post-placement, and long-term monitoring data. Comparable or improved benthic community conditions relative to baseline by the end of the two year monitoring period. | Yes |
| | SPI camera images within and around perimeter of TLC footprint | Compare SPI results with taxonomic surveys. Identify infaunal successional stages, RPD depth, and bioturbation depth. | No due to method limitations |

**Performance Objective 1** was the evaluation of cap placement and determination of physical stability of TLC. Success was measured based on cap thickness by differentiating the cap material from the underlying native sediment as measured using multiple methods including sediment core profiling, bathymetry, Sediment Profile Imagery (SPI), and Sediment Friction Sound Probe (SED-FSP). Success of this phase of the project was evaluated based on the overall stability in the thickness of the cap over time, as well as by the ability of the different measurement techniques to gage the stability. While the coring measurements provide the most direct measure of cap thickness, they were limited spatially, so other measurements such as the bathymetric mapping, SED-FSP and SPI provide additional information on the spatial stability of the TLC. Stability of the EMNR cap was a reflection of the cap design and of site-specific conditions including placement accuracy and distribution, hydrodynamics, cap material grain size, natural sedimentation rates, and benthic mixing processes. Results provided insight into cap placement and thickness and into mixing processes that may have occurred during or after cap placement.

Overall, the performance objectives for cap placement and stability were met. The sediment coring confirmed that the cap was remaining relatively stable over time, and the bathymetric mapping, SPI camera and SED-FSP system all provided confirmatory evidence for cap stability. These additional measures also provided much broader spatial coverage which enhanced the understanding of the overall stability of the cap. Sediment core profiling demonstrated the average cap depth was at least inches 6 inches at all stations (average of 10 inches in the most recent long-term monitoring event). The bathymetric surveys clearly show the changes in elevation related to the cap placement, and these measured changes were consistent with the target thickness for the cap. In the SPI survey, only Station 03 on the south-eastern edge of the cap site appeared to be without cap sediment. SED-FSP was in general agreement with other measurements of thickness and provided additional insight into vertical mixing of the cap with underlying and newly deposited sediments.

The stability of the TLC was further supported by the current meter results that indicated currents at the site were generally low relative to critical threshold velocities at both measurement stations and under flow conditions for two different seasons (spring and summer). Thus it is unexpected that the cap would be disturbed by normal spring and summer currents. It is still possible that the cap could be disturbed under storm conditions, especially storm associated waves due to the shallow nature of the site.

**Performance Objective 2** was an evaluation of the extent of sediment and contaminant mixing. Data collected to support assessment of this performance objective included measures that elucidated the mixing and deposition of sediment, and measures that directly measured the mixing and deposition of contaminants. In this project, we evaluated the use of sediment core visual analysis, sediment core TOC and grain size analysis, SPI camera, SED-FSP, and sediment trap mass collection as measures of sediment mixing and deposition. We also evaluated sediment core contaminant profiles for direct measurement of the influence of mixing and deposition on contaminant distributions within the TLC. Visual analysis of sediment cores was used to qualitatively evaluate evidence of mixing within the cap over time based on observable differences in coloration and particle size between the native material, new deposition material, and the TLC material. TOC and grain size analysis provided a more quantitative measure of these same differences. SPI camera results were particularly useful for distinguishing sediment deposition layers and surface sediment mixing zones. The SED-FSP provided evidence for both bottom-up and top-down mixing based on vertical variations in mean grain size (limited to the 2016 event). Material collected in the sediment traps was used to estimate the mass flux of depositional sediment to the cap as well as the contaminant flux associated with this deposition. Vertically-segmented bulk sediment chemistry measurements provided a direct measure of the vertical movement of contamination associated with mixing and deposition processes. And finally, passive sampler porewater profiling was used to evaluate changes in porewater exposure that might have been associated with mixing processes or other porewater processes such as advection or diffusion.

Success of this performance objective was gaged by how well these measures could assess benthic mixing, and ultimately by how these processes influenced the broader performance metric for surface sediment exposure and ecological response (see PO4 and PO5). As with all natural environments, sediment mixing was expected to occur, and TLCs are not necessarily designed to prevent mixing. This element of the project focused on quantifying the extent of sediment mixing and the extent to which these processes increased or reduced the exposure to DDX in surface sediments.

Overall, the performance objectives for sediment and contaminant mixing in the cap were met. Multiple lines of evidence indicated that the dominant processes observed were some disturbance associated with the installation of the cap, followed by longer term top-down mixing. The SPI camera results and the SED-FSP results provided a broader spatial context, while the visual analysis, TOC, grain size, and bulk sediment chemistry provided a more detailed and quantitative assessment of the focus stations at the site. While the long-term trends indicate that top-down mixing is ongoing and wide spread, the material depositing at the site appears to be relatively low in concentration, and thus the top-down mixing is not expected to result in a loss of performance of the EMNR remedy. Importantly, the multiple lines of evidence also indicated the relatively limited amount of bottom-up mixing. This is critical to the performance of the TLC because bottom up mixing could bring higher concentration sediments into the surface zone where biological exposure is much more likely. These findings were confirmed by the bulk sediment chemistry data that indicated minimal change in the DDX concentrations in the bottom interval of the cap just above the native sediments.

**Performance Objective 3** was the evaluation of reductions in surface sediment chemical concentrations. Reduction in surface sediment concentrations was a key remedy objective for the TLC in order to reduce the ecological risk of DDX exposure. As described above, processes such as bottom-up mixing of native sediment, or top-down mixing of new deposition had the potential to influence the success of the EMNR remedy in achieving the expected reductions in surface sediment concentrations. Under this performance objective, we evaluated the performance of the remedy with respected to achieving the desired level of reduction in concentration in surface sediments. Data required for the assessment of the performance objective included DDX concentrations in surface sediment samples and sediment cores. Results for the performance objective were supplemented by the results of the cap mixing PO2, which provide information on mixing rates and extent. Sediment samples were obtained prior to and following TLC placement (2-, 14-, and 25-month post-placement) on and off cap. Success was measured by the change in surface sediment DDX concentrations following the installation of the cap, and the long-term persistence of the change out to the 25-month sampling event.

The analysis for PO3 indicated that the TLC surface sediment is remaining below pre-TLC placement levels and that recontamination from either top-down or bottom up mixing has not occurred to an extent that would compromise the remedy. Thus the success criteria were met. Bulk sediment chemistry found reductions in concentration of total DDX were below the PRG, significant reductions over time as well as significantly lower concentrations in the TLC compared to underlying native sediment, and reductions for on cap stations were greater than off cap stations for all events on average. Sediment traps indicated relatively high deposition rates of material with lower concentrations in the post-placement events compared to baseline.

**Performance Objective 4** was the evaluation of reductions in chemical bioavailability and bioaccumulation. Reducing the concentration of DDX in surface sediment was expected to in turn reduce exposure of the native benthic invertebrate community, potential direct adverse effects, as well as reduction in the potential to indirectly or directly adversely affect higher trophic level fish, birds, and mammals. The extent to which the TLC contributed to reductions in bioavailability and consequently reduced the potential for bioaccumulation up the food web was the focus of this performance objective.

The parameters to evaluate changes in bioavailability and bioaccumulation included direct measurement of DDX concentrations in benthic invertebrate tissue using *in situ* bioaccumulation testing, as well as measurement of sediment porewater concentrations with ex situ passive samplers as an indicator of the bioavailable chemical fraction in sediments. Success was measured based on reduction in uptake by benthic invertebrates as measured by *in situ* bioaccumulation testing, and reductions in surface sediment porewater DDX concentrations as measured by ex situ passive samplers, respectively.

Overall, the success criteria for reductions in bioavailability were met. Significant reductions in concentrations of total DDX in *L. variegatus* tissue (lipid weight basis) was observed in short- and long-term events (on average). Reductions in concentrations of total DDX in *C. fuminea* tissue were also observed in short-term and long-term events on average, with significant reductions in the short-term event. Concentrations of total DDX in surface sediment porewater were reduced in all events compared to baseline, with significant reductions in the short-term monitoring and most recent long-term monitoring event.

**Performance Objective 5** was an evaluation of the rate of benthic recovery following TLC placement. Along with reducing contaminant levels and bioaccumulation, a key goal of the EMNR remedy was to enhance the subtidal habitat at the site for benthic invertebrates. High levels of contaminants can have direct impacts on the health and composition of the benthic community, and creating a relatively clean environment for benthic colonization is an important aspect of the EMNR remedy. The time for benthic recovery and potential impact of the cap on the benthic community was evaluated. Projection of the long-term effectiveness of the TLC remedy was evaluated based on the rate at which the benthic community recovered after cap placement and the extent to which the benthic community showed improvement compared to baseline conditions.

Laboratory treatability studies performed prior to the installation of the TLC suggested a conceptual model for the benthic recovery in which the cap would initially reduce the benthic populations due to smothering of the native population beneath the cap, followed by a relatively rapid recolonization that should continue to improve over longer time periods as more clean, natural sediment was mixed into the cap from top-down mixing. To test this, the rate and extent of sediment cap colonization was evaluated as well as the way in which cap conditions were similar to or differ from regional background conditions. Of interest was whether the TLC improved, hindered, or was otherwise neutral regarding the quality of benthic habitat. Data required to evaluate the impact of the TLC on the benthic community included benthic taxonomic surveys before and after cap placement (five on-cap stations and two off-cap stations), and SPI camera photos to document benthic colonization. Results were used to document the effects of TLC placement on the presence of the benthic community and to document changes in community structure over time after cap placement.

Overall, the performance objective success criteria were met using the direct benthic census data over the long-term with the TLC increasing scores for abundance, richness, and diversity. The B-IBI was scored in the highest category in the long-term monitoring events. SPI survey results were not found to be in agreement with the benthic community census, and significantly less confidence was placed in the SPI results due to noted limitations under the conditions present at the site.

**<u>Future Projections</u>**

Recovery of surface sediment concentrations with EMNR (thin-layer Habitat Enhancement Cap) provides physical isolation of the impacted sediments to the benthic community and prevents resuspension or transport of impacted-sediments. Reduction in concentrations of DDX in surface sediments with the EMNR remedial option occurs in a shorter timeframe compared to MNR as shown in Figure ES-1. The measured concentrations in surface sediment decreased from an average of 573 µg/kg, dw in 2009 (57 months prior to TLC placement) and 264 µg/kg, dw in 2012 (20 months prior to TLC placement). After EMNR placement, measured concentrations in the 2-, 14-, and 25-month events show the concentration reaching 51 µg/kg, dw (average surface sediment) and projected to reach concentrations similar to off-cap measurement within 60 months or sooner. Concentrations in surface sediment with MNR remedy are projected to continue to decline; however, at a much slower rate of recovery. The rate of recovery under MNR was estimated based on reductions in DDX concentrations for the two off cap stations from 57 months pre-placement to 25-months post-placement, and assuming a linear rate of decline. This rate of decline was applied to surface concentrations measured at the time of cap placement to derive the MNR curve.

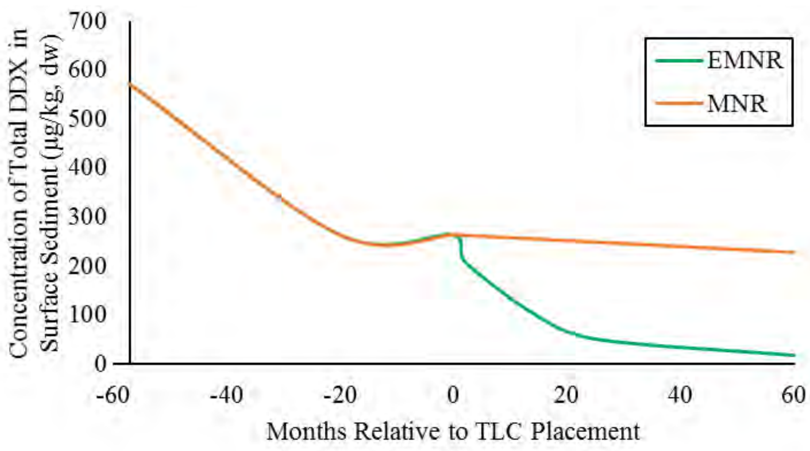


**Figure ES-1. Illustration of EMNR and MNR Performance relative to total sediment DDX concentrations.**

### E.S.4. Implementation Issues

Although conventional isolation caps have demonstrated effectiveness in the management and remediation of chemically impacted sediment, rigorous demonstration and validation of the effectiveness of EMNR remains limited (USEPA 2005). Ongoing questions regarding the application, performance, and ecological impacts of EMNR have limited its widespread implementation. To address these implementation issues, the following relevant questions were posed. Evaluation of these questions based on the literature compiled and the demonstrations conducted as part of this project are presented below.

***Is artificially-increased sediment deposition via TLC placement an effective strategy for enhancing MNR and accelerating natural system recovery rates?***

The effectiveness of the TLC strategy for accelerating MNR appears to be a viable remediation approach depending on site conditions. From a process perspective, key aspects of the success of the TLC and the overall EMNR approach are that: (1) the TLC remain relatively stable above the sediment to be isolated; (2) any new deposition is relatively clean compared to surface sediment goals, even if the rate of deposition is low; (3) bottom-up mixing of the TLC is limited to the extent that the elevated levels of contamination in the underlying sediment do not unduly influence the exposure in the surface sediments following placement of the TLC; (4) advection rates through the cap are not so significant that they lead to a high level of porewater movement from below the TLC into the TLC; and (5) the remedy should demonstrate direct reduction in bioavailability over the short-term and long-term. For the Quantico embayment site where we conducted our demonstration, all of these conditions were documented to be satisfied. Multiple measures of cap thickness and elevation indicated that the cap material was remaining relatively stable and within design guidelines. New deposition, as characterized by sediment traps and surface sediment interval samples, was generally low in DDX. Bottom-up mixing was documented to be limited based on multiple lines of evidence. While advection rates were not directly measured, porewater measurements at critical intervals within the cap showed that advection was not significant enough to unduly influence the concentrations within the cap. Finally, direct measurements of bioavailability including uptake in organisms and porewater concentrations generally indicated significant reductions over both short and long time periods out to 2 years.

***How sensitive is EMNR performance to the accuracy of TLC placement?***

Sensitivity of the EMNR performance to the accuracy of TLC placement appears to be relatively high. This is because the layer being applied is generally thin, and on the same order of magnitude in thickness as the bioactive zone of the sediments. To be effective, the TLC must also accommodate a certain degree of bottom-up mixing that is likely to occur either during the installation or due to physical or biological disturbance over time. Thus key aspects of the sensitivity to placement include the relative thickness of the TLC compared to the bioactive zone, and the degree of bottom-up mixing that is expected based on construction methods and site specific likelihood of physical and biological disturbance following placement. For the demonstration at Quantico Embayment, the bioactive zone was relatively shallow because of the freshwater, riverine nature of the site. Also, it was observed that the installation of the TLC generally achieved target thickness throughout the site so that there were few areas where biological activity was likely to interact with the underlying sediments. In addition, physical disturbance of the TLC appeared to have been limited to localized resuspension during the installation of the cap, resulting in some interleaving of native sediments with the cap material, but not to the extent that it interfered with the effectiveness of the remedy over the 2 years of observations.

***What are the short-term construction (risk-of-remedy) effects associated with EMNR and to what extent does TLC application influence benthic community survival?***

The primary risks related to the construction of the TLC appear to be potential short- to mid-term effects on the benthic community, along with some amount of disturbance of the native sediment associated with the depositing of the TLC material. The effects on the benthic community are expected to be a function of both the initial covering of the native sediments that can result in smothering of the existing infaunal community, as well as the potential that the community could be degraded over the mid-term as a result of the differing grain size and TOC characteristics of the TLC material. From our laboratory treatability studies, we observed significant smothering effects from placement of thin layers of sand over infaunal organisms. However, at the demonstration site at Quantico Embayment, we observed relatively rapid recovery of the benthic community following construction of the TLC. While the sand material may not have provided optimal habitat initially, it was observed that over time, top-down mixing of relatively clean sediment deposits into the surface layer tended to improve the habitat characteristics, and a general improvement in benthic community health was observed relative to the pre-construction conditions.

***Under what range of physical, biological, and chemical conditions will EMNR be effective?***

The range of effectiveness of EMNR was not completely explored in this project. However, general considerations for the selection of EMNR are becoming well established. From a physical perspective, the remedy should generally be applied at sites that are relatively quiescent, and not subject to significant physical disturbance that would disrupt or penetrate the cap to a degree that the underlying sediments would be re-exposed or significantly mixed into the TLC.

The native materials must also have the physical strength to support the TLC so that gravitational mixing does not lead to failure of the TLC. From a biological perspective, the TLC thickness should consider the nature and scale of bioactivity in the surface sediments, and the expected route of exposure for the risk endpoints under consideration. From a chemical perspective, EMNR is generally viewed as being most effective at sites where MNR would be effective, but deposition rates are potentially too low to reach the desired clean up goals in a reasonable amount of time. Thus most sites where EMNR has been applied have exposure levels that are near risk thresholds, as opposed to higher concentration hot spots. For the Quantico Embayment site, our results reflect these physical, biological and chemical conditions. The site is in a relatively protected embayment, the bioactivity was limited due to the freshwater nature of the site, and the concentrations (other than in areas targeted for removal) were relatively close to the target PRG.

***With respect to grain size, total organic carbon (TOC) content, and other biogeochemical parameters that influence habitat quality, how can EMNR design be optimized?***

This remains a key question that was not thoroughly addressed in this project. Follow-on studies have been proposed to address this optimization question. In general, EMNR has been carried out using TLCs constructed with sand, which is optimal from a stability and construction perspective, but not necessarily optimal from a habitat or environmental protection perspective. The sand materials are often not consistent with the grain size characteristics of the native sediments, and thus create a habitat that is also inconsistent with the site conditions. In addition, the sand material contains essentially no TOC, which may create a less optimal habitat while also providing little to no binding capacity for contaminants. While the traditional sand TLC was shown to be effective over 2 years at the Quantico Embayment site, future development of a more comprehensive approach and guidance for the selection and optimization of EMNR that addressed this question would be highly beneficial to the broader implementation of the remedy.

***How effective is EMNR in reducing chemical mobility and biological exposure potential in surface sediment?***

Overall, review of the historical literature, and our experience with the Quantico Embayment site indicated that EMNR can be highly effective and reducing exposure in surface sediments. EMNR remedy effectiveness seems to be a function of three primary considerations, including careful consideration of site condition for the selection of EMNR, proper design of the EMNR remedy to meet site-specific conditions, and adequate monitoring to assure remedy success and address any potential defects in the TLC. For the Quantico Embayment site, the EMNR remedy was shown to be effective in reducing exposure in surface sediments as measured by bulk sediment total DDX concentrations, porewater DDX concentrations, and direct measurement of bioaccumulation in two site-exposed benthic organisms.

# 1. Introduction

This project evaluated the performance of enhanced monitored natural recovery (EMNR) as an innovative and cost effective remedy for legacy sediment contaminants. This evaluation was conducted under field conditions at the Quantico Marine Corps Base (MCB), Quantico, Virginia. The remedy involved the placement of a thin-layer cap (TLC) of clean sediment material to enhance natural recovery and reduce contaminant bioavailability to benthic organisms and subsequent potential threats to higher trophic levels.

The project began in 2009 under project number ER-0827 (Demonstration Plan, dated April 5, 2009) and included a case study review of EMNR sediment sites titled *A Review of Thin-Layer Placement Applications to Enhance Natural Recovery Of Contaminated Sediment* (Merritt et al., 2010). Initially, all pre-remedy (laboratory and field) and post-remedy (field) efforts were planned under project number ER-0827; however, due to unforeseen delays in signing of the Record of Decision (ROD), the TLC remedy installation was postponed, resulting in the postponement of project ER0827 until the ROD would be finalized and signed.

In September 2011, the ROD for Site 99, the Quantico Embayment, and Site 96, the Old Landfill Southern Wetlands Site was signed (NAVFAC WA 2011). Upon review of the ROD, discussions with the Navy Remedial Project Manager and the ESTCP Sponsor, a decision was made to restart the project and carry out the post-remedial monitoring efforts as described in the original demonstration plan, with some modifications as described within the revised Demonstration Plan dated August 28, 2014. ER-201368 is the new Environment Security Technology Certification Program (ESTCP) project number used for the remainder of the study.

In this report, performance results of the EMNR technology are combined with remedy implementation costs to evaluate the cost effectiveness of the technology at full scale. Results of this work will improve the understanding and acceptance of EMNR as a remedy alternative for contaminated sediment sites.

## 1.1. Background

Contaminated sediment cleanup costs at Navy and United States Marine Corps (USMC) sites are estimated to exceed $1B. For these sites, ecological recovery and reduced exposure risks are achieved primarily by reducing chemical bioavailability and exposure in surface sediment, thereby controlling or eliminating chemical exposure pathways. However, cost effective remedies for sediment management at moderately impacted Navy/USMC sites are lacking. Currently, the primary remedial options implemented by the Navy/USMC are dredging, isolation capping, and monitored natural recovery (MNR, USEPA 2005). Dredging is expensive, difficult to implement without generation of residuals, and may result in negative impacts to aquatic habitat, the benthic community, and surface water quality. Conventional isolation capping, although less expensive than dredging, may also negatively impact benthic community structure and composition, and by altering site bathymetry, capping may negatively influence the quality of aquatic and near shore habitats. MNR is cost effective, but it’s utility as a remedial strategy is highly site-specific and may require years or decades to demonstrate adequate risk reduction.

MNR combined with TLC is often referred to as Enhanced Monitored Natural Recovery (EMNR) and has the potential to accelerate and improve the effectiveness of MNR as a remedial strategy. A hypothetical demonstration of the benefit of TLC addition to MNR is presented in Figure 1. The MNR scenario in Figure 1 represents an environment in which capping is not considered as a component of system recovery. Both the MNR and EMNR surface sediment concentrations approach regional background levels with time. The EMNR scenario accelerates sediment concentration reductions, but results in some level of rebound due to the natural deposition of sediments with background chemical concentrations over the clean cap material. The rebound also may be due to biological mixing of the clean sediment material with underlying native sediment or porewater migration through the TLC. Notably, background chemical concentrations establish asymptotic cleanup levels for all technologies, including capping and dredging.

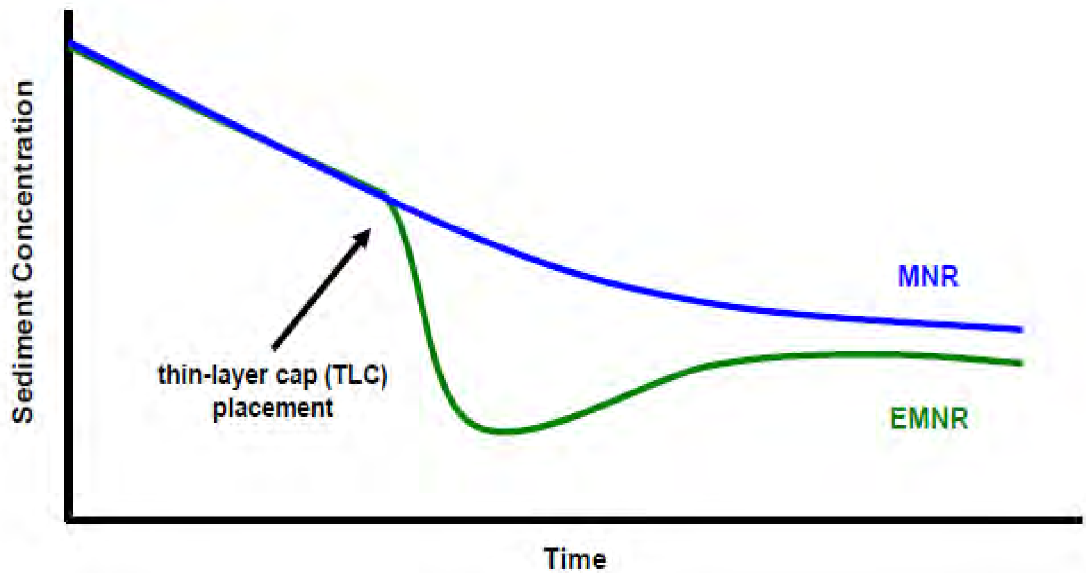


**Figure 1. Hypothetical relationship between chemical concentrations in surface sediment and temporal evolution of system recovery under MNR and EMNR.**

The placement of a TLC augments background or unamended recovery rates by placing a layer of clean material over sediment characterized by elevated chemical concentrations. The thickness of this layer of clean materials is typically between 15 and 30 centimeters (cm). TLCs accelerate the natural recovery of a system through burial and dilution of underlying impacted sediment. Although the physical mixing of sediment by sediment-dwelling organisms is generally confined to surface sediment, TLCs are generally implemented with the recognition that some biological or physical mixing of the cap with underlying sediment is likely to occur. In contrast to isolation caps, TLCs are not generally intended to provide complete isolation of the native sediment bed by creating a complete seal over the contaminated sediment (Brannon et al., 1985). Thus, design of the TLC must account for chemical concentrations in the native sediment bed surface when targeting site-specific remedial goals.

The placement of a TLC facilitates the re-establishment of benthic organisms, as well as minimizing disruption of the native benthic community, while accelerating natural sedimentation and disrupting exposure pathways for benthic invertebrates (NRC 2003; USEPA 2005). TLCs also minimize displacement of aquatic habitat by minimizing the change in surface sediment elevations. Moreover, as the cost for implementation of EMNR may be significantly lower than the cost for implementation of dredging or isolation capping remedies, EMNR may demonstrate the potential for accelerating system recovery in a cost-effective manner, while minimizing negative environmental impacts (Oregon DEQ 2005; Battelle et al., 2007).

Potential limitations to the effectiveness of EMNR include penetration or disturbance of the cap surface, concerns regarding long-term cap stability, sensitivity to accurate placement, excessive intermixing with native sediments, and, for amended caps, changes in the chemical binding capacity of cap amendments with time (NRC 2001). These concerns are not limited to EMNR and reflect common concerns associated with the placement of all remedial caps, including caps used as backfill to address post-dredge residuals.

Although conventional isolation caps have demonstrated effectiveness in the management and remediation of chemically impacted sediment, rigorous demonstration and validation of the effectiveness of EMNR remains limited (USEPA 2005). It is likely that ongoing questions regarding the application, performance, and ecological impacts of EMNR limit its widespread application. Relevant questions include:

- Is artificially-increased sediment deposition via TLC placement an effective strategy for enhancing MNR and accelerating natural system recovery rates?
- How sensitive is EMNR performance to the accuracy of TLC placement?
- What are the short-term construction (risk-of-remedy) effects associated with EMNR and to what extent does TLC application influence benthic community survival?
- Under what range of physical, biological, and chemical conditions will EMNR be effective?
- With respect to grain size, total organic carbon (TOC) content, and other biogeochemical parameters that influence habitat quality, how can EMNR design be optimized?
- How effective is EMNR in reducing chemical mobility and biological exposure potential in surface sediment?

## 1.2. Objective of the Demonstration

The objective of this project is to foster broader understanding and acceptance of the EMNR remedy through demonstration and validation of performance and cost-effectiveness at DoD contaminated sediment sites.

DoD faces increasing demands to address contaminated sediment sites, requiring improved understanding of potential remedial options and methods to assess their performance. Broader use of EMNR has several potential benefits to DoD and the broader scientific community, including reduced material costs compared to conventional isolation capping and/or dredging, accelerated recovery and reduced long-term monitoring costs compared to MNR, elimination of removal and disposal costs associated with dredging, and elimination/reduction of impacts to benthic communities compared to conventional isolation capping and dredging remedies. Because most of the contaminated sediment at Navy/USMC and DoD sites often falls into the "moderately" contaminated classification, EMNR has the potential to find widespread application, particularly as an adjunct to other more active remedies that might be applied in areas of higher contamination at the site. With cleanup costs estimated to exceed $1B, the broader application of EMNR could save DoD tens to hundreds of million dollars. EMNR also could facilitate more rapid acceptance and site closure for DoD sites where MNR is the most appropriate remedy but agency resistance or concerns make MNR acceptance difficult.

Primary end-user issues for EMNR generally include (1) concern with leaving contamination in place, (2) concern with the effectiveness of the remedy, (3) concerns with the permanence of the remedy, and (4) the perception of using dilution of surface sediment chemical concentrations as a remedy. The first issue is common to many *in situ* remedies (e.g., traditional capping, MNR, in-situ amendments) and can be addressed through risk communication. The second issue will be addressed directly in this demonstration by rigorously evaluating the full scale effectiveness of the EMNR remedy at the Quantico site. The third issue will be addressed to the extent possible by this short-term demonstration as well as by an accompanying Case Study Review and Technical report (Merritt et al 2010; Environ and SSC Pacific, 2009) and possibly by a potential follow-up verification study for long-term performance to be proposed at a future date.

Publications and presentations associated with this effort will improve the visibility of EMNR as a potential remedy within the community of practitioners, and will improve understanding of the appropriate application of the remedy. The fourth issue will be addressed by demonstrating that EMNR accomplishes more than just surface sediment dilution, and is an appropriate risk-management strategy that reduces chemical exposures, bioavailability, and risk. This will be achieved by (1) reviewing and documenting cost and performance data from sites where EMNR has been previously implemented, and (2) a full-scale field demonstration and validation of EMNR at a DoD contaminated sediment site. Results of this demonstration will provide DoD site managers and regulatory agencies with well-documented cost, performance, and risk-of-remedy data with which to evaluate EMNR during the remedy selection phase and to gauge remedy effectiveness during the monitoring phase.

Our approach to demonstration and validation of the EMNR process will focus on the following key technical performance issues:

- Utility of available monitoring tools to address EMNR performance
- Short-term implementation success
- Ability to project the potential for long-term remedy success
- Determination of the mechanisms and processes that regulate EMNR effectiveness

Full-scale validation of this technology in the field will help to foster improved DoD and regulatory confidence in this technology.

### 1.3. Regulatory Drivers

The remedy at the Quantico Embayment is being conducted in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). Implementation of the CERCLA remediation process is outlined in Title 40 of the Code of Federal Regulations (40 CFR) Part 300, National Oil and Hazardous Substance Contingency Plan (NCP).

# 2. Technology

This section describes the EMNR technology to provide a better understanding of its functionality and operation. Also presented are past applications and the advantages and limitations of this remedial alternative, and its application at the Quantico site.

## 2.1. Technology Description

EMNR involves the placement of a thin layer (commonly, less than 30 cm) of clean sand or clean sediment over contaminated sediment, coupled with ongoing natural recovery processes and monitoring program, to achieve ecological recovery and risk reduction at contaminated sediment sites. At most sites, effectiveness is based on the combination of the TLC and ongoing deposition processes that combine to reduce surface sediment chemical concentrations and isolate deeper sediment contaminant deposits. EMNR has emerged over the last 5-10 years as a viable hybrid of traditional capping and MNR. The development and application of the technology thus draws heavily from the lessons learned in the development of these component remedies. The remedy can be viewed in two phases including the active phase when the TLC is implemented, and the performance/recovery phase during which the effectiveness of the TLC and ongoing natural processes are gauged through monitoring. The active phase relies essentially on traditional capping with the primary difference that EMNR relies on a relatively thin cap layer; to assure effectiveness, cap thickness generally must be more carefully regulated for EMNR than for a thicker isolation cap. The performance phase integrates monitoring strategies consistent with both capping and MNR.

At the Quantico Site, the EMNR / TLC technology was referred to as a "Habitat Enhancement Cap" (HEC). The HEC, described below, generally serves the same functions as EMNR.

### 2.1.1. Thin Layer Capping Phase – Background Information

In the context of EMNR, thin layer capping is a method of enhancing or accelerating natural recovery through rapid deposition of a thin layer of clean material. In general, the TLC is not designed to provide complete chemical isolation, but to provide a reasonable degree of physical isolation and to rapidly achieve low chemical concentrations targeting site-specific remedial action objectives and remedial goals; EMNR also reduces potential resuspension or transport of contaminated sediment particles (Palermo et al., 1998). The design thickness for a TLC is typically driven by the bioturbation depth for organisms that are expected to colonize the cap surface, underlying sediment chemical concentrations, and the expected contribution of natural deposition processes further to isolate sediment contaminants. Because the cap is thin, the impact on bathymetry is generally minimal, permitting application in areas where thicker caps would not be feasible without dredging.

A variety of materials can be used for the TLC to provide the necessary engineering specifications and to target site-specific habitat characteristics. At some sites, including portions of the Quantico Embayment, the cap can be subsequently enhanced with vegetation to provide increased stability and habitat quality. Material selection is critical in assuring a reasonable degree of stability in the response to currents, waves, and other potential physical disturbances. The TLC caps can be placed in deeper waters using a range of construction methods including either hydraulic or mechanical methods or in shallow waters by working from the adjacent shoreline using mechanical earthmoving equipment. Factors that drive the proper selection of placement technology include water depth, current velocities, wave heights, access by floating equipment, and distance from the shoreline.

A significant challenge for TLC is accurate placement with respect to cap thickness. The industry has developed a variety of cap placement methods to improve placement accuracy and to assure the uniform distribution of cap materials. Occasionally, TLC designs target a greater thickness to make sure that the design thickness is achieved at all locations. For example, if the design thickness is 6 inches, a 9-inch cap may be placed assuming a 3-inch tolerance for placement. The cost for cap placement depends on factors including crew costs, equipment costs, material costs and production rate. Production rate can vary based on site specific factors including accessibility, water depth, and weather and sea conditions.

Short-term monitoring associated with the TLC generally involves verification of accurate material placement. Water quality may also be monitored, generally focusing on effects on total suspended solids (TSS) and turbidity in the vicinity of the work area. Other construction monitoring components to be considered may include dissolved oxygen, ammonia, and total sulfides or sediment traps to collect and measure resuspended bottom sediments; these alterative monitoring components generally reflect site-specific concerns or targets during remediation.

Traditional techniques for monitoring cap placement include bathymetric surveys (Lillycrop et al., 1991), sediment core sampling, sediment profiling camera (e.g., http://www.remots.com), visual observation (shallow water), or diver observations. Precision bathymetry is the most common monitoring tool for TLC projects and generally includes surveys prior to placement of the cap, periodically during placement, and at the completion of placement (Palermo et al., 1998). Other monitoring tools that have proved useful on a site specific basis include side scan sonar, sub-bottom profilers, and multi-beam depth sounding systems.

After placement, surface sediment chemical concentrations may be monitored to establish a post-placement chemistry baseline for the site.

### 2.1.2. Characteristics of the TLC at the Quantico Marine Corps Base, Quantico, VA

The project site for implementation of this study was Site 99, the Quantico Embayment site, Quantico, VA (Figure 2). Conceptual design drawings of the Quantico TLC are presented in the Draft-Final Remedial Design (Battelle 2009) and include plan view as well as cross-sectional representations of the cap, and highlights shore side topography and placement area bathymetry.

The contaminated sediment within the Quantico Embayment remedial footprint (10.9 acres) was covered with a thin-layer HEC (Figure 3). The HEC (also referred to in this document as a thin-layer cap) involved placement of capping material (sand) under water and was designed to provide physical isolation of the contaminated sediment from the benthic environment and to prevent resuspension or transport of contaminated sediment while providing viable habitat for several different species and creating wetland habitat. With the exception of the Sewage Treatment Plant drainage channel, no dredging or excavation was conducted. The existing rock revetment along the shoreline of Site 4 was covered with imported fill material to provide better habitat. The upper portion of the new fill was planted with upland vegetation, and at lower elevations, the fill was planted with appropriate types of wetland vegetation to restore the Potomac River shoreline to more functional conditions (NAVFAC WA 2011).

The HEC was constructed in summer of 2014 and the grain sizes of the cap material were selected in the final design to be stable during both normal river flows and during periods of flood flows and storm-generated waves. Ideally, sediment sizes would be chosen to match surrounding grain sizes within the freshwater tidal systems of the Potomac River. The HEC material consisted of common sand fill material, poorly to well sorted with less than 5 percent fines passing a 200-micron sieve and with a grain size distribution characteristically between fine and coarse grain. The material had a minimum D50 of 0.5 mm or greater (NAVFAC WA 2011).

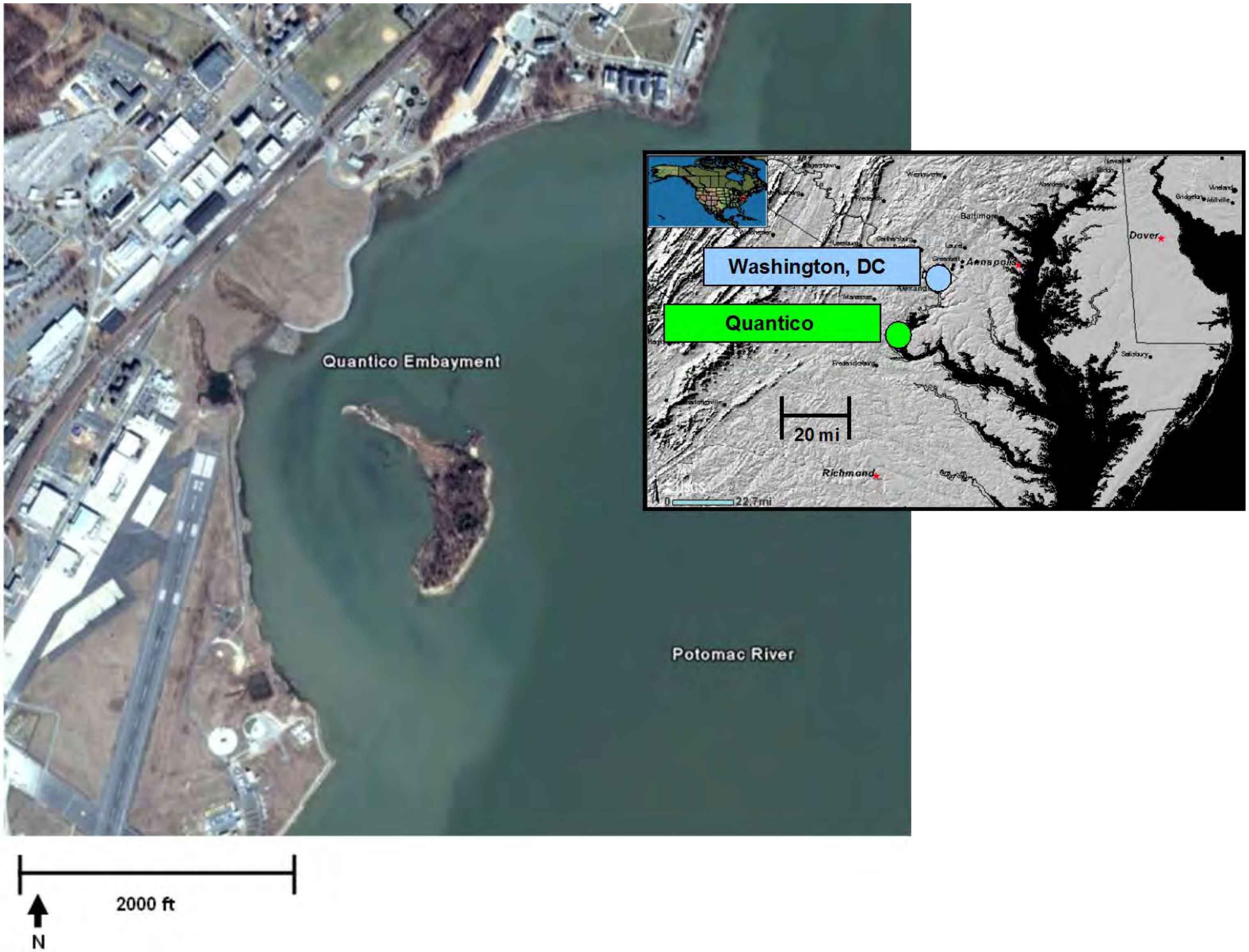

**Figure 2. Quantico Embayment, Quantico Marine Corps Base, Quantico, VA.**


**Figure 3. Site 99 work areas (referenced from AGVIQ-CH2M HILL 2012).**

For the Quantico Embayment, the HEC was placed by spreading a sand slurry over the remedial footprint. Sand was delivered to the site by truck or barge and transferred into a mixing tank. Water was added to form a slurry, which was pumped to a shallow-draft spreader barge. The spreader barge was moved at a carefully controlled rate as the slurry was discharged to spread the cap material evenly over the sediment. Because it was not possible to place a perfectly uniform cap layer underwater, and to place a cap with a minimum thickness of 6 inches, construction specifications called for the placement of an average of 9 to 12 inches of material over the remedial footprint to ensure a minimum of 6 inches throughout (NAVFAC WA 2011).

For the purpose of installation, the HEC area was been divided into four zones, as shown in the Remedial Design (RD) drawings (Figure 4 in this document): Zone 1 (light blue and red areas), Zone 2 (dark blue), Zone 3 (orange), and Zone 4 (green and pink). The fill material was placed in the HEC area using equipment from the shoreline where possible (Zones 2 through 4) and with shallow-sand spreading barges (Zone 1). Fill material was placed and graded in Zones 2 through 4 in accordance with RD drawings. Fill material was not graded in Zone 1. The fill material in Zone 1 was placed using hydraulic methods (dredge piping) in the HEC area from barges. Additional details regarding cap placement were defined in the Final Remedial Action Work Plan dated February 2012 (AGVIQ-CH2M HILL 2012) and are not discussed further in this document.

Wetland vegetation was incorporated into the shoreline areas of the cap design to further maintain cap integrity. The wetland was designed to be compatible with existing wetland systems, which are tidal freshwater wetlands. Plantings were conducted to reflect the three hydrologically influenced zones within tidal systems, open water, intertidal marsh, and high marsh. Along the Site 4 shoreline, the existing rock revetment was left in place and covered with imported fill material to provide better habitat. The upper portion of the new fill was planted with upland vegetation because the top of the rock was 6 feet above the high tide elevation. At lower elevations, the new fill was planted with appropriate types of wetland vegetation to restore the shoreline to more natural conditions (AGVIQ-CH2M HILL 2012).

The tidal wetlands created as part of the remedy provided stabilization of the cap and contaminated sediments, and a greater assimilative capacity for contaminants that may potentially move through the cap. The wetlands also protect against groundwater discharge, and provide revitalized habitat for impacted ecological receptors. In areas that are distant from the landfill where contaminant levels are reduced, the cap aided in the natural recovery of contaminated sediments on the edge of the restored wetland. As part of the regulatory project, physical, chemical, and/or biological monitoring was conducted to evaluate the integrity and condition of the cap and the effectiveness of the remedy; the details of the monitoring are described in the *Final IR Site 99 Long-Term Monitoring Plan* (NAVFAC WA 2010, AGVIQ-CH2M HILL 2012) and summarized in Table 1.

This project was not involved in the design or implementation of the sediment cap, except insofar as the project team needed to understand the cap design and plans to monitor cap performance. The opportunity for this ESTCP study was to capitalize on an existing TLC and to leverage the full scale TLC implementation costs for this project. The Chesapeake Division, Naval Facilities Engineering Command is responsible for the Environmental Restoration – Navy (ER-N) remedial action design and implementation for the Quantico Embayment site. This

ESTCP demonstration, carried out by Space and Naval Warfare Systems Center, Pacific (SSC Pacific) and Ramboll Environ US Corporation (Ramboll Environ, formerly ENVIRON International Corporation), was not engaged in and is not responsible for meeting regulatory objectives for the Site; rather, we focused on providing a detailed demonstration of the performance and effectiveness of EMNR with respect to the utility of available monitoring tools to address EMNR performance, short-term implementation success, and the ability to project long-term remedy success.  Results of this work contribute to the industry's understanding of the mechanisms and processes that regulate EMNR effectiveness.

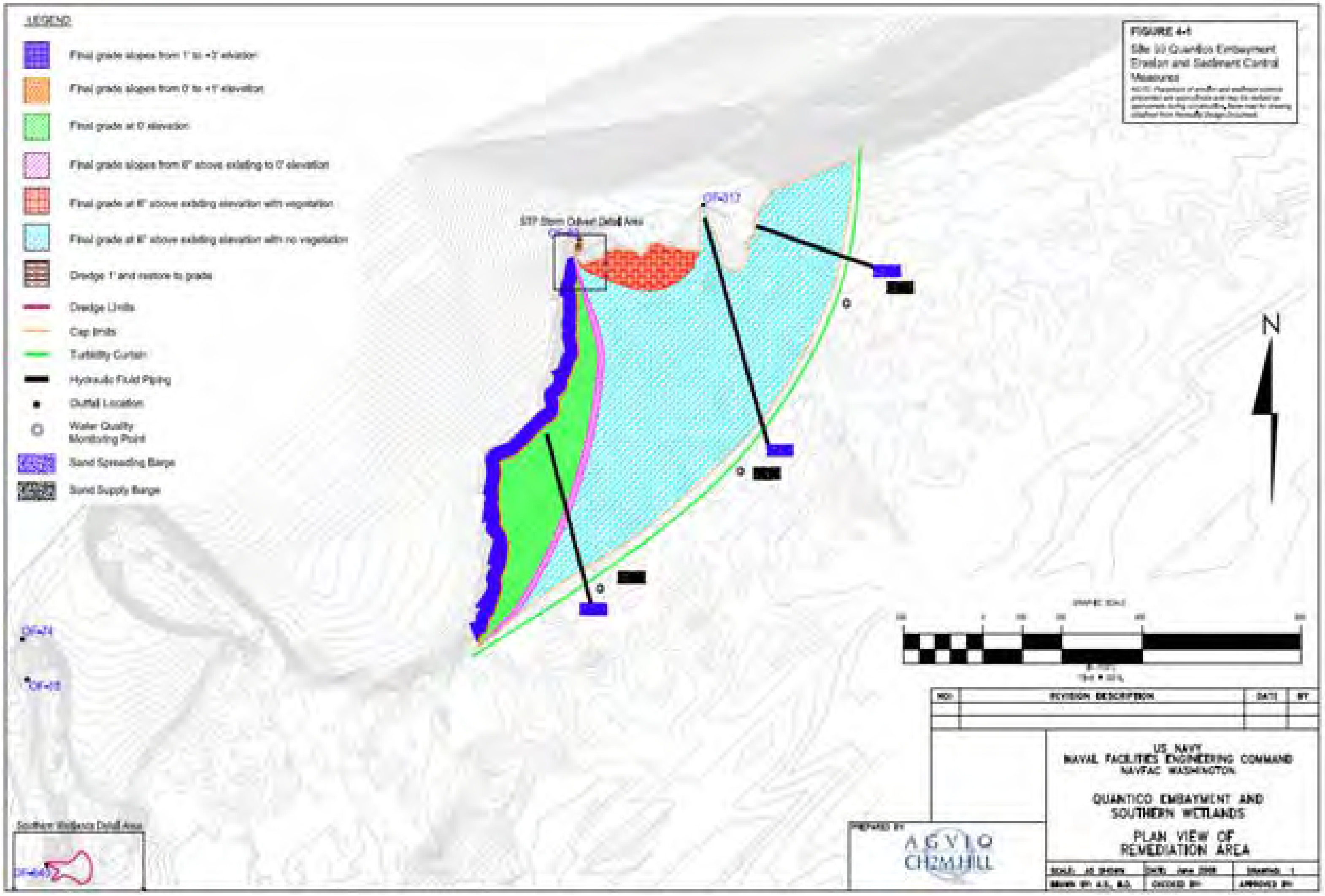


**Figure 4. Quantico Embayment and Southern Wetlands Remediation Area (from AGVIQ-CH2M HILL 2012).**

**Table 1. Site 99 Long-Term Management Plan (LTMP) for IR Site 99, MCB Quantico (Battelle and Neptune, 2010).**

| AREA | MATRIX | ANALYSIS | DATA QUALITY OBJECTIVE (DQO): DECISION STATEMENT/STUDY QUESTION | NUMBER OF SAMPLES | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Year 0 (Pre-Baseline Construction) | YR 1 | YR 2 | YR 3 | YR 4 | YR 5 |
| **FISH TISSUE SAMPLES** | | | | | | | | | |
| Quantico Embayment (including one sample from the mouth of the STP drainage channel) | Tissue – Killifish, whole body (note 2) | PCB congeners;<br>2,4' and 4,4'-DDx isomers;<br>Percent moisture; Total lipids | Primary Question 1: Have remedial actions in IR Site 99 reduced risk to piscivorous birds in the Quantico Embayment and PRSA1 from ingestion of forage fish and intermediate predator fish exposed to elevated DDx levels in sediments to acceptable levels? | 10 | 10 | 10 | 10 | 10 | 10 |
| | Tissue – Intermediate Predator Fish (e.g. perch, bass), whole body (note 3) | PCB congeners;<br>2,4' and 4,4'-DDx isomers;<br>Percent moisture; Total lipids | | 0 | 0 | 0 | 0 | 0 | 6 |
| **POREWATER SAMPLES** | | | | | | | | | |
| Quantico Embayment,<br>Southern Wetlands,<br>Unnamed Tributary,<br>STP drainage channel | Porewater (note 4) | PCB congeners; TCL pesticides;<br>TCL SVOCs (selected);<br>TCL VOCs (selected) | 1) Are contaminants in the groundwater under IR Site 4 being transported to the Quantico Embayment, Southern Wetlands, or Unnamed Tributary and eventually to the Potomac River at levels exceeding groundwater risk criteria identified in WS#15? 2) Are contaminants from the Site 99 Soil Areas being transported via groundwater to the adjacent Quantico Embayment and eventually to the Potomac River at levels exceeding groundwater risk criteria identified in WS#15? | 0 | (25)/105<br>3<br>3<br>1 | 10<br>3<br>3<br>1 | 10<br>3<br>3<br>1 | 10<br>3<br>3<br>1 | 10<br>3<br>3<br>1 |

**Table 1. (cont.)**

| AREA | MATRIX | ANALYSIS | DATA QUALITY OBJECTIVE (DQO): DECISION STATEMENT/STUDY QUESTION | NUMBER OF SAMPLES | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Year 0 (Pre-Baseline Construction) | YR 1 | YR 2 | YR 3 | YR 4 | YR 5 |
| **SEDIMENT SAMPLES** | | | | | | | | | |
| Quantico Embayment,<br>Southern Wetlands,<br>Unnamed Tributary<br>STP drainage channel | Sediment (note 4) | PCB congeners; TCL pesticides;<br>TCL SVOCs (selected);<br>TCL VOCs (selected);<br>Grain size;<br>Total organic carbon; Percent moisture | No DQO. | 0 | 10<br>3<br>3<br>1 | 0 | 0 | 0 | 0 |
| **HABITAT CAP MONITORING** | | | | | | | | | |
| Quantico Embayment | Habitat cap and constructed wetlands (note 6)<br>a) 0.72 acre upland transition zone<br>b) 0.12 acre high marsh<br>c) 2.51 acre low marsh<br>d) 7.71 acre unvegetated open water | Bathymetry/ Topography<br>Cap thickness | 1) Is the HEC and created wetland remaining stable and, therefore, effective at reducing potential physical and biological transport pathways for contaminants in Embayment sediments over time, thus reducing ecological risks?<br>2) Is the slope and cover in the Site 99 Soil Areas remaining stable with no erosion into the adjacent drainage area? | 0 | 0 (note7) | 0 (note8) | 0 (note8) | 0 (note8) | 1 |
| Quantico Embayment | Constructed wetlands<br>a) Low marsh zone<br>b) High marsh zone<br>c) Upland transitional zone<br>Site 99 Soil Areas | Wetland quality measures (note 9)/<br>visual inspections (vista) (note 10) | | 0 | 0<br>0<br>0<br>0 | 14<br>vista<br>vista<br>vista | 14<br>vista<br>vista<br>vista | 14<br>vista<br>vista<br>vista | 14<br>vista<br>vista<br>vista |
| Quantico Embayment | Open Water | SAV coverage<br>Benthic community (SPI)<br>Fish community | | 0 | 1<br>21<br>1 | 1<br>21<br>1 | 1<br>21<br>1 | 1<br>21<br>1 | 1<br>21<br>1 |

**NOTES:**

1. Note that sample numbers do not include field QC samples.

2. Each killifish sample will represent a composite of multiple fish (approximately 30-40 fish weighing a minimum of 50 grams) in order to achieve required analytical mass. Only killifish greater than 5 cm in size will be included in the sample, and no individual fish will represent greater than 25% of the sample mass.

3. Each fish will represent a composite of multiple fish (approximately 10 fish weighing a minimum of 50 grams) in order to achieve required analytical mass

4. Porewater collected a minimum of 12 -18" below the sediment-water interface. Sediment associated with the porewater will only be collected in post-construction Year 1 to assist in understanding the expected variability associated with the porewater data.

5. Porewater will be monitored from 25 locations in Year 1, with samples collected and analyzed from the 10 stations showing the highest flow rate and separation (groundwater defined b water quality parameters) from Potomac River surface water.

6. Habitat cap will also be assessed after any large storm event.

7. Bathymetry and topography surveys will be conducted by the construction contractor (as-built survey) immediately following completion of construction and for one year postconstructi as described in the construction work plan.

8. Habitat cap will only be sampled for bathymetry/topography to determine cap thickness if evidence of cover instability is identified.

9. Percent survival in the low marsh, high marsh, and upland transitional zones will be quantified in Year 1 as part of the construction work plan; percent cover and diversity in Years 2- 5 will be quantified only in the low marsh zone at the 14 sample locations as described in the LTMP. The visual inspection analysis will use one or more vista location(s) that will cover the entire constructed wetland. The 14 sample locations to evaluate intertidal/low marsh habitat wetland quality will be randomized each year.

10. Vista or observational locations covering the entire 10.9 acre HEC and the 0.5 acre Site 99 Soil Areas will be established in Year 1 by the construction contractor and returned to each year (Years 2 through 5) as part of this LTMP.

### 2.1.3. Chronological Summary of the Development of the Technology to Date

EMNR has been implemented as a component of overall site remedial strategies that have included sediment dredging, construction of confined disposal facilities, isolation capping, debris removal, and MNR. EMNR combines conventional, accepted knowledge regarding sediment capping processes (e.g., material placement techniques, design considerations and limitations, hydrodynamics, and appropriate monitoring strategies) with an understanding of background site conditions (e.g., sedimentation and burial dynamics, bioturbation and/or hydrodynamic mixing, plus other possible forms of natural risk attenuation).

As documented in the *Review of Thin-Layer Placement Applications to Enhance Natural Recovery of Contaminated Sediment* (Merritt et al 2010), EMNR has been implemented successfully at the Wyckoff/Eagle Harbor Superfund Site in Bainbridge Island (WA), the Ketchikan Pulp Company Site in Ketchikan (AK), and the Bremerton Naval Complex in Bremerton (WA). For these sites, EMNR was selected for those portions of the remedial area in which stated goals were to reduce the concentration of chemicals in the biologically active zone of sediment in a manner that would enhance the potential for ecologically balanced re-colonization, while not causing widespread disturbance to existing habitat. Chemicals of concern (CoC) addressed using EMNR include mercury and other metals, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and diffusive toxicants including sulfide, ammonia, and 4-methylphenol. Field pilot studies of EMNR placement have also been conducted at the Palos Verdes shelf site in California, the Duwamish Waterway in Washington, and the Anacostia River in the District of Columbia. For these sites, available data focused primarily on implementation and short-term post-placement monitoring, and were incomplete for the evaluation of long-term EMNR performance.

## 2.2. Technology Development

EMNR / TLC accelerates the physical isolation and natural recovery processes such as burial or sorption compared to MNR. This is an increasingly accepted technology that is seeing relatively broad consideration in feasibility studies for remedy screening, evaluation, and selection. Despite its broad consideration and increasing application, EMNR has not been studied as much as dredging and capping, contributing to some of the uncertainties associated with this technology. In principle, aquatic habitat is preserved or enhanced by EMNR compared to a dredging remedial option. Complete isolation of underlying sediment to the overlying water above the TLC surface is not the engineering goal in EMNR. Rather acceleration of the MNR processes to reduce time to achieve remedial action objectives (ITRC 2017). This demonstration will add substantially to our understanding of EMNR / TLC performance.

## 2.3. Advantages and Limitations of the Technology

Successful implementation of EMNR is contingent on both the effectiveness of the capping technology and the degree to which background site conditions are understood. If both aspects of implementation are realized, EMNR is expected to result in a stable, *in situ* sediment remedy that is accomplished with minimal short-term disturbance to the benthic ecosystem. As with all *in situ* remedies, limitations to success include the fact that the remedy leaves chemical contaminants in place and that changes to site hydrodynamic conditions (such as resulting from long term variation in near-shore land use, flow magnitude, or tidal range) could impact the long term physical stability of the emplaced cap. Such limitations can be overcome; however, with careful design considerations and an accurate, site-specific understanding of the role that hydrodynamics plays in chemical fate and transport, and by institutional controls that limit anthropogenic disturbances of the remedy.

The primary advantage of EMNR is that it provides a low-cost alternative that takes leverages ongoing natural recovery processes and accelerates those processes to cost-effectively reduce ecological and human health risks. EMNR also minimizes ecological impacts that may be realized by more aggressive technologies like dredging and capping. By minimizing negative ecological impacts, EMNR may be more ecologically suited to existing habitats, and may be employed to accelerate post-remediation habitat recovery.

The primary disadvantages of EMNR are that it is generally more costly than a pure MNR remedy, the thin-cap provides only a minimal barrier over the contaminated sediments, and the sand materials that are generally used have limited binding capacity and thus may not always protect against porewater migration or other processes that may introduce contamination to the cap.

# 3. Performance Objectives

This project was designed to evaluate the performance and effectiveness of the Quantico EMNR remedy and the utility of available monitoring tools to address EMNR performance, short-term implementation success, the ability to project long-term remedy success, and the understanding of the mechanisms and processes that regulate EMNR effectiveness.

The demonstration was designed to provide baseline (pre-cap construction) monitoring and post-construction long-term monitoring at 2, 14 and 25 months after installation of the EMNR cap. Performance was analyzed using a combination of quantitative and qualitative tests to achieve the objectives of the project. The performance objectives are provided in Table 2. Additional details regarding the design of this study, data requirements, and statistical analyses are provided in section 5 Test Design and the Demonstration Plan (Chadwick et al., 2013).

This project was a field-scale demonstration designed to assess the performance and effectiveness of the Quantico Embayment TLC remedy. At the Quantico Embayment site, the EMNR cap was designed to address sediments that are moderately contaminated with the chlorinated pesticide dichlorodiphenyltrichloroethane (DDT) and its derivatives dichlorodiphenyldichloroethane (DDD) and dichlorodiphenyldichloroethylene (DDE). For this document, and unless specified by species, DDT, DDD, and DDE are defined collectively as DDX. The TLC was designed to accelerate natural system recovery by promoting sediment burial and reducing chemical exposures and risk to biological receptors.

The extent to which expected performance metrics were achieved was evaluated from data collected during the pre-construction baseline monitoring and post-construction monitoring. An overview of this sampling is provided below and detailed chronological information for the demonstration plan is provided in section 5 Test Design. Monitoring phases included: 1) pre-placement baseline of biological, physical, and chemical conditions; and 2) long-term monitoring (for this project, 2-years of monitoring) following TLC placement to evaluate remedy performance. Sampling during all monitoring phases focused on the capped area and on reference stations located outside of the capping area.

Although the duration of this project may not be sufficient for a full evaluation of long-term remedy effectiveness, results of this project do provide insight into the overall effectiveness of the EMNR remedy over the 2 year monitoring period. This demonstration project also evaluated the utility of various innovative tools and approaches to monitor remedy effectiveness; the efficacy of those tools also is evaluated herein. To the extent possible, the post-remedy 2-year monitoring results were used to project certain facets of long-term remedy effectiveness using empirical data, conceptual models, statistical analyses or other approaches; however, a fully-definitive evaluation of remedy performance may require longer-term monitoring. The need for additional monitoring is discussed in Section 8 and is also captured within the long-term monitoring plan for the site (Battelle and Neptune, 2010).

**Table 2. Performance objectives for EMNR at Quantico Embayment.**

| Performance Objective | Data Requirements | Success Criteria | Success Criteria Met |
|---|---|---|---|
| PO1<br>Evaluate cap placement and determine physical stability of TLC | Sediment core profiling (visual classification) | Compare cap thicknesses with design specifications. Average cap thickness should not be less than 6 inches or a minimum cap thickness of 2 inches in the areas targeted for a 6-inch cap. | Yes |
| | Bathymetry | Compare bathymetric resolution with target thicknesses and sediment coring results. Bathymetric changes in elevation should be qualitatively consistent with cap thickness measurements made by coring.<br>Compare elevation change measured by bathymetry with cap thickness specifications at coring stations. Average elevation change should be on the order of 6 inches and the majority of the cap area should show positive elevation change from 2014 baseline. | Yes |
| | Sediment Profile Imagery (SPI) | Compare baseline and post-placement SPI images. SPI camera able to distinguish TLC from native sediment and resolve cap thicknesses less than or equal to the camera penetration depth.<br>SPI measured cap thickness should be qualitatively consistent with cap thickness measurements made by coring. | Yes |
| | Sediment Friction Sound Probe (SED-FSP) | Compare cap thicknesses with design specifications. FSP measurements should be able to distinguish TLC from native sediment and accuracy in identifying mixing depth within 50% of estimates indicated by grain size analysis of sediment cores. | Yes |
| PO2<br>Determine the extent of sediment and contaminant mixing | Sediment core profiling (visual classification) | Mixing and deposition layers are clearly visible and can be distinguished from cap material. Mixing and deposition layer thicknesses can be quantified to support interpretation of contaminant profiles. | Yes |
| | SPI camera | SPI camera able to distinguish mixing and depositional layers associated with the TLC. Provide qualitative estimates of the degree of mixing to support interpretation of contaminant profiles. | Yes |
| | SED-FSP | SED-FSP able to distinguish mixing and depositional layers associated with the TLC. Provide qualitative estimates of the extent of mixing and deposition to support interpretation of contaminant profiles. | Yes |

| Performance Objective | Data Requirements | Success Criteria | Success Criteria Met |
|---|---|---|---|
| | Surface sediment TOC, and grain size | Compare baseline, post-cap placement, and long-term monitoring results. Changes in TOC and grainsize can be used to quantify vertical mixing and deposition to support interpretation of contaminant profiles. | Yes |
| | Sediment Traps | Sediment trap mass provides quantitative estimate of new deposition. Sediment trap chemistry provides estimate of depositional flux to support interpretation of contaminant profiles. | Yes |
| | Surface sediment chemistry | Compare baseline, post-cap placement, and long-term monitoring results. Vertical mixing and deposition do not alter contaminant profiles sufficiently to cause failure of the EMNR remedy. | Yes |
| PO3<br>Evaluate surface sediment chemical concentration reductions | DDX analyses from core samples | Compare baseline, post-cap placement, and long-term monitoring results for core sample DDX levels. Significant reduction in DDX compared to baseline and/or levels should not increase beyond sediment PRGs; 650 ppb total DDX. Reduction in exposure compared to baseline is sustained over 2 years. | Yes |
| PO4<br>Evaluate reductions in chemical bioavailability and bioaccumulation | *In situ* bioaccumulation tests | Compare baseline, post-cap placement, and long-term monitoring results. Significant reduction in bioaccumulation and surface sediment porewater concentrations of DDX compared to baseline. Reduction in bioaccumulation and porewater concentrations compared to baseline levels are sustained over 2 years. | Yes |
| | DDX concentrations in sediment porewater with passive samplers (SPME) | | Yes |
| PO5<br>Determine the rate of benthic recovery | Pre- and post-cap placement benthic taxonomic surveys | Measure and compare benthic community health indices across baseline, post-placement, and long-term monitoring data. Comparable or improved benthic community conditions relative to baseline by the end of the two year monitoring period. | Yes |
| | SPI camera images within and around perimeter of TLC footprint | Compare SPI results with taxonomic surveys. Identify infaunal successional stages, RPD depth, and bioturbation depth. | No due to method limitations |

## 3.1. Performance Objective 1 (PO1): Evaluate Cap Placement and Determine Physical Stability of TLC

### 3.1.1. Introduction

The Navy implemented EMNR to remediate sediment containing elevated concentrations of DDX in portions of the Quantico Embayment. Effective performance is dependent on construction and the relative stability of the TLC, among other factors evaluated in other performance objectives. Placement uniformity and long-term TLC stability are important success criteria. Some level of redistribution and settling or consolidation is to be expected after cap placement in a natural environment.

Success was measured based on cap thickness by differentiating the cap material from the underlying native sediment as measured using multiple methods including sediment core profiling, bathymetry, Sediment Profile Imagery (SPI), and Sediment Friction Sound Probe (SED-FSP). Success of this phase of the project was evaluated based on the overall stability in the thickness of the cap over time, as well as by the ability of the different measurement techniques to gage the stability. While the coring measurements provide the most direct measure of cap thickness, they were limited spatially, so other measurements such as the bathymetric mapping, SED-FSP and SPI provide additional information on the spatial stability of the TLC. Stability of the EMNR cap was a reflection of the cap design and of site-specific conditions including placement accuracy and distribution, hydrodynamics, cap material grain size, natural sedimentation rates, and benthic mixing processes. Results provided insight into cap placement and thickness and into mixing processes that may have occurred during or after cap placement.

### 3.1.2. Sediment Core Profiling

#### 3.1.2.1. Data Collection and Treatment

The depth of the cap-native sediment interface was recorded immediately following cap placement (confirmation coring) to confirm placement objectives were met, and again at the short term (2-months post-placement) and long term (14- and 25-months post-placement) monitoring events to measure stability of the TLC. The methods are detailed in Section 5 Test Design. The cap thicknesses visually observed for each of the five replicate cores at each multimeric station were averaged and compared to target design specifications. The design specifications stated the average cap thickness over the target area should not be less than 6 inches (15 cm) or a minimum cap thickness of 2 inches (5 cm) or less in the areas targeted for a 6-inch cap (other than in those areas where cap thickness is less than 2 inches by design).

#### 3.1.2.2. Data Interpretation and Extent the Success Criteria Were Met

The performance objective was met since the average cap thickness as an average of all stations in each post-placement event and as an average of the five replicate cores at each station was greater than or equal to 6 inches (15 cm), and the minimum cap thickness always exceeded 2 inches (5 cm). Overall, the average thickness observed in the 2-month post-placement event (30 cm), decreased slightly in the first annual event (25 cm) and remained constant in the second annual event (25 cm). Results are discussed further in Section 5.7 (Sampling Results).

### 3.1.3. Bathymetry

#### 3.1.3.1. Data Collection and Treatment

A bathymetry survey was made before and after cap placement by the construction contractor and as part of the long-term monitoring for IR Site 99 (NAVFAC WA 2010). The bathymetric survey was intended to provide contextual information for other analyses, rather than as a means of assessing either the constancy of cap thickness across the study area or the extent to which cap materials consolidate over time. Bathymetric survey data is known to have a certain amount of error associated with measurements, therefore this metric may not be useful on its' own to assess cap thickness over time, but the data is useful when used conjunction with other lines of evidence (sediment coring, SPI camera, SED-FSP). In addition, the bathymetric measurements only reflect changes in elevation which should be related to cap thickness but could be influenced by compaction of the underlying sediments and mixing. Despite these limitations, bathymetric survey and elevation data before cap placement were compared to post-placement surveys by simple subtraction to infer cap thickness through time and compared to other collected metrics. The methods are detailed in Section 5 Test Design.

#### 3.1.3.2. Data Interpretation and Extent the Success Criteria Were Met

The performance objectives stated that the elevation change measured by bathymetry should be on the order of 6 inches and the majority of the cap area should show positive elevation change from 2014 baseline, and that the bathymetric changes in elevation should be qualitatively consistent with cap thickness measurements.

The performance objectives were met since within the target TLC area, the mean elevation increased by 7 inches and 6 inches from the baseline 2014 survey to the post-remedial 2015 and 2016 surveys, respectively (Table 3). In addition, the bathymetric difference mapping for 2015 and 2016 showed positive changes in elevation throughout the majority (>94% for 2015 and >82% for 2016) of the target cap area. Also, the bathymetric difference mapping for subtraction of the 2015 elevation from the 2016 elevation reflected the stability of the cap over the two years following placement, with generally very little change between the two post-cap surveys with a mean difference across the cap area of only -3 cm. Comparing the bathymetric elevation changes with the cap thickness measurements for the on-cap coring stations showed that the two measures were qualitatively comparable with the exception of station QT-3 where the bathymetry consistently showed a smaller change in elevation than was reflected in the cores. The average values for change in elevation showed a slight bias toward lower values than the coring which was expected due to compaction and mixing of the cap material with the native sediment.

Overall, the bathymetric surveys clearly show the changes in elevation related to the cap placement, and these measured changes were consistent with the target thickness for the cap. Annual surveys for the two years following the cap placement showed only very small changes in elevation, indicating that the cap appears to be relatively stable in elevation. Results are discussed further in section 5.7 (Sampling Results).

### 3.1.4. Sediment Profile Imagery

#### 3.1.4.1. Data Collection and Treatment

The effectiveness of the SPI camera as a visual monitoring tool was a function of the degree to which the camera could differentiate between the native sediment and the TLC as well as the ability of the camera to penetrate into the TLC to a sufficient depth to resolve the vertical structure of the cap. The methods are detailed in Section 5 Test Design.

#### 3.1.4.2. Data Interpretation and Extent the Success Criteria Were Met

The performance objectives for the SPI measurements stated that the SPI camera should be able to distinguish TLC from native sediment, resolve cap thicknesses less than or equal to the camera penetration depth, and that the SPI measured cap thickness should be qualitatively consistent with cap thickness measurements made by coring.

The objectives were met with qualifications because the SPI measurement was able to distinguish clearly between native and cap sediments. This allowed the SPI to be used to quantitatively gage the cap thickness so long as the cap thickness was less than or equal to the camera penetration depth. At stations where the cap thickness was greater than the camera penetration depth, only an upper bound for cap thick ness could be determined. The SPI and coring-based cap thickness measurements were consistent in that the SPI indicated average cap thicknesses of >4.9 inches and >5.4 inches for the 2014 and 2015 surveys, respectively, while the coring measurements indicated thicknesses of 8.5 inches and 10.7 inches for the corresponding years (Table 3). Due to limited penetration of the SPI camera at a large percentage of the stations, the 6 inch cap thickness metric could not be fully evaluated, but the measurements were generally consistent with this metric.

The broader spatial coverage of the SPI system provided additional insights beyond the limited coring stations, in particular in identifying areas of reduced cap cover. In the 2-month post construction survey (2014), 19 of 21 stations had a cap thickness of at least 2 inches (one station with 1 inch thickness was on the edge of the TLC). The sediment surface at cap stations during this survey showed primarily clean sands. Stations that were located 25 to 50 m away from the cap to the southeast appeared to be all native sediments with no cap sediment indicating minimal migration of the cap material. The cap appeared to completely cover the SPI stations located on the cap. In the 14-month event (2015), all on-cap stations had a cap thickness of at least 2 inches, with the exception of one station on the edge of the target area. Only Station 03 on the south-eastern edge of the cap site appeared to be without cap sediment. The SPI survey also was conducted in the 25-month sampling event; however, the results are currently pending.

Overall, the SPI system provided a useful means of distinguishing cap material from native sediment as a means of evaluating cap stability. The limited camera penetration at many sites did limit the ability to quantify the total cap thickness, so the measurement often only provided a lower bound. This limitation was related both to the difficulty of pushing the camera through sand, and the challenges of working off of a small boat in shallow water with a hand-push system, rather than the traditional weighted drive frame. Detailed results for the SPI surveys are provided in Section 5.7

### 3.1.5. Sediment Friction Sound Probe

#### 3.1.5.1. Data Collection and Treatment

The SED-FSP was used in the determination of vertical mean particle size profiles to analyze cap thickness and stability. Usable data were limited to the 25-month event (2016). Friction sound profile data were interpreted to determine the depth of the cap-native sediment interface. Cap thicknesses were compared to performance objectives (described above) to determine cap placement and stability through time. Where the SED-FSP measurements were co-located with sediment coring, the two methods were compared to determine agreement. The methods are detailed in Section 5 Test Design.

#### 3.1.5.2. Data Interpretation and Extent the Success Criteria Were Met

The performance objectives for the SED-FSP were to show that the SED-FSP measurements could distinguish TLC material from native sediment, that SED-FSP-measured cap thicknesses met the cap design specifications, and that the accuracy in identifying mixing depth by SED-FSP be within 50% of estimates indicated by the sediment cores.

The objectives were met because the SED-FSP was able to clearly distinguish cap material from native material. The SED-FSP results satisfied the performance objectives with an average thickness for cap and mixed material of about 12.8 inches (32.6 cm) at the on-cap stations with a minimum thickness of 6.5 inches (16.5 cm). Comparing the SED-FSP results with the coring measurements showed close agreement with the average thickness for the SED-FSP (cap and mixed material) for the five stations of 9.8 inches, and the average for the coring at 9.9 inches, well within the 50% level of agreement (Table 3).

The spatial distribution for the cap material from the SED-FSP mapping showed that undisturbed layers of the original cap material were still present at about half of the cap area at thicknesses exceeding 15 cm. When the mixed and cap material were considered, the results indicated thicknesses exceeding 15 cm throughout the capping area. Because mixing with native sediment and new deposits are expected over time at an EMNR site, these results indicate that the cap is behaving in a manner consistent with the EMNR concept. The maps also indicate no obvious movement of significant amounts of capping material into off cap areas, at least along the two transects that were surveyed to the east of the cap area.

The SED-FSP also provided additional insight into the vertical structure of the cap and its interaction with the underlying sediments and newly deposited sediment on top of the cap. The SED-FSP profiles provided a rapid, in-situ means of determining the thickness of the undisturbed capping material, as well as the thickness of these mixing layers on the upper and lower interfaces of the cap material.

Overall, the SED-FSP provided cap thickness measurements that were highly consistent with the sediment coring results, while providing a much more rapid means of characterizing the spatial and vertical distribution of cap material relative to the traditional coring methods. Detailed results for the SED-FSP survey are provided in Section 5.7.

### 3.1.6. Summary for Cap Thickness and Stability

Overall, the performance objectives for cap placement and stability were met. The sediment coring confirmed that the cap was remaining relatively stable over time, and the bathymetric mapping, SPI camera and SED-FSP system all provided confirmatory evidence for cap stability (Table 3; Figure 5). These additional measures also provided much broader spatial coverage which enhanced the understanding of the overall stability of the cap. Sediment core profiling demonstrated the average cap depth was at least inches 6 inches at all stations (average of 10 inches in the most recent long-term monitoring event). The bathymetric surveys clearly show the changes in elevation related to the cap placement, and these measured changes were consistent with the target thickness for the cap. In the SPI survey, only Station 03 on the south-eastern edge of the cap site appeared to be without cap sediment. SED-FSP was in general agreement with other measurements of thickness and provided additional insight into vertical mixing of the cap with underlying and newly deposited sediments.

**Table 3. Summary and comparison of TLC thickness and stability over space and time.**

| Station | 2014 | | | | | 2015 | | | | | 2016 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Const | Coring | Bathy | FSP | SPI | Const | Coring | Bathy | FSP | SPI | Const | Coring | Bathy | FSP | SPI |
| QT-1 | 6.0 | 7.1 | NA | NA | >4.2 | NA | 5.9 | 4.1 | NA | 0.0 | NA | 5.9 | 5.6 | 10.5 | NA |
| QT-2 | 10.0 | 15.7 | NA | NA | >3.3 | NA | 6.7 | 12.6 | NA | 3.5 | NA | 6.7 | 7.3 | 6.8 | NA |
| QT-3 | 8.0 | 11.0 | NA | NA | >7.2 | NA | 9.1 | 3.3 | NA | 8.7 | NA | 9.8 | 1.6 | 8.4 | NA |
| QT-4 | 8.5 | 12.6 | NA | NA | >4.6 | NA | 15.4 | 10.0 | NA | 6.3 | NA | 9.4 | 10.4 | 8.9 | NA |
| QT-5 | 10.0 | 13.0 | NA | NA | >5.3 | NA | 16.3 | 12.6 | NA | >8.4 | NA | 17.5 | 12.2 | 14.5 | NA |
| Average | 8.5 | 11.9 | NA | NA | >4.9 | NA | 10.7 | 8.5 | NA | >5.4 | NA | 9.9 | 7.4 | 9.8 | NA |

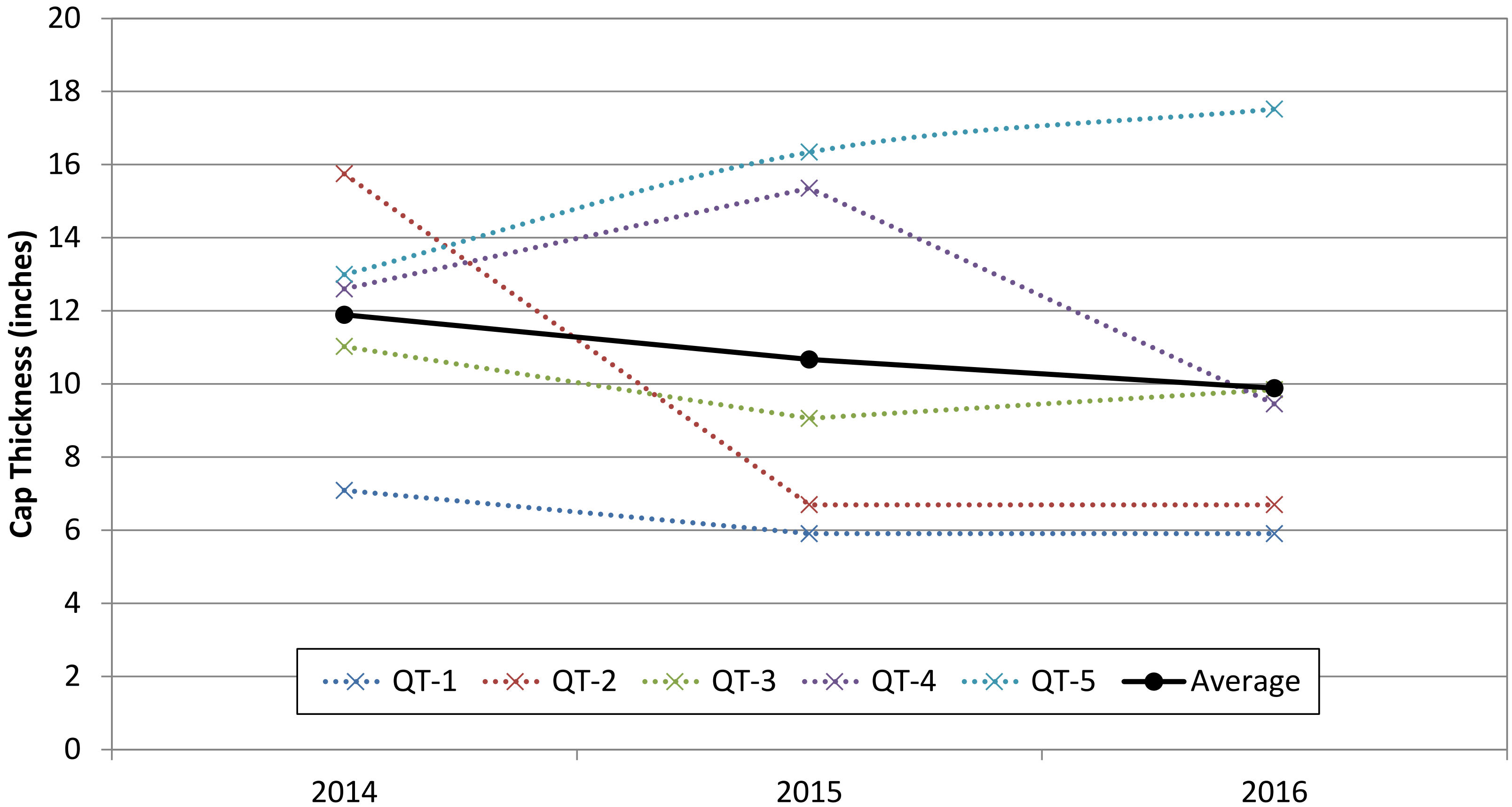


**Figure 5. Trends in sediment core visual cap thickness over the three survey events for the five on-cap monitoring stations and the overall average thickness.**

## 3.2. Performance Objective 2 (PO2): Determine Extent of Sediment and Contaminant Mixing

### 3.2.1. Introduction

The effectiveness of the TLC remedy is a function of the degree to which it controls surface sediment chemical concentrations with time, reducing chemical exposures and bioavailability. The effectiveness of EMNR in reducing surface sediment concentrations is influenced by the both the extent and depth of TLC mixing with underlying sediment and the deposition of new sediment on top of the cap. This performance objective evaluated the extent of sediment mixing from these processes after placement of the TLC. Effective performance of EMNR relies on relative stability of the TLC and subsequent deposition of relatively clean sediment to promote sediment burial and to limit environmental exposure to the untreated underlying sediment. The goal was not necessarily to eliminate sediment mixing, but to limit mixing with underlying sediment so that DDX concentrations in the cap remain below target concentrations[1], and to assure that new sediment depositing on to the cap were not leading to recontamination of the surface sediment. At most contaminated sediment sites, some level of surface sediment recontamination is likely. The issue is whether recontamination due to mixing exceeds target remedial goals, and whether recontamination enters the site from an off-site source (i.e., top-down) or from underlying and buried sediment (i.e., bottom-up). The analysis of sediment mixing was used to differentiate surface sediment depositional processes versus contaminant migration via bioturbation mixing and resuspension/redeposition.

Data collected to support assessment of this performance objective included measures that elucidated the mixing and deposition of sediment, and measures that directly measured the mixing and deposition of contaminants. In this project, we evaluated the use of sediment core visual analysis, sediment core TOC and grain size analysis, SPI camera, SED-FSP, and sediment trap mass collection as measures of sediment mixing and deposition. We also evaluated sediment core contaminant profiles for direct measurement of the influence of mixing and deposition on contaminant distributions within the TLC. Visual analysis of sediment cores was used to qualitatively evaluate evidence of mixing within the cap over time based on observable differences in coloration and particle size between the native material, new deposition material, and the TLC material. TOC and grain size analysis provided a more quantitative measure of these same differences. SPI camera results were particularly useful for distinguishing sediment deposition layers and surface sediment mixing zones. The SED-FSP provided evidence for both bottom-up and top-down mixing based on vertical variations in mean grain size (limited to the 2016 event). Material collected in the sediment traps was used to estimate the mass flux of depositional sediment to the cap as well as the contaminant flux associated with this deposition. Vertically-segmented bulk sediment chemistry measurements provided a direct measure of the vertical movement of contamination associated with mixing and deposition processes. And finally, passive sampler porewater profiling was used to evaluate changes in porewater exposure

[1] Remedial goals identified in Section 2.7 of the Record of Decision (NAVFAC 2011) for Site 99 Quantico Embayment and PRSA1 sediment: DDX – 650 μg/kg; PCBs – 730 μg/kg (protection of fish) and 1,195 μg/kg (protection of birds).

that might have been associated with mixing processes or other porewater processes such as advection or diffusion.

Success of this performance objective was gaged by how well these measures could assess benthic mixing, and ultimately by how these processes influenced the broader performance metric for surface sediment exposure and ecological response (see PO4 and PO5). As with all natural environments, sediment mixing was expected to occur, and TLCs are not necessarily designed to prevent mixing. This element of the project focused on quantifying the extent of sediment mixing and the extent to which these processes increased or reduced the exposure to DDX in surface sediments.

### 3.2.2. Sediment Core Profiling

#### 3.2.2.1. Data Collection and Treatment

Sediment cores collected during the short term (2-months post-placement) and long term (14- and 25-months post-placement) events were used to visually evaluate mixing of native sediments in cap material. The sediment collection methods are detailed in Section 5 Test Design and photologs of cores are shown in Appendix E. Core photos were examined for mixing based on observable differences in coloration and particle size between the native material, new deposition material, and the TLC material. The visual analysis of replicate sediment core images from stations on the cap footprint were then used in conjunction with physical and chemical measures discussed above to evaluate the degree of mixing within the TLC. The methods are detailed in Section 5 Test Design.

#### 3.2.2.2. Data Interpretation and Extent the Success Criteria Were Met

The success criterion was met, subject to the limitations below, because visual confirmation of mixing was observable from sediment core profiling. From the core photographs, we identified three classes of mixing that could influence the performance of the TLC including:

- Bottom-up mixing of native sediment with the TLC
- Thickness of new deposits on top of the TLC
- Top-down mixing of new deposits with the TLC
- Interleaving of native sediment with TLC strata likely associated with disturbance during or after TLC installation

The visual analysis was limited especially at the native-cap interface as the TLC aged, where it was often difficult to determine if mixed silt and sand layers were associated with the cap or were purely native materials. General observations from the analysis showed that the cap was largely undisturbed at the 2-month event (2014) with minimal mixing or deposition detectable from the visual analysis, although there was evidence of interleaving especially in the more southerly stations (QT4 and QT5). The 14-month (2015) and 25-month (2016) events showed relatively similar results with a significant degree of top-down mixing, but still minimal bottom-up mixing. There was also a slight trend toward increasing deposition on top of the cap observed between 2015 and 2016. The visual observations were qualitatively consistent with the measurements for TOC and grainsize. Detailed results for the coring survey are provided in Section 5.7.

### 3.2.3. Total Organic Carbon

#### 3.2.3.1. Data Collection and Treatment

Total organic carbon content was measured in 3 surface sediment intervals in the top 7 cm of the cap, bottom of the cap, and 3 intervals in the top 7 cm of the native sediment. Sediment samples were obtained prior to and following TLC placement (2-, 14-, and 25-month post-placement), on and off cap. Measurements in these intervals were used to understand mixing of deposited material from the top down, mixing within the cap and mixing of the cap with the underlying sediments. The methods are detailed in Section 5 Test Design.

#### 3.2.3.2. Data Interpretation and Extent the Success Criteria Were Met

The performance objective for the TOC measurements was to compare baseline, post-cap placement, and long-term monitoring results to determine if changes in TOC could be used to quantify vertical mixing and deposition to support interpretation of contaminant profiles. The success criterion was considered to be met if observations as to whether mixing occurred could be made. Because the native material was relatively high in TOC and the cap material was very low in TOC, the contrast in TOC provided a means of evaluating the interaction between these two endpoints. New sediment deposition was also expected to be relatively in high in TOC compared to the TLC material. The analysis is considered to be qualitative because (1) TOC is not a conservative property and thus the endpoint values can shift over time, (2) different TOC methods were used over the course of the project that may have had differing extraction efficiencies, and (3) the measurements were only made in portions of the cap.

The success criterion was met, subject to the qualitative limits described above, because TOC content depth profiles allowed for observations as to whether mixing occurred, informed our understanding of the general mechanisms of mixing, and provided a basis for interpreting the vertical variations in contaminant concentrations observed in the cap.

Two primary mixing processes were observed based on the TOC data. In the 2-month event (2014), there was evidence of some of the sampling strata between 0-7 cm below the SWI having elevated TOC levels for the mid to southern station (3, 4 and 5). These elevated levels were attributed to disturbances that likely occurred during the installation of the TLC and were consistent with the visual observations that showed a higher presence of interleaved dark sediment layers in the cap at these stations. Over time, the TOC data suggests that top-down mixing became the more dominant process with more uniform TOC levels through the cap across all stations, and with TOC levels showing progressively less contrast in concentration compared to the TOC levels in the native sediments below the cap. By the 25-month event, TOC content was nearly uniform in the top 7 cm of the TLC at each station, indicating mixing within the surface cap materials. Stations 2, 4 and 5 maintained lower surface sediment TOC content relative to underlying sediment, indicating less top-down mixing. The interval 0-2 cm above the cap-native sediment interface remained lower in TOC content through 25 months and across all stations, indicating the relative stability of the lower interface and in general a low degree of bottom-up mixing. Overall, the results seem to indicate that initial disturbance associated with the installation, followed by longer-term top-down mixing were the most prevalent mechanisms leading to the observed patterns. Detailed results for TOC are provided in Section 5.7.

### 3.2.4. Grain Size

#### 3.2.4.1. Data Collection and Treatment

Grain size was measured in 3 surface sediment intervals in the top 7 cm of the cap, bottom of the cap, and 3 intervals in the top 7 cm of the native sediment. Sediment samples were obtained prior to and following TLC placement (2-, 14-, and 25-month post-placement), on and off cap. Measurements in these intervals was used to understand mixing of deposited material from the top down, mixing within the cap and mixing of the cap with the underlying sediments. The methods are detailed in Section 5 Test Design.

#### 3.2.4.2. Data Interpretation and Extent the Success Criteria Were Met

The performance objective for the grain size measurements was to compare baseline, post-cap placement, and long-term monitoring results to determine if changes in grain size could be used to quantify vertical mixing and deposition to support interpretation of contaminant profiles. The success criterion was considered to be met if observations as to whether mixing occurred could be made. Because the native material was relatively high in fines (silt and clay) and the cap material was very low in fines, the contrast in fines (or sand content) provided a means of evaluating the interaction between these two endpoints. New sediment deposition was also expected to be relatively in high in fines compared to the TLC material. The analysis is considered to be qualitative because there is still a significant sand fraction in the native material and it is not possible to clearly distinguish between the sand associated with the native material and the sand associated with the cap, and the measurements were only made in portions of the cap.

The success criterion was met, subject to the limitations described above, because fines/sand content depth profiles allowed for observations as to whether mixing occurred, informed our understanding of the general mechanisms of mixing, and provided a basis for interpreting the vertical variations in contaminant concentrations observed in the cap.

From the baseline measurements, sand content in the native material ranged from about 80% in the northern part of the site, to about 40% in the southern part of the site. The cap material was essentially 100% sand. During the Month-2 monitoring event, the upper 7 cm was dominated by sand (92% on average). Stations in the southern end of the cap footprint (Stations 3, 4 and 5) showed a higher influence of fines, consistent with the TOC measurements, reinforcing the interpretation that there was some level of disturbance of the native sediment during the TLC. During the 14-month event, the upper 7 cm had a somewhat higher sand content compared to the 2-month event (95% on average), with the primary indication of mixing at Station 3. By the 25-month event, the percent of sand decreased in the top 7 cm overall (91% on average) and particularly at Stations 1 and 3 where fines content in the 10-20% range was observed throughout the upper layers of the TLC. The interval 0-2 cm above the cap-native sediment interface remained sand-dominated through 25 months, indicating the relative stability of the lower interface, and the general lack of bottom-up mixing. Consistent with the TOC measurements, the grain size results seem to indicate that initial disturbance associated with the installation, followed by longer-term top-down mixing were the most prevalent mechanisms leading to the observed patterns. Detailed results for grain size are provided in Section 5.7.

### 3.2.5. SPI Survey

#### 3.2.5.1. Data Collection and Treatment

SPI images were collected throughout the TLC area and at off-cap stations. To evaluate mixing, the images were classified as to the grain size major mode, and comments were assigned as to the presence of fines in relation to cap materials. Because of the limitations discussed previously on penetration depth, the SPI results were generally only applicable to evaluating top down mixing or the presence of fines within the upper portions of the cap. The methods are detailed in Section 5 Test Design.

#### 3.2.5.2. Data Interpretation and Extent the Success Criteria Were Met

The performance objective for the SPI camera was to be able to distinguish mixing and depositional layers associated with the TLC in order to provide qualitative estimates of the degree of mixing to support interpretation of contaminant profiles. The SPI camera grain size major mode and comments were evaluated. Grain size major modes with silt present in on-cap stations were interpreted as being influenced by mixing, because the TLC material was essentially entirely made up of sand. Station comments indicating a fines layer residing on top of the cap were interpreted to indicate new deposition on top of the TLC. Results were not evaluated in detail for the mechanism of mixing, however the common presence of a deposition layer and fine material penetrating into the cap was inferred to indicate potential top-down mixing. The analysis was considered qualitative because the visual analysis of images is inherently qualitative, the SPI results did not include detailed analysis of vertical distribution of fines, the penetration of the camera generally did not extend fully through the TLC, and the 25-month survey data were not available for analysis. The SPI camera did provide a broader spatial evaluation of mixing relative to the limited locations for the coring survey.

The success criterion was met, subject to the qualitative limits described above, because SPI images allowed for observations as to whether mixing occurred, informed our understanding of the spatial distribution of mixing, and provided a basis for interpreting the vertical variations in contaminant concentrations observed in the cap.

Results from the 2-month event generally showed an intact TLC with minimal mixing and deposition. Of the 22 stations surveyed, only 6 (27%) showed evidence of fines within the cap and only 4 (18%) showed evidence of a depositional layer on top of the cap. In general, the depositional layers that were observed were noted as “floc” layers. Only 2 stations (9%) showed evidence of both fines within the cap and deposition on top of the cap, indicating that top-down mixing was likely very limited within this short time frame following construction of the TLC. In contrast, by the time of the 14-month event, of the 23 stations surveyed, 10 stations (43%) showed evidence of fines within the cap, 9 stations (39%) showed evidence of deposition on top of the cap, and 8 stations (35%) had both conditions. This suggests that deposition and top-down mixing were much more prevalent 14 months after construction of the cap. The findings are consistent with the visual observations from the sediment cores, but provide a much broader spatial assessment than the limited coring stations. Detailed results for SPI surveys are provided in Section 5.7.

### 3.2.6. Sediment Friction Sound Probe

#### 3.2.6.1. Data Collection and Treatment

The SED-FSP was used in the determination of vertical mean particle size profiles to analyze deposition and mixing within the cap. Usable data were limited to the 25-month event (2016). Friction sound profile data were interpreted to determine the extent of mixed layers above and below the TLC, and the thickness of any depositional layer on top of the cap. The methods are detailed in Section 5 Test Design.

#### 3.2.6.2. Data Interpretation and Extent the Success Criteria Were Met

The performance objective for the SED-FSP was to be able to distinguish mixing and depositional layers associated with the TLC and provide qualitative estimates of the extent of mixing and deposition to support interpretation of contaminant profiles. The SED-FSP mean grain size profiles were evaluated. Mean grain size data were interpreted as:

- Predominantly Native Sediment/New Deposition: $D50 \leq 100$ µm
- Mixed Native Sediment/Sand Cap Material: $100 < D50 \leq 300$ µm
- Predominantly Sand Cap Material: $300 < D50$ µm

Using these definitions, cap thickness was determined from the SED-FSP profiles, along with estimated thicknesses for deposition layers on top of the cap, and mixing layers between new deposition and cap material, and underlying native sediment and cap material.

The analysis was considered qualitative because the SED-FSP is a screening tool for particle size, the SED-FSP could not distinguish between sand associated with the cap and native sand, and data were only available for the 25-month event. The SED-FSP camera did provide a broader spatial evaluation of mixing relative to the limited locations for the coring survey.

The success criterion was met, subject to the qualitative limits described above, because SED-FSP data allowed for observations as to whether mixing occurred, informed our understanding of the spatial distribution of mixing, and provided a basis for interpreting the vertical variations in contaminant concentrations observed in the cap.

Results from the 25-month event showed that depositional layers and mixing were clearly evident in the SED-FSP mean grain size profiles. Out of the 24 on-cap stations evaluated in the survey, all 24 (100%) had at least a trace layer of new deposition, 23 (96%) showed evidence of top-down mixing, 22 (92%) showed evidence of bottom-up mixing, and 7 (29%) showed evidence of interleaved layering. Consistent with the other measures of mixing, top-down mixing was generally more significant with an average extent over the on-cap stations of 8.3 cm, compared to an average of 4.5 cm for bottom-up mixing. The average depth of the new deposition layer at the on-cap stations was 3.7 cm. Overall, the SED-FSP provided a rapid means of assessing the spatial distribution of mixing and new deposition and its potential influence on the TLC. Detailed results for SED-FSP surveys are provided in Section 5.7.

### 3.2.7. Sediment Traps

#### 3.2.7.1. Data Collection and Treatment

The sediment trap data were used in the determination of depositional mass loading and contaminant flux to the surface of the cap to support evaluation of deposition and mixing within the cap. Data were available from three events including the fall baseline event in 2009, the post-cap survey in September 2014, and the post-cap survey in August 2016. During each event, traps were placed at three locations including the north, mid and south areas of the cap. The sediment trap methods are detailed in Section 5 Test Design.

#### 3.2.7.2. Data Interpretation and Extent the Success Criteria Were Met

The performance objectives for the sediment trap survey were that sediment trap mass would provide quantitative estimates of new deposition and that sediment trap chemistry would provide estimates of depositional flux to support interpretation of TLC contaminant profiles. The analysis was considered quantitative because it provided a direct measure of the mass and contaminant flux to the top of the cap. However, the quantification is subject to a number of limitations including that that data were only collected during a 2-3 week portion of the summer season, the data were not collected during every sampling event, the data were collected at a limited number of stations, and the traps do not distinguish between new deposition and localized resuspension.

The success criterion was met, subject to the limitations described above, because sediment trap data allowed for observations of the deposition rate and mass flux of DDX to the top of the cap, informed our understanding of the spatial distribution of deposition and top-down mixing, and provided a basis for interpreting the vertical variations in contaminant concentrations observed in the cap.

Results for deposition rates ranged from 5.6 – 14 g/cm$^2$/y across the stations and the events. A consistent spatial trend was observed across the events with highest deposition rates at the North station, while the deposition rates at the Mid and South stations were generally comparable. These rates translate to deposition thicknesses in the range of 4.3 – 9.0 cm/y, which are relatively high and likely represent a combination of both new deposition and local resuspension. Analytical results indicated that deposited sediments were dominated by fines with sand fractions generally in the range of 10%. TOC content in the trap samples generally decreased following the capping and was consistent with off-cap TOC levels from the surface sediments at the reference stations. Chemical concentrations for DDX showed a clear trend with reduced concentrations of total DDX following the cap placement as reflected in the low concentrations in trap materials from the 2014 and 2016 events. Averaged across the cap stations the reductions in trap sediment concentrations for the 2014 and 2016 events were about 70% and 65%, respectively. As with the trap concentrations, the depositional fluxes showed a marked decrease following the installation of the cap with reductions in mass flux of total DDX of about 63% for 2014 and 72% for 2016. Overall, the sediment trap results indicate relatively high deposition (or re-deposition) rates, with DDX concentrations in the depositing sediments substantially lower in both of the post capping sampling events, and grain size, TOC and DDX content of the post capping trap sediments consistent with the characteristics of off-cap sediments to the east of the capping area. Detailed results for SED-FSP surveys are provided in Section 5.7.

#### 3.2.8. Bulk Sediment Chemistry

##### 3.2.8.1. Data Collection and Treatment

Bulk sediment chemistry samples were collected from cores at on-cap locations, and in grab samples at off-cap locations. Concentrations of DDX were measured in 3 surface sediment intervals in the top 7 cm of the cap, bottom of the cap, and 3 intervals in the top 7 cm of the native sediment. Sediment samples were obtained prior to and following TLC placement (2-, 14-, and 25-month post-placement), on and off cap. Measurements in these intervals were used to understand mixing of deposited material from the top down, mixing within the cap, and mixing of the cap with the underlying sediments. Statistical analyses were performed as detailed in Section 5.6 Sampling Methods.

##### 3.2.8.2. Data Interpretation and Extent the Success Criteria Were Met

The performance objective for the bulk sediment sampling was to compare baseline, post-cap placement, and long-term monitoring results to verify that vertical mixing and deposition did not alter contaminant profiles sufficiently to cause failure of the EMNR remedy. Changes associated with top-down mixing were expected to show up in the 3 surface sediment intervals, while changes associated with bottom-up mixing were expected to be detected in the cap interval above the cap/native sediment interface. Changes within the cap associated with larger scale disturbance (for example during installation) were expected to be detected by the bulk sediment sampling just after construction during the 2-month event prior to any significant opportunity for other types of mixing to be influential. The analysis was considered quantitative because the DDX concentrations were measured directly in the intervals of interest. However, the approach was limited by the lack of continuous sampling intervals throughout the cap, by the availability of only three baseline stations versus five post-construction monitoring stations, by the lack of broader spatial coverage based on the limited number of stations, and by the heterogeneity associated with the distribution of DDX at the site.

The success criterion was met, subject to the qualitative limits described above, because the bulk sediment sampling allowed for quantitative comparisons of the DDX concentrations in the cap intervals that were expected to be most strongly influenced by mixing. Along with the other measures described above, the bulk sediment measurements provided key observations as to the types and magnitude of mixing and the degree to which it influenced the success of the EMNR remedy.

During the short-term monitoring event (2-months post-TLC), average DDX concentrations in 0-2 cm below SWI (535 µg/kg dw) had greater concentrations than both the 2-5 cm (31 µg/kg dw) and 5-7 cm (64 µg/kg dw) below SWI intervals. These trends held constant in the 14 month event, with concentrations being the greatest in the surface layer, 0-2 cm (210 µg/kg dw) compared to the 2-5 and 5-7 cm intervals, which had concentrations of 50 and 52 µg/kg dw, respectively. Results from the 25-month event show a relatively uniform profile of low DDX concentrations for the 0-2, 2-5 and 5-7 cm below SWI intervals; results were 52, 46 and 56 µg/kg dw, respectively. These results indicate that the higher levels of DDX observed during the 2- and 14-month events was likely the result of disturbance during the installation of the cap, since the elevated levels were present immediately following construction and were primarily found on in the surface interval of the cap. The reductions in concentration observed over the longer term during the 25-month event suggest that a combination of deposition of cleaner material and top-down mixing into the cap led to reductions of these initially elevated levels of DDX.  Additionally, DDX concentrations in the 0-2 cm above the cap native sediment interface generally remained low throughout the entire monitoring period, indicating minimal bottom-up mixing influence on the TLC. Detailed results for bulk sediment chemistry are provided in Section 5.7.

### 3.2.9. Summary

Overall, the performance objectives for sediment and contaminant mixing in the cap were met. Multiple lines of evidence indicated that the dominant processes observed were some disturbance associated with the installation of the cap, followed by longer term top-down mixing. The SPI camera results and the SED-FSP results provided a broader spatial context, while the visual analysis, TOC, grain size, and bulk sediment chemistry provided a more detailed and quantitative assessment of the focus stations at the site. While the long-term trends indicate that top-down mixing is ongoing and wide spread, the material depositing at the site appears to be relatively low in concentration, and thus the top-down mixing is not expected to result in a loss of performance of the EMNR remedy. Importantly, the multiple lines of evidence also indicated the relatively limited amount of bottom-up mixing. This is critical to the performance of the TLC because bottom up mixing could bring higher concentration sediments into the surface zone where biological exposure is much more likely. These findings were confirmed by the bulk sediment chemistry data that indicated minimal change in the DDX concentrations in the bottom interval of the cap just above the native sediments.

## 3.3. Performance Objective 3 (PO3): Evaluate Surface Sediment Chemical Concentration Reductions

### 3.3.1. Introduction

Reduction in surface sediment concentrations was a key remedy objective for the TLC in order to reduce the ecological risk of DDX exposure. As described above, processes such as bottom-up mixing of native sediment, or top-down mixing of new deposition had the potential to influence the success of the EMNR remedy in achieving the expected reductions in surface sediment concentrations. Under this performance objective, we evaluated the performance of the remedy with respected to achieving the desired level of reduction in concentration in surface sediments.

Data required for the assessment of the performance objective included DDX concentrations in surface sediment samples and sediment cores. Results for the performance objective were supplemented by the results of the cap mixing PO2, which provide information on mixing rates and extent. Sediment samples were obtained prior to and following TLC placement (2-, 14-, and 25-month post-placement) on and off cap.

Success was measured by the change in surface sediment DDX concentrations following the installation of the cap, and the long-term persistence of the change out to the 25-month sampling event.

### 3.3.2. DDX analyses for surface sediments

#### 3.3.2.1. Data Collection and Treatment

Concentrations of DDX were measured within the TLC and in the native sediment. Sediment samples were obtained prior to and following TLC placement (2-, 14-, and 25-month post-placement) on and off cap. Performance of the remedy focused on the changes in the surface sediment layer where exposure was most likely. At on-cap locations, undisturbed, intact, continuous sediment cores were collected in general accordance with ASTM 1391 (ASTM 2008), utilizing a TLC integrity coring device. Five cores were collected at each station, the cores were sub-sectioned into pre-defined intervals, and the intervals were composited. Off-cap surface sediment samples (0-10 cm) were collected with a petite Ponar grab sampler.

For the purposes of this analysis, the surface sediment at on-cap locations was represented by the average of the upper three intervals of the core samples that extended from the sediment-water interface down to 7 cm. Total DDX concentrations were reported on both a dry weight and organic carbon normalized basis. However, because the organic carbon levels in the cap were very low, due to changes in TOC analytical methods over the course of the study, and because the site PRGs were not normalize, the organic carbon normalized concentrations were considered unreliable and were not used in the assessment of the performance objective. The results thus focused on the un-normalized total DDX concentrations. Details of the sampling methods and statistical analyses that were performed are provided in Section 5.6 Sampling Methods.

### 3.3.2.2. Data Interpretation and Extent the Success Criteria Were Met

The performance objective for the surface sediment sampling was to compare baseline, post-cap placement, and long-term monitoring results for DDX levels to determine if significant reductions in DDX occurred compared to baseline, that reductions were maintained of the long term (2 years), and that levels were consistently below the sediment PRGs of 650 ppb total DDX. Based on the conceptual model for EMNR, changes in surface sediment concentrations were expected to occur immediately following the installation of the TLC and approach levels consistent with the low concentration in the TLC material. After that time, surface sediment concentrations were expected to slowly trend toward the regional background concentration as deposition and top-down mixing continued to influence the remedy. The analysis was quantitative in that DDX concentrations were directly measured in the surface sediments at all of the time intervals of the study. However, the assessment was limited in that measurements were only performed at five on-cap stations, measurements were only performed during the summer season, and the monitoring only extended for a period of two years.

The success criterion was met, subject to the limitations described above, because the DDX concentrations in the surface sediment were immediately reduced following the installation of the TLC, the reductions persisted throughout the monitoring period for up to two years, and the average concentrations in the surface sediment intervals were always below the PRG. The assessment was also supported by the findings of PO2 which indicated that bottom-up mixing of the contaminated underlying sediments was limited, and that top-down mixing, while prevalent, was associated with relatively clean deposits of new sediment material which did not adversely impact the surface sediments of the TLC.

Concentrations of total DDX in surface sediment (top 7 cm below SWI) were an average of 973 µg/kg, dw in the baseline 2 event, decreased in the short-term monitoring (210 µg/kg, dw) and continued to decrease in the first and second annual long-term post-placement events (104 µg/kg, dw in the 14-month event and 51 µg/kg, dw in the 25-month). Significant reductions in log transformed concentrations of total DDX in surface sediment (top 7 cm below SWI) between the baseline and 2-month ($p = 0.02$, 77% decrease), 14-month ($p = 0.002$, 48% decrease) and 25-month ($p < 0.0001$, 91% decrease) events were observed (Figure 6). While monitoring stations 1 and 4 were not included in the percent reductions due to lack of co-located baseline stations, concentrations of total DDX in surface sediment at these stations were also well below the PRG. Greater reductions were observed on cap than off cap stations for each event, on average in the top 7cm below SWI. In the short term, Reductions off cap in the 2-month event were 52% at the off cap stations compared to 77% decrease observed at the on cap stations (Figure 6). Over the long term, reductions of 39% and 41% were found at the off cap station while decreases of 48% and 91% were observed at the on cap stations for 14- and 25-month events, respectively. As shown in Figure 6, the 14-month event has wide variability for average on-cap percent reductions, which is driven by an increase in DDX concentrations at monitoring station 2, from 170 to 510 µg/kg. Excluding this value results in a reduction of 79 ± 39%. Additionally, comparisons of DDX reductions were made between the TLC material (0-7 cm below SWI) and the underlying native sediment (0-7 cm below cap-native sediment) for each monitoring event. Again, significant reductions in log DDX concentrations were observed in the short-term event ($p < 0.001$, 55% decrease), the first annual post-placement event ($p=0.02$, 17% decrease), and the last long-term post-placement monitoring event (p <0.001, 81% decrease). Detailed results for bulk sediment chemistry are provided in Section 5.7.

### 3.3.3. Summary

The analysis for PO3 indicated that the TLC surface sediment is remaining below pre-TLC placement levels and that recontamination from either top-down or bottom up mixing has not occurred to an extent that would compromise the remedy. Thus the success criteria were met. Bulk sediment chemistry found reductions in concentration of total DDX were below the PRG, significant reductions over time as well as significantly lower concentrations in the TLC compared to underlying native sediment, and reductions for on cap stations were greater than off cap stations for all events on average. Sediment traps indicated relatively high deposition rates of material with lower concentrations in the post-placement events compared to baseline.

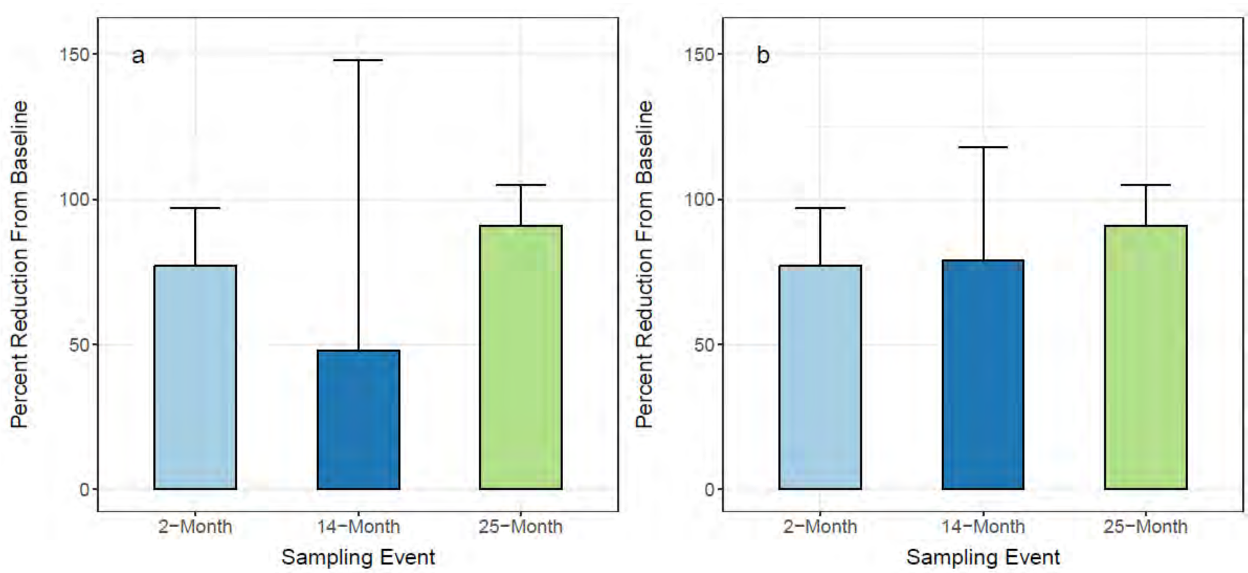


**Figure 6. Reduction in surface sediment (0-7 cm) total DDX concentrations compared to baseline (%) including all data (a) and excluding increase of DDX concentrations at one station during the 14-month event (b).**

## 3.4. Performance Objective 4 (PO4): Evaluate Reductions in Chemical Bioavailability and Bioaccumulation

### 3.4.1. Introduction

Reducing the concentration of DDX in surface sediment was expected to in turn reduce exposure of the native benthic invertebrate community, potential direct adverse effects, as well as reduction in the potential to indirectly or directly adversely affect higher trophic level fish, birds, and mammals. The extent to which the TLC contributed to reductions in bioavailability and consequently reduced the potential for bioaccumulation up the food web was the focus of this performance objective.

The parameters to evaluate changes in bioavailability and bioaccumulation included direct measurement of DDX concentrations in benthic invertebrate tissue using *in situ* bioaccumulation testing, as well as measurement of sediment porewater concentrations with *ex situ* passive samplers as an indicator of the bioavailable chemical fraction in sediments. Success was measured based on reduction in uptake by benthic invertebrates as measured by *in situ* bioaccumulation testing, and reductions in surface sediment porewater DDX concentrations as measured by *ex situ* passive samplers, respectively.

### 3.4.2. *In Situ* Bioaccumulation

#### 3.4.2.1. Data Collection and Treatment

The Sediment Ecosystem Assessment Protocol (SEAP) technology was used for *in situ* bioaccumulation testing with oligochaete *Lumbriculus variegatus* and clam *Corbicula fluminea*. Multi-metric stations on and off cap were monitored pre- and post-placement in short-term and long-term monitoring events. Concentrations of DDX in tissue were lipid normalized to account for variation in tissue lipid content. Statistical analyses were performed to determine whether significant reductions in uptake in the short- and long-term timeframes were observed. Details of the sampling methods and statistical analyses that were performed are provided in Section 5.6 Sampling Methods.

#### 3.4.2.2. Data Interpretation and Extent the Success Criteria Were Met

The performance objective for the bioaccumulation testing was to compare baseline, post-cap placement, and long-term monitoring results to verify that significant reduction in bioaccumulation of DDX occurred compared to baseline, and that reductions were sustained over 2 years. Based on the conceptual model for EMNR and the observed changes in the surface sediment concentrations, reductions in bioavailability of DDX were expected to occur immediately following the installation of the TLC and consistent with the low DDX concentration in the TLC material. After that time, low levels of bioavailability were expected to be maintained as deposition and top-down mixing of relatively clean material continued to influence the remedy. The analysis was quantitative in that DDX concentrations were directly measured in the tissues of organisms exposed to site surface sediments at all of the time intervals of the study. However, the assessment was limited in that measurements were only performed at five on-cap stations, measurements were only performed during the summer season, and the monitoring only extended for a period of two years.

The success criterion was met with some qualifications and subject to the limitations described above. The average reductions in bioaccumulation of total DDX in *Lumbriculus variegatus* tissue in the 2-, 14- and 25-month post remedy across the on cap stations were 72%, 67% and 86%, respectively (lipid weight basis). Significant reductions were observed in both the short-term and long-term monitoring. Greater reductions in the 25-month event indicated the remedy was performing as intended. Reductions of total DDX in *L. variegatus* tissue at the off-cap stations also indicates the potential that the EMNR remedy is having a positive effect at off-cap locations, or that natural recovery is occurring as well, or both (71% reduction in 25-month post-placement monitoring event). For *Corbicula fluminea*, average reductions in uptake of total DDX in tissue in the 2-, 14- and 25-month post remedy across the on cap stations were 55%, 25% and 33%, respectively (lipid weight basis). Short-term reductions were statistically significant; however, reductions in the long-term events were not statistically significant, largely due to variability associated with observations at Station 3. Thus overall, bioaccumulation was reduced for both organisms and in all survey events compared to baseline, however the reductions in the longer term events for *Corbicula fluminea* were not statistically significant.

### 3.4.3. Surface Sediment Porewater (*Ex Situ* Passive Sampling)

#### 3.4.3.1. Data Collection and Treatment

Concentrations of DDX congeners in surface sediment porewater were measured via *ex situ* passive sampling with SPME. Porewater concentrations were expected to provide an indicator of the bioavailable fraction of DDX in surface sediments. Multi-metric stations on and off cap were monitored pre- and post-placement in short-term and long-term monitoring events. Statistical analyses were performed to determine whether significant reductions in uptake in the short- and long-term timeframes were observed. Details of the sampling methods and statistical analyses that were performed are provided in Section 5.6 Sampling Methods.

#### 3.4.3.2. Data Interpretation and Extent the Success Criteria Were Met

The performance objective for the porewater testing was to compare baseline, post-cap placement, and long-term monitoring results to verify that significant reduction in surface sediment porewater concentrations of DDX occurred compared to baseline, and that reductions were sustained over 2 years. Based on the conceptual model for EMNR and the observed changes in the surface sediment concentrations, reductions in bioavailability of DDX were expected to occur immediately following the installation of the TLC and consistent with the low DDX concentration in the TLC material. After that time, low levels of bioavailability were expected to be maintained as deposition and top-down mixing of relatively clean material continued to influence the remedy. The analysis was qualitative in that DDX porewater concentrations in surface sediments were only an indicator of bioavailability, and not a direct measure. Other limitations of the porewater measurements included that the assessment was only performed at five on-cap stations, measurements were only performed during the summer season, and the monitoring only extended for a period of two years.

The success criterion was met with some qualifications and subject to the limitations described above. Concentrations of total DDX (log-transformed) in surface sediment porewater (0-7 cm below sediment-water interface (SWI)) were significantly reduced in the short-term monitoring

(2-months post-placement) and long-term monitoring (25-month post-placement). Concentrations were also lower than baseline in the 14-month post-placement monitoring; however, these reductions were not statistically significant. Reductions were 61%, 30%, and 48% for the 2-, 14-, and 25-month events, respectively (with lower decreases in the 14- and 25-month events being influenced by potential outliers). Thus overall, bioavailability, as indicated by surface sediment porewater concentrations, was reduced in all survey events compared to baseline, however the reductions in the 14-month were not statistically significant.

### 3.4.4. Summary

Overall, the success criteria for reductions in bioavailability were met. Significant reductions in concentrations of total DDX in *L. variegatus* tissue (lipid weight basis) was observed in short- and long-term events (on average). Reductions in concentrations of total DDX in *C. fuminea* tissue were also observed in short-term and long-term events on average, with significant reductions in the short-term event. Concentrations of total DDX in surface sediment porewater were reduced in all events compared to baseline, with significant reductions in the short-term monitoring and most recent long-term monitoring event.

## 3.5. Performance Objective 5 (PO5): Determine the Rate of Benthic Recovery

### 3.5.1. Introduction

Along with reducing contaminant levels and bioaccumulation, a key goal of the EMNR remedy was to enhance the subtidal habitat at the site for benthic invertebrates. High levels of contaminants can have direct impacts on the health and composition of the benthic community, and creating a relatively clean environment for benthic colonization is an important aspect of the EMNR remedy. The time for benthic recovery and potential impact of the cap on the benthic community was evaluated. Projection of the long-term effectiveness of the TLC remedy was evaluated based on the rate at which the benthic community recovered after cap placement and the extent to which the benthic community showed improvement compared to baseline conditions.

Laboratory treatability studies performed prior to the installation of the TLC suggested a conceptual model for the benthic recovery in which the cap would initially reduce the benthic populations due to smothering of the native population beneath the cap, followed by a relatively rapid recolonization that should continue to improve over longer time periods as more clean, natural sediment was mixed into the cap from top-down mixing. To test this, the rate and extent of sediment cap colonization was evaluated as well as the way in which cap conditions were similar to or differ from regional background conditions. Of interest was whether the TLC improved, hindered, or was otherwise neutral regarding the quality of benthic habitat. Data required to evaluate the impact of the TLC on the benthic community included benthic taxonomic surveys before and after cap placement (five on-cap stations and two off-cap stations), and SPI camera photos to document benthic colonization. Results were used to document the effects of TLC placement on the presence of the benthic community and to document changes in community structure over time after cap placement.

### 3.5.2. Benthic Community Census

#### 3.5.2.1. Data Collection and Treatment

Benthic community census involved the enumeration of each benthic organism in a sample of the top 10 cm of sediment. Based on this enumeration, various indices were evaluated to compare pre-cap placement events from spring 2009 and fall 2012 (baseline 1 and baseline 3) to short term (2-months post-placement) and long term (14- and 25-months post-placement) events as well as regional background conditions. Indices included total abundance, taxa richness, Shannon-Weiner diversity, Pielou's evenness, and a benthic-index of biotic integrity (B-IBI).

#### 3.5.2.2. Data Interpretation and Extent the Success Criteria Were Met

The performance objective for the benthic community census testing was to measure and compare benthic community health indices across baseline, post-placement, and long-term monitoring data, and verify that comparable or improved benthic community conditions relative to baseline were present by the end of the two year monitoring period. Based on the conceptual model for EMNR, the benthic community health was expected to potentially degrade somewhat immediately following the TLC installation, followed by a relatively rapid improvement such that by the end of the two year monitoring period, the conditions should be comparable or improved relative to the baseline. The analysis was quantitative in that the population of benthic invertebrates was directly surveyed from surface sediment samples collected from the top 10 cm of the sediment column both on and off the cap. However, the assessment was limited in that measurements were only performed at five on-cap stations, measurements were only performed during the summer season, and the monitoring only extended for a period of two years.

The success criteria for the performance objective were met or exceeded as there were no significant adverse effects to benthic communities due to presence of the cap, and showed a general improvement in conditions over the long-term. In the short-term (2-months post-placement), abundance, richness, and diversity were significantly increased compared to pre-cap benthic surveys for both on and off cap stations, but no significant difference in evenness was observed. The B-IBI score during the short-term monitoring event was within the range of scores observed during the pre-cap placement sampling events. In the first annual post-cap placement monitoring event, abundance, richness, and diversity in the cap footprint continued to be significantly greater than pre-cap placement values; abundance and richness metrics in the cap footprint were also greater than off cap stations during the same event. B-IBI scores increased to conditions similar to pre-cap conditions and achieved a score in the highest possible category ("Meets restoration goals"; Llanso, 2002). In the second year following cap placement, in general, abundance, richness, and diversity for stations in the cap footprint became more similar to pre-cap conditions. B-IBI on cap reached its' highest scores, but overall, remained similar to the fall 2012 pre-cap monitoring event, achieving a score of "Meets restoration goals" (Llanso, 2002). Measures of abundance, richness, diversity, and B-IBI scores indicates better conditions on cap in the final post-placement monitoring event compared to off cap stations.

### 3.5.3. SPI Survey

#### 3.5.3.1. Data Collection and Treatment

SPI survey methods are described above for PO1. The analysis was considered to by qualitative because the biological activity and habitat quality are only inferred from the images rather than directly measured as with the benthic census. In addition, the application of the SPI was considered to be significantly limited for benthic assessment because the freshwater successional model developed for lake bottoms was not particularly useful for characterizing infauna in rivers because burrows, feeding pits, and subsurface voids can be destroyed quickly by either river currents, or wind-driven energy, or deposition, and about one-third of the stations in the baseline were indeterminate infaunal successional stage. Therefore, only a very qualitative comparison of the infaunal observations in the baseline to the short-term and long-term post-placement observations was possible. Apparent redox potential discontinuity and bioturbation observations also were evaluated qualitatively to understand the potential effect of the cap in the short- and long-term recovery of the benthic community.

#### 3.5.3.2. Data Interpretation and Extent the Success Criteria Were Met

In the short-term (2-months post-placement), sediment profile images showed little to no evidence that biological processes were occurring, such as bioturbation. The RPD appeared to be dominated by physical processes. Small tubes were observed at half the stations and fecal pellets likely from bivalves were observed at several stations. Oligochaetes were dominant at

less than one-third of stations. Gas voids occurred at half the stations and were the most obvious signs of biogenic activity. There was no evidence in the sediment profile images that biological processes were involved in sediment mixing.
Bioturbation, which is a primary mixing process in marine sediments, is not an important factor in transitional or tidal freshwater benthic habitats (Diaz 1994). In general, conditions were equivalent with successional Stage 1 indicating benthic recolonization has not occurred to a great degree in the short-term (baseline observations were stage 2 or 3 at nearly half the stations).

In the first annual post-placement monitoring event, observations at each station continued to be equivalent to Stage 1 indicating benthic recolonization had not occurred substantially. The RPD was shallower at stations where resuspension-deposition likely occurred and the deepest RPD values were observed in sandy porous sediment, primarily a function of porewater circulation driven by current or wave action that pumps oxygenated water into the sediment (physical processes). The most obvious signs of biological processes, gas voids, were observed at nearly half the stations. There was no evidence in the sediment profile images that biological processes were involved in sediment mixing. Bioturbation, which is a primary mixing process in marine sediments, is not an important factor in transitional or tidal freshwater benthic habitats (Diaz, 1994).

The results for the final monitoring event (2 years following placement of TLC) were not available at the time this document was prepared.

Overall, the SPI results were found to be most useful for observations related to cap placement, deposition and mixing, and of limited use for the assessment of benthic community health.

### 3.5.4. Summary

Overall, the performance objective success criteria were met using the direct benthic census data over the long-term with the TLC increasing scores for abundance, richness, and diversity. The B-IBI was scored in the highest category in the long-term monitoring events. SPI survey results were not found to be in agreement with the benthic community census, and significantly less confidence was placed in the SPI results due to noted limitations under the conditions present at the site.

## 4. Site Description

Quantico Embayment is a semi-circular inlet of the Potomac River (Figure 7). Its surface area is approximately 190 acres. Within the southern half of the bay, and approximately 500 feet from the shoreline, is a 12-acre private island called Chopawamsic Island (12 acres). A broad shelf between 3 to 5 feet depth is located northeast of the island, and an historical river channel left a small depression approximately 16-20 feet deep west of the island. In general, the water depths of the bay range from tidal level along the shoreline to 5 to 6 feet where the bay meets the Potomac River.

Adjacent to the location selected for TLC are the Southern Wetlands, representing approximately 1.6-acre of tidal, freshwater, emergent marsh located immediately south of the Site 4 Old Landfill and adjacent to the Quantico Embayment (Figure 7).

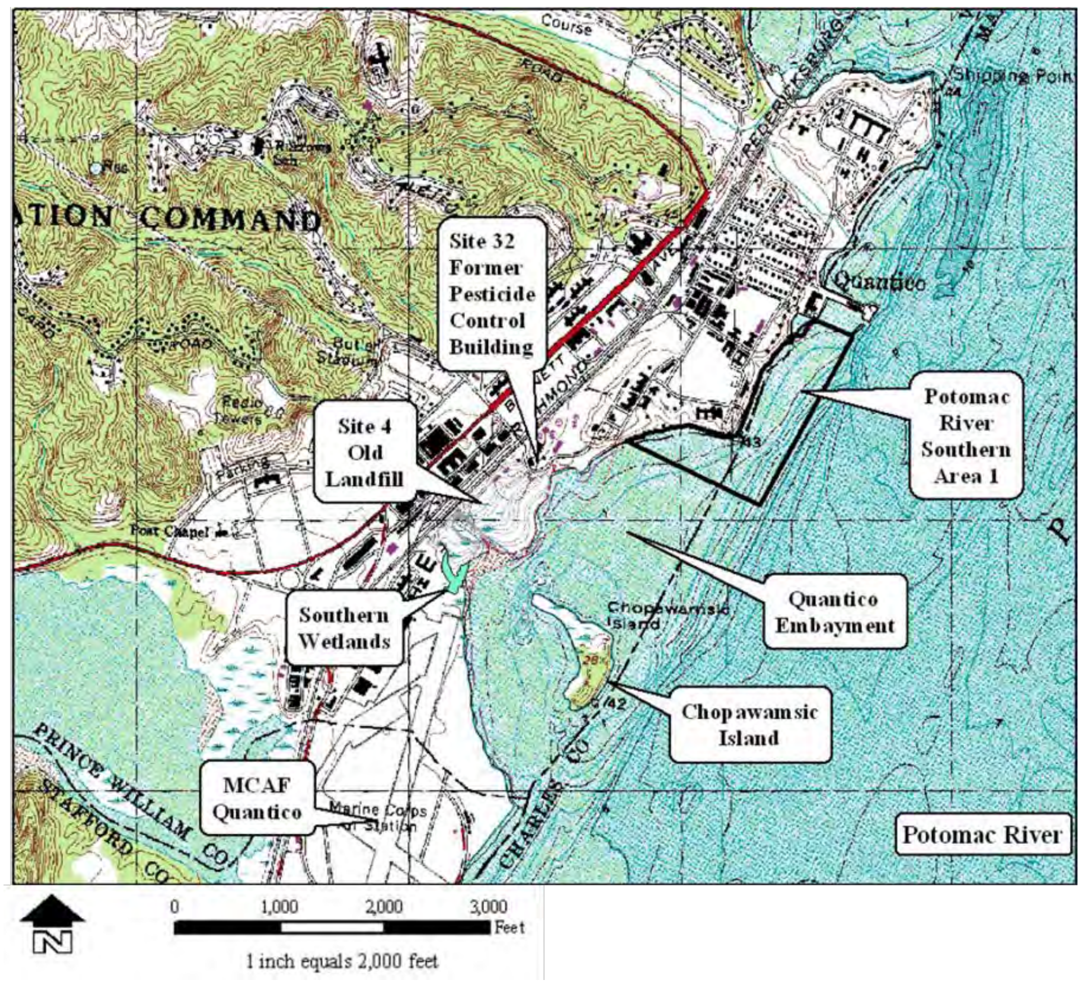


**Figure 7. Site map for Quantico Bay, Chopawansic Island, and the Potomac River (referenced from Battelle et al., 2007)**

## 4.1. Site Selection

Quantico Embayment was selected as the test site for this demonstration. The site offered a unique opportunity to evaluate a full-scale implementation of EMNR at a DoD site. The costs associated with conducting this demonstration (estimated >$4 M for cap installation alone) would be prohibitive without the opportunity to leverage the effort with the ER-N remedial effort. Factors including the unique leveraging opportunity at a DoD site, the presence of a baseline ecological risk analysis (Battelle and Neptune and Co., 2004; TtNUS 2006; Battelle and Neptune and Co., 2005), the presence of existing data to characterize the nature and distribution of CoCs, including DDX, and the low energy conditions in the embayment all support the selection of the Quantico Embayment as a highly desirable site for demonstration and validation of the EMNR process. The location of the TLC in Quantico Embayment is presented in Figure 9.

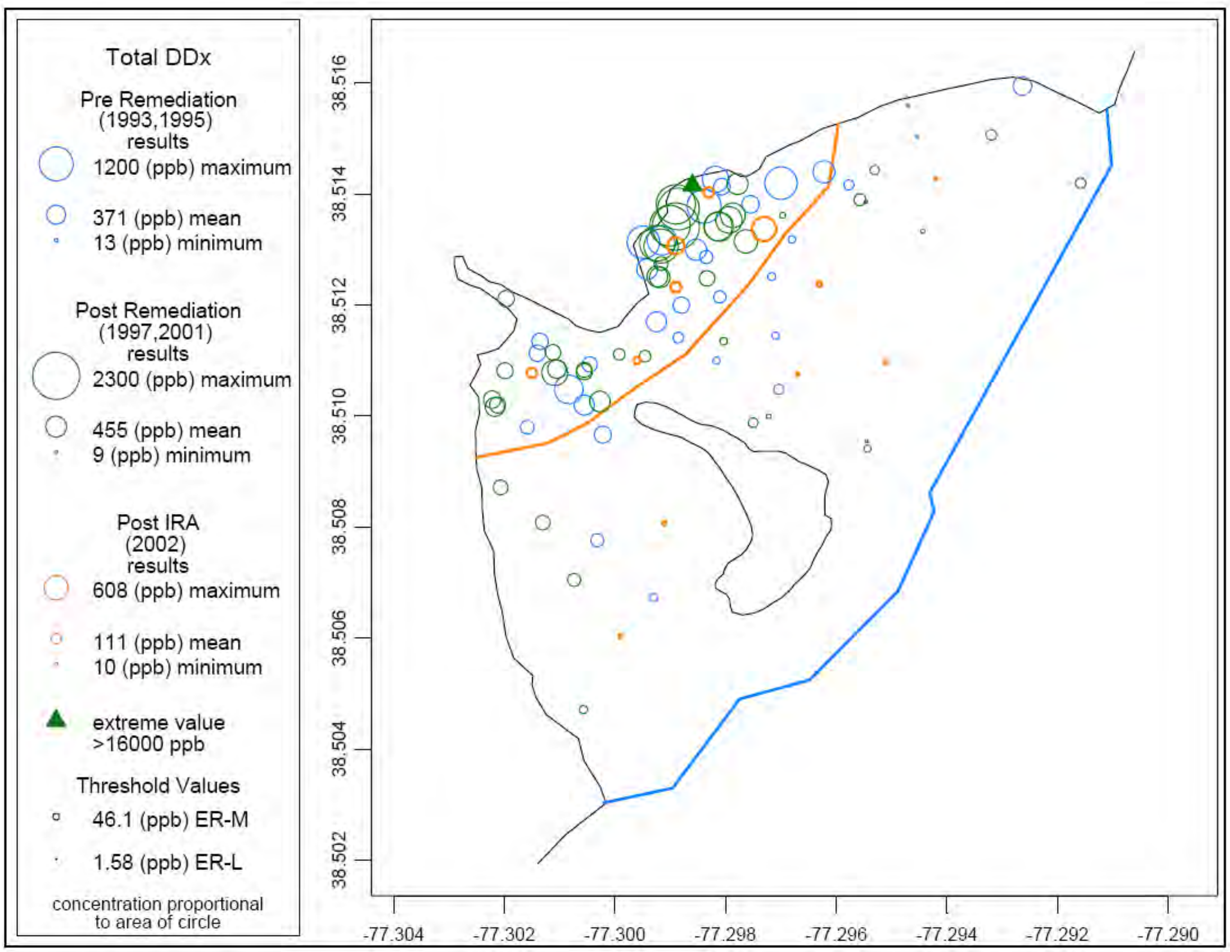


**Figure 8. Concentration of DDX in Quantico Embayment sediment. The orange line represents the boundary between the Inner Quantico Embayment and the Outer Quantico Embayment. The blue line represents the boundary between the Outer Quantico Embayment and the Potomac River (from Battelle and Neptune 2004).**


**Figure 9. Approximate extent of TLC in the Quantico Embayment. The cap area encompasses sediment with surface sediment DDX concentrations greater than or equal to 200 µg/kg (Adapted from Battelle 2008).**

## 4.2. Site Location and History

The site selected for the EMNR demonstration is an embayment of the Potomac River (Figure 7) referred to as the Quantico Embayment. The Quantico Embayment is located at the Quantico Marine Corps Base (MCB), approximately 35 miles south of Washington, DC and 75 miles north of Richmond, Virginia. The embayment is approximately 190 acres in extent and is located adjacent to the Quantico MCB Old Landfill (Site 4) (Battelle et al., 2007). The Old Landfill operated from the early 1920s until 1971, at which point its use was replaced by other municipal landfills (Battelle et al., 2007). Material disposed of at the Old Landfill have included municipal refuse, construction debris, paint and paint thinners, transformers, dielectric fluids, waste oils, batteries, and compressors. Prior to the mid-1960s, waste materials were burned before burial at the site (Battelle et al., 2007). Chemical inputs to Quantico Embayment have originated from seepage and runoff from the Old Landfill as well as possible runoff from the Former Pesticide Control Building (Site 32) located north of the Old Landfill and near the current wastewater treatment plant (Figure 10). Prior to its destruction in 1985 by a fire, the Former Pesticide Control Building contained approximately 500 pounds of stored pesticides. Runoff from this site appears to have drained into a designated drainage channel located along the northern portion of the landfill, and then into the embayment. The Department of the Navy and regulatory agencies have agreed that, upon completion of the removal action at Site 32, soils from this location will no longer represent potential chemical inputs to the Quantico Embayment.

In 1993, the Virginia Department of Environmental Quality (VADEQ) issued a Notice of Violation (NOV) to the Quantico MCB related to the unpermitted discharge and leaching of PCBs, pesticides, petroleum hydrocarbons, and metals from the Old Landfill into the Potomac River. Measures to control chemical releases from the Old Landfill were implemented by the Department of the Navy following the NOV. An interim remedial action (IRA) was conducted in 1997, with the intention of abating chemical discharge into the Potomac River. The IRA resulted in the placement of a barrier over the landfill, removal of contaminated sediment and waste material from the embayment and drainage channel, and installation of a riprap revetment for erosion protection. The effectiveness of the IRA was assessed during a Post-IRA Study Investigation in 2002 (Battelle and Neptune, 2004) for the Quantico Watershed Study (QWS). Based on analyses of surface sediment grab samples, subsurface sediment core samples (maximum depth of 1.5 ft or 0.47 m), and biological samples (fish and submerged aquatic plants) collected within the embayment as well as references areas, it was determined that exposure to 4,4'-DDD and 4,4'-DDE in Quantico Embayment sediment and forage fish posed potential ecological risk to piscivorous birds. This potential ecological risk along with risks to piscivorous birds, omnivorous mammals, and fish in adjacent areas within the MCB, prompted a Feasibility Study (FS) (Battelle et al., 2007) to evaluate potential sediment remedial actions. Of five proposed remedial alternatives for the site, a combination of Habitat Enhancement Capping with MNR was the preferred remedy for protecting human health and the environment, as well as complying with federal and state environmental laws (Battelle et al., 2007).

The demonstration site at Quantico is a shallow embayment with an average water depth of 1.5 m. This location is defined predominantly as a freshwater system, with minimal tidal influence (between 0.3 m to 0.7 m tidal range). Surface water salinity at this site ranges from between 0.5 practical salinity units (psu) to 3 psu, with the higher salinity occurring during lower river flow conditions in the late summer and early fall. Sediment is typically fine-grained, with greater than 55 percent (%) silt and clay (Battelle and Neptune 2004). More coarse-grained sediment is located along the shoreline and adjacent to outfalls, and finer-grained sediment (with greater than 80% silt and clay) is located in outer areas of the embayment (Battelle et al., 2007). Based on the grain size distribution and evidence of low flow velocities within the embayment, it is assumed that this site is depositional in nature.

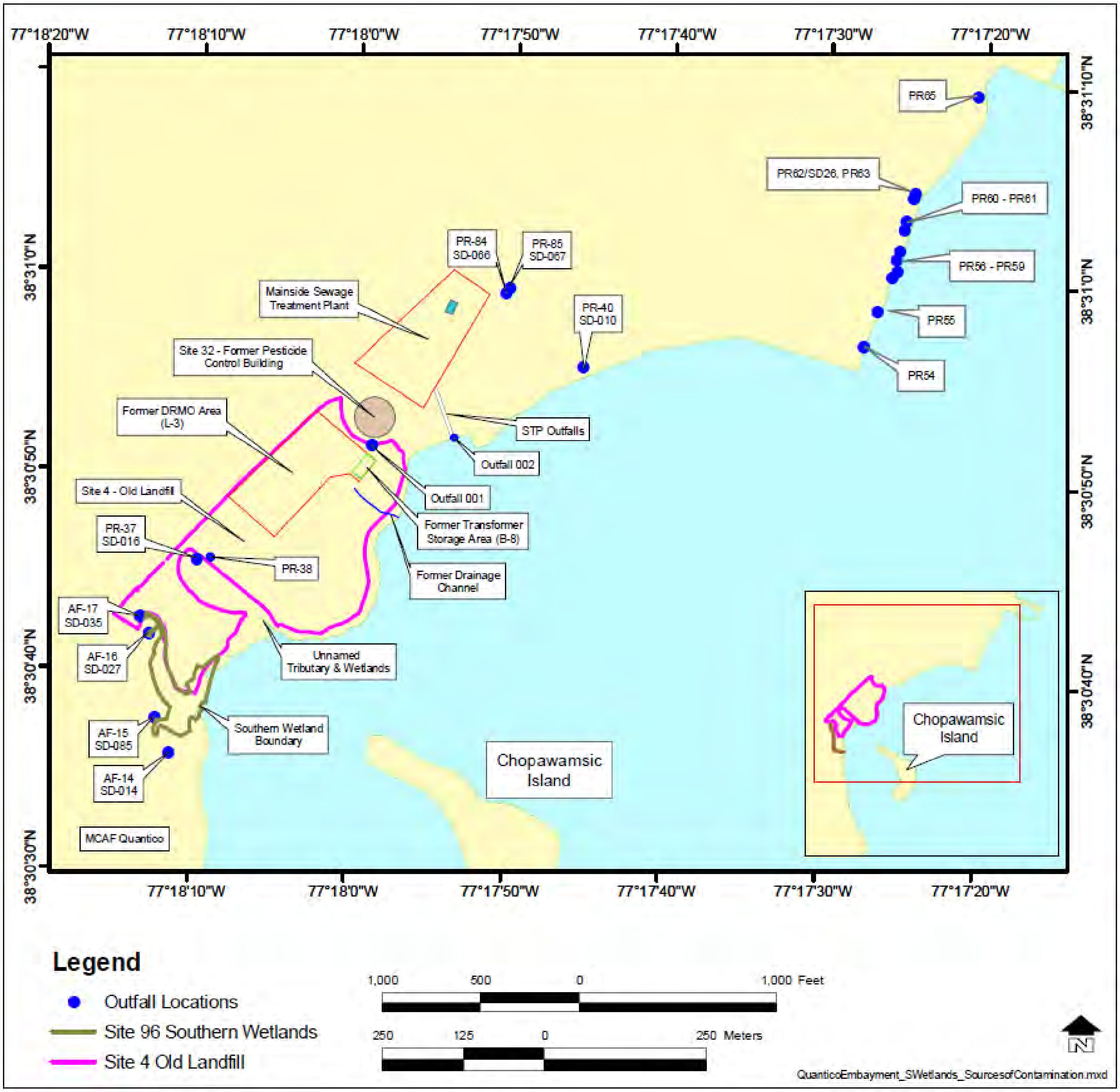


**Figure 10. Potential sources of contaminants to the Quantico Embayment and adjacent habitats (referenced from Battelle, 2009).**

## 4.3. Site Geology/Hydrogeology

No information on the site geology is discussed in existing reports (Battelle 2005, 2008, 2009; Battelle et al., 2004, 2005, 2007) and therefore is not presented here.

Based on navigation charts and tide tables mean higher high water (MHHW) is 0.83 ft above mean sea level (MSL) and mean lower low water (MLLW) is 0.76 feet below MSL (Figure 11; Battelle, 2009).

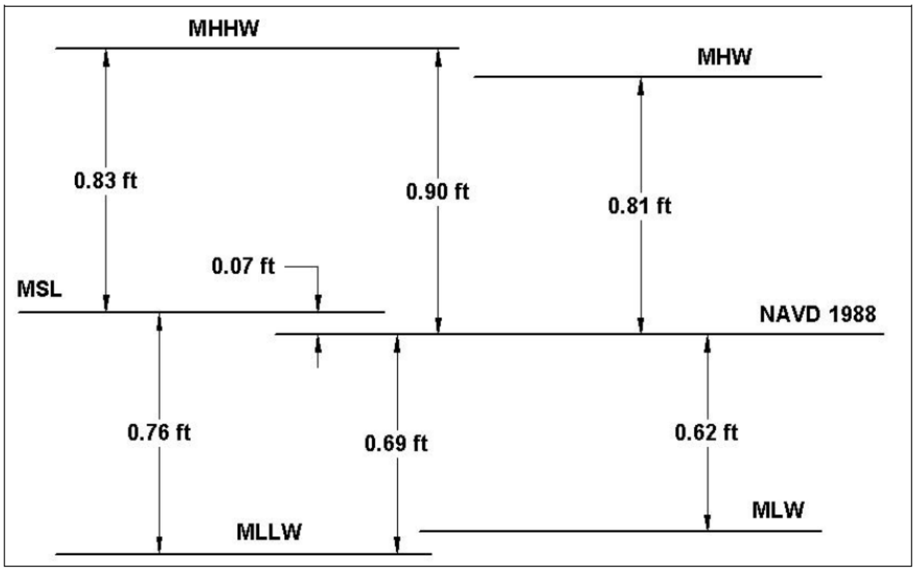


**Figure 11. General hydrologic range in the Potomac River at MCB Quantico (from Battelle, 2009). MHHW-mean higher high water; MHW-mean high water; MSL-mean seal level; NAVD 1988-North American Vertical Datum of 1988; MLW-mean low water; MLLW- mean lower low water.**

## 4.4. Contaminant Distribution

The Quantico Embayment and adjacent habitats, including the Southern Wetlands, have historically received numerous potential contaminants from several sources. These sources include the Site 4 Old Landfill, the Former Pesticide Control Building, the Mainside Sewage Treatment Plant, and the active Marine Corps Air Facility [MCAF] Quantico (Figure 10).

In addition, a number of historical and current storm water outfalls had or have discharge points draining to the Quantico Embayment (Figure 10). Prior to the separation of the storm and sanitary sewer systems at MCB Quantico, these outfalls may have been a source of chemical constituents to the embayment from various operations (e.g., maintenance facilities, floor drains, and wash racks). Six outfalls are currently regulated under NPDES permits, and drain directly into the Southern Wetlands and/or Quantico Embayment. Of these, two outfalls discharge non-contact cooling water and steam condensate, and one discharges steam condensate only. NPDES-permitted outfalls within MBC are not expected to be a significant current source of potential contamination; non-NPDES permitted outfalls are also not expected to be continuing sources of potential contamination as they only drain storm runoff from buildings and parking lots (Battelle, 2009). Present chemical inputs to Quantico Embayment from Potomac River sources are considered minimal (Battelle and Neptune, 2004).

Although CoCs at this site included PAHs, metals, chlorinated pesticides, and PCBs in both surface (0 to 10 cm) and subsurface (greater than 10 cm) sediment, the presence and concentration of DDX compounds drive the requirement for site remedy. DDX compounds, consisting of DDT and its degradation products DDD and DDE, have generally been measured at the highest concentration levels in the northern portion of the inner portion of the Quantico Embayment adjacent to the northern edge of the Site 4 Old Landfill and adjacent to the potential runoff stream from the Former Pesticide Control Building (Figure 10). Sediment sampling suggests that DDX concentrations both increase with depth in the sediment and are generally highest in the near-shore area (Battelle, 2007).

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# 5. Test Design

This section provides a detailed description of the experimental design, sampling and analytical methods, and analytical validation conducted in order to evaluate the effectiveness of EMNR at the Quantico Embayment site. Tools and approaches presented below focus on physical, chemical, and biological characterizations of the site, both pre-and post-implementation of the TLC remedy to address the performance objectives defined in section 3.

## 5.1. Conceptual Experimental Design

This project examined changes in physical, chemical, and biological parameters of the site prior to and following placement of a TLC in support of EMNR demonstration.

Physical parameters assessed in this project included the following:

- The distribution and coverage, uniformity, minimum and maximum thicknesses of the TLC after placement.
- The stability of the TLC to hydrodynamic forces.
- Changes in TLC stability over time resulting from natural sedimentation, benthic mixing, and hydrodynamic forces.

Chemical parameters included:

- Surface sediment chemical concentrations following cap placement.
- Monitoring of the extent to which the new sediment (cap) surface may be recontaminated from either the water column (top-down) or via mixing with underlying sediment (bottom-up).
- Movement of contaminants via porewater migration.

Biological parameters included:

- Assessment of community recovery following cap placement and characterization of the extent to which cap placement and the creation of a new sediment surface may affect the health and composition of the benthic community.
- Assessment of ecological risk reduction via monitoring of DDX bioaccumulation in invertebrates.

## 5.2. Baseline Characterization

Pre-placement monitoring represents baseline characterization of physical, chemical, and biological conditions. Baseline characterization was initially conducted in spring and fall 2009 to target different environmental and ecological conditions at the site (SSC Pacific, Environ and Army Corps of Engineers 2009). However, due to delays in the TLC installation, all follow-on work was postponed until such time that the regulatory work at Site 99 (TLC installation) would resume. In conjunction with plans to proceed with post-cap monitoring, a related ESTCP Project (ER-201130, Gunther Rosen, Principal Investigator) was able to proceed and use Site 99 as part of their demonstration of the SEAP Protocol. Because the SEAP project is an integral component of this demonstration project, every effort was made to ensure that project objectives could be aligned to maximize the benefit to each project. Sampling related to ESTCP Project ER-201130 to establish additional baseline conditions was conducted in October 2012. Data collected in each baseline characterizations included the following parameters as summarized in Table 4 and as described here:

Three baseline characterizations occurred in the following timeframes to establish pre-remedial conditions:

1. Baseline 1: April – May 2009
2. Baseline 2: August – September 2009
3. Baseline 3: October 2012

Further information on the baseline characterization (e.g., sample locations, methods, results, and data evaluation) is provided in the sections below with the post-remedial monitoring events.

**Table 4. Summary of baseline characterization activities.**

| Parameter | Baseline 1 Spring 2009 | Baseline 2 Fall 2009 | Baseline 3 Fall 2012 |
|---|---|---|---|
| Bathymetry | X | -- | -- |
| Hydrodynamic monitoring (current meter) | X | X | -- |
| Deposition rates and concentrations of DDX in deposited sediment (Sediment trap) | -- | X | -- |
| Physical and chemical analysis of sediment cores | -- | X | X [1] |
| Concentrations of DDX in tissue from *in situ* bioaccumulation testing | -- | X | X |
| Concentrations of DDX in tissue from native pelagic invertebrate | -- | X | -- |
| Concentrations of DDX in Porewater (*Ex Situ* Passive Sampling) | -- | X | -- |
| Concentrations of DDX in Porewater (*In Situ* Passive Sampling) | -- | -- | X[2] |
| SPI | -- | X | -- |
| Benthic community census | X | -- | X |

[1] Grab samples only

[2] Samples provided to D. Reible but results not used in this demonstration

## 5.3. Treatability or Laboratory Study Results

Prior to field sampling, laboratory sediment was used to examine the uptake of DDX by a representative benthic invertebrate and to assess survival, and growth of representative benthic species following placement of the TLC, as well as fate and transport mechanisms of DDX (initial mixing of TLC material with native sediment, bioaccumulation and biotransport of DDX in benthic organisms, etc.). Data allowed several fundamental uncertainties regarding capping and DDX fate and transport to be addressed under controlled laboratory conditions, as well as provided information to optimize the experimental design for post-capping chemical and biological measurements. For laboratory physical burial effects and bioaccumulation experiments, a series of three experiments were conducted in in July 2009 by Dr. Guilherme Lotufo at ERDC facilities in Vicksburg, MS. Detailed methods and results of the experiments are provided in Appendix B and are summarized as follows:

Bioaccumulation kinetics findings:

- Steady-state bioaccumulation of DDX occurred within two weeks in small invertebrates.
- Bioavailability within typical range (BSAF ~ 1-2).

Findings on the effects of resident invertebrates:

- Steady-state bioaccumulation of DDX occurred within two weeks in small invertebrates.
- Bioavailability within typical range (BSAF ~ 1-2).
- Only a small percentage of the invertebrates were able to migrate into 0.5-ft cap and establish in upper layer. None remained in smothered Quantico sediment underneath sand.
- Total DDX in *Lumbriculus* and *Leptocheirus* remained relatively unchanged at day 28 relative to day 14 day.
- Concentrations of DDX were 4 times greater in *Leptocheirus* compared to *Lumbriculus* tissue (5 times for lipid-normalized residues).
- Insufficient mass of invertebrates were recovered from the sand cap; therefore body residue could not be derived.

Colonization of sand cap findings:

- Most invertebrates added to the established cap (colonization experiment) were alive after 14 days.
- DDX body residue in *Lumbriculus* added to top of cap was only 8% of that measured in worms exposed to Quantico sediment.

## 5.4. Design and Layout of Technology Components

Performance of enhanced monitored natural recovery at the Site was evaluated by establishing a baseline and comparing the results of the baseline characterization to post-placement monitoring events to document the extent to which the remedy reduces bioavailable concentrations of the contaminant and the potential effects to ecological health of the native benthic community. Sediments adjacent to the thin layer cap were monitored as well as the native sediments underlying the cap. A thorough description with accompanying schematic diagrams of all technology components as deployed are provided in Section 5.5 (Field Testing). The target area for the TLC is shown in Figure 9.

## 5.5. Field Testing

The post-cap placement monitoring was performed in the short-term (2-months post-placement), and long-term (1 and 2 years after cap placement). Post-cap long-term monitoring was conducted in the fall each year to coincide seasonally with baseline characterization (Baseline 2 and Baseline 3 as described in section 5.2 [Baseline Characterization]).

Post-cap placement monitoring activities including tools or parameters to evaluate each physical, chemical, and biological characterization are summarized in Table 5.

### 5.5.1. Sample locations (Multi-metric sample locations)

Baseline 1 sample locations are shown in Figure 12 and Baseline 2 locations are shown in Figure 13. In Baseline 3 and short term and long term post-placement monitoring events, sample locations included 5 on-cap and 2 off-cap stations for physical, chemical and biological characterization as shown in Figure 14. Locations were surveyed using a hand-held global positioning system (GPS) unit to record the coordinates of each station (Table 7). Comparison of the locations of the multi-metric stations over time is shown in Table 8.

**Table 5. Summary of post-placement activities.**

| Parameter | 0-month post-placement | 2-month post-placement | 14-month post-placement | 25-month post placement |
|---|---|---|---|---|
| Bathymetry | X | X | X | X |
| Friction sound probe | -- | X | X | X |
| Deposition rates and concentrations of DDX in deposited sediment (Sediment trap) | -- | X | -- | X |
| Physical and chemical analysis of sediment cores | X [1] | X | X | X |
| Concentrations of DDX in tissue from *in situ* bioaccumulation testing | -- | X | X | X |
| Concentrations of DDX in Porewater (*Ex Situ* Passive Sampling) | -- | X | X | X |
| Concentrations of DDX in Porewater (*In Situ* Passive Sampling) | -- | X[2] | X[2] | X[2] |
| SPI | -- | X | X | X |
| Benthic community census | -- | X | X | X |

[1] Confirmation sediment core profiling only

[2] Samples provided to D. Reible but results not used in this demonstration

### 5.5.2. Schedule and activities

The schedule for the baseline characterization, remedy placement, and post-placement monitoring events is provided in Table 6.

**Table 6. Baseline characterization and post-placement monitoring event schedule.**

| Event | Dates |
|---|---|
| Baseline 1 | April to May 2009 |
| Baseline 2 | August to September 2009 |
| Baseline 3 | October 2012 |
| Remedy Placement<br>0-month post-placement | June 2014 |
| Short Term Post-Placement Monitoring:<br>2 Month Post-Remedial Monitoring Event | September 2014 |
| Long Term Post-Placement Monitoring:<br>14 Month Post- Remedial Monitoring Event | September 2015 |
| Long Term Post-Placement Monitoring:<br>25 Month Post- Remedial Monitoring Event | August 2016 |

**Figure 12. Baseline 1 (Spring 2009) multi-metric sample locations.**


**Figure 13. Baseline 2 (Fall 2009) multi-metric sample locations.**


**Figure 14. Baseline 3 (Fall 2012) and post-placement multi-metric sample locations.**

**Table 7. Sample locations for baseline and post-TLC sampling events.**

| Station ID | Type | Placement Relative to TLC [1] | Latitude | Longitude |
|---|---|---|---|---|
| Baseline 1 | | | | |
| Cap 1 | Benthic Community Census | On-cap | 38.51315 | -77.29824 |
| Cap 2 | Benthic Community Census | On-cap | 38.51311 | -77.29836 |
| Cap 3 | Benthic Community Census | On-cap | 38.51326 | -77.29766 |
| Off Cap 1 | Benthic Community Census | Off-cap | 38.51212 | -77.29865 |
| Off Cap 2 | Benthic Community Census | Off-cap | 38.51351 | -77.29671 |
| Off Cap 3 | Benthic Community Census | Off-cap | 38.51432 | -77.29616 |
| Baseline 2 | | | | |
| Cap 1 | Multi-metric | On-cap | 38.5127972 | -77.2986417 |
| Cap 2 | Multi-metric | On-cap | 38.5135306 | -77.2980583 |
| Cap 3 | Multi-metric | On-cap | 38.5141528 | -77.297175 |
| Off Cap 1 | Multi-metric | Off-cap | 38.511975 | -77.2975889 |
| Off Cap 2 | Multi-metric | Off-cap | 38.5142167 | -77.2946889 |
| Baseline 3[2] and Post-Placement Monitoring Events | | | | |
| QT-1 | Multi-metric | On-cap | 38.5144694 | -77.2968806 |
| QT-2 | Multi-metric | On-cap | 38.5140083 | -77.2972361 |
| QT-3 | Multi-metric | On-cap | 38.5136972 | -77.2977639 |
| QT-4 | Multi-metric | On-cap | 38.5132083 | -77.2981417 |
| QT-5 | Multi-metric | On-cap | 38.5128278 | -77.2985222 |
| QT-6 | Multi-metric | Off-cap | 38.5142139 | -77.2945833 |
| QT-7 | Multi-metric | Off-cap | 38.5119833 | -77.297475 |

[1] In reference to the target area for the TLC in the baselines (pre-remedial events)
[2] Baseline 3 did not include QB-7 as monitoring station.

**Table 8. Station IDs for multi-metric stations during all sampling events.**

| Baseline 1 (May 2009) | Baseline 2 (September 2009) | Baseline 3 (October 2012) | 2-Month Post-Cap (September 2014) | 14-Month Post-Cap (September 2015) | 25-Month Post-Cap (August 2016) | Within Cap Placement Area? |
|---|---|---|---|---|---|---|
| NA | NA | QB 1 | QT2-1 | QT14-1 | QT25-1 | Within |
| CAP 3 | CAP 3 | QB 2 | QT2-2 | QT14-2 | QT25-2 | Within |
| CAP 2 | CAP 2 | QB 3 | QT2-3 | QT14-3 | QT25-3 | Within |
| NA | NA | QB 4 | QT2-4 | QT14-4 | QT25-4 | Within |
| CAP 1 | CAP 1 | QB 5 | QT2-5 | QT14-5 | QT25-5 | Within |
| OFF CAP 2 | OFF CAP 2 | QB 6 | QT2-6 | QT14-6 | QT25-6 | Outside |
| OFF CAP 1 | OFF CAP 1 | NA | QT2-7 | QT14-7 | QT25-7 | Outside |
| OFF CAP 3 | NA | NA | NA | NA | NA | Outside |

NA: not applicable

### 5.6. Sampling Methods

Sampling events, tools, and parameters are summarized in section 5.5 (Field Testing). Sample locations are described in section 5.5.1 (Sample locations).

A description of sampling conducted including collection methods, analytical methods, and approach to data treatment and evaluation is described below. A summary of samples collected is provided in Table 9. A summary of the analytical methods is presented in Table 10.

All analytical equipment was calibrated according to manufacturer instructions. Field duplicate and replicate samples collected for quality assurance purposes are summarized in Table 9. A field blank was collected following laboratory protocols. Additional laboratory quality control samples required by the referenced method, including laboratory control sample/laboratory control sample duplicate analyses, matrix spike/matrix spike duplicate analyses, surrogate recoveries, and other method specific quality control samples were followed and provided in analytical reporting from the analytical laboratory.

To the extent possible, disposable sampling equipment was used for samples involving chemical measurements to minimize decontamination requirements. Decontamination of stainless steel mixing bowls and utensils was conducted as follows. The bulk of any sediment material adhered to the equipment was scraped from the equipment into a containment bucket. The sediment (e.g., cap material) was returned to the river at the end of the day unless otherwise directed by the Navy. Equipment was then rinsed with river water to remove any remaining sediment. Next, the water-rinsed equipment was cleaned with Alconox. Finally, the equipment was triple rinsed with river water and final rinse with distilled water. All investigation-derived waste (IDW) was disposed properly, in accordance with base procedures. Further details on quality assurance procedures are provided in Appendix C.

**Table 9. Sample and station counts by sampling event.**

| Parameter | Baseline 1 and Baseline 2 | | | Baseline 3 | | | 2-month post-placement | | | 14-month post-placement | | | 25-month post-placement | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Primary Sample Count | QA/QC Sample Count | Station Count | Primary Sample Count | QA/QC Sample Count | Station Count | Primary Sample Count | QA/QC Sample Count | Station Count | Primary Sample Count | QA/QC Sample Count | Station Count | Primary Sample Count | QA/QC Sample Count | Station Count |
| Hydrodynamic monitoring (current meter) | 3,258 readings | -- | 2 | 3,752 readings | -- | 2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Friction sound probe and confirmation cores (Grain size, porewater) | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1 field duplicate | 27 |
| Sediment trap (mass, DDX) | 3 | -- | 3 | -- | -- | -- | 3 | -- | 3 | -- | -- | -- | 3 | -- | 3 |
| Bulk Sediment (DDX, TOC, Grain Size, Sediment texture) | **14 samples**<br>-3 core intervals at each on cap station<br>-1 grab at each on-cap station<br>-1 grab at each off-cap station | **3 field duplicate samples**<br>-3 core intervals at one on cap station | **5 stations**<br>-3 on-cap stations<br>-2 off-cap stations | **6 samples**<br>-1 grab at each on cap station<br>-1 grab at each off cap station | -- | **6 stations**<br>-5 on-cap stations<br>-1 off-cap station | **37 samples**<br>-7 core intervals at each on cap station<br>-1 grab at each off-cap station | **7 field duplicate samples**<br>-7 core intervals at each on cap station | **7 stations**<br>-5 on-cap stations<br>-2 off-cap stations | **37 samples**<br>-7 core intervals at each on cap station<br>-1 grab at each off-cap station | **7 field duplicate samples**<br>-7 core intervals at each on cap station | **7 stations**<br>-5 on-cap stations<br>-2 off-cap stations | **37 samples**<br>-7 core intervals at each on cap station<br>-1 grab at each off-cap station | **7 field duplicate samples**<br>-7 core intervals at each on cap station | **7 stations**<br>-5 on-cap stations<br>-2 off-cap stations |
| *In Situ* bioaccumulation testing (DDX, lipid) | **4 samples**<br>-Species: Lv[1] | **1 field duplicate sample** | **4 stations**<br>-3 on-cap stations<br>-1 off-cap stations | **5 samples of each species**<br>Lv and Cf[1] | -- | **6 stations**<br>-5 on-cap stations<br>-1 off-cap station | **7 samples per species**<br>Lv and Cf | **1 field duplicate per species** | **7 stations**<br>-5 on-cap stations<br>-2 off-cap stations | **7 samples per species**<br>Lv and Cf | **1 field duplicate per species** | **7 stations**<br>-5 on-cap stations<br>-2 off-cap stations | **7 samples per species**<br>Lv and Cf | **1 field duplicate per species** | **7 stations**<br>-5 on-cap stations<br>-2 off-cap stations |
| Native pelagic invertebrate tissue (DDX, lipid) | **5 samples** | -- | **5 stations**<br>-3 on-cap stations<br>-2 off-cap stations | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| *Ex Situ* Porewater (DDX) | **14**<br>-3 core intervals at each on cap station<br>-1 grab at each on-cap station<br>-1 grab at each off-cap station | **3 field duplicate samples**<br>-3 core intervals at one on cap station | **5 stations**<br>-3 on-cap stations<br>-2 off-cap stations | -- | -- | -- | **37 samples**<br>-7 core intervals at each on cap station<br>-1 grab at each off-cap station | **7 field duplicate samples**<br>-7 core intervals at each on cap station | **7 stations**<br>-5 on-cap stations<br>-2 off-cap stations | **37 samples**<br>-7 core intervals at each on cap station<br>-1 grab at each off-cap station | **7 field duplicate samples**<br>-7 core intervals at each on cap station | **7 stations**<br>-5 on-cap stations<br>-2 off-cap stations | **37 samples**<br>-7 core intervals at each on cap station<br>-1 grab at each off-cap station | **7 field duplicate samples**<br>-7 core intervals at each on cap station | **7 stations**<br>-5 on-cap stations<br>-2 off-cap stations |
| *In Situ* Porewater (DDX) | -- | -- | -- | **6 Samples**<br>-1 interval at each station | **2 field duplicates per interval** | **6 stations**<br>-5 on-cap stations<br>-1 off-cap station | **84 samples**<br>- 12 intervals at each station | **2 field duplicates per interval** | **7 stations**<br>-5 on-cap stations<br>-2 off-cap stations | **23 samples**<br>-1 to 5 intervals at each station | **3 field duplicates** | **7 stations**<br>-5 on-cap stations<br>-2 off-cap stations | **42 samples**<br>- 2 to 11 intervals at each station | **2 field duplicates per interval** | **7 stations**<br>-5 on-cap stations<br>-2 off-cap stations |
| SPI | **51 images** | **28 duplicate images** | **51 stations** | -- | -- | -- | **32 images** | **1 to 3 images per station** | **32 stations** | **21 images** | **1 to 3 images per station** | **21 stations** | *Pending* | *Pending* | *Pending* |
| Benthic community census | **6 samples** | **1 field duplicate;**<br>QA/QC performed by taxonomic laboratory | **6 stations**<br>-3 on-cap stations<br>-3 off-cap stations | **6 samples** | QA/QC performed by taxonomic laboratory | **6 stations**<br>-5 on-cap stations<br>-1 off-cap station | **7 samples** | QA/QC performed by taxonomic laboratory | **7 stations**<br>-5 on-cap stations<br>-2 off-cap stations | **7 samples** | QA/QC performed by taxonomic laboratory | **7 stations**<br>-5 on-cap stations<br>-2 off-cap stations | **7 samples** | QA/QC performed by taxonomic laboratory | **7 stations**<br>-5 on-cap stations<br>-2 off-cap stations |

[1] Abbreviations: Lv: *Lumbriculus variegatus*; Cf: *Corbicula fluminea*

**Table 10. Analytical methods utilized during the project.**

| Matrix | Analyte | Method |
|---|---|---|
| Sediment | DDX | EPA 8081A |
| Sediment | TOC | SW846 9060A [1] |
| Sediment | Moisture | ASTM D2216 |
| Sediment | Grain size | ASTM D422 |
| Porewater (*in situ*) | DDX | EPA 8081A; Reible and Lotufo (2012) |
| Porewater (*ex situ*) | DDX | EPA 8081A; Method followed You (2007) and Yang (2008) |
| Invertebrate Tissue | DDX | EPA 8081A |

[1] EPA 9060A used in baseline, 2-, and 25-month events. In 14-month event, modified Walkley Black (heated during the digestion) was used.

### 5.6.1. Bathymetry

The objective of the bathymetric surveys was to document the water depths in the capping area prior to and following the placement of the cap. Changes in water depths before and after the cap placement provide a general indication of the spatial distribution and uniformity of the placement. Changes in water depths over time following the cap placement provide a general indication of the stability of the cap and a basis for interpretation of finer scale coring measurements at the multi-metric stations.

Bathymetry data over the cap were collected during three survey events on March 31, 2015, 23-24 August 2015, and 23 August 2016. The first data set, collected just prior to the cap installation by Waterway Surveys and Engineering Ltd., was provided by the Remedial Program Manager to include in our evaluation. Data collection for the 2015 and 2015 post-capping surveys was conducted using a Teledyne Oceanscience Z-Boat 1800 remote control hydrographic survey boat with a Ceepulse 100™ 20 kHz echosounder integrated with a Hemisphere A101 Global Positioning Satellite (GPS) receiver (Figure 15). The remote control vessel was manually operated using joy stick controls from a nearby small boat. Data were collected along transects that ran both parallel to the shoreline as well as perpendicular to the shoreline with a goal of covering the cap area with transects spaced ~10-m apart (Figure 16). Water depth data were collected at a 6-Hz data rate and GPS data at 5-Hz, generating a value roughly every 30 cm along the vessel track at a nominal boat speed of 3 kts. All data were stored on-board the Z-Boat's data management system for post-processing.

The bathymetry data processing began with a data download from the data system to a comma separated variable (CSV) datafile that was further processed with a combination of Miscrosoft Excel, Matlab®, and/or Eye4Soft Hydromagic hydrographic survey software. The GPS and bottom depth data were time-matched into a single datafile containing longitude (x), latitude (y), and bottom depth (z) records. The data were evaluated for outliers, errors, and overlaps, particularly when the transducer was too shallow for a good reading (~0.3 m), got stuck on a shoreline or in algal mats, or when the system was brought to shore for battery changes or other operational tasks. Best professional judgement was used to make these corrections. The bottom depths in this dataset were then corrected for the fixed transducer depth and differences between the default 1500 m/s sound velocity of the unit with measured values using a Sontek Castaway® CTD unit. A final step was to transform the measured water depths to a North American Datum 1988 (NAVD 88) reference elevation as described below.

Barometrically compensated water surface elevation was determined using a Solinst Levelogger® Edge Model 3001 water level sensor and a Solinst Barologger Edge 3001 barometric pressure sensor deployed at the nearby Quantico Marina ~ 1 km away. The water level sensor was placed ~1 m below the water surface inside of a perforated PVC pipe (Figure 17) to measure the ~1' tidal variations during the surveys. The elevation of the sensor in NAVD88 was measured using a Trimble GEOXH6000 1-cm GPS receiver using Trimble with Terrasync 5.61 Centimeter Edition software. The unit's antenna was placed directly on top of the pipe to determine position and elevation at 1-s intervals over multiple 1-min acquisition periods. The position and elevation were corrected with Trimble Pathfinder Office Version 5.80 software using corrections from the National Geodetic Survey's Continuously Operating Reference Station in Newington, VA (CORS Station ID: LOYB). The water surface elevation over time in NAVD88 was determined by subtraction as shown in Figure 18. The water surface elevations in NAVD88 were interpolated then time matched to the depth dataset to generate a final CSV data file with bottom elevation data in the NAVD88 reference datum.

The final bathymetry datasets were gridded and contoured using Golden Graphics Surfer software to create final regular rectangular data array and to generate graphical representations of the data. The gridding process was conducted using a Kriging method that was based on an 80x86 rectangular set of grid lines having ~5 m spacing. The grid was then masked to fit within an area that encompassed the data collection area while minimizing the area outside of it (minimizing extrapolation). This grid was run through a 3x3 Gaussian low-pass filter to smooth and finalize the final interpolated dataset. Difference maps were then generated using the grid math function of Surfer.

**Figure 15. Teledyne Oceanscience Z-Boat 1800 remote control hydrographic survey boat used during the 2015 and 2016 surveys undergoing preparation (top photo) and surveying in work area with Chopawamsic Island in the background (bottom photo).**


**Figure 16. Typical track line for the bathymetric surveys at Quantico Embayment. This track is from the 2015 post-cap survey.**

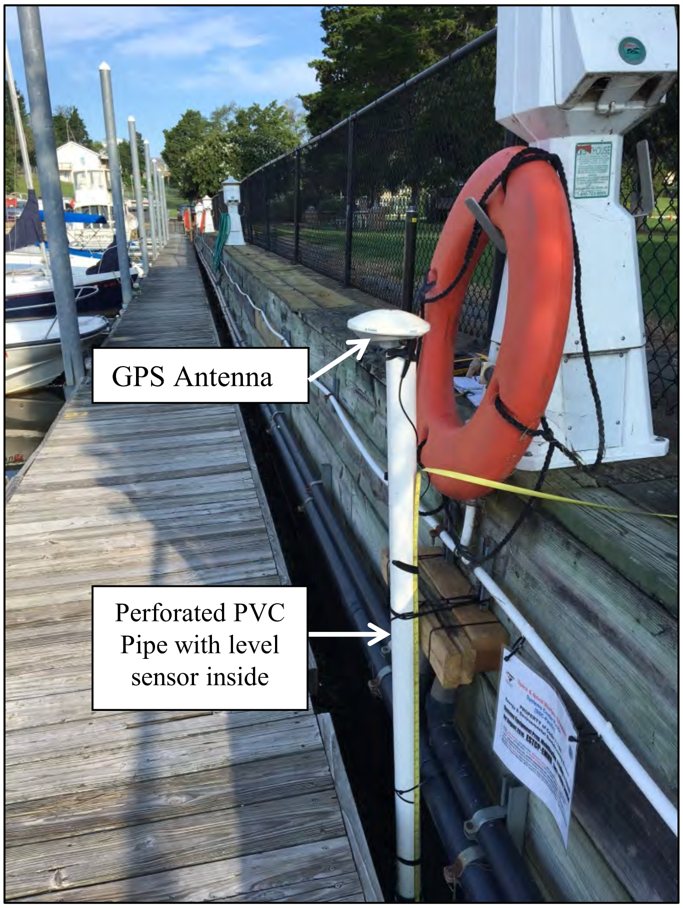



**Figure 17. Level and barologger sensors set up inside vertical tube at Quantico Marina with Trimble GPS antenna atop the tube during position and vertical height measurements.**

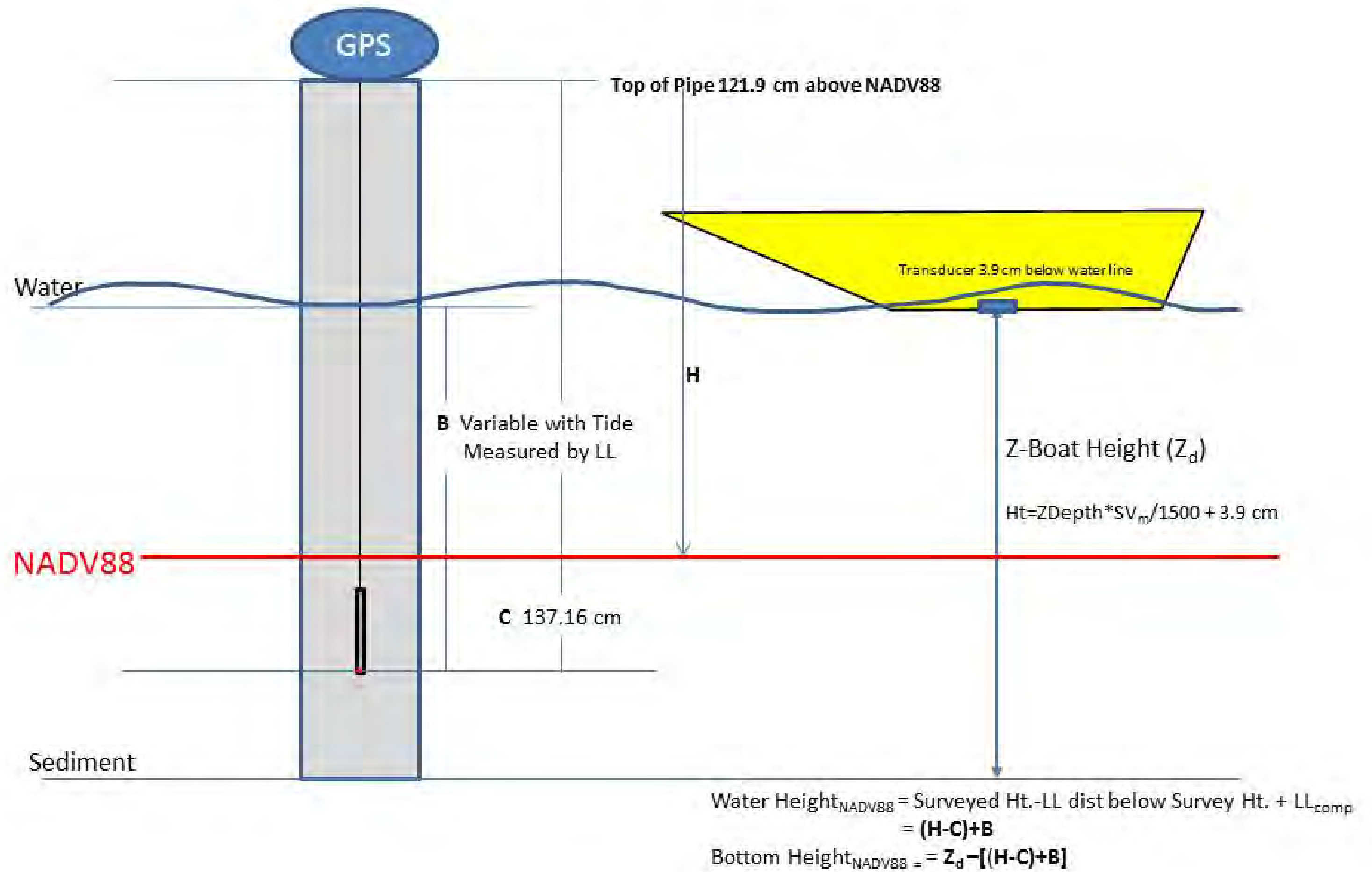



**Figure 18. Example schematic drawing and equations used to reference bottom depths to NAVD88.**

### 5.6.2. Hydrodynamic monitoring (Current Meter Measurements)

The objective of the current meter measurements was to document water velocities in the capping area so that cap stability could be assessed.

Current meters were deployed at two on-cap locations (Q1-S4 and Q2-S4) prior to the installation of the cap (Figure 19). Two rounds of measurements were carried out. The first round was in the spring of 2009 during the period 4/9/2009 – 5/2/2009. The second round was during the fall of 2009 during the period 9/1/09 – 9/27/09. Currents were measured using InterOcean S4 current meters. The S4 is an electromagnetic current meter that measures the voltage resulting from the motion of a conductor (water flow velocity) through a magnetic field according to Faraday's law of electromagnetic induction. The S4 conductor length is the effective path between the sensing electrodes. The magnetic field intensity is generated by a circular coil, internal to the S4, driven by a precisely regulated alternating current. The use of an alternating magnetic field and synchronous detection techniques to measure the voltage at the sensing electrodes provides an extremely stable, low noise current measurement. Two orthogonal pairs of electrodes and an internal flux gate compass provide the current vector.

At each station, the S4 was bolted to an aluminum angle iron and the angle iron was pushed into the sediment by wading so that the current meter was suspended 1 ft (30 cm) above the sediment-water interface (Figure 20). Measurements were recorded for a period of 1 minute every 10 minutes with each 1 minute interval including approximately 160 individual readings. During the spring deployment, a total of 3258 readings were collected, and during the fall a total of 3752 readings were recorded. Site locations, depths and deployment periods for the two events are summarized in Table 11.

To evaluate sediment stability the current meter records were compared to critical mean water column velocities for initiation of sediment movement ($U_{cm}$) and sediment suspension ($U_{cs}$). Critical velocities were estimated using the following relationships for sediment movement using the following equation (Soulsby, 1997):

$$U_{cm} = 0.19(d_{50})^{0.1} log\left(\frac{12h}{6d_{50}}\right)$$

and for sediment suspension (Soulsby, 1997):

$$U_{cs} = 2.8\left(\frac{h}{d_{50}}\right)^{0.1}\left((s-1)gd_{50}\right)^{0.5}$$

where $d_{50}$ is the median diameter from the grain size distribution, $h$ is the water depth, $s$ is the specific gravity of the sediment, and $g$ is the acceleration of gravity. The d50 was determined to be 0.46 mm from the grain size distribution for the cement sand that was used for the cap (Figure 21). Water depths (h) at the two stations were determined from the 2009 bathymetry and then corrected using the average cap thickness of 9 inches (23 cm) taken from the post-construction coring survey. The specific gravity of the cement sand used for the cap was 2.66. Using these values, the mean water column velocities for initiation of sediment movement and sediment suspension were determined (Table 12). Measured velocities at each station during each sampling event were then compared to these values. Velocities below the critical values were interpreted as indicating bed stability, and velocities above the critical values were interpreted as indicating bed instability.

**Table 11. Locations, depths and sampling periods for the S4 current meter deployments at Quantico Embayment during the 2009 baseline events.**

| Period | Station | Latitude (deg NAD83) | Longitude (deg NAD83) | Depth (m) | Start Date | End Date |
|---|---|---|---|---|---|---|
| Spring 2009 | Q1-S4 | 38.51243 | -77.29893 | 0.50 | 4/9/2009 | 5/2/2009 |
| | Q2-S4 | 38.51316 | -77.29798 | 1.20 | 4/9/2009 | 5/2/2009 |
| Fall 2009 | Q1-S4 | 38.51243 | -77.29893 | 0.50 | 9/1/2009 | 9/27/2009 |
| | Q2-S4 | 38.51316 | -77.29798 | 1.20 | 9/1/2009 | 9/27/2009 |

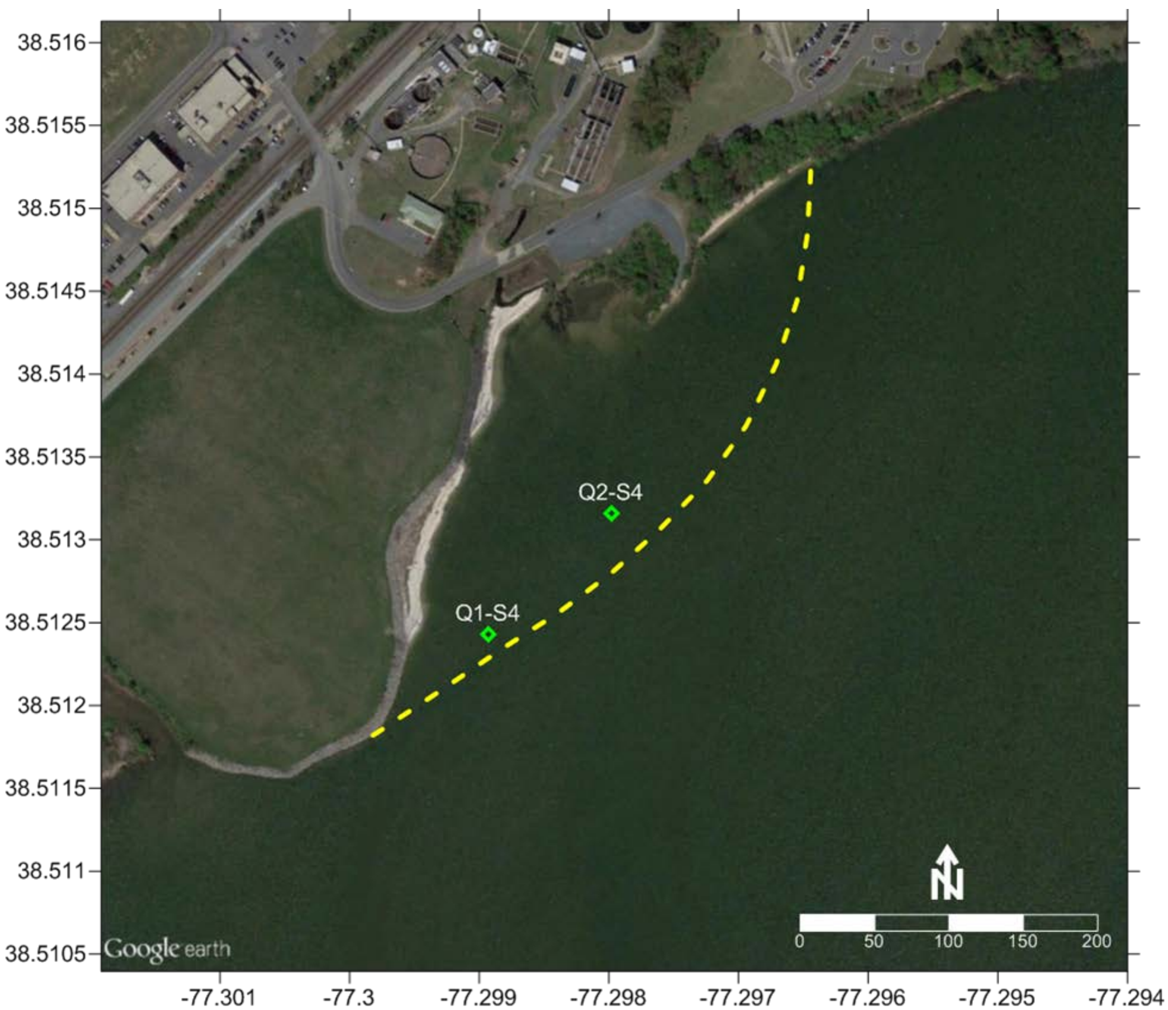



**Figure 19. Map showing the locations of the current meter stations at Quantico Embayment during the 2009 baseline events.**


**Figure 20.  Preparing the aluminum angle iron spike to support the S4 current meter.**

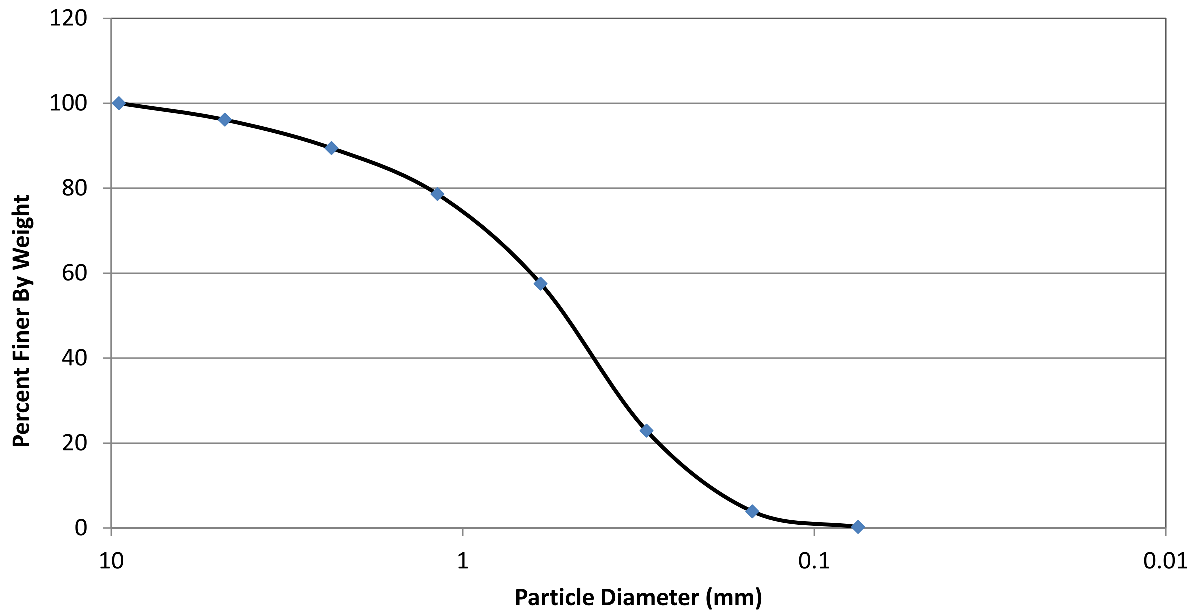



**Figure 21. Particle size distribution for the cement sand used for the Quantico Embayment habitat enhancement cap.**

**Table 12. Parameters used to estimate the critical water column velocities.**

| Station | Pre-Cap Depth (m) | Cap Thickness (m) | Post-Cap Depth (m) | Cap Material d50 (mm) | Cap Material Specific Gravity | Critical Velocity for Bed Movement (cm/s) | Critical Velocity for Bed Suspension (cm/s) |
|---|---|---|---|---|---|---|---|
| Q1-S4 | 0.50 | 0.23 | 0.27 | 0.46 | 2.66 | 0.33 | 0.54 |
| Q2-S4 | 1.20 | 0.22 | 0.99 | 0.46 | 2.66 | 0.37 | 0.59 |

### 5.6.3. Friction sound probe

Cap thickness data were acquired from multiple sources including a post-capping coring survey conducted by the construction contractor in 2014, coring surveys conducted at the multi-metric cap stations during the post-capping surveys of 2014, 2015 and 2016, SPI camera surveys during the post-capping surveys of 2014, 2015 and 2016, and Sediment Friction Sound Probe (SED-FSP) surveys conducted as part of the post-capping surveys of 2014 and 2016. Methods for the 2014 coring survey conducted by the construction contractor were not available for this report, but the results are included below. Methods and results for the SED-FSP measurements are described below. Equipment problems during the 2014 SED-FSP survey precluded the collection and use of valid data, so only the 2016 data were used. Location maps for the post-construction coring survey and the SED-FSP survey thickness measurement stations are shown in Figure 22 and Figure 23, respectively.

The SED-FSP uses friction-sound as a method for in-situ, screening-level measurement of grain size. On a theoretical basis, friction-sound is believed to be generated when phonons are produced by the breaking or excitation of atomic or molecular bonds as a contact surface moves over or through a particle matrix. Friction-sound intensity has been shown to be a linear function of the radius of particles in contact with the surface and the velocity of the probing surface. The SED-FSP unit developed and used by SPAWARSYSCEN PACIFIC employs this correlation to infer grain size. The effectiveness of the SED-FSP system was demonstrated during an Environmental Security and Technology Certification Program (ESTCP) project (No. ER-0919) in a variety of contaminated sediment management scenarios including measurement of thickness of a contaminated sediment cap site located on the Anacostia River in Washington, DC.

The SED-FSP sensor probe consists of a ½ inch diameter, meter long stainless steel probe containing an acoustic microphone at the tip. As the probe surface moves through the sediment matrix the generated friction sound is recorded by the embedded microphone. The microphone signal is transmitted through a physical interface to an electronics processing package that then transmits the processed acoustic signal to recording software. Figure 1 below shows the main components of the SED-FSP probe including the probe tip, probe physical interface, electronics interface/package and recording software.

The SED-FSP probe is coupled to a 5/8 inch diameter pneumatic piston/cylinder drive unit mounted onto an aluminum frame assembly (Figure 25). The pneumatic system is remotely operated by the user through a multiple-valve mechanism that controls compressed air flow to the cylinder drive. During deployment the SED-FSP assembly is lowered from a deployment platform onto the sediment surface, the probe is fully retracted with the tip near the water/sediment surface interface. Pneumatic hoses and a data transfer cable of as long as 150 ft. allow for remote operation of the system. As the pneumatic cylinder is activated by the user the SED-FSP probe tip extends downwards and penetrates the sediment bed to a maximum depth of 2 feet. The friction sound that is generated due to penetration of the probe into the sediment bed is transmitted and processed by the SED-FSP system and the data stored on a PC. Prior to deployment, the SED-FSP is calibrated for grain size by correlating acoustic intensity to sediments of known mean grain sizes. Using calibration parameters the acoustic signals are post-processed to arrive at grain size estimates.

The data collection interval of the SED-FSP during the Quantico survey was 162 milliseconds, equivalent to acoustic data acquisition every 1 to 1.5 cm. of probe travel, depending on the probe speed. Using the stored acoustic data and known probe penetration speed a vertical depth profile of grain size was assembled for each of the probed stations. When applied to a sediment cap site the depth profile indicates the interfaces of water column, native sediment and cap material. Cap thickness is acquired from the native sediment - cap interfaces.

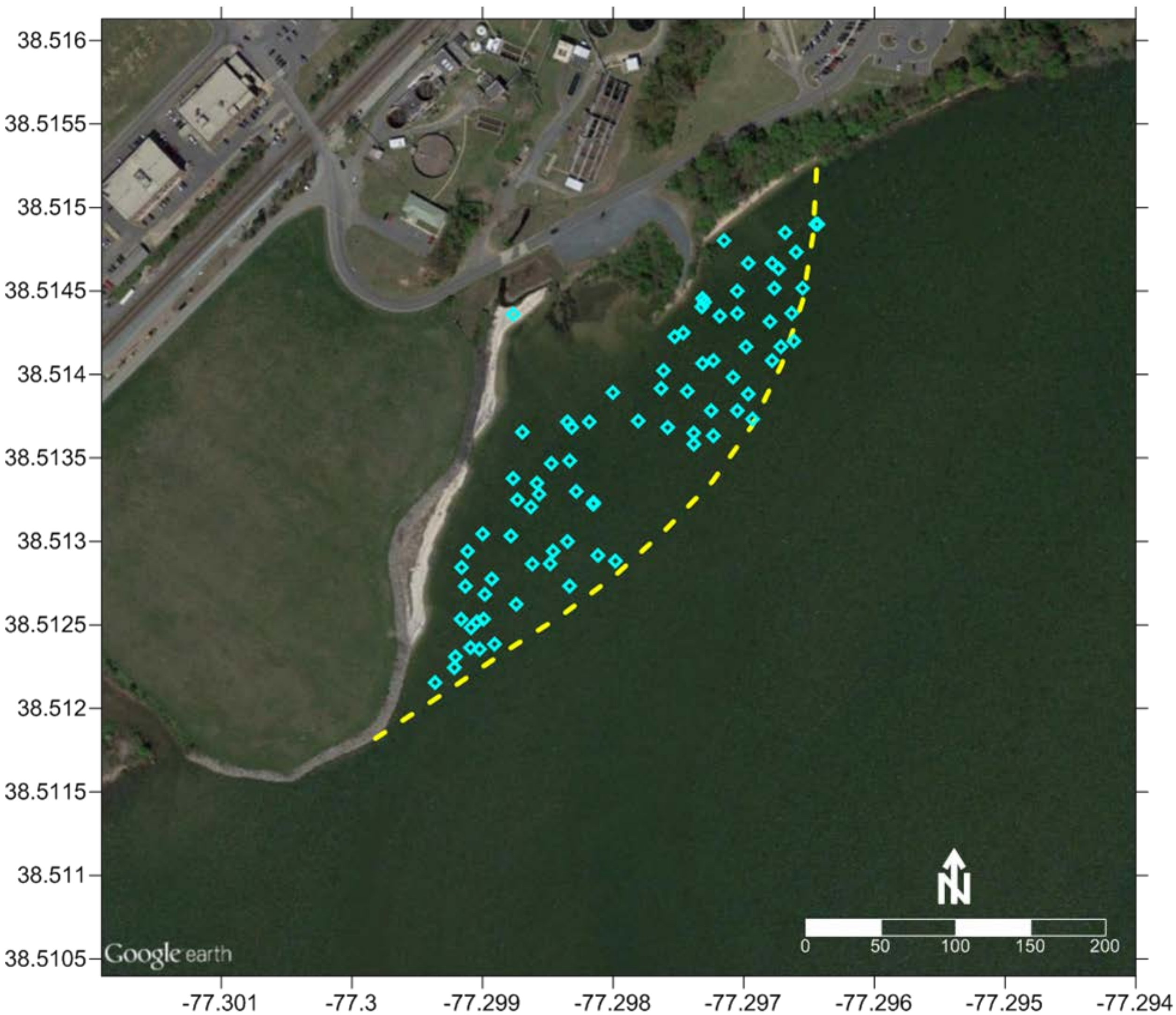



**Figure 22. Location map for the cap thickness survey stations collected by the construction contractor immediately following the construction of the cap in 2014.**

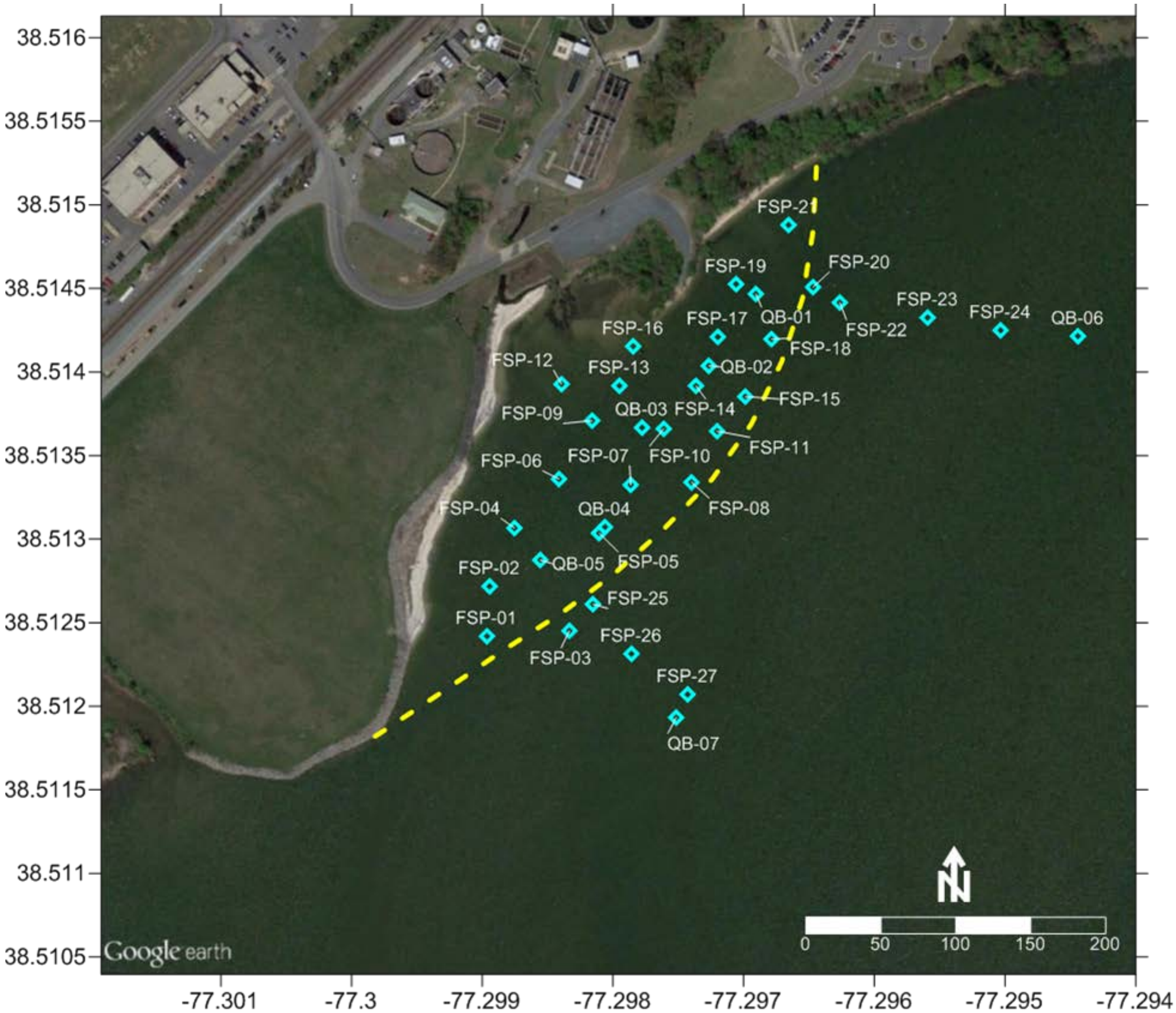



**Figure 23. Location map for the SED-FSP stations where cap thickness was measured during the 2016 post-cap field event.**

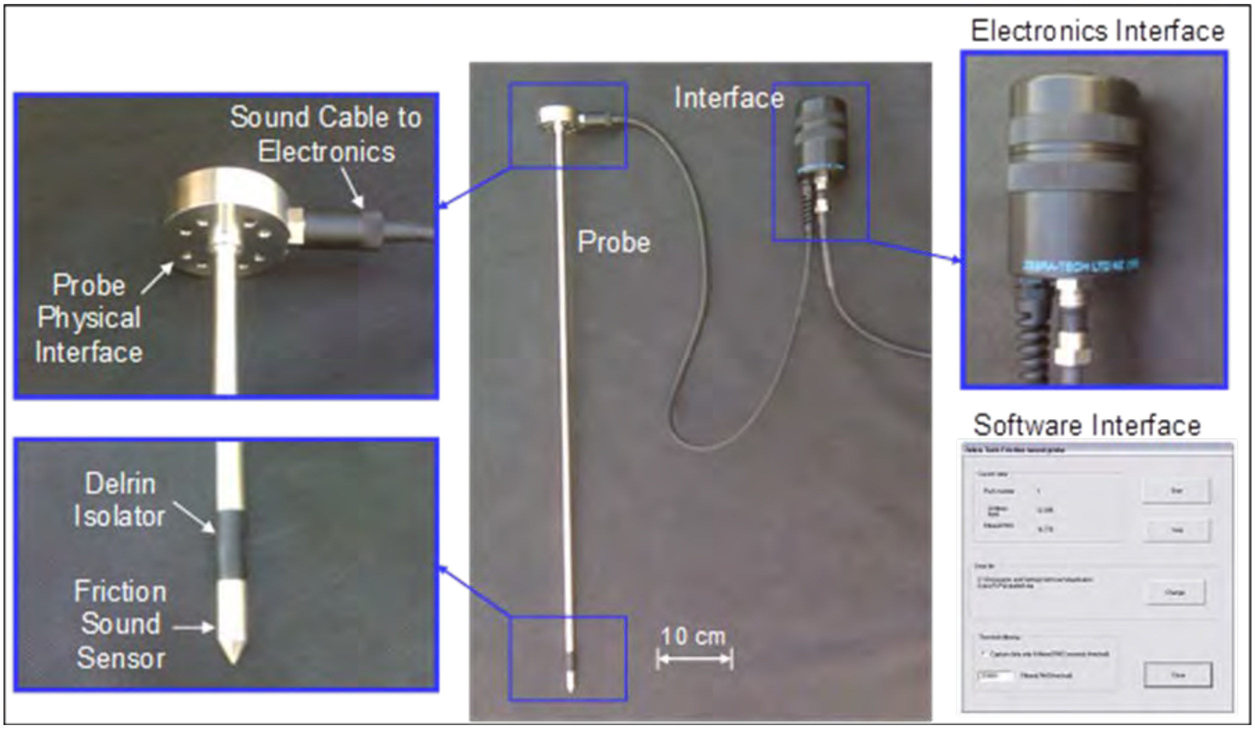



**Figure 24. Sediment friction sound probe (SED-FSP) including sensor tip, probe/electronics interface, electronics package, and data recording software.**

**Figure 25. SED-FSP system; probe and frame assembly.**

### 5.6.4. Sediment Traps

The objective of the sediment trap deployments at Quantico Embayment was to quantify the deposition rates and chemical loading associated with sediment deposition in the on-cap area both prior to and following the thin-layer cap placement.

Sediment traps were deployed during three events including the fall baseline event in 2009, the post-cap survey in September 2014, and the post-cap survey in August 2016. Procedures generally followed the methods described in Blake et al. (2007). During each event, traps were placed at three locations including the north, mid and south areas of the cap (Figure 26 and Table 13). Traps were deployed for periods ranging from about 14 - 23 days with the shortest deployment during 2016 and the longest deployment during 2009. The traps used during the 2009 event were constructed from 30 in by 6 in diameter PVC pipe providing an aspect ratio of 5:1. A single trap was deployed at each station. During the 2014 and 2016 events, multiple traps constructed from 10 in by 2 in PVC pipe (still 5:1 aspect) were used to provide a lower profile for the shallow water (Figure 27). A total of 13 traps were deployed at each station in a plastic rack to provide adequate surface area comparable to the larger traps from 2009.

During all deployments, each trap was covered with coarse mesh to prevent entrance of large organisms. Prior to deployment, the traps were filled about 1/3 full with a solution consisting of 50 ppt brine and Rhodamine dye to mark the brine layer. The remaining volume of each trap was carefully filled with ambient surface water. The mechanism for trapping the sediments lies in the strong density gradient between the denser, brine layer and the overlying ambient water. An internal surface is created at the interface of these layers, making it very difficult to mix water from one layer into the other. As a result, when sediments fall into the brine layer they are effectively trapped. The Rhodamine dye in the brine layer was used to visualize any disturbance of the brine layer during the deployment.

Each trap was capped prior to deployment to minimize disturbance while placing the traps. Traps were deployed by wading or divers at each site and staked in place. Once in place, traps were left with the caps on for at least 3 hours to allow any sediment that was disturbed during the deployment to settle. Each trap was then carefully uncapped and left in place for the remaining time of the deployment. At the conclusion of the deployment, sediment traps were capped by wading or divers and brought to the surface. Traps were then carefully lifted into the vessel and transported to the shore for sediment processing.

On site, sediment traps were placed in an ice bath to deter biological growth and decomposition within the traps. Sediment traps were then left in a stationary position for several hours to allow suspended particles to settle to the bottom of the trap. At this point the traps contained three layers: the sediment, the brine and the surface water. The surface water and brine layers from the traps were first pumped off using a peristaltic pump. Care was taken during this step to remove as much of the brine layer as possible without disturbing the sediment layer at the bottom of the trap. Tubing from the peristaltic pump was soaked in a laboratory detergent and rinsed with deionized (DI) water prior to pumping water from each trap. Once the overlying water was removed from each sediment trap, sediments were transferred into clean, pre-weighed sampling containers for shipment to the laboratory for further processing. Any sediments remaining in the traps were rinsed into the container with DI water.

At the laboratory, sediments were then allowed to remain undisturbed for at least 12 hours to allow for the consolidation of sediments in each container. After this settling period, any water that separated to the surface was carefully removed using a peristaltic pump. Each container was then weighed to determine the total wet weight of the sediment in each trap. Subsamples were taken from each container and dried in an oven for 48 hours at 100° to determine the percent moisture for each sample. This data was then used to determine the total dry weight of sediment deposited into each trap over the deployment period. The remaining sediments from each trap grouping were then combined, homogenized, and placed into laboratory containers a shipped for further chemical analysis. Trap sediments from each deployment were analyzed for TOC, grainsize and DDT compounds.

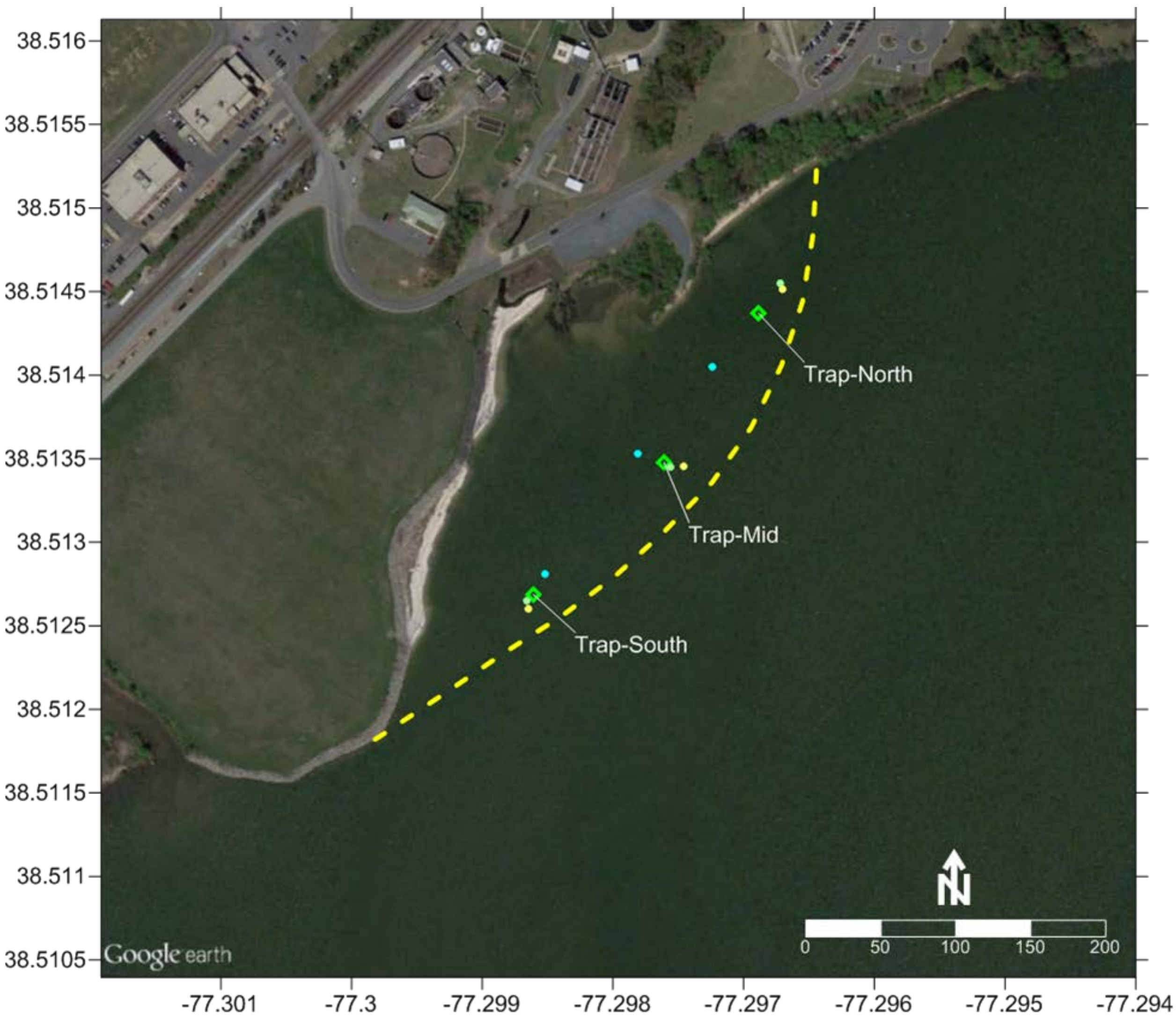



**Figure 26. Location map for the sediment traps deployed at Quantico Embayment. The green diamonds indicate the average location for the three sampling events. Colored dots indicate 2009 event (blue), 2014 event (green) and 2016 event ( yellow).**

**Table 13. Sediment trap locations.**

| Station | Baseline September 2009 | | Post-Cap September 2014 | | Post-Cap August 2016 | |
|---|---|---|---|---|---|---|
| | Long. (NAD83) | Lat. (NAD83) | Long. (NAD83) | Lat. (NAD83) | Long. (NAD83) | Lat. (NAD83) |
| Trap-South | -77.29852 | 38.51281 | -77.29866 | 38.51265 | -77.29865 | 38.51260 |
| Trap-Mid | -77.29781 | 38.51353 | -77.29756 | 38.51345 | -77.29746 | 38.51345 |
| Trap-North | -77.29724 | 38.51405 | -77.29672 | 38.51455 | -77.29670 | 38.51451 |

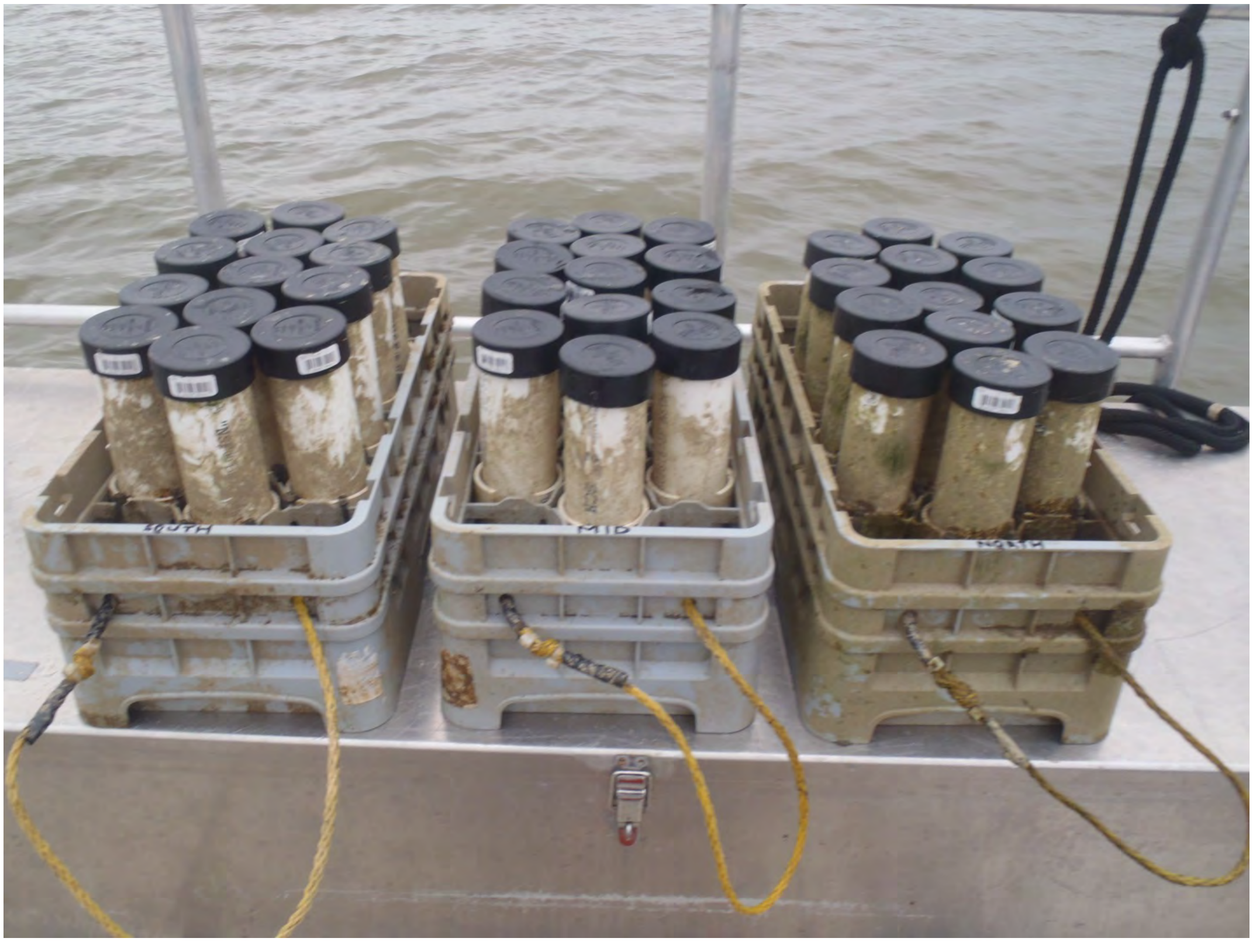



**Figure 27. Sediment traps used during the 2014 and 2016 sampling events. Black caps were removed after deployment and replaced prior to retrieval.**

### 5.6.5. Bulk Sediment

#### 5.6.5.1. Sample Collection, Processing, and Handling

*Core Samples*

Undisturbed, intact, continuous sediment cores were collected in general accordance with ASTM 1391 (ASTM 2008), utilizing a TLC integrity coring device, developed by SSC PACIFIC, in collaboration with the University of California San Diego (UCSD). The new, clean core tube (6' length, 2" inner diameter, cellulose acetate butyrate) was inserted into an external polyvinyl chloride (PVC) sleeve that was drove into the TLC and native sediment, to the target depth, using a slide hammer. If refusal was met before target depth, an immediately adjacent location was found. The top of the core tube was capped and the core was pulled out while leaving the external PVC liner in the sediment. The sample was retained within the core tube, and the bottom of the core was capped. The sample in the core tube was then brought to the surface for up-right storage until processing on shore. The external PVC liner was filled with the appropriate amount of clean replacement cap material before removing the liner. The Standard Operating Procedure (SOP) for the integrity core sampler is provided in Appendix D. Five replicate cores were collected at each multimetric station to achieve sufficient sample mass. An additional five replicate cores were collected at multimetric station 5, and was treated as a field duplicate. Once collected, cores were taped with electrical tape on top and bottom, labelled with core ID and up-right orientation, then stored up-right for transit to onshore processing area.

At the onshore processing area, the cores were split lengthwise, sediment core profiling was conducted (visual sediment texture classification as described below), and photographs were taken of each core. The interface of the bottom of the TLC and native sediment was visually identified. Each core was sectioned into intervals as follows (Figure 28):

- Within the thin layer cap;
  - 0-2 cm below the water-cap interface
  - 2-5 cm below the water-cap interface
  - 5-7 cm below the water-cap interface
- Across the mixing boundary between the cap and the underlying native sediment; and
  - 0-2 cm above the cap-native sediment interface
- Within the underlying native sediment
  - 0-2 cm below the cap-native sediment interface
  - 2-5 cm below the cap-native sediment interface
  - 5-7 cm below the cap-native sediment interface

The intervals were composited from each of the five stations at a station and homogenized. The homogenized sample was subsampled into laboratory-provided sample containers for physical and chemical analysis as well as *ex situ* passive sampling as described below.

Each sample was clearly labeled with sample ID, project name, point of contact and analysis to be performed. Samples were maintained at 4 degrees Celsius (°C) prior to and during overnight shipment to the analytical laboratory, USACE Engineer Research and Development Center (ERDC). *Ex situ* sediment samples were shipped to SPAWAR SSC Pacific laboratory for further processing (described below).

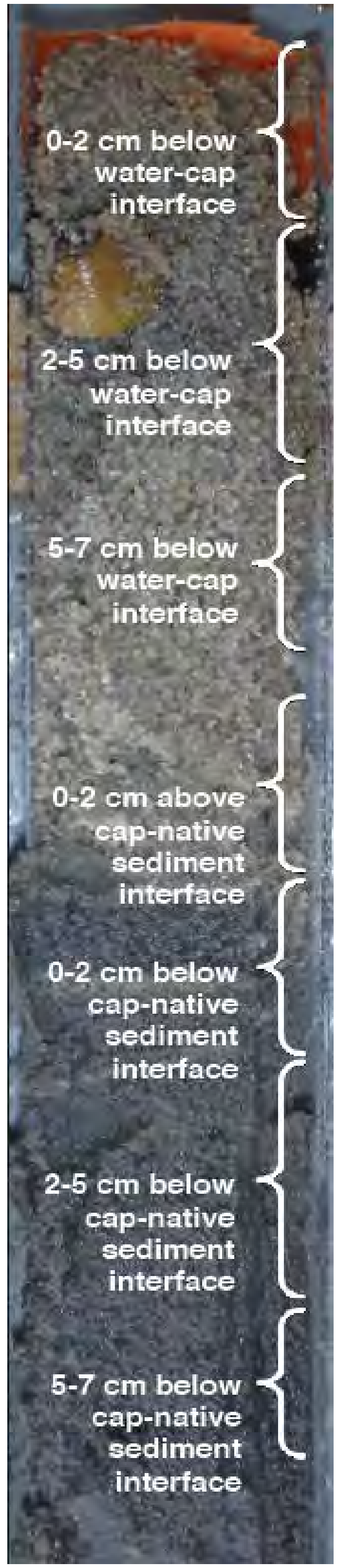



**Figure 28. Sediment core penetration and sectioning approach for physical and chemical characterization**

*Grab Samples*

A petite Ponar grab sampler (Figure 29) was used to collect surface (0 – 10 cm) sediment samples at the two off cap reference areas and the benthic community census samples. Additionally, petite Ponar grab samples were collected on the cap footprint at each monitoring station during baseline 2 and baseline 3 events. The homogenized sample was subsampled into laboratory-provided sample containers for physical and chemical analysis as well as *ex situ* passive sampling as described below. Each sample was clearly labeled with sample ID, project name, point of contact and analysis to be performed. Samples were maintained at 4 degrees Celsius (˚C) prior to and during overnight shipment to the analytical laboratory, ERDC. *Ex situ* sediment samples were shipped to SPAWAR SSC Pacific laboratory for further processing (described below).

The petite Ponar grab samples an area of approximately 0.023 $m^2$ (0.152 m x 0.152 m) to a depth of 0.10 m. The petite Ponar grab is a relatively small and light set of jaws that are lowered opened and close when touching the surface of the bottom sediment. It is equipped with mesh screens and rubber flaps to cover the jaws allowing water to pass through the device during descent and reducing disturbance from bow waves at the sediment-water interface. The rubber flaps protect the sample from washout during ascent after sample recovery (USEPA 2007).


**Figure** 29**. Picture of a petite Ponar grab used for the benthic invertebrate surveys (courtesy of Wildco, www.wildco.com).**

Each sediment sample were inspected prior to subsequent processing to ensure the sample is acceptable, i.e., the sample was undisturbed by the bow waves of the dredge and did not washout during retrieval. Conditions indicative of sample acceptability are (USEPA 2007):

- The dredge is not overfilled such that sediment touches the top of the sampler.
- Overlying water is present (but is removed prior to processing and storage).
- Overlying water is clear, or not excessively turbid.
- The sediment-water interface is intact and relatively undisturbed, with no indication of channeling or washout.
- The desired depth of penetration has been achieved.
- There is no evidence of sample loss such as through incomplete closure of the dredge, sediment penetration at an angle, or tilting upon retrieval.

If these criteria were not achieved, the sample was rejected and another grab was collected. The location of consecutive attempts were as close to the original attempt as possible and located in the "upstream" direction of any existing current. Rejected samples were discarded in a manner that did not affect subsequent samples at that station or other sampling stations (USEPA 2007).

#### 5.6.5.2. Physical Analyses and Data Treatment

*Sediment Core Profiling (Visual Classification)*

Core logging for sediment texture was performed in general accordance with ASTM D2488 (ASTM International 2009). The sediment texture for the length of each core was noted in the field logs. The depth of the cap-native sediment interface was also noted for each core and was averaged for the five replicate cores to determine a single depth measurement at each station. Also, a determination of the extent of mixing was made based on qualitative visual observations of each core.

*Total Organic Carbon*

The total organic carbon content of sediment samples were analyzed by 9060A in baseline and 2- and 25-month events and Walkley Black in 14-month event (heated during digestion). Differences in TOC content between the methods are evident, with the most recent annual events having TOC contents lower than expected. Due to unforeseen changes in analytical methods for TOC between the 2-month and 14-month sampling events, as well as unexplained variability and patterns between events, temporal comparisons of TOC was not possible.

*Grain Size*

The grain size distribution of sediment samples were analyzed by ASTM Method D422. Results for all events were summarized into percent fines (< 0.075 mm), sand (0.075 – 4.75 mm) and gravel (> 4.75 mm). Vertical gradients were qualitatively investigated between the monitoring stations and sampling events to help inform the extent of top-down and bottom-up mixing occurring in the cap footprint.

*Moisture Content*

The moisture content of sediment samples were analyzed by ASTM Method D2216.

*Concentrations of DDX*

Sediment samples were analyzed for DDX congeners following EPA method 8081A. Concentrations of DDX were compared among the 7 sample depth layers within each sampling event to understand surface versus depth effects on chemical data.

*Data Treatment and Interpretation*

The analytical results for each of the events (Baseline 2, Baseline 3, 2-, 14-, and 25-Month) were compiled. Primary and duplicated sample concentrations were averaged, with this value being used in data evaluation. Total DDX was calculated for each sample as the sum of detected DDX congeners.

The composition of DDX congeners for bulk sediment samples measured in native sediment and the cap is dominated by 4,4'-DDE and 4,4'-DDD, which represent > 75% of the total DDX concentration (Figure 30 and Figure 31). Additionally, similar congener compositions are seen in both the in-cap and native sediment samples. Since the congener composition is similar in these comparisons, a congener specific evaluation (e.g., 4,4'-DDE or 4,4'-DDD) would provide similar conclusions as total DDX. Therefore, individual congener data has not been evaluated further.

Total DDX concentrations were reported on both a dry weight and organic carbon normalized basis. Organic carbon normalized concentrations were not calculated for samples that had low TOC (i.e., < 0.2%), as these low TOC values can artificially inflate chemical concentration values (Michelsen 1988). For these samples, concentrations were only evaluated on a dry weight basis. Due to unforeseen changes in analytical methods for TOC between the 2-month and 14-month sampling events, as well as unexplained variability and patterns between events, temporal comparisons of TOC normalized DDX concentrations was not possible. It appears that the baseline 2 and 2-month event have comparable TOC results based on concentrations in the native sediment, so comparisons between these events was possible.

Given the pause in sample collection between Baseline 2 (2009) and cap placement (2014), an additional set of grab sediment samples were collected in 2012 to evaluate the potential of DDX reductions prior to cap placement (i.e., establishment of a new baseline). These grab samples were compared to grab samples collected during the baseline 3 and indicated no substantial differences in total DDX concentrations between these events. Therefore, the use of baseline 2 core samples for temporal comparisons was representative of site conditions.

Percent reductions from baseline for on cap sediments in each post-placement event for each surface sediment interval (0-2, 2-5 and 5-7 cm) at stations 2, 3 and 5 were calculated. Percent reductions from baseline for off cap sediment samples (0-10 cm) from station 6 in each post-placement event were also calculated. In addition to comparing surface sediment reductions compared to baseline, reductions of total DDX concentrations in cap material was compared to underlying native sediment for each on cap station from post-placement events.

Trends in total DDX were evaluated statistically utilizing pre- and post-TLC placement at stations 2, 3, and 5. These are the only stations with co-located baseline and post placement samples collected. Total DDX results from the three in cap depth intervals (0-2, 2-5 and 5-7 cm) and the four events (Baseline 2, 2-, 14-, and 25-Month) were compared with a Randomized Block One-Way Analysis of Variance (ANOVA). The ANOVA was blocked by station ID (2, 3 and 5) to control for differences in sediment concentrations between these locations. A significant blocking factor indicates that the total DDX concentrations are different between stations, when ignoring event. If the blocking factor was not significant, then it would be acceptable to include post-TLC stations 1 and 4 into the model and re-analyze all data, since total DDX did not vary by station. If the blocking factor was significant, the interaction between Station and Event was investigated using a 2-way ANOVA to check for potential confounding factors in the data. An interaction would be present if, for example, the total DDX trends between stations changed between events. Unless major interactions occurred, it was safe to assume the results of the initial one-way ANOVA were valid. Normality of model residuals was evaluated using Shapiro-Wilk and a normal probability plot, and equality of variances was checked by plotting model residuals against fitted values. If these assumptions were not satisfied, the dependent variable (total DDX) was log transformed and the analysis was re-run.

Initial data evaluation indicated that the residuals were not normally distributed and the variances were not homogenous in the Randomized-Block ANOVA model comparing pre- and post- total DDX concentrations at stations 2, 3 and 5. Total DDX was log transformed and the assumptions were met. Results of the Randomized-Block ANOVA on the log transformed data indicated that there was a significant difference in total DDX concentrations between the stations ($p < 0.0001$), therefore the interactions between station and event were checked. This analysis showed that there was a significant interaction ($p < 0.05$), but this interaction was being driven by one elevated data point, Total DDX at station 5 during the 2-Month event, and therefore could be ignored. A post-hoc pairwise comparison (Tukey's HSD) was implemented on the randomized-block ANOVA results to determine differences between events and stations.

To investigate potential mixing of cap material and native sediment, concentrations of total DDX in the sediment interval above (0-2 AI) and below (0-2 BI) the cap-native sediment interface were evaluated. Initial comparisons were completed looking at differences between above and below cap-native sediment interface samples for the five on-cap stations on an event by event basis utilizing paired-t tests. Additionally, a 2-way ANOVA was completed, comparing: 1) interface (0-2 Above Interface and 0-2 Below Interface) and 2) Event (2-, 14 and 25-Month). Concentrations of total DDX were log transformed due to violations of ANOVA assumptions with the raw data. The differences between total DDX concentrations above and below the interface were constant across the three events (i.e., no significant interaction between event and interface). There were significant differences between events and intervals ($p < 0.05$), so a Tukey's HSD was implemented.

The potential that the cap material was recontaminated to pre-TLC placement concentrations due to top-down contaminant mixing was evaluated. Concentrations of total DDX in the cap sediment (0-2, 2-5 and 5-7 cm below SWI) were compared to native sediment (0-2 BI, 2-5 BI and 5-7 BI) utilizing Randomized Block ANOVAs for each post-placement event. The ANOVA was blocked by station ID (1, 2, 3, 4 and 5) to control for differences in sediment concentrations between these locations. A significant blocking factor indicates that the total DDX concentrations are different between stations, when ignoring position relative to cap-native sediment interface. Concentrations of total DDX were log transformed due to violations of ANOVA assumptions with the raw data. This analysis showed that there were a significant ($p < 0.05$) differences in each event between DDX concentrations in cap material compared to native sediment. A post-hoc pairwise comparison (Tukey's HSD) was implemented to determine differences between the two layers.

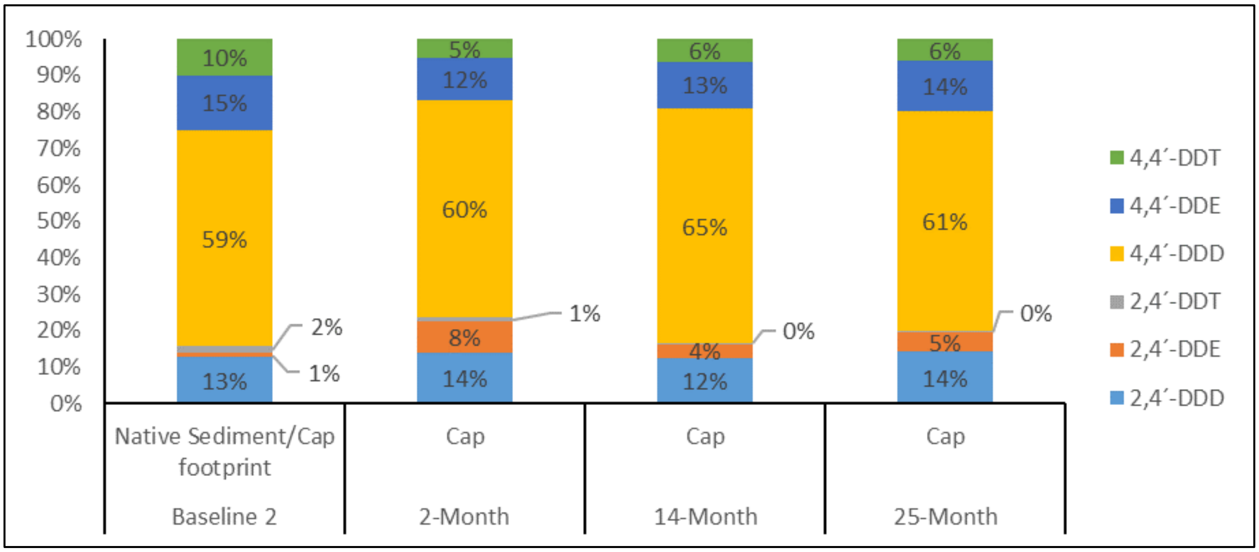



**Figure 30. Mean congener composition in surface sediment (0-7 cm below SWI and 0-2 AI) during baseline and post-cap placement events. Note: Baseline is the average of all depths and locations sampled in the cap footprint in 2009. Post-remedy compositions contain locations in the cap footprint (QT1 – 5) and depth intervals within the cap material (0-2, 2-5, 5-7 and 0-2AI).**

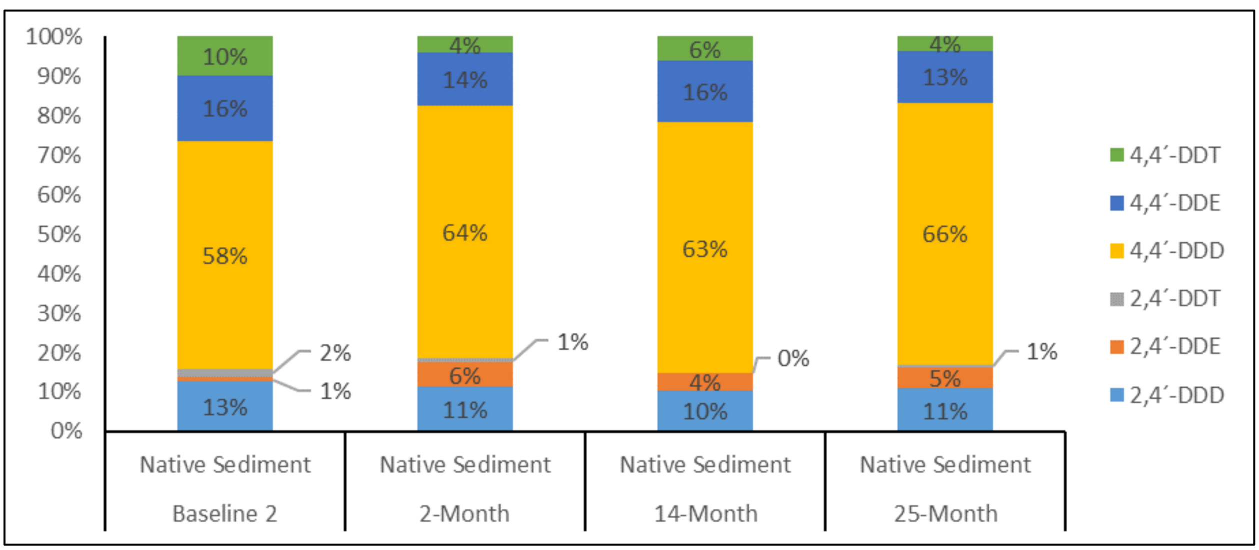



**Figure 31. Mean congener composition in native sediment (0-7 cm below cap-native sediment interface) during baseline and post-cap placement events. Note: Baseline is the average of all depths and locations sampled in 2009. Post-remedy compositions contain all site locations (QT1 – 7) and depth intervals below the cap-native sediment interface (0-2 BI, 2-5 BI, 5-7 BI, 0-10cm).**

### 5.6.6. *In Situ* Bioaccumulation

#### 5.6.6.1. Sample Collection and Analysis

Evaluation of the reduction of DDX uptake utilized *in situ* bioaccumulation experiments (Rosen et al 2012, Greenberg et al., 2002). Two species of laboratory-reared organisms, *Lumbriculus variegatus* (oligochaete worms) and *Corbicula fluminea* (freshwater clams), were deployed by US EPA ERT divers using Sediment Ecotoxicity Ring (SEA Ring) for 14 days at multi-metric stations on and off cap in pre-(baseline 2 and baseline 3) and post-placement events (2-, 14-, and 25-month post-placement). The SEA Ring is a patented (U.S. Patent No. 8,011,239, Figure 32), autonomous multi-chamber sampler used primarily for toxicity and bioaccumulation testing (Burton et al., 2013) and has successfully completed USEPA's Environmental Technology Verification (ETV) Program (McKernan et al., 2014). The approach followed methods outlined in the McKernan et al., 2014.

For the SEA Ring deployment, field crew loaded SEA Rings into 17 gallon plastic containers with site seawater, and transferred to dive boat. SEA Rings were loaded one at a time to minimize stress on organisms and adversely impact passive samplers. Containers were lowered from the boat one at a time to divers in water over marked station locations. Divers submerged containers at surface and performed a manual purge of air from pump lines (as directed by field crew). Divers descended to sea floor with SEA Ring in container, identified appropriate deployment locations, and pushed the SEA Ring firmly into sediment so that the lower 5 inches of the exposure chambers were exposed to sediment. This was roughly in line with the white plastic SEA Ring base plate. Divers observed approximate depth of sediment cores (in relation to base plate) and successful trigger of core catcher rings, if possible. The deeper the platform was submerged into surficial sediment the better, for maximum core depth. Divers depressed plastic syringes that released pre-loaded organisms (worms) into designated chambers. Divers made general observations that the SEA Ring was secure and that organisms were in contact with the sediment. They also confirmed the pump was operational based on two blinking lights on the control module. Divers observed slight opening of duck bill valves indicating water was pumping through chambers. Divers secured a small surface buoy to the SEA Ring for easy identification. If deemed necessary, divers secured two sand/screw anchors on opposite sides of the SEA Ring to ensure it did not come out of the sediment. Divers returned to the boat and continued deployment procedure until all SEA Rings were secured at the appropriate stations.

Following a 14 day exposure, organisms were recovered, enumerated, depurated in clean seawater, weighed, and transferred to vials for shipment and chemical analysis. On day 14, divers returned to the site with empty plastic containers and plastic core tube end caps provided by SPAWAR field crew. Divers descended to location with 17 gallon containers and placed them on the sea floor next to the SEA Ring to be recovered. Divers noted condition of SEA Ring, sediment core integrity, and potential organism mortalities. Divers clamped the two white plastic hose clamps down firmly. With end caps ready for secondary capping of core catcher covered chambers, divers carefully pulled SEA Ring directly upward out of sediment, and applied caps to prevent potential loss of sediment from chambers. Documentation of any substantial amount of sediment loss from individual chambers during the removal process were made, if possible. Once caps were secured, divers transferred SEA Ring into plastic container, and brought to the surface. SPAWAR field crew processed samples either on the boat or pierside using 1 mm sieves, a 110V submersible pump, and various other equipment prior to an overnight purge in clean seawater. Following overnight purging, organisms were weighed, composited as necessary, and frozen for analysis for DDX congeners following EPA 8081B and lipids.

**Figure 32. Second Generation SEA Ring Device utilized for assessment of *in situ* bioaccumulation.**

During baseline 2, an earlier version of the SEA Ring was deployed. This version of the SEA Ring did not have built in pumps to circulate water and therefore represented more of a static exposure scenario. *Lumbriculus variegatus*, a burrowing oligochaete, was the only organism deployed in this event, therefore the static nature of the overlying water was likely not a driving factor in DDX uptake. The remainder of the events included an updated SEA Ring with water circulation as well as inclusion of both *L variegatus* and *C. fluminea*. *Corbicula fluminea* were obtained from an uncontaminated location in the Strawberry River (Ozark foothills) by Dr. Jennifer Bouldin (Arkansas State Unverity) for all events except for Baseline 3, where clams were obtained from an uncontaminated source on the Upper Potomac River by Dr. Harriette Phelps University of the District of Columbia). *Lumbriculus variegatus* were obtained from California Blackworm Company for all events (Fresno, CA; http://www.aquaticfoods.com/LiveBlackwormsM.html).

After 14 day field deployments, organisms from each of the replicate SEA Ring chambers were collected and composited into a single sample per station. Initial studies from the 2012 baseline 3 event indicated that analyzing SEA Ring chambers separately and as a composite resulted in similar tissue concentrations (Rosen et al. 2017), therefore composite samples were used for all data analyses with the exception of baseline 3, station 1. Select replicate data from this SEA Ring were averaged and treated as a composite sample. Replicate SEA Ring data from the 2012 baseline 3 event is reported in Appendix E as well as in the Appendices in Rosen et al. (2017).

Tissues in non-field deployed organisms (time 0 samples) were analyzed from each initial batch and are representative of tissue samples before exposure to sediment. This procedure was not done for the 2009 baseline event.

#### 5.6.6.2. Data Treatment and Statistical Methods

Statistical analysis focused on concentrations of total DDX. The composition of DDX congeners for Lumbriculus and Corbicula tissue was dominated by 4,4'-DDE and 4,4'-DDD, which typically represents > 82% of the total DDX concentration (with the exception of 25-month on cap Corbicula tissue, which is at 67%) as shown in Figure 33 and Figure 36. Additionally, similar congener compositions were observed in both the on-cap and off-cap samples through time. Since the congener composition was similar in these comparisons, a congener specific evaluation (e.g., 4,4'-DDE or 4,4'-DDD) would provide similar conclusions as total DDX. Therefore, individual congener data has not been evaluated further.

Baseline 3 results are the sum of 4,4' substituted DDX congeners, as the 2,4' congeners were not analyzed. On average, 4,4' congeners represent 91% ( 82 – 100%) of total DDX tissue concentrations in the other events, therefore baseline 3 is comparable to these other events without correcting for the differences.

Overall, concentrations in time 0 samples were low for the 2-, 14- and 25-Month events (<4 µg/kg ww), resulting in variability of congener compositions (Figure 37 and Figure 38). The time 0 organisms (*L variegatus* and *C. fluminea*) from baseline 3 (2012) contained appreciable concentrations of total DDX (results summarized in Appendix E) and the composition was similar to that of the field deployed organisms (Figure 37 and Figure 38). Initial concentrations in the three replicates for *L. variegatus* were 13, 20 and 51 µg/kg ww. Initial concentrations in the three replicates for *C. fluminea* were 2, 14 and 31 µg/kg ww. It is apparent when comparing the time 0 *L. variegatus* and *C. fluminea* to the off cap station in 2012 that depuration exceeded uptake during the exposure period. Therefore, it is likely that a majority of the total DDX concentrations observed in exposed organisms is due to exposure to the site and not from contamination of time 0 organisms. It should also be noted that DDX tissue concentrations at the on cap stations (prior to the remedy) were an order of magnitude higher than those at off cap stations, indicating that time 0 concentrations were relatively inconsequential to the baseline 2012 assessment.

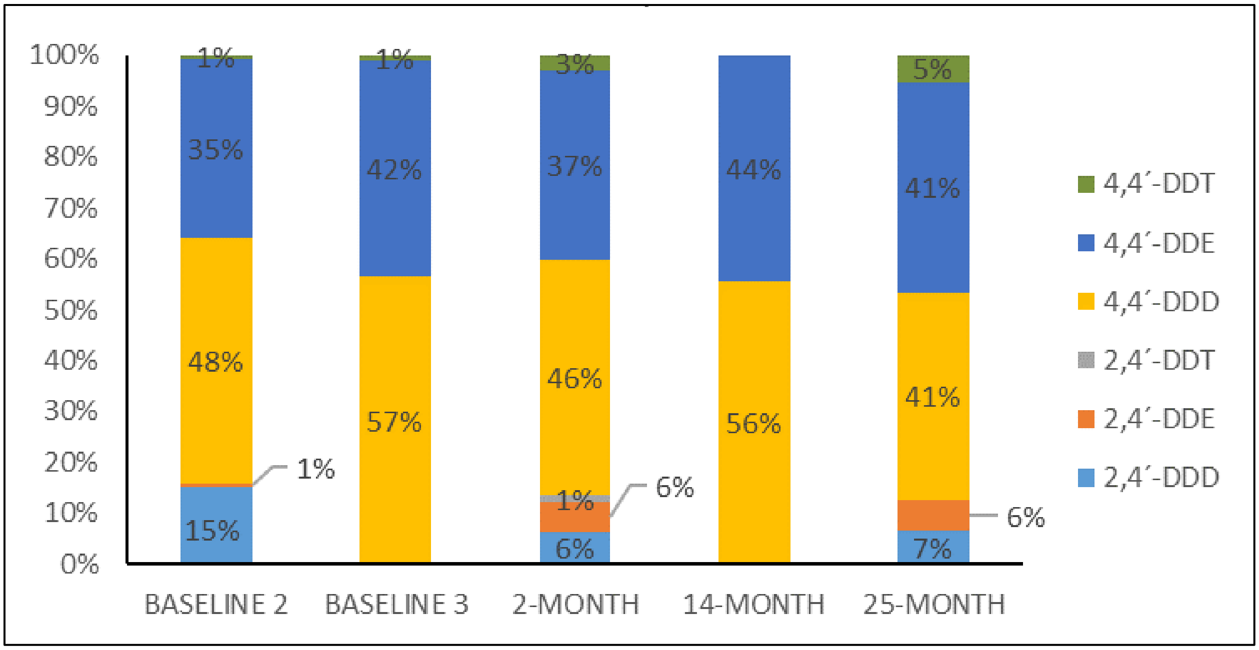



**Figure 33. Average Congener Composition in *Lumbriculus* Tissue from On Cap Stations. Note: Baseline 3 was only analyzed for 4,4' substituted congeners.**

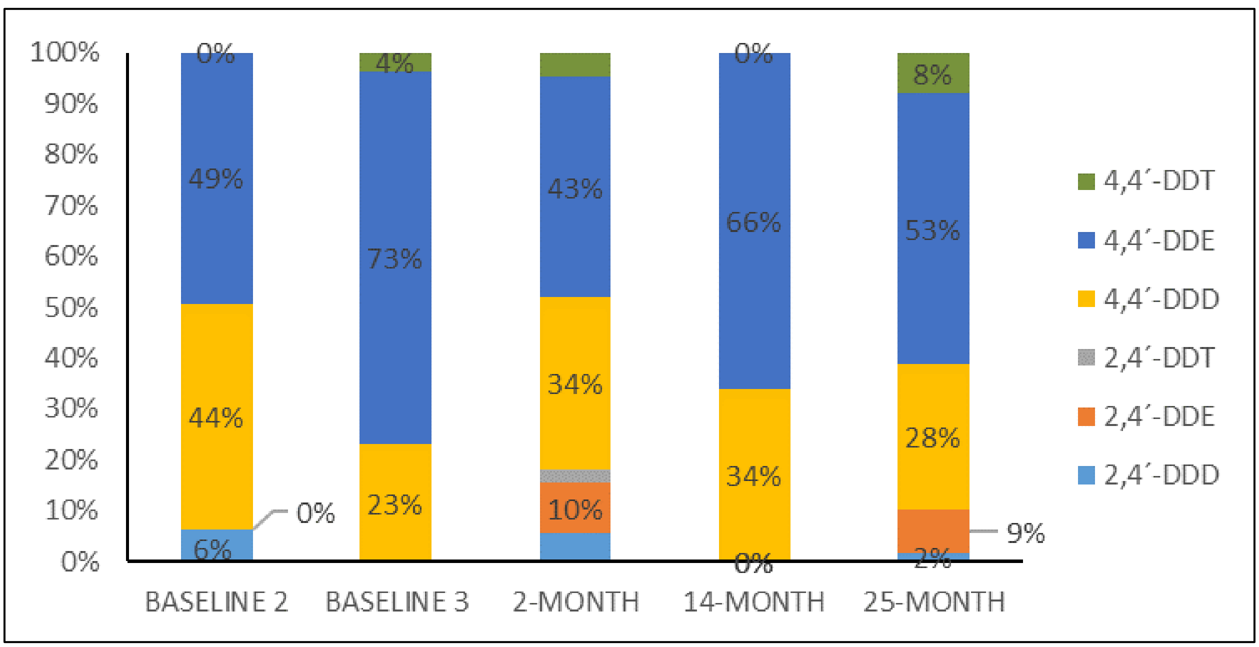



**Figure 34. Average Congener Composition in *Lumbriculus* Tissue from Off Cap Stations. Note: Baseline 3 was only analyzed for 4,4' substituted congeners.**

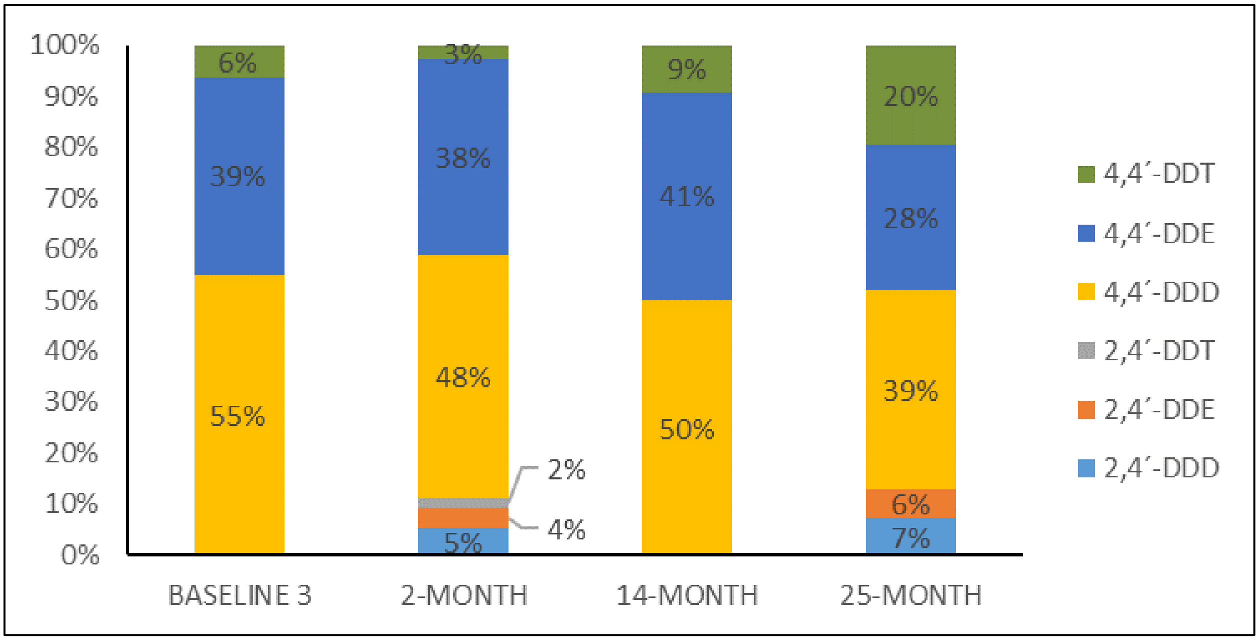



**Figure 35. Average congener composition in *Corbicula* Tissue from on-cap stations. Note: Baseline 3 was only analyzed for 4,4' substituted congeners.**

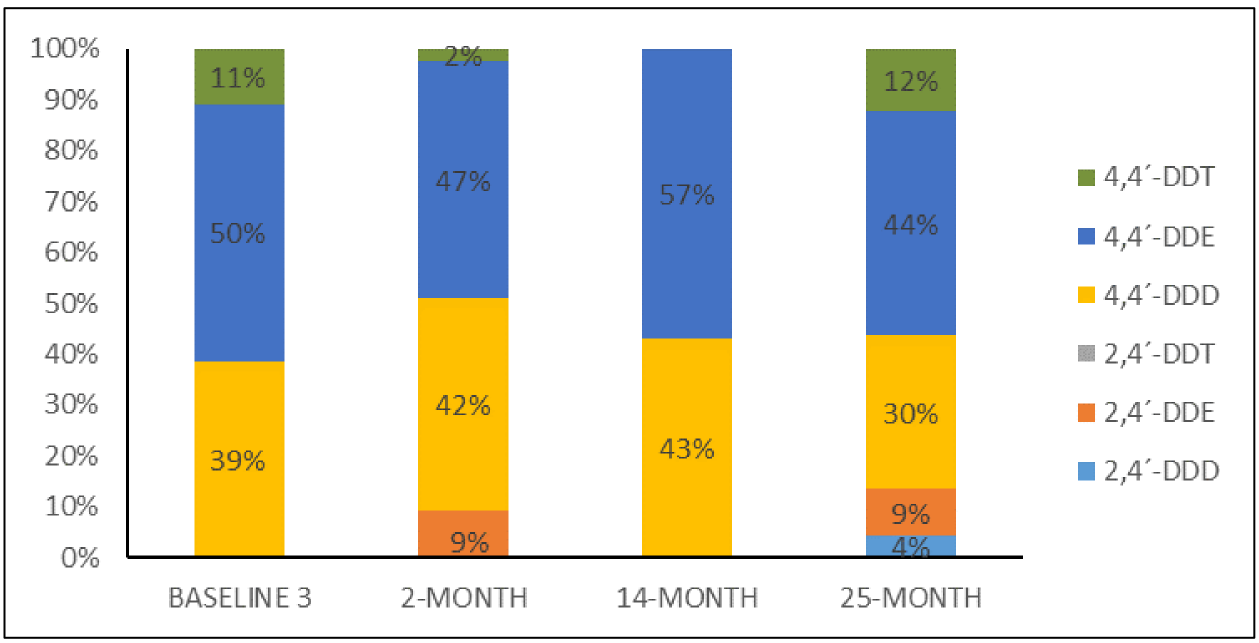



**Figure 36. Average congener composition in *Corbicula* Tissue from off-cap stations. Note: Baseline 3 was only analyzed for 4,4' substituted congeners.**

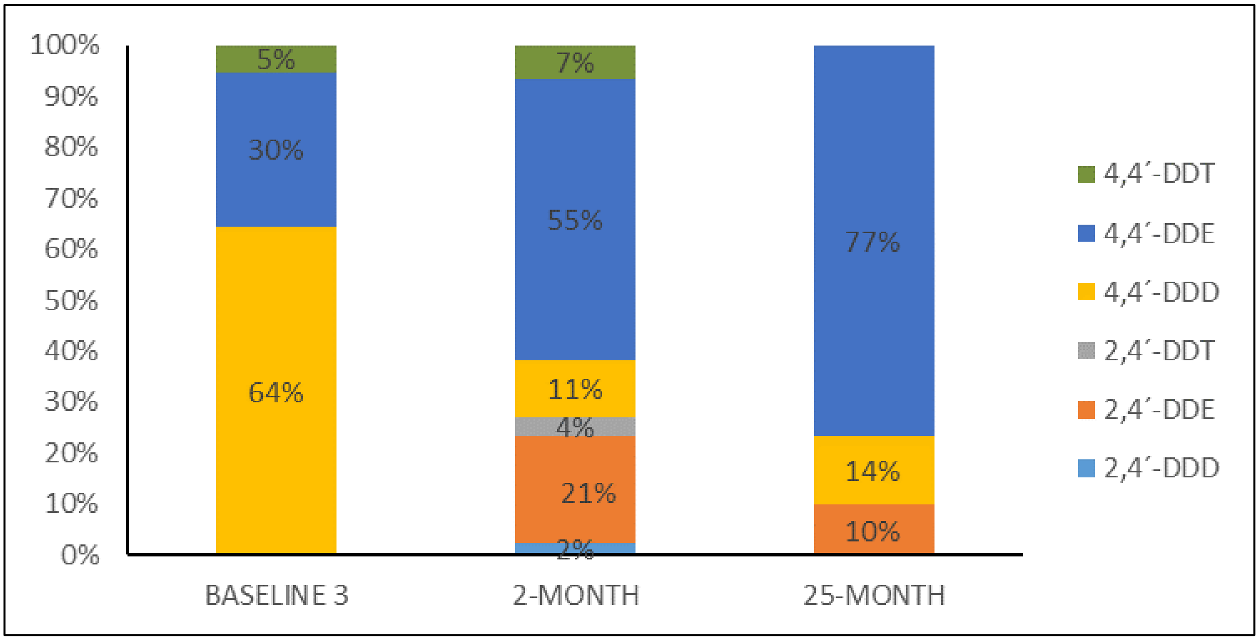



**Figure 37. Average congener composition in Time-0 *Lumbriculus* tissue. Note: Baseline 3 was only analyzed for 4,4' substituted congeners.**

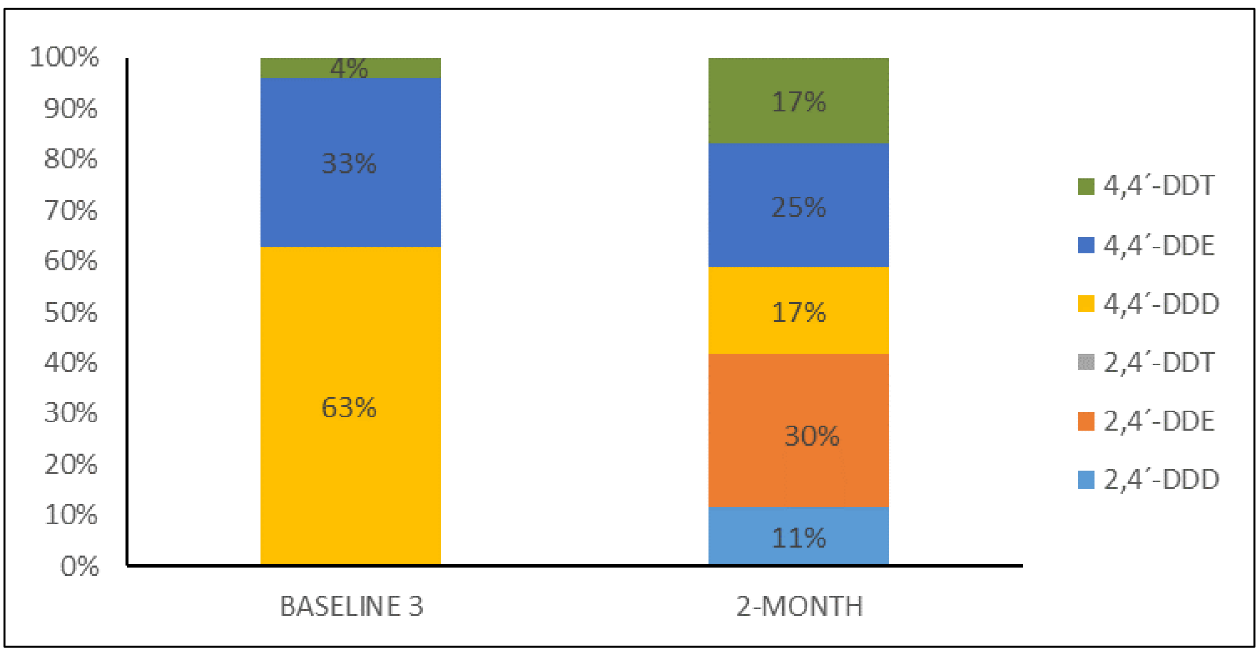



**Figure 38. Average congener composition in Time-0 *Corbicula* tissue. Note: Baseline 3 was only analyzed for 4,4' substituted congeners.**

Statistical analyses were completed on lipid normalized total DDX concentrations, as lipid content is a major factor in determining hydrophobic organic contaminant concentrations. Assumptions of parametric statistical tests were tested, including: normality of model residuals evaluated using Shapiro-Wilk and a normal probability plot, and equality of variances checked by plotting model residuals against fitted values. If these assumptions were not satisfied, the dependent variable (total DDX) was log transformed and the analyses were re-run.

Given that only two monitoring station from the cap footprint (Stations 1 and 4) had data for a baseline event and all 3 post-cap monitoring events for *L.variegatus*, it was not possible to include station as a blocking variable to control for total DDX spatial heterogeneity for this species. The baseline 3, 2- and 14-Month events had a balanced design for stations 1, 2, 4 and 5, and a blocked one-way ANOVA was run on the data to determine if there were differences among stations. This model did not satisfy the equal variances assumptions so log transformed DDX concentrations were used. This preliminary analysis indicated that there were not significant differences between stations 1, 2, 4 and 5 ($p > 0.05$), indicating that a one-way ANOVA would not be higher skewed by spatial concentration gradients. A one-way ANOVA comparing means across all available data for on-cap stations across the events was completed. This analysis included both baselines (baseline 2 and baseline 3) as separate events. Log transformed DDX concentrations were used due to unequal variances in model. Results from the one-way ANOVA on *L. variegatus* tissue concentrations indicated that there was a significant difference between the five sampling events ($p < 0.01$). A post-hoc pairwise comparison (Tukey's HSD) was run on the ANOVA results.

The *C. fluminea* dataset was more robust, therefor it was possible to control for this spatial DDX variability. Total tissue DDX concentrations on a lipid basis at stations 1, 2, 3, 4 and 5 from the four events (Baseline 3, 2-, 14-, and 25-Month) were compared with a Randomized Block One-Way Analysis of Variance (ANOVA). The ANOVA was blocked by station ID (1, 2, 3, 4 and 5) to control for differences in tissue concentrations between these locations. If the blocking factor was not significant, it was safe to assume that tissue concentrations did not vary by location and a one-way ANOVA could be utilized. Results from the randomized block one-way ANOVA on *C. fluminea* tissue concentrations indicated that there were not differences in tissue concentrations between the stations based on the blocking variable. Therefore, a one way ANOVA was completed utilizing all available on cap data. The one-way ANOVA indicated slight significant differences between the four sampling events ($p = 0.02$). A post-hoc pairwise comparison (Tukey's HSD) was run on the ANOVA results.

### 5.6.7. Native Pelagic Invertebrate Tissue

#### 5.6.7.1. Sample Collection

Activity traps intended to be used for the collection of pelagic invertebrate did not function. In baseline 2, pelagic invertebrate were collected by hand for sufficient tissue mass for DDX analysis. This was found to be a labor intensive process which was not possible to execute in the planned duration of the field sampling for the post-placement monitoring events. Therefore, collection was not conducted in the post-placement monitoring events.

### 5.6.8. Porewater (*ex situ* passive sampling)

DDX in sediment pore water was assessed through application of *ex situ* Solid Phase Micro-Extraction (SPME). Diffusion of DDX in sediment pore water was used to estimate bioavailability of DDX within the cap layer and native sediment. Data were used in investigating changes in bioavailability as a result of TLC and sediment mixing. Procedures followed methods outlined in You et al., (2007) and Yang et al., (2008), as described in Appendix D.

Briefly, *ex situ* sediments were adjusted to 60% water content using distilled water (typically 10 – 20 mL), followed by the addition of 600 µL of a mercuric chloride solution, which served as a microbial growth inhibitor. Each sample jar received one SPME sampler, which consisted of 10 3-cm pieces (30 cm total) of SPME fiber (10-µm thickness polydimethylsiloxane (PDMS) coating, 210-µm silica core diameter, (Fiber-guide Industries, Stirling, New Jersey). The fibers were contained within a 110-µm stainless steel mesh envelope, and cleaned with a 50:50 solution of acetonitrile:water and water rinse. The sample jars containing SPME samplers were constantly rotated for two weeks on a sediment roller at approximately 30 rpms. Following two week equilibration, the samplers were retrieved from the sediment slurry, the fibers were cleaned with damp laboratory wipes, placed in pre-weighed 2 mL vials, re-weighed and 1.8 mL of hexane was added to each vial. The vials were then shipped to ERDC where they were then stored at 4°C, spiked with an internal recovery standards, evaporated to a volume of approximately 100 or 200 µL with pure nitrogen, and analyzed following EPA 8081A.

The estimation of a concentration of DDXs in sediment porewater requires the concentration of DDXs in the fiber coating be at equilibrium. Experiments by You et al., (2007) have confirmed that the agitation method we have used is sufficient to reach approximate equilibrium (approximately 90% of steady state or more) for DDXs in the fiber coating. Steady state concentrations of DDXs in the fiber coating were assumed.

#### 5.6.8.1. Data Treatment and Interpretation

The composition of DDX congeners for porewater measured by *ex situ* passive samplers in native sediment and the cap is dominated by 4,4’-DDE and 4,4’-DDD, which represent > 75% of the total DDX concentration (Figure 39 and Figure 40). Additionally, similar congener compositions are seen in both the in-cap and native sediment samples. Since the congener composition is the similar in these comparisons, a congener specific evaluation (e.g., 4,4’-DDE or 4,4’-DDD) would provide similar conclusions as total DDX. Therefore, individual congener data has not been evaluated further.

Percent reductions from baseline for on cap porewater samples for each surface interval (0-2, 2-5 and 5-7 cm) at stations 2, 3 and 5 were calculated. Percent reductions from baseline for off cap sediment samples (0-10 cm) from station 6 was also calculated. In addition to comparing surface porewater reductions compared to baseline, reductions of total DDX concentrations in cap material was compared to underlying native porewater for each on cap.

Trends in total DDX were evaluated statistically utilizing pre- and post-TLC, at stations 2, 3, and 5. Total Porewater DDX results from the three depth intervals (0-2, 2-5 and 5-7 cm below

SWI) and the four events (Baseline 2, 2-, 14-, and 25-Month) were compared with a Randomized Block One-Way Analysis of Variance (ANOVA). The ANOVA was blocked by station ID (2, 3 and 5) to control for differences in sediment concentrations between these locations. Normality of model residuals was evaluated using Shapiro-Wilk and a normal probability plot, and equality of variances was checked by plotting model residuals against fitted values. If these assumptions were not satisfied, the dependent variable (total DDX) was log transformed and the analyses were re-run. If the blocking factor was significant, the interaction between Station and Event was investigated using a 2-way ANOVA to check for any potential confounding factors in the data. A significant blocking factor indicates that the total DDX concentrations are different between stations, when ignoring event. An interaction would be present if, for example, the total DDX trends between stations changed between events. Unless major interactions occurred, it was safe to assume the results of the initial one-way ANOVA are valid. If the blocking factor was not significant, then it would be acceptable to include post-TLC stations 1 and 4 into the model and re-analyze all data, since total DDX did not vary by station.

Initial data evaluation from the randomized-block ANOVA indicated that the residuals were not normally distributed, therefor log transformed DDX concentrations were used. Results of the ANOVA indicated that the blocking factor (Station) was significant, indicating a significant difference between the stations ($p < 0.001$). Due to this, stations 1 and 4 data could not be included in the model because of spatial heterogeneity in porewater DDX. The interaction between station and event was checked and showed that there was not a significant interaction ($p > 0.05$) indicating results of the randomized-block ANOVA were valid. The randomized-block ANOVA indicated there was a significant difference between events and stations ($p < 0.001$), therefore a post-hoc pairwise comparison (Tukey's HSD) of the ANOVA results was implemented to determine differences between events and stations.

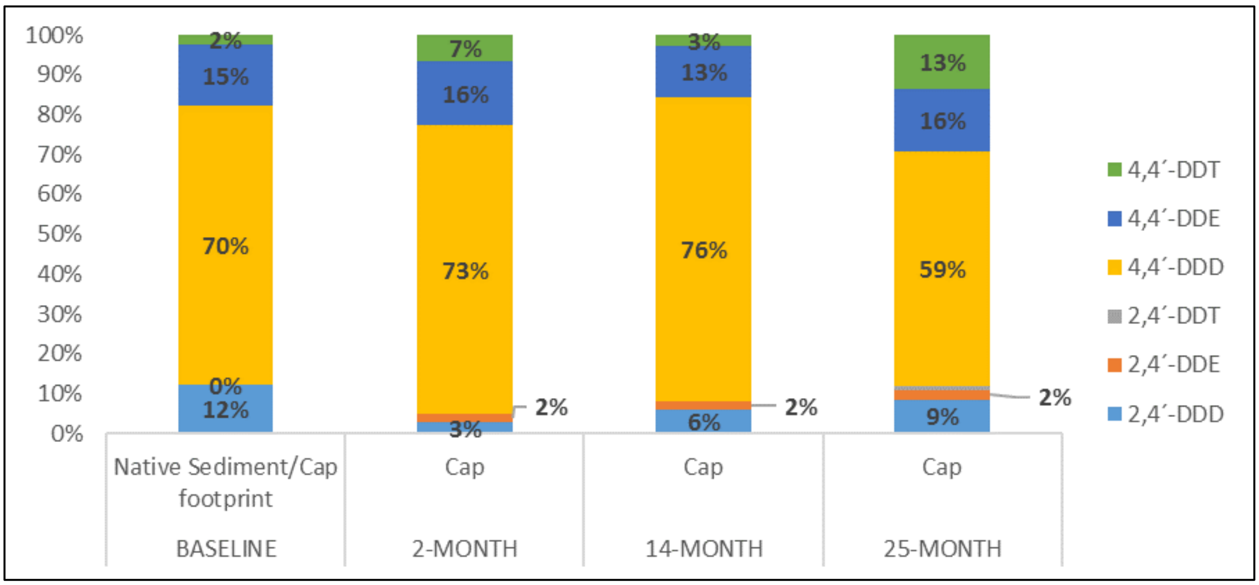



**Figure 39. Average Porewater (*Ex Situ*) Congener Composition in Cap Sediment. Note: Baseline is the average of all depths and locations sampled in 2009. Post-remedy**

**compositions contain locations in the cap footprint (QT1 – 5) and depth intervals within the cap material (0-2, 2-5, 5-7 and 0-2AI).**

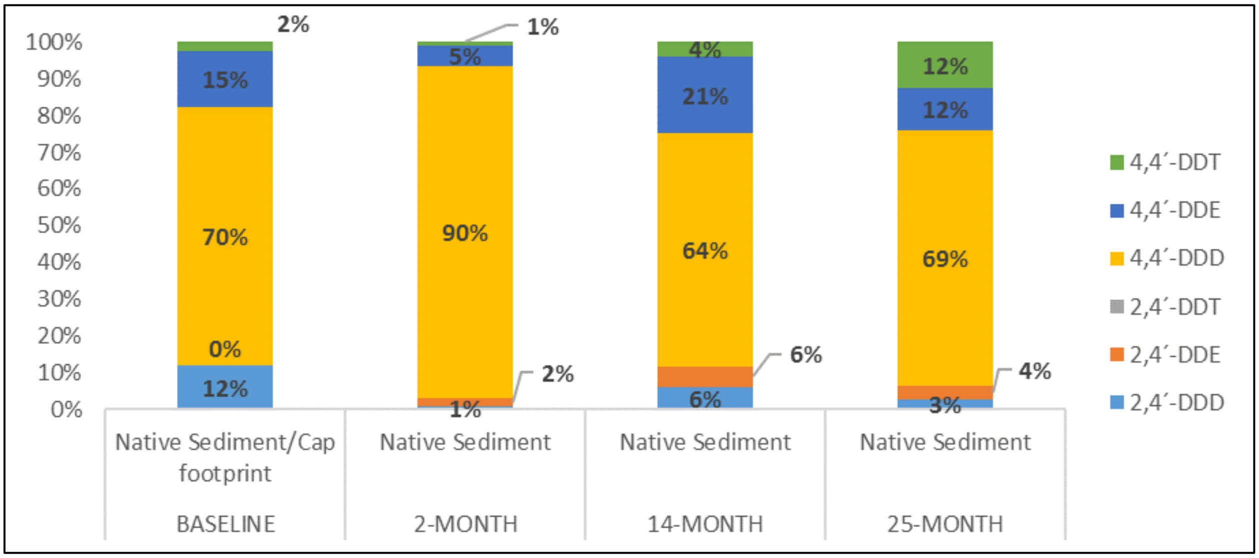



**Figure 40. Average Porewater (*Ex Situ*) Congener Composition in Native Sediment. Note: Baseline is the average of all depths and locations sampled in 2009. Post-remedy compositions contain all site locations (QT1 – 7) and depth intervals below the cap-native sediment interface (0-2 BI, 2-5 BI, 5-7 BI, 0-10cm).**

### 5.6.9. Sediment Profile Imagery

Sediment profile imaging is a benthic sampling technique in which a specialized camera is used to obtain vertical cross-section photographs of the upper 15 cm to 20 cm of the sediment column. This is a reconnaissance survey technique used for rapid collection, interpretation and mapping of data on physical and biological sediment characteristics. Measurements obtained from SPI are using to characterize surface sediment types and layering, evaluate benthic habitat quality, and follow ecosystem recovery after emplacement of a cap remedy or abatement of natural or manmade disturbances.

SPI images were acquired with a sediment profile camera consisting of a wedge-shaped prism with a Plexiglas face plate and an internal strobe for lighting. The back of the prism contains a mirror mounted at an angle to reflect the profile of the sediment-water interface toward the camera. The camera was mounted horizontally on the top of the prism. The prism was filled with distilled water, through which the photographs were obtained. If the water was sufficiently deep that deployment occurred from the deck of a sampling platform such as a Jon boat or pontoon boat, the camera prism was mounted on an assembly that was moved vertically by creating tension (or slack) on a deployment wire. Under this scenario, the rate of prism penetration into the sediment was controlled by an adjustable hydraulic piston. If the SPI camera was deployed in sufficiently shallow water that remote deployment was not required, the prism assembly was advanced into the sediment by hand. The extent of prism penetration into the sediment was influenced by site factors including sediment grain size and physical obstructions to penetration. SPI camera data was processed and reported by Germano & Associates for the baseline 2 event and RJ Diaz and Daughters for the 2-, 14-, and 25-month events (note that the 25-month report was not available at the time of publication for this report).

SPI was used to visualize processes at the cap-water interface. SPI stations for the Quantico surveys are shown in Figure 41 – Figure 43. Positions are listed in Appendix E. A total of 51, 32, and 21 stations were surveyed during the baseline, 2-month and 14-month events respectively. The visualization of the sediment-cap interface was limited by the depth of penetration of the SPI camera, which did not reach the native sediment at all stations, reducing the utility of this tool in monitoring of cap thickness. SPI surveys were conducted both pre- and post-placement. Sediment Profile Imagery survey will provide additional information on sediment characteristics including mixing information and variations in sediment grain size. Also, information from SPI images were interpreted to provide a qualitative examination of the benthic community successional stage. Successional stages were evaluated prior to TLC placement and ranged from stage 1 to stage 3 (Rhoads and Germano 1986).

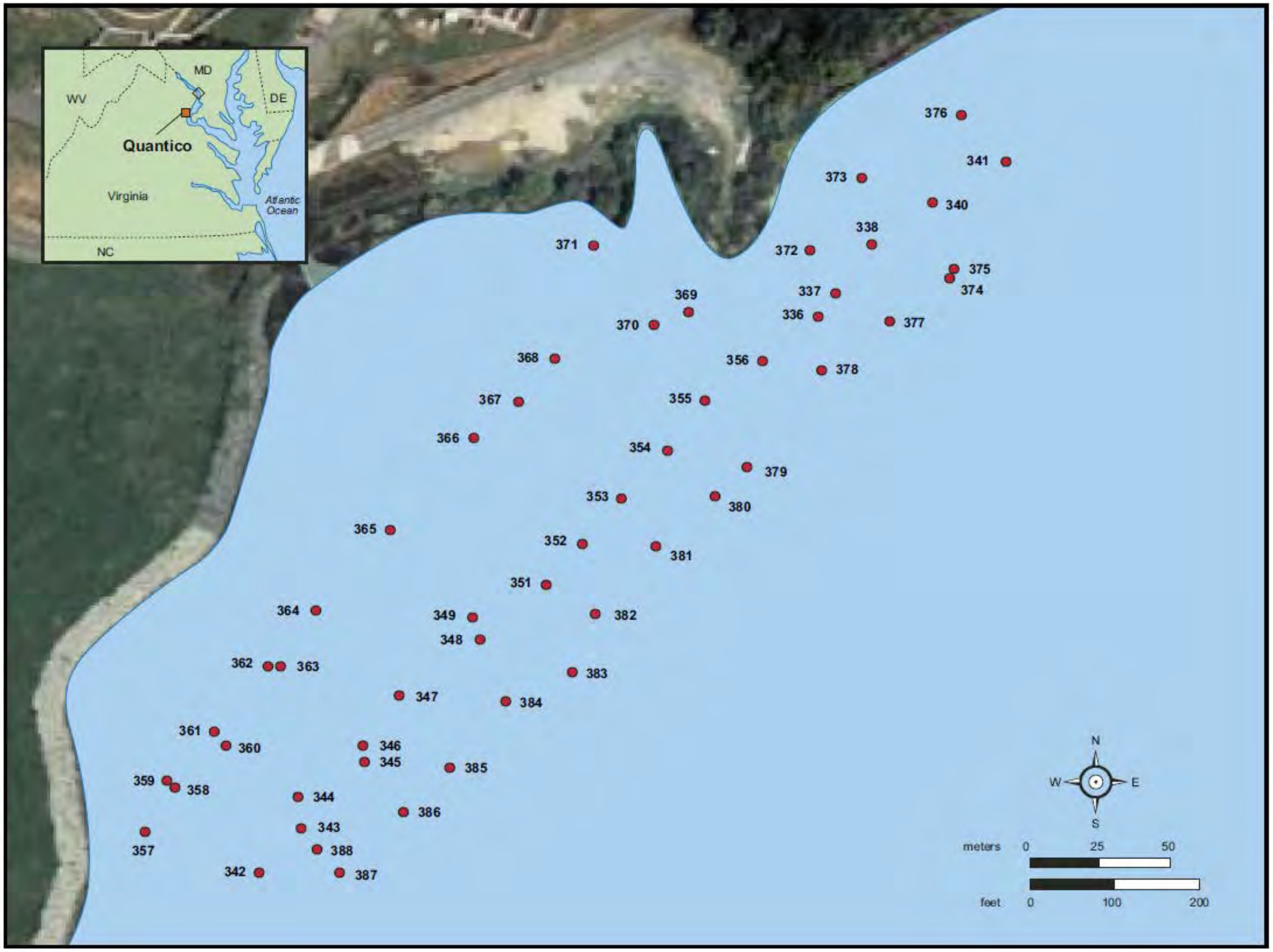



**Figure 41. SPI stations for the 2009 baseline survey.**

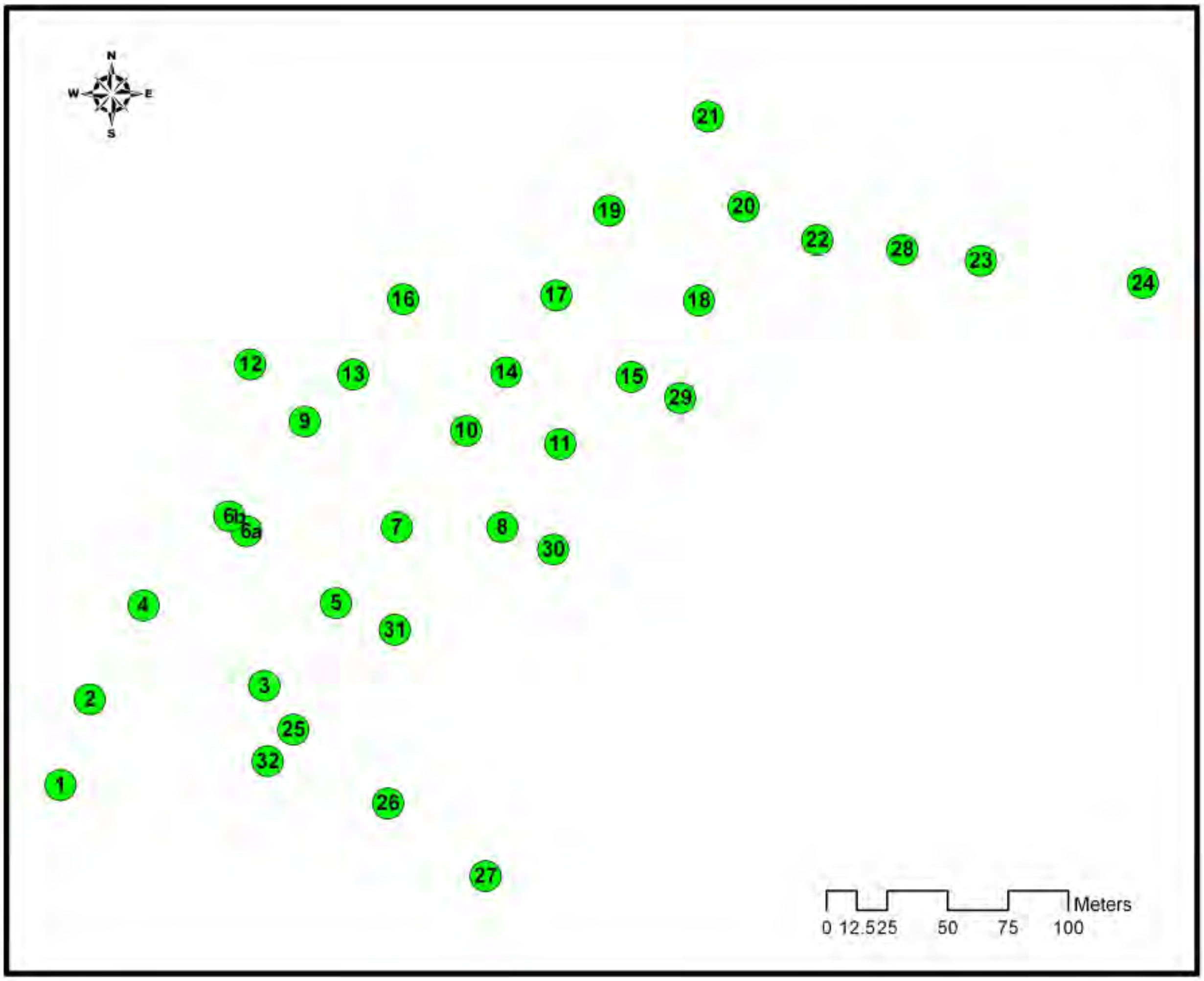



**Figure 42. SPI stations for the 2014 2-month post construction survey.**

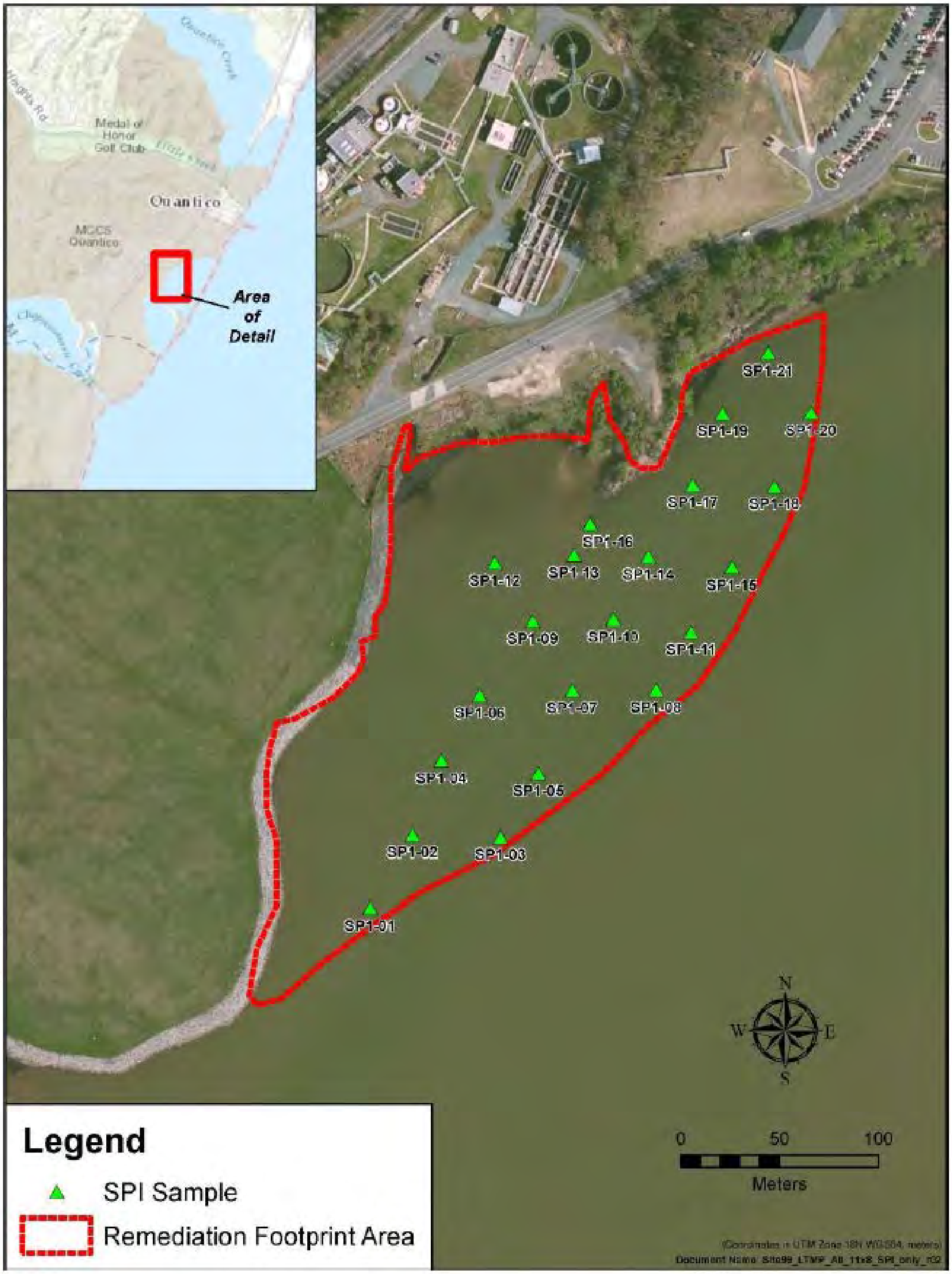



**Figure 43. SPI stations for the 2015 14-month post-construction survey.**

### 5.6.10. Benthic Community Census

#### 5.6.10.1. Collection, Processing, and Analysis Methods

During each sampling event, triplicate grab samples at each of the stations was collected using a petite Ponar grab sampler. Petite Ponar sample collection is discussed above in Section 5.6.5. Following collection, the content of each grab sample was sieved through a 500 micrometer (µm) mesh opening sieve (USEPA 2007). Samples were rinsed with Quantico Embayment water and invertebrates and other materials (e.g., sediment and debris) retained on the sieves were collected and immediately preserved by formalin (in Baseline 1 and 3, isopropyl alcohol was used). Samples were immediately shipped to Ecoanalysts (formerly Ramboll Environ) for taxonomic evaluation (Baseline 1 and 3 events were sent to Normandeau Associates).

#### 5.6.10.2. Calculation of Metrics and Statistical Evaluation

Invertebrates were identified to the lowest possible taxonomic level and enumerated. Benthic community census data were provided as counts per sample (by taxa) by EcoAnalysts (or Normandeau Associates). Prior to data analysis and interpretation, the taxa names were synonymized by rolling up taxa names to higher levels between datasets to account for differences in ID level between multiple years of data. Synonymizing taxa IDs between multiyear datasets is a critical first step to allow for direct comparison between the events without artefacts of differences in ID level. Additionally, separate life stages (pupae, larvae, etc.) of an individual taxa were combined into a single taxa to avoid double counting. The result of this exercise was comparable datasets between the 5 events with benthic community census data. Variability between multiyear datasets is inevitable given changes in taxonomists as well as updates the taxonomic ID guides.

Four biological indices commonly used to assess benthic community health were used to evaluate the data. This includes:

- Total abundance
- Taxa richness
- Species diversity, as measured by Shannon-Wiener Diversity Index (H')
- Species evenness, as measured by the Pielou's Evenness Index (J', Pielou 1966)

Total abundance was calculated as the numbers of individuals divided by the sampling area in square meters ($m^2$). Area sampled at each station was 0.069 $m^2$. Taxa richness is the number of different taxa collected in each composite sample. H' is calculated as the sum of the proportion of individuals in each species to the total number of individuals in each sample ($p_i$) multiplied by the natural logarithm (ln) of $p_i$ for each sample. J' is calculated as H' divided by the ln number of taxa.

These four metrics were evaluated separately using a one-way ANOVA to compare differences between the two baseline events, and the 2-, 14-, and 25- month monitoring events for the on cap stations. Before analyzing the data, standard assumptions were checked with the Shapiro-Wilk normality test, and diagnostic plots (residuals versus fitted values and normal Q-Q plots) were used to check normality and equal variance. If there were significant differences between events, a Tukey's HSD post hoc test was used to determine differences between individual events. The off cap stations were qualitatively compared to on cap stations due to limited sample size (n = 1 to 3, depending on event) to determine if potential adverse effects were due to presence of the cap.

The methodology used by Llansó (2002) to derive the Chesapeake Bay benthic index of biotic integrity (B-IBI) to assess benthic community health and environmental quality in Chesapeake Bay, was followed for determination of the health of the benthic community at Quantico Embayment during the various phases of this demonstration. This B-IBI integrates a number of individual metrics, including abundance, abundance of pollution-indicative taxa, abundance of pollution sensitive taxa, abundance of carnivores and omnivores, tolerance score and Tanypodinae to Chironomidae abundance ratio, into an integrative community score (Llanso 2002). This method, described by Weisberg et al., (1997), evaluates the ecological condition of a sample by comparing values of key benthic community attributes (metrics) to reference values expected under non-degraded conditions in similar habitat types. It is therefore a measure of deviation from reference conditions. Based on a series of statistical and simulation studies, Alden et al., (2002) concluded that the B-IBI was a sensitive, stable, robust and statistically sound method.

These comparative parameters allowed for an evaluation of the short-term responses of the community to cap placement. Possible community responses may include long-term recovery of the extant community following cap placement or re-colonization of the cap area by organisms from outside of the cap area footprint.

## 5.7. Sampling Results

### 5.7.1. Bathymetry

Results for the baseline and post-cap bathymetric surveys are summarized below.

#### 5.7.1.1. 2014 Baseline Survey

The 2014 baseline bathymetry is shown in Figure 44. The primary features of the bottom elevation across the overall survey area included an offshore gradient in elevation sloping from about +0.06 m NAVD88 near the shoreline to about -1.73 m NAVD88 in the area offshore of the cap (Table 14). The slope was generally strongest between the shore and about a third of the distance offshore and then flattens out further offshore. There was a shallow zone in the small cove at the mouth of the drainage that enters the embayment at about the midpoint of the north-south extent of the capping area. The mean elevation in the survey area was -1.01 m NAVD88, while the mean elevation within the target cap area was about 10 cm shallower at -0.91 m NAVD88.

#### 5.7.1.2. 2015 Post-Cap Survey

The 2015 post-cap bathymetry is shown in Figure 45. The primary features of the bottom elevation across the overall survey area were qualitatively similar to the 2014 survey except that the offshore area appeared slightly shallower. The maximum elevation near the shore was about -0.22 m NAVD88 and the lowest elevation offshore was about -1.61 m NAVD88 (Table 14). The mean elevation in the survey area was -0.89 m NAVD88, while the mean elevation within the target cap area was about 15 cm shallower at -0.74 m NAVD88.

#### 5.7.1.3. 2016 Post-Cap Survey

The 2016 post-cap bathymetry is shown in Figure 46. As with 2015, the primary features of the bottom elevation across the overall survey area were qualitatively similar to the 2014 survey except that the offshore area appeared slightly shallower. The maximum elevation near the shore was about -0.20 m NAVD88 and the lowest elevation offshore was about -1.63 m NAVD88 (Table 14). The mean elevation in the survey area was -0.91 m NAVD88, while the mean elevation within the target cap area was about 14 cm shallower at -0.77 m NAVD88.

#### 5.7.1.4. Differences

Difference maps were developed from the bathymetric grids to evaluate changes between the pre- and post-cap condition as well as to evaluate stability of the cap following the cap placement. The difference map for subtraction of the 2014 elevation from the 2015 elevation is shown in Figure 47. This map reflects the general characteristics of the cap one year after placement, with positive changes in elevation throughout the majority (>94%) of the target cap area of up to about 50 cm (Table 14). The mean difference in the target cap area was 17 cm which exceeds the minimum target thickness of 15 cm (6 inches).

The difference map for subtraction of the 2014 elevation from the 2016 elevation is shown in Figure 48. This map reflects the general characteristics of the cap two years after placement, with positive changes in elevation throughout the majority (>82%) of the target cap area of up to about 37 cm (Table 14). The mean difference in the target cap area was 14 cm which is still comparable to the minimum target thickness of 15 cm (6 inches).

The difference map for subtraction of the 2015 elevation from the 2016 elevation is shown in Figure 49. This map reflects the general stability of the cap over the two years following placement, with generally very little change between the two post-cap surveys. The mean difference across the cap area was -3 cm (Table 14) and the map indicates that most changes were very localized.

Elevations changes from the 2015 and 2016 bathymetric surveys are compared to the estimated cap thickness from the on-cap coring stations in Table 15. The results are qualitatively comparable with the exception of station QT-3 where the bathymetry consistently showed a smaller change in elevation than was reflected in the cores. Average values for change in elevation showed a bias toward lower values than the coring which was expected due to compaction and mixing of the cap material with the native sediment.

#### 5.7.1.5. Summary

Overall, the bathymetric surveys clearly show the changes in elevation related to the cap placement, and these measured changes were consistent with the target thickness for the cap. Annual surveys for the two years following the cap placement showed only very small changes in elevation, indicating that the cap appears to be relatively stable in elevation.

**Table 14. Grid statistics for the three bathymetric surveys for the overall survey area, the cap area, and the survey differences within the cap area.**

| Condition | | Min | Max | Mean | Stdev |
|---|---|---|---|---|---|
| Survey Area | 2014 Elevation (m NAVD88) | -1.73 | 0.06 | -1.01 | 0.35 |
| | 2015 Elevation (m NAVD88) | -1.61 | -0.22 | -0.89 | 0.40 |
| | 2016 Elevation (m NAVD88) | -1.63 | -0.20 | -0.91 | 0.40 |
| Cap Area | 2014 Elevation (m NAVD88) | -1.48 | 0.06 | -0.91 | 0.31 |
| | 2015 Elevation (m NAVD88) | -1.45 | -0.22 | -0.74 | 0.32 |
| | 2016 Elevation (m NAVD88) | -1.49 | -0.20 | -0.77 | 0.33 |
| Difference | 2015-2014 Diff (m) | -0.66 | 0.50 | 0.17 | 0.12 |
| | 2016-2014 Diff (m) | -0.84 | 0.37 | 0.14 | 0.11 |
| | 2016-2016 Diff (m) | -0.33 | 0.37 | -0.03 | 0.07 |

**Table 15. Comparison of cap thickness based on coring with change in elevation based on bathymetry difference from the pre-construction 2014 baseline (inches) at the five on-cap stations.**

| Station | 2015 | | 2016 | |
|---|---|---|---|---|
| | Coring | Bathy | Coring | Bathy |
| QT-1 | 5.9 | 4.1 | 5.9 | 5.6 |
| QT-2 | 6.7 | 12.6 | 6.7 | 7.3 |
| QT-3 | 9.1 | 3.3 | 9.8 | 1.6 |
| QT-4 | 15.4 | 10.0 | 9.4 | 10.4 |
| QT-5 | 16.3 | 12.6 | 17.5 | 12.2 |
| Average | 10.7 | 8.5 | 9.9 | 7.4 |

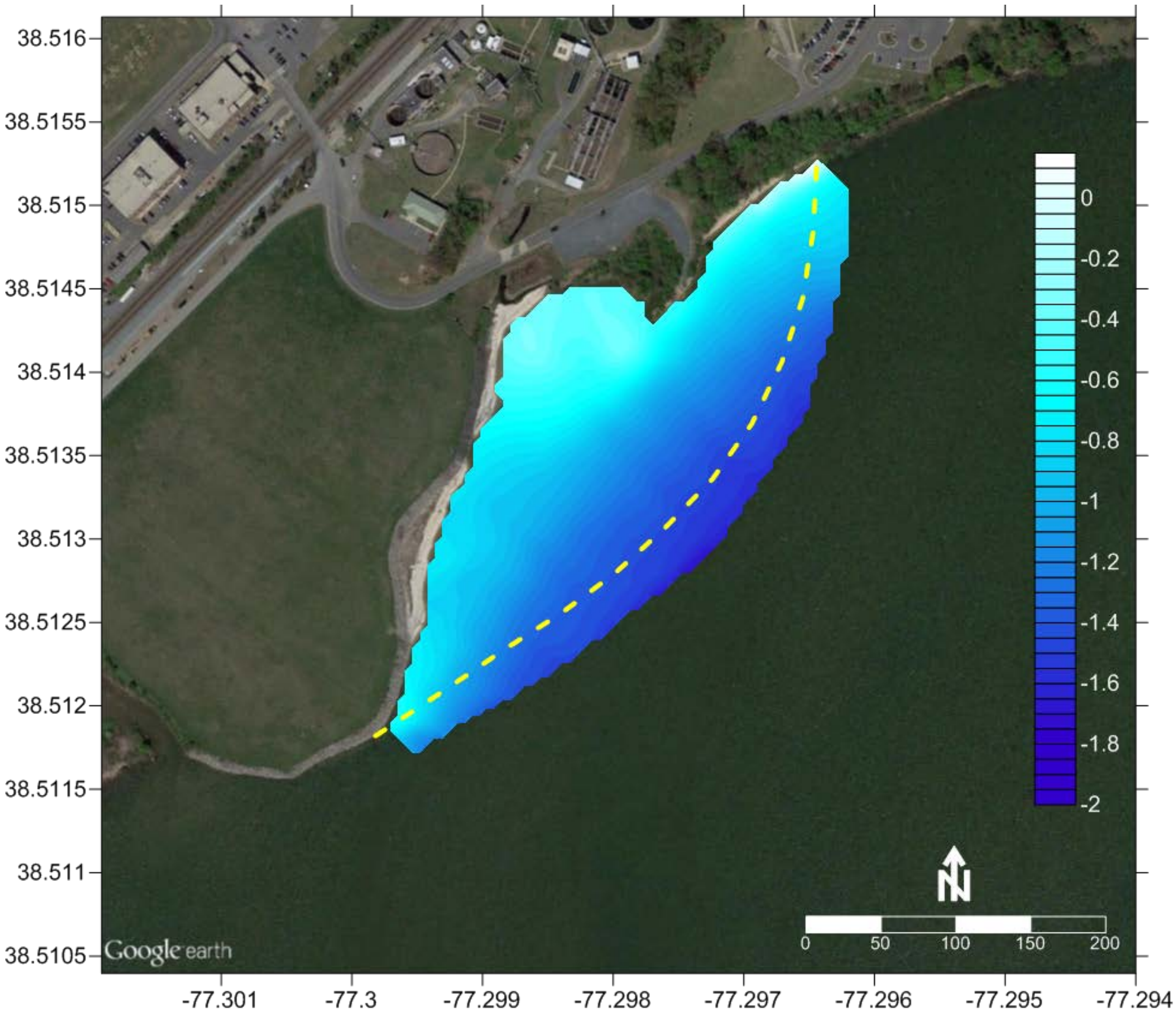



**Figure 44. Baseline bathymetry from the 2014 pre-capping survey. The yellow dashed line indicates the offshore boundary of the area targeted for the thin-layer cap. Bathymetry is reported in meters relative to the NAVD88 vertical datum.**

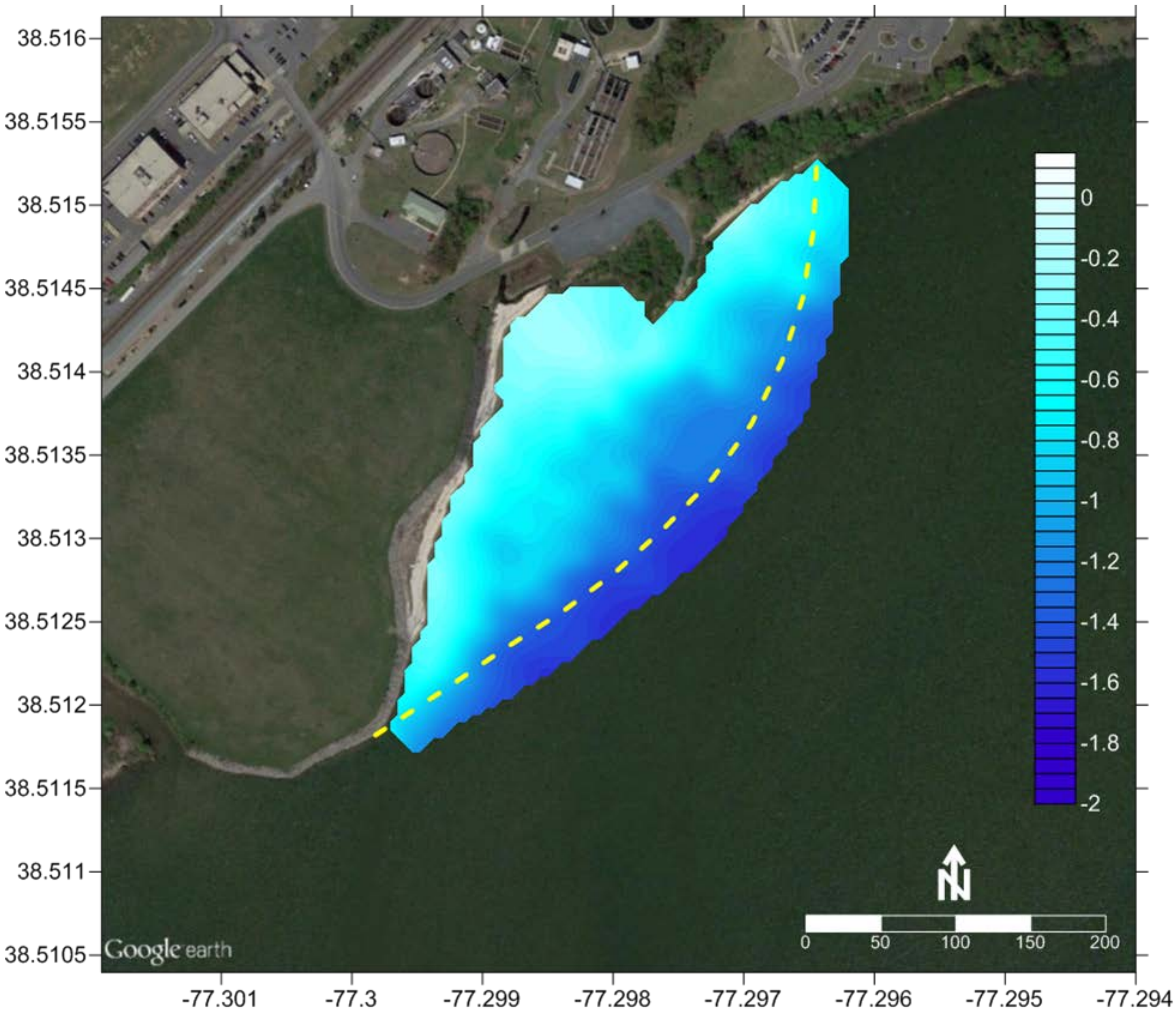



**Figure 45. Bathymetry from the 2015 post-capping survey. The yellow dashed line indicates the offshore boundary of the area targeted for the thin-layer cap. Bathymetry is reported in meters relative to the NAVD88 vertical datum.**

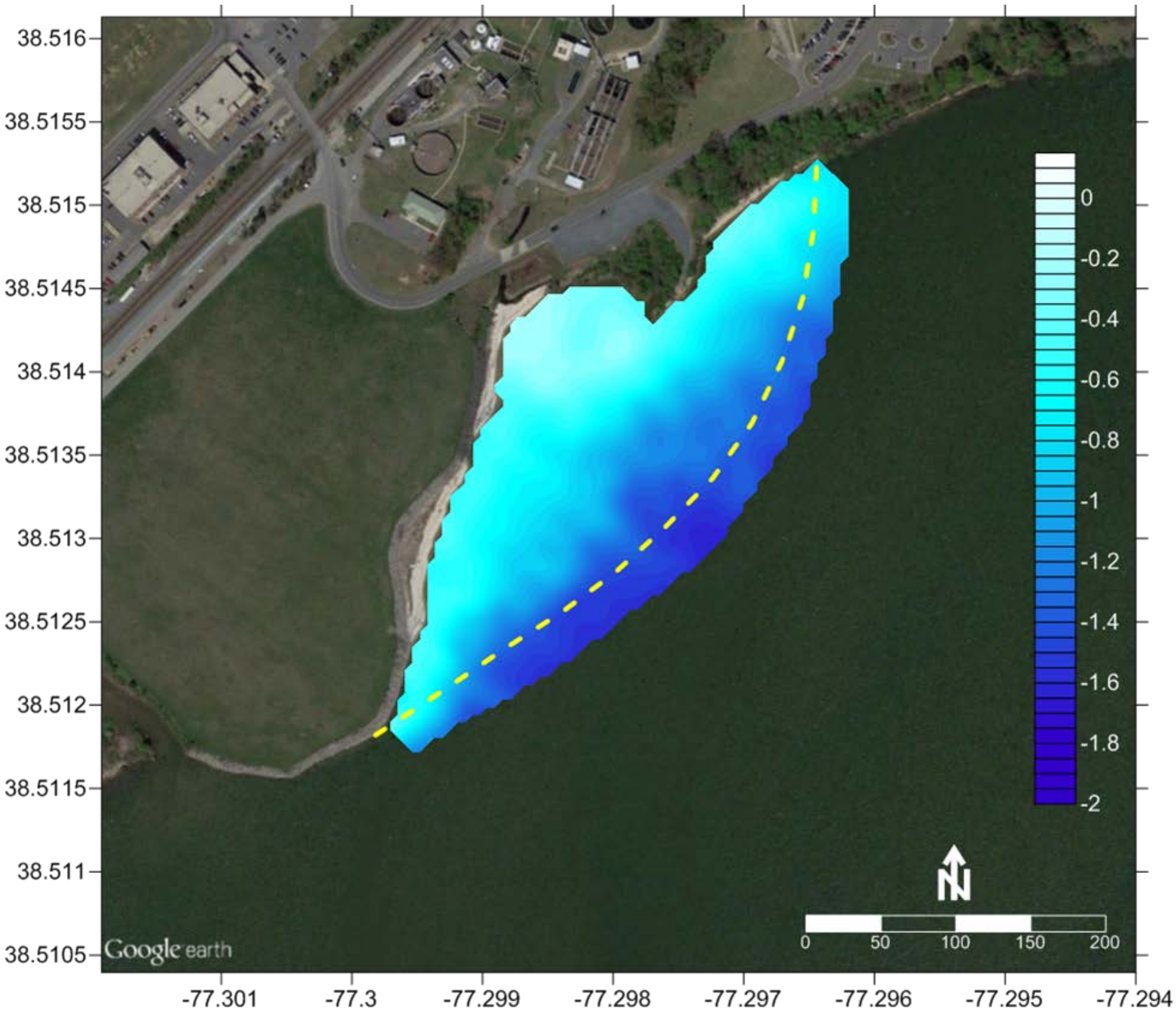



**Figure 46. Bathymetry from the 2016 post-capping survey. The yellow dashed line indicates the offshore boundary of the area targeted for the thin-layer cap. Bathymetry is reported in meters relative to the NAVD88 vertical datum.**

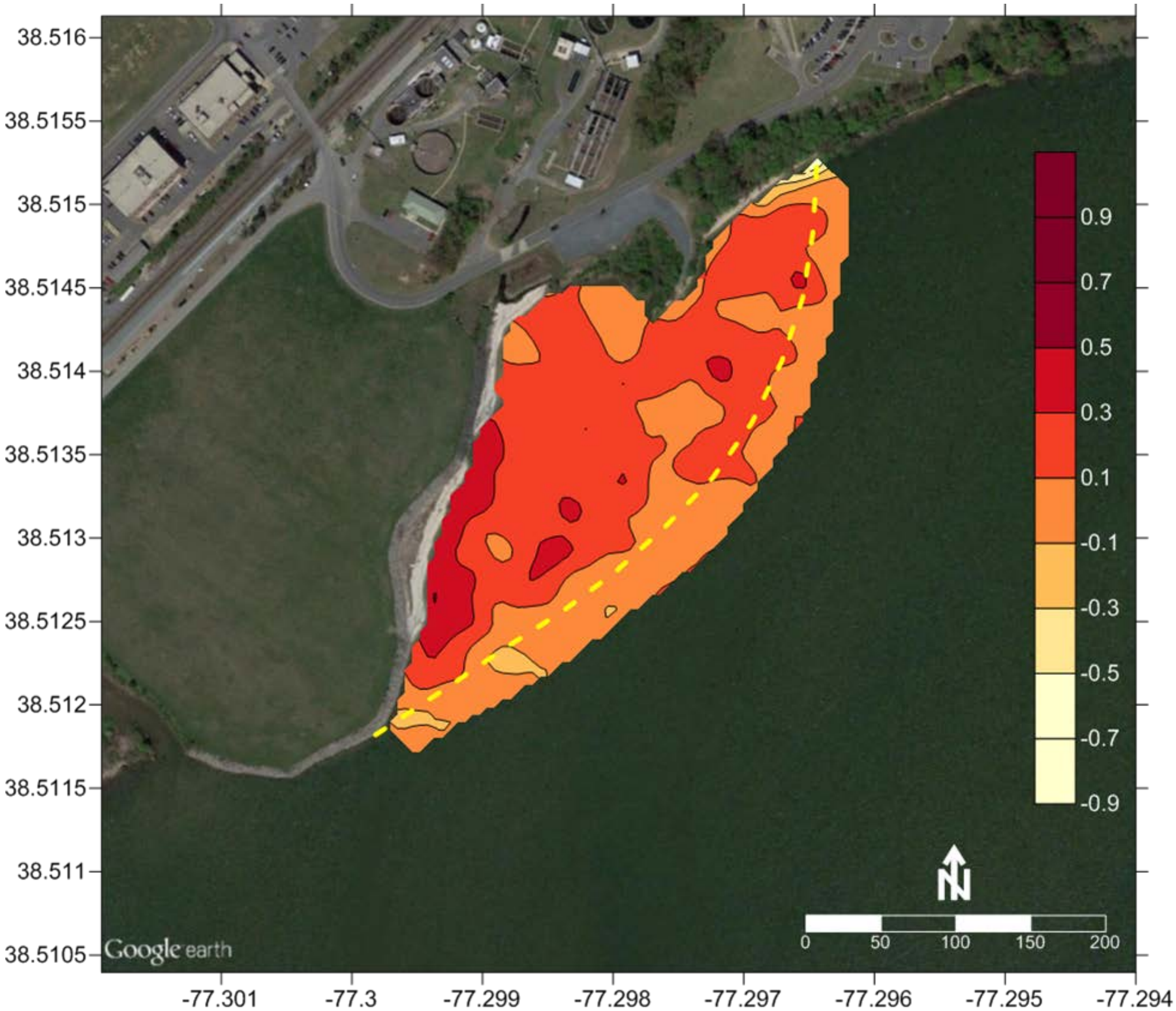



**Figure 47. Difference map for the 2014 pre-cap baseline compared to the 2015 post-cap survey. The yellow dashed line indicates the offshore boundary of the area targeted for the thin-layer cap. Positive differences indicate 2015 elevations that are higher than 2014 elevations. Units are meters.**

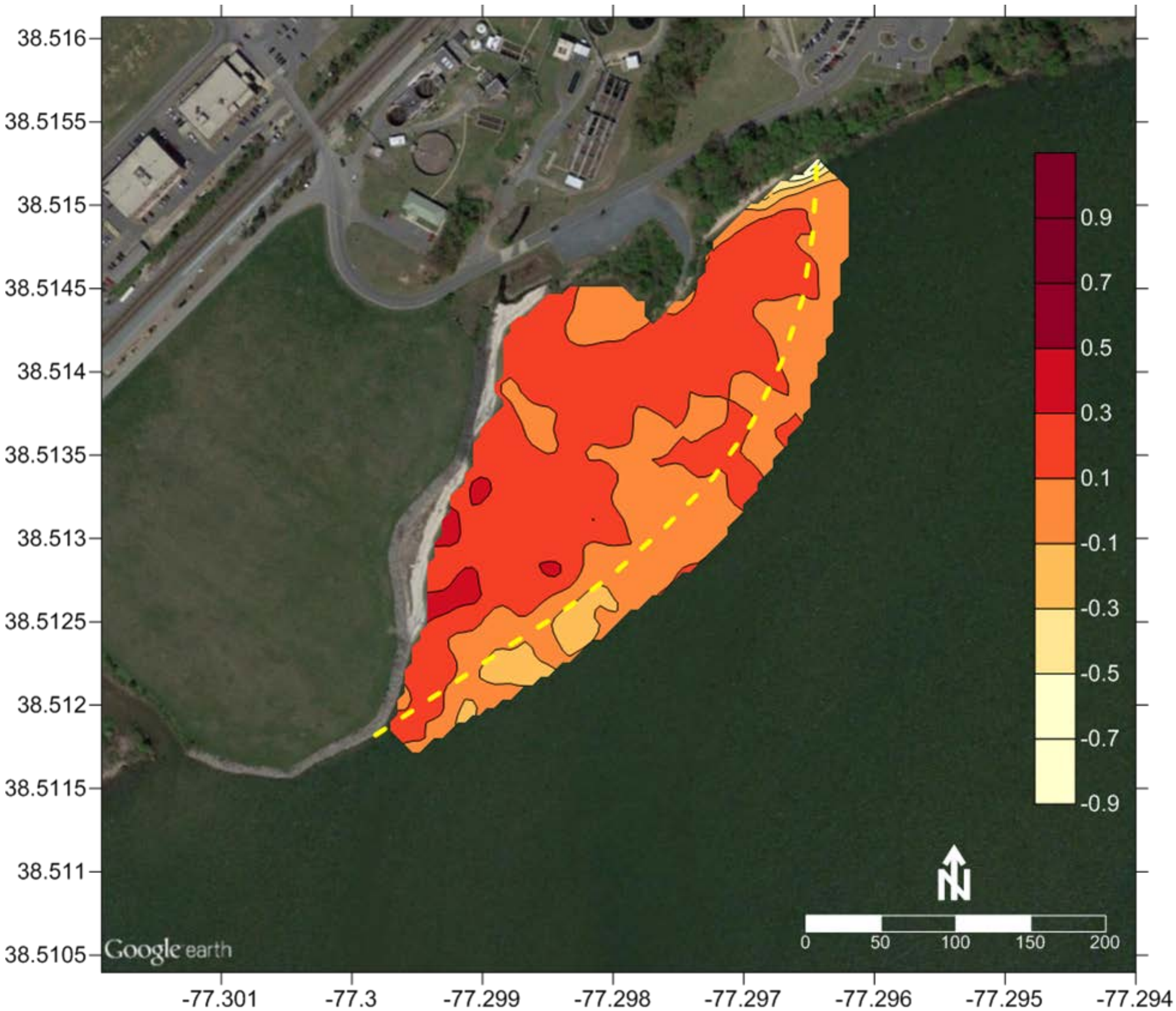



**Figure 48. Difference map for the 2014 pre-cap baseline compared to the 2016 post-cap survey. The yellow dashed line indicates the offshore boundary of the area targeted for the thin-layer cap. Positive differences indicate 2016 elevations that are higher than 2014 elevations. Units are meters.**

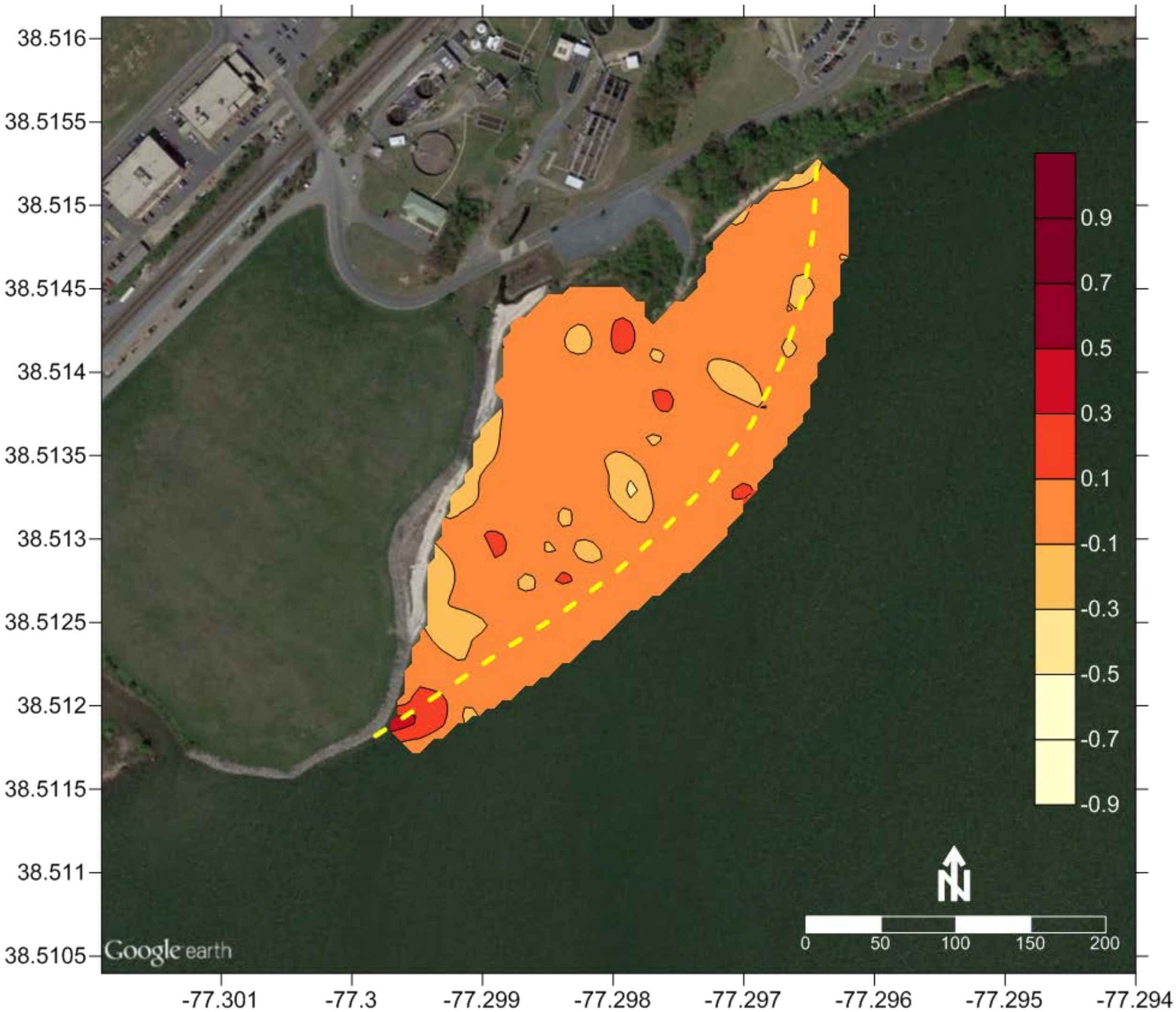



**Figure 49. Difference map for the 2015 post-cap survey compared to the 2016 post-cap survey. The yellow dashed line indicates the offshore boundary of the area targeted for the thin-layer cap. Positive differences indicate 2016 elevations that are higher than 2015 elevations. Units are meters.**

### 5.7.2. Hydrodynamic Monitoring (Current Meter Measurements)

Time-series results for the current meter measurements are shown in Figure 50 – Figure 51 for the spring period, and Figure 52 – Figure 53 for the fall period. During the spring, the tidally-averaged east-west component of velocity at the southern station (Q1-S4) was generally westerly in the range of 1-5 cm/s with higher velocities during the earlier portion of the deployment (Figure 50). This component showed weak tidal fluctuations in the range of 2 cm/s. The north-south component of velocity had a tidal average that was close to zero with tidal fluctuations also in the range of 2 cm/s. Water speed at this station was strongest during the early portion of the deployment (4-6 cm/s) then decreased to about 1-2 cm/s by the mid-deployment period and beyond. At the northern station (Q2-S4) during the spring, the tidally-averaged east-west velocity was directed more easterly in the range of 1-4 cm/s with relatively strong tidal fluctuations of up to 5 cm/s especially during the early portion of the deployment (Figure 51). The north-south velocity at this station was directed to the south in the range of about 1-3 cm/s with tidal fluctuations in the range of 3-4 cm/s during the early portion of the deployment that decreased to 1-2 cm/s during the second half of the deployment. Water speed during this period was fairly stable at about 5 cm/s.

During the fall, the tidally-averaged east-west component of velocity at the southern station (Q1-S4) was generally in the range of 1 cm/s with more easterly direction during the early portion of the deployment and more westerly during the later portion (Figure 52). This component showed weak tidal fluctuations in the range of 1 cm/s. The north-south component of velocity had a tidal average that was in the range of 3-4 cm/s in the northerly direction with tidal fluctuations in the range of 2 cm/s. Water speed at this station was generally in the range of 3-4 cm/s. At the northern station (Q2-S4) during the fall, the tidally-averaged east-west velocity was directed more westerly at about 4 cm/s with tidal fluctuations of up to 3 cm/s (Figure 53). The north-south velocity at this station was directed to the north in the range of about 4-5 cm/s with tidal fluctuations in the range of 2-4 cm/s. Water speed during this period was fairly stable at about 6 cm/s.

Current rose diagrams for the stations in Quantico Embayment are shown in Figure 54. For the spring deployment, the results indicate currents generally in the north and northeast quadrants at mean speeds in the range of 3-5 cm/s. These results suggest a weak counter flow (to the southerly river flow) eddy within the embayment during this period. For the fall deployment, the results indicate currents more generally in the southern quadrants (both east and west) suggesting flow more directly aligned with the river flow during this period.

To evaluate stability of the cap, measured currents from the 2009 surveys were compared to critical threshold velocities for particle motion and suspension as described in the methods section above. These thresholds differ for the two stations primarily due to the differences in water depth, with the southern station (Q1-S4) being shallower, and thus having slightly lower velocity thresholds (Table 12). Comparisons for each station under the spring and fall flow conditions are shown in Figure 55. These results indicate that currents at the site are generally low relative to critical threshold velocities at both sites and under both flow conditions. Thus it is unexpected that the cap would be disturbed by normal spring and summer currents. It is still possible that the cap could be disturbed under storm conditions, especially storm associated waves due to the shallow nature of the site.

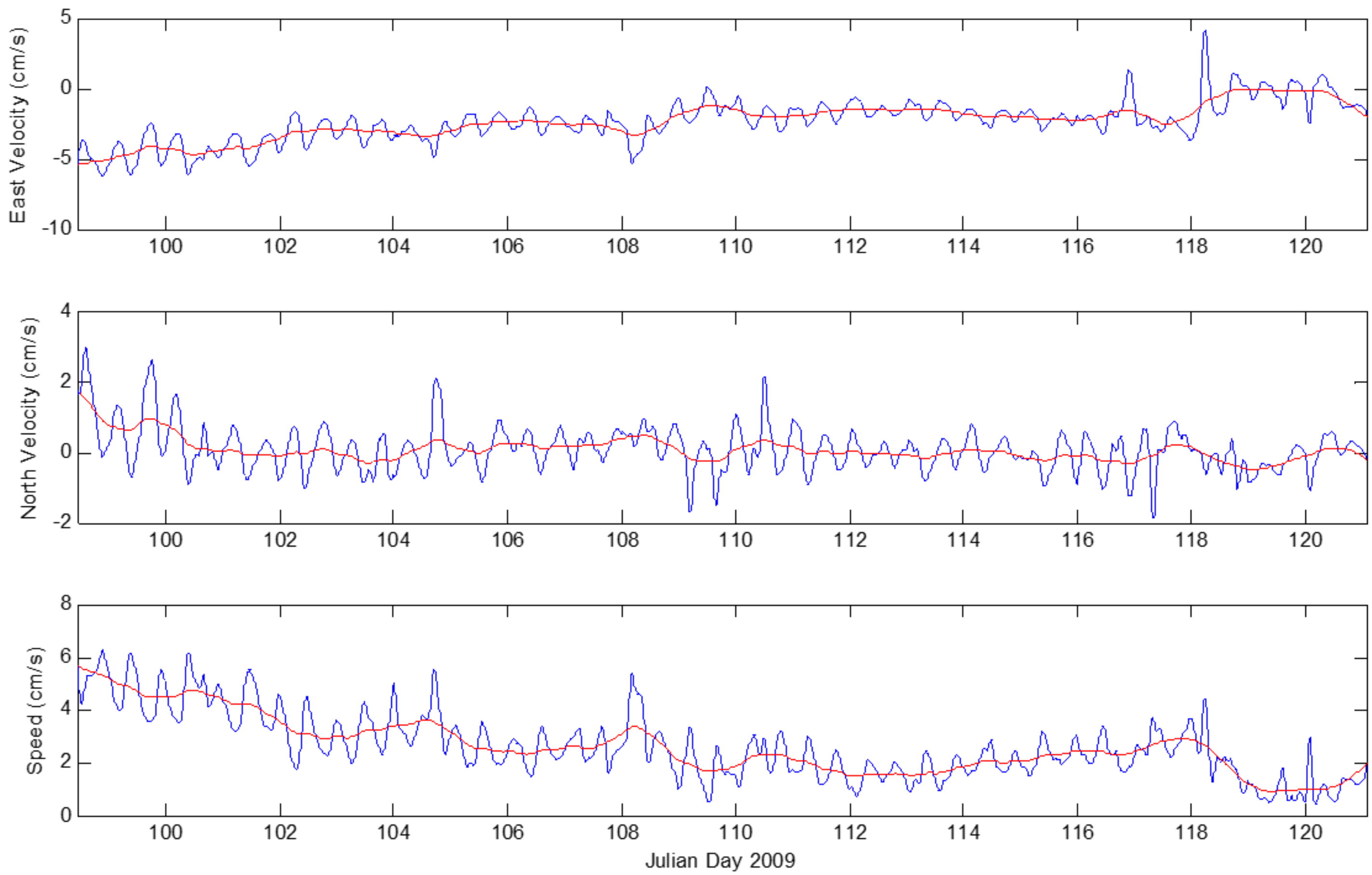



**Figure 50. Water velocity and speed for the S4 deployed at Q1-S4 during the spring sampling event.**

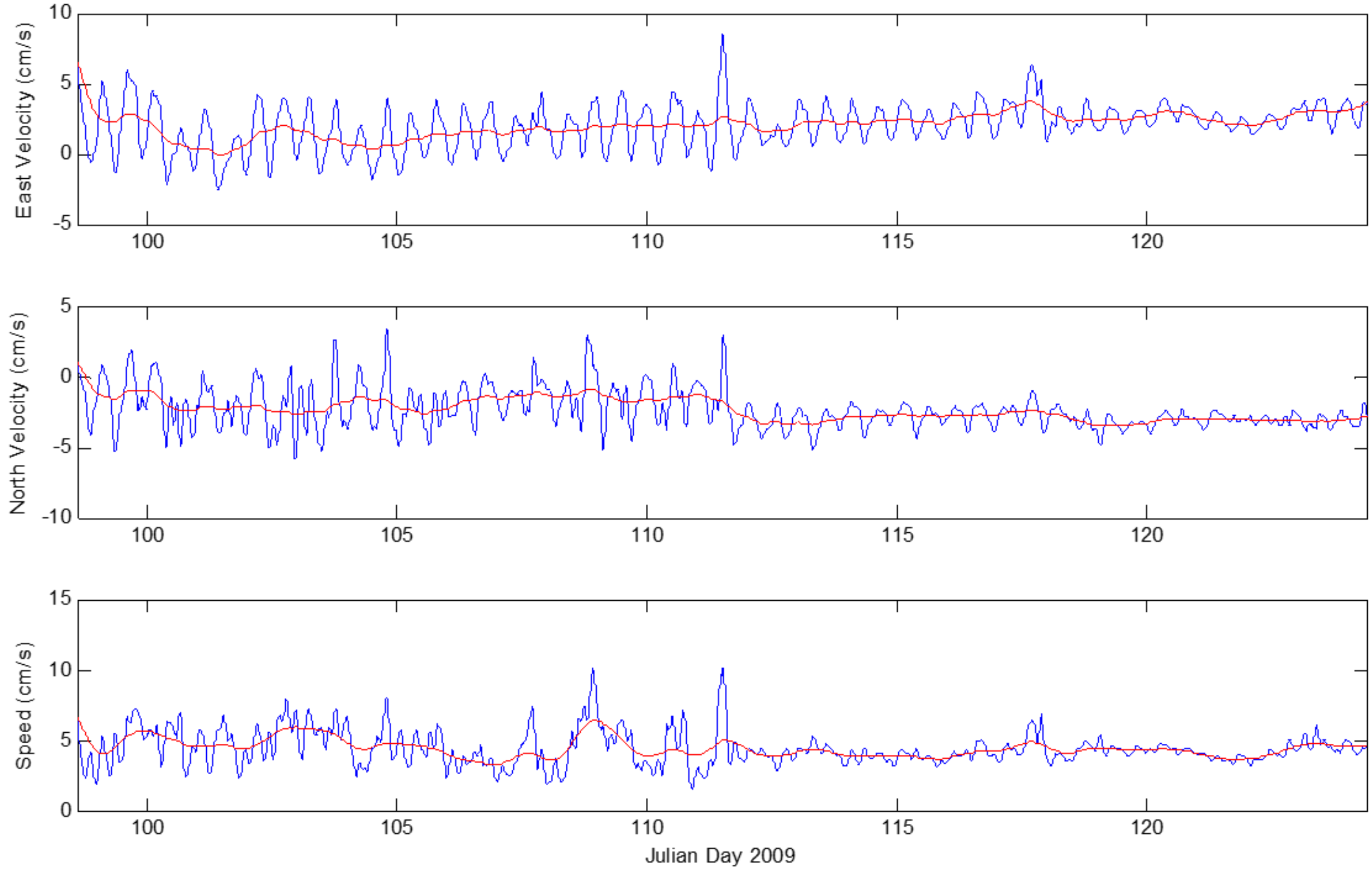



**Figure 51. Water velocity and speed for the S4 deployed at Q2-S4 during the spring sampling event.**

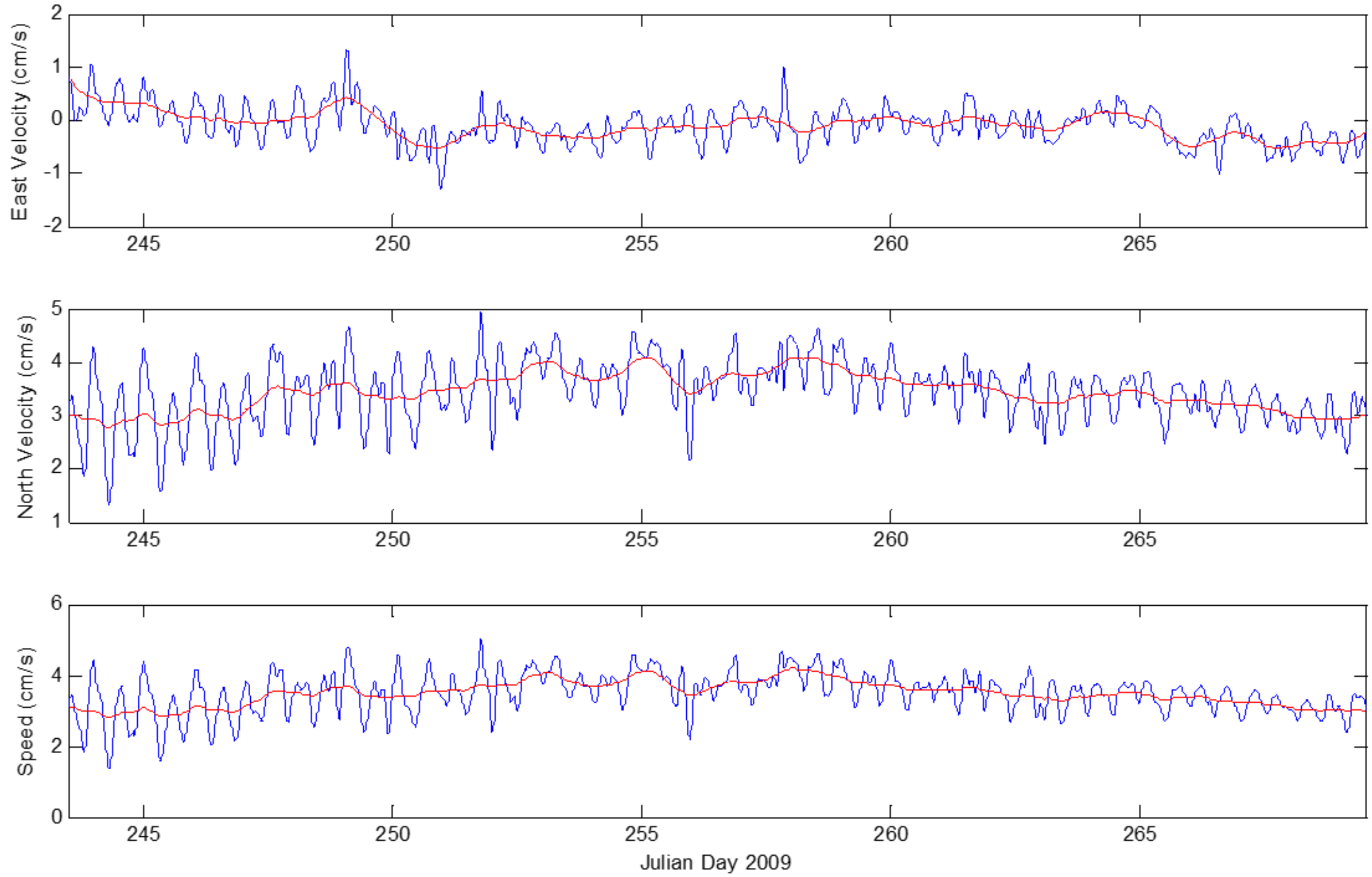



**Figure 52. Water velocity and speed for the S4 deployed at Q1-S4 during the fall sampling event.**

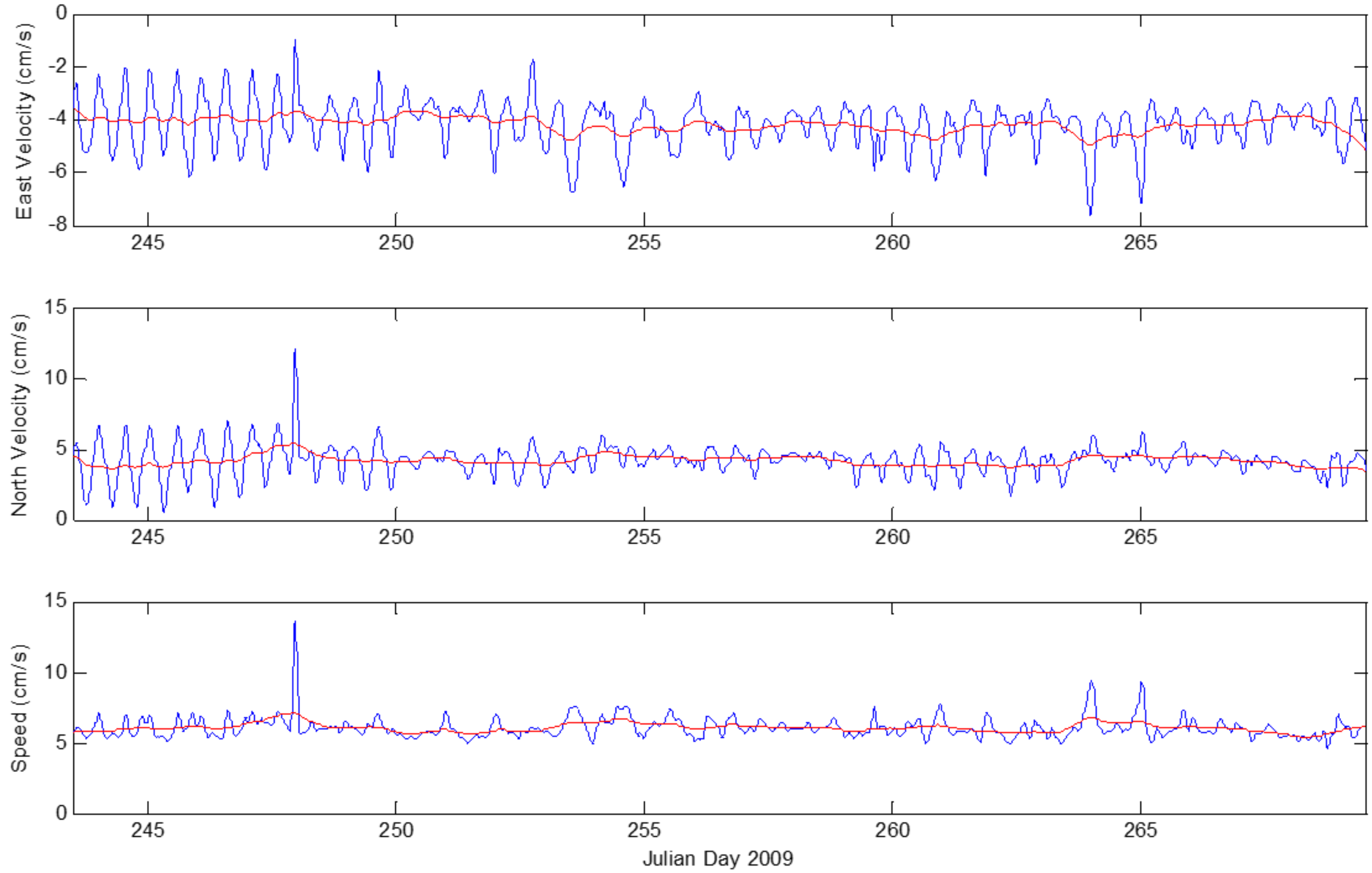



**Figure 53. Water velocity and speed for the S4 deployed at Q2-S4 during the fall sampling event.**

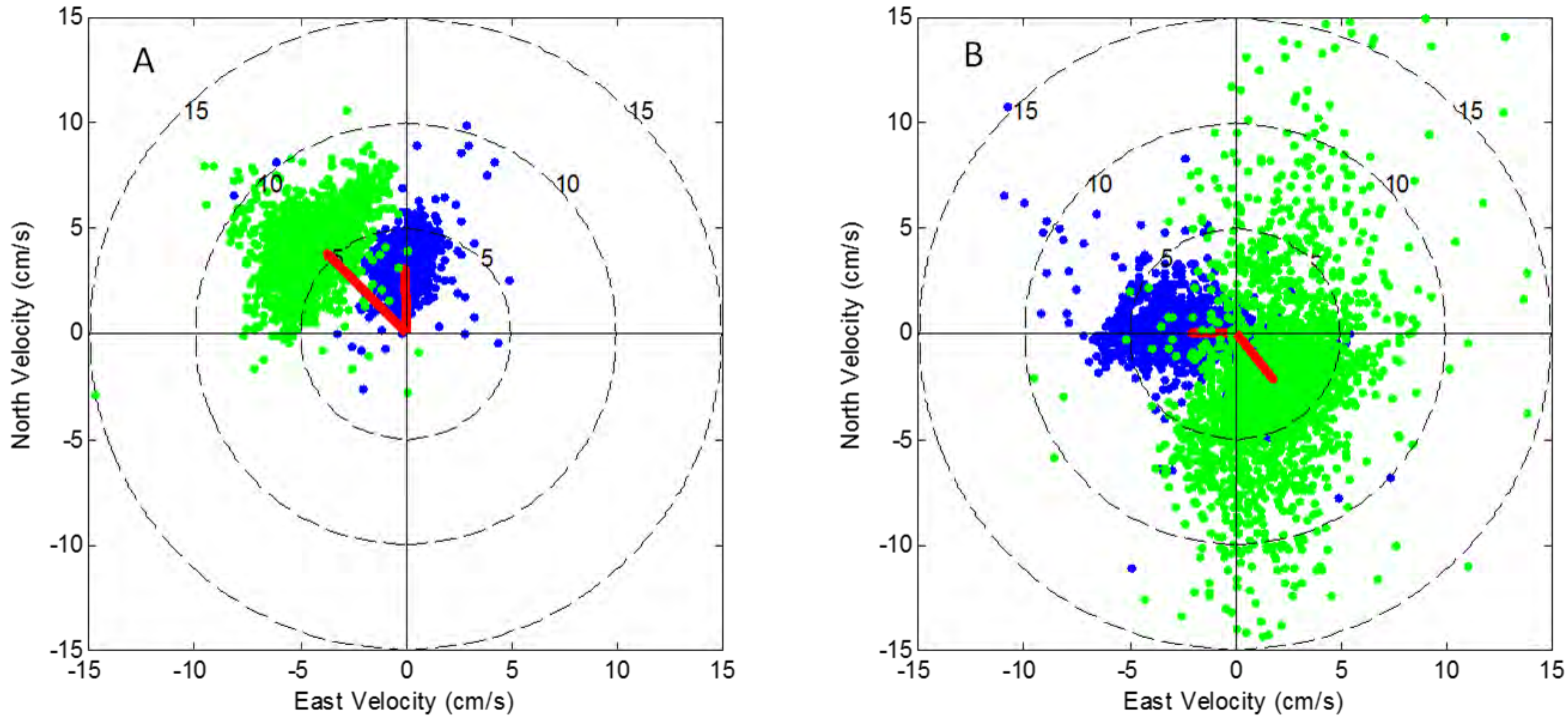



**Figure 54. Current rose for Quantico Embayment stations Q1-S4 (blue) and Q2-S4 (green) during the spring (A) and fall (B) of 2009. The red lines indicate the mean speed and direction over the deployment period.**

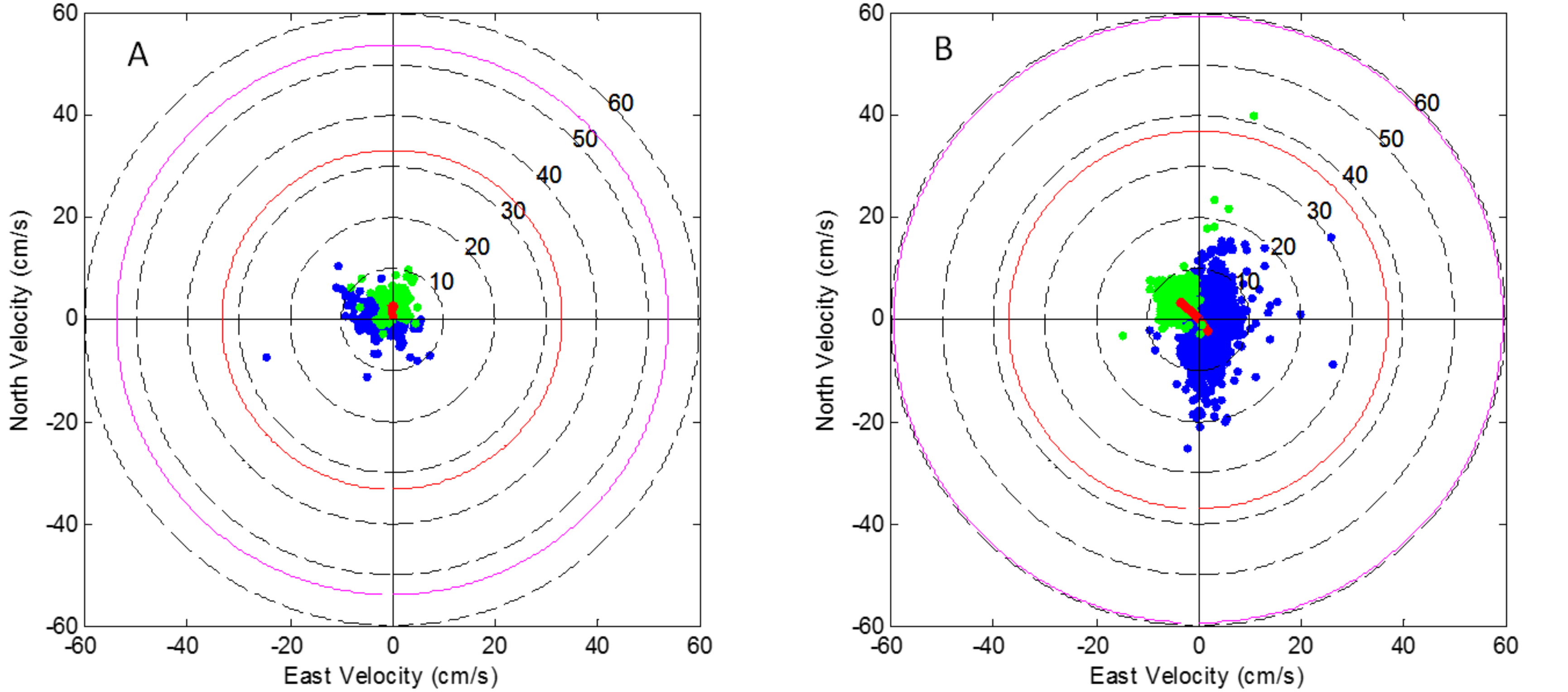



**Figure 55. Current rose for Quantico Embayment stations Q1-S4 (A) and Q2-S4 (B) during the spring (blue) and fall (green) of 2009 compared to velocity thresholds for particle motion (red circle) and particle suspension (magenta circle).**

### 5.7.3. Friction Sound Probe

Cores were collected at a total of 83 stations during the post construction verification survey that was conducted by the site contractor during the period 5/28/2014 - 6/9/2014 (Figure 22). Thickness at three stations failed the 15 cm threshold and they were touched up, but no additional verification data for these three stations was available. Results for the 80 stations where data were available are shown in Table 16 and Figure 56. The results are binned with the lower bin indicating stations with thickness below the 15 cm threshold, and then in increments of 15 cm thickness above that. Cap thickness ranged from a low of 15.2 cm to a high of 58.4 cm with an average thickness of 22.5 cm and a standard deviation across the cap stations of 8.9 cm. The spatial distribution in Figure 56 shows that the majority of the stations had thicknesses in the range of 15-30 cm (84%). Areas with cap thicknesses above 30 cm were generally observed near the shoreline along the southwestern portion of the cap, and both near the shoreline and near the outer cap boundary in the northeastern portion of the cap. There were no measurements (except those noted as being re-worked) with thicknesses less than 15 cm. There were limited thickness measurements in the central-offshore portion of the cap.

Cap thickness was re-surveyed on August 9, 2016 using the SED-FSP system at 21 on-cap and 6 off-cap locations (Figure 23). The SED-FSP differs from the coring in that it provides a full profile of estimated mean grain size (D50) to a depth of about 60 cm below the sediment-water interface. Figure 57 shows the SED-FSP results for the five multi-metric on-cap stations where sediment cores were also collected. Results from the grain size analysis results from the co-located cores are plotted with the SED-FSP results. Note that the core results are based on the average of five replicates, and samples were only collected at specified depths below the sediment-water interface, and around the visually observed lower boundary of the cap, so this comparison should only be considered qualitatively. In general, the SED-FSP and cores at these stations show reasonable agreement, both with respect to the cap thickness and with respect to the magnitude of the mean particle size in the cap.

To estimate the vertical extent of the cap, the SED-FSP results were separated into qualitative bins as follows:

- Predominantly Native Sediment/New Deposition: D50≤100 μm
- Mixed Native Sediment/Sand Cap Material: 100<D50≤300 μm
- Predominantly Sand Cap Material: 300<D50 μm

Using these definitions, cap thickness was determined from the SED-FSP profiles, along with estimated thicknesses for deposition layers on top of the cap, and mixing layers between new deposition and cap material, and underlying native sediment and cap material. For purposes of defining the overall cap thickness, the mixed and predominantly sand cap material layers were summed. The results are shown in Table 17.

The SED-FSP results indicated an average thickness for cap material of about 17.1 cm, and an average combined thickness of cap and mixed material of about 32.6 cm at the on-cap stations. The cap material thickness at the on-cap stations ranged from 0.0 – 44.5 cm with a standard deviation of 12.8 cm. For the combined cap and mixed material, the thickness at the on-cap stations ranged from 16.5 – 59.1 cm with a standard deviation of 13.5 cm. These average values and ranges are generally consistent with the values observed during the 2014 post-construction survey taking into consideration that the cap material has been mixing with both underlying native sediment and new sediment deposits over time. These ranges are also quite consistent with the values measured directly (by observation) from the cores collected at the multi-metric stations (Table 18).

Figure 58 and Figure 59 show maps of the cap thickness results for the predominantly cap material thickness and the mixed plus cap material thickness, respectively. The spatial distribution for the cap material shows that undisturbed layers of the original cap material are still present at about half of the cap area at thicknesses exceeding 15 cm. When the mixed and cap material are considered, the results indicate thicknesses exceeding 15 cm throughout the capping area. Because mixing with native sediment and new deposits are expected over time at an EMNR site, these results indicate that the cap is behaving in a manner consistent with the EMNR concept. The maps also indicate no obvious movement of significant amounts of capping material into off cap areas, at least along the two transects that were surveyed to the east of the cap area.

SED-FSP data were also used to evaluate the thickness of deposition layers on top of the cap, and mixing zones on the top and at the base of the cap based on the qualitative mean grain size bins described above. The results are summarized in Table 19. The analysis was considered qualitative because the SED-FSP is a screening tool for particle size, the SED-FSP could not distinguish between sand associated with the cap and native sand, and data were only available for the 25-month event. The SED-FSP camera did provide a broader spatial evaluation of mixing relative to the limited locations for the coring survey.

Results from the 25-month event showed that depositional layers and mixing were clearly evident in the SED-FSP mean grain size profiles. Out of the 24 on-cap stations evaluated in the survey, all 24 (100%) had at least a trace layer of new deposition, 23 (96%) showed evidence of top-down mixing, 22 (92%) showed evidence of bottom-up mixing, and 7 (29%) showed evidence of interleaved layering. Consistent with the other measures of mixing, top-down mixing was generally more significant with an average extent over the on-cap stations of 8.3 cm, compared to an average of 4.5 cm for bottom-up mixing. The average depth of the new deposition layer at the on-cap stations was 3.7 cm. Overall, the SED-FSP provided a rapid means of assessing the spatial distribution of mixing and new deposition and its potential influence on the TLC.

In summary, cap thickness measurements provided from multiple sources and methods show reasonable agreement at the site. While cap thickness is varying over time, it appears that this is primarily as a result of mixing processes, both with native sediments below the cap and with new deposition on top of the cap. The SED-FSP survey data from 2016 provide a means of estimating the amount of mixing that is taking place over time. In general, the results indicate that the cap materials are staying in the cap area, but mixing vertically in time in a manner consistent with expectations for an EMNR remedy.

**Table 16. Cap thickness results from the 2014 post construction survey.**

| Station | Latitude | Longitude | Thickness (cm) | Station | Latitude | Longitude | Thickness (cm) |
|---|---|---|---|---|---|---|---|
| 2E | 38.51231 | -77.29921 | 43.2 | 8E | 38.51368 | -77.29758 | 17.8 |
| 2E | 38.51224 | -77.29922 | 17.8 | 8F | 38.51358 | -77.29738 | 22.9 |
| 2E | 38.51216 | -77.29936 | 16.5 | 9C | 38.51389 | -77.29800 | 24.1 |
| 3D | 38.51284 | -77.29916 | 58.4 | 9D | 38.51392 | -77.29763 | 20.3 |
| 3D | 38.51268 | -77.29898 | 27.9 | 9D | 38.51390 | -77.29743 | 21.6 |
| 3D | 38.51248 | -77.29909 | 33.0 | 9E | 38.51365 | -77.29738 | 17.8 |
| 3E | 38.51236 | -77.29909 | 16.5 | 9E | 38.51378 | -77.29725 | 27.9 |
| 3E | 38.51253 | -77.29917 | 38.1 | 9F | 38.51347 | -77.29847 | 20.3 |
| 3E | 38.51252 | -77.29904 | 15.2 | 9F | 38.51363 | -77.29723 | 27.9 |
| 3F | 38.51236 | -77.29902 | 17.8 | 10D | 38.51402 | -77.29762 | 20.3 |
| 4C | 38.51294 | -77.29911 | 17.8 | 10D | 38.51423 | -77.29753 | 35.6 |
| 4D | 38.51305 | -77.29900 | 27.9 | 10D | 38.51425 | -77.29746 | 33.0 |
| 4D | 38.51273 | -77.29913 | 20.3 | 10E | 38.51408 | -77.29723 | 25.4 |
| 4E | 38.51278 | -77.29893 | 48.3 | 10E | 38.51407 | -77.29732 | 19.1 |
| 4E | 38.51254 | -77.29899 | 20.3 | 10F | 38.51378 | -77.29705 | 17.8 |
| 4E | 38.51262 | -77.29874 | 15.2 | 10F | 38.51388 | -77.29697 | 16.5 |
| 4F | 38.51239 | -77.29891 | 22.9 | 10F | 38.51373 | -77.29693 | 17.8 |
| 5D | 38.51321 | -77.29863 | 40.6 | 10F | 38.51398 | -77.29708 | 15.2 |
| 5D | 38.51287 | -77.29848 | 25.4 | 11D | 38.51441 | -77.29732 | 17.8 |
| 5D | 38.51325 | -77.29873 | 15.2 | 11D | 38.51435 | -77.29718 | 21.6 |
| 5E | 38.51303 | -77.29878 | 15.2 | 11D | 38.51443 | -77.29730 | 15.9 |
| 5E | 38.51287 | -77.29862 | 27.9 | 11E | 38.51417 | -77.29698 | 17.8 |
| 5F | 38.51273 | -77.29833 | 20.3 | 11F | 38.51408 | -77.29678 | 16.5 |
| 6C | 38.51338 | -77.29877 | 17.8 | 12C | 38.51480 | -77.29715 | 30.5 |
| 6D | 38.51330 | -77.29828 | 15.2 | 12D | 38.51450 | -77.29705 | 24.1 |
| 6D | 38.51300 | -77.29835 | 17.8 | 12D | 38.51446 | -77.29732 | 16.5 |
| 6D | 38.51328 | -77.29857 | 20.3 | 12D | 38.51437 | -77.29705 | 15.2 |
| 6E | 38.51335 | -77.29858 | 19.1 | 12E | 38.51432 | -77.29680 | 25.4 |
| 6E | 38.51292 | -77.29812 | 17.8 | 12E | 38.51417 | -77.29672 | 16.5 |
| 6E | 38.51294 | -77.29846 | 27.9 | 12E | 38.51452 | -77.29677 | 15.2 |
| 6F | 38.51288 | -77.29798 | 15.2 | 12F | 38.51420 | -77.29662 | 33.0 |
| 7B | 38.51366 | -77.29870 | 17.8 | 13C | 38.51467 | -77.29697 | 38.1 |
| 7C | 38.51368 | -77.29832 | 17.8 | 13D | 38.51463 | -77.29673 | 15.2 |
| 7D | 38.51348 | -77.29833 | 22.9 | 13D | 38.51485 | -77.29668 | 15.2 |
| 7E | 38.51323 | -77.29815 | 17.8 | 13E | 38.51437 | -77.29663 | 45.7 |
| 7E | 38.51322 | -77.29815 | 21.6 | 13E | 38.51473 | -77.29660 | 15.2 |
| 8A | 38.51436 | -77.29877 | 38.1 | 14D | 38.51490 | -77.29645 | 15.2 |
| 8C | 38.51372 | -77.29818 | 17.8 | 14D | 38.51467 | -77.29678 | 15.9 |
| 8C | 38.51372 | -77.29835 | 15.2 | 14D | 38.51490 | -77.29643 | 15.2 |
| 8D | 38.51372 | -77.29781 | 20.3 | 14E | 38.51452 | -77.29655 | 17.8 |

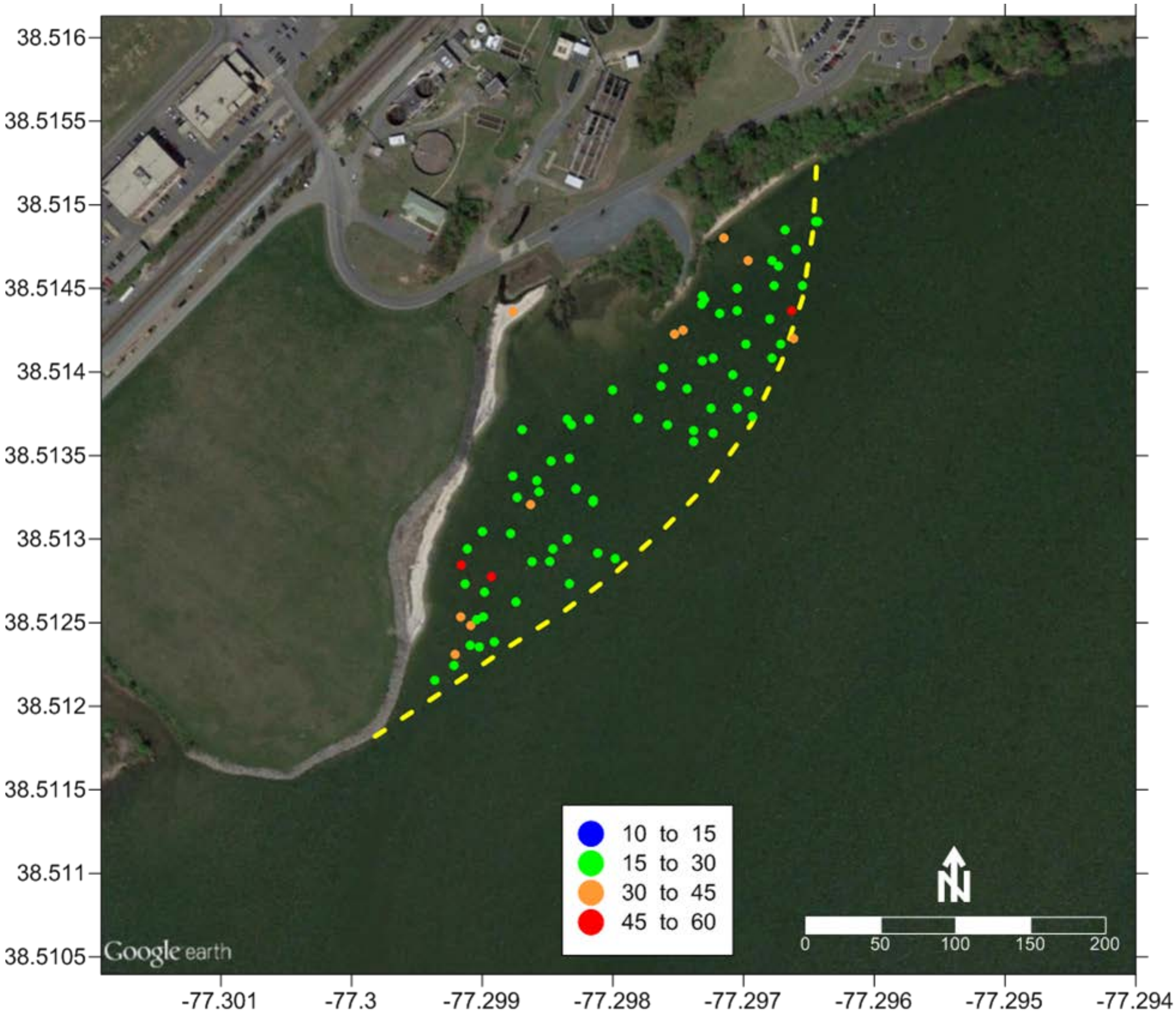



**Figure 56. Results for cap thickness measurements collected by the site contractor immediately following construction of the cap in 2014.**

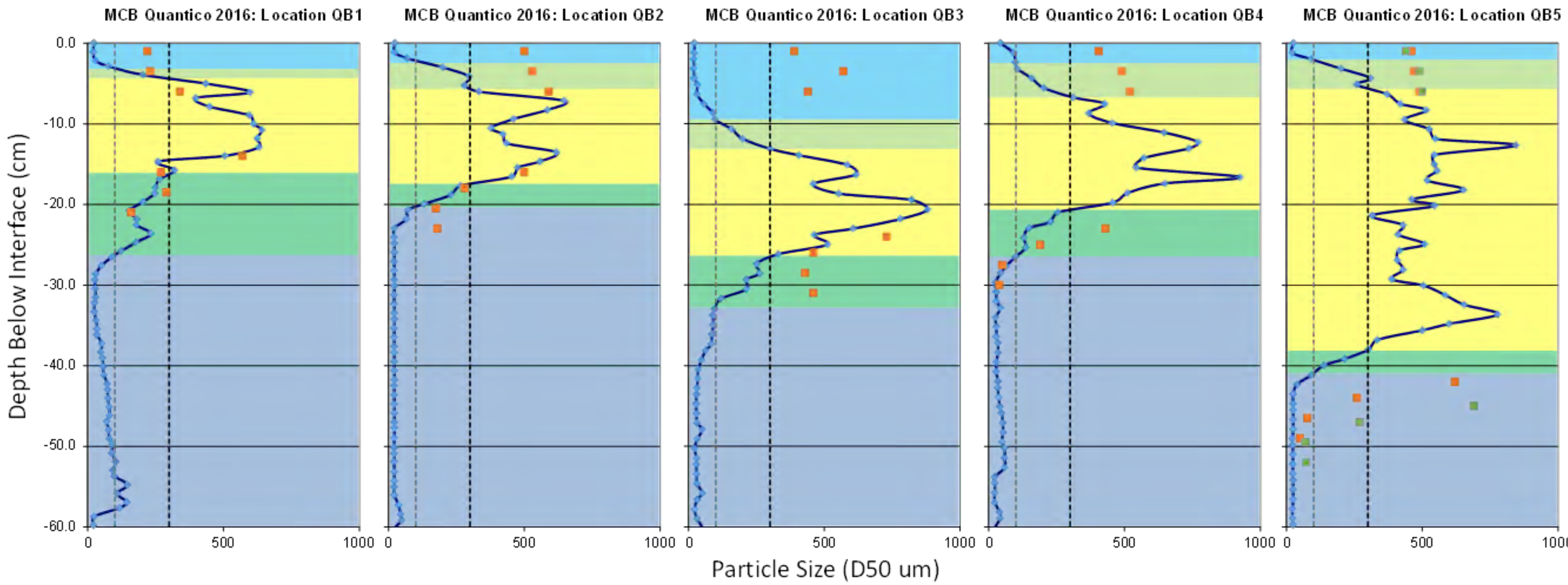



**Figure 57. Examples of SED-FSP profiles for the multi-metric stations QE1-QE5 (left to right) during the 2016 post-cap survey. Blue lines and diamonds are the SED-FSP data, orange square symbols (and green for QE5 station duplicate) are measured D50s from the cores collected at these stations. Blue colors indicate native material, green tones indicate mixed zones, and yellow color indicates predominant sand.**

**Table 17. SED-FSP results for the post-cap survey performed in 2016. Grey shaded cells are for off-cap stations.**

| Station | Latitude | Longitude | Native Material (cm) | Mixed Material (cm) | Cap Material (cm) | Cap + Mixed Material (cm) |
|---|---|---|---|---|---|---|
| FSP-01 | 38.512419 | -77.298964 | 28.9 | 16.1 | 15.0 | 31.1 |
| FSP-02 | 38.512718 | -77.298944 | 13.5 | 12.6 | 33.9 | 46.5 |
| FSP-03 | 38.512452 | -77.298333 | 60.0 | 0.0 | 0.0 | 0.0 |
| FSP-04 | 38.513067 | -77.298754 | 37.6 | 16.3 | 6.1 | 22.4 |
| FSP-05 | 38.513036 | -77.298107 | 43.3 | 15.7 | 1.0 | 16.7 |
| FSP-06 | 38.513360 | -77.298413 | 26.9 | 20.7 | 12.4 | 33.1 |
| FSP-07 | 38.513324 | -77.297864 | 17.6 | 12.4 | 30.0 | 42.4 |
| FSP-08 | 38.513340 | -77.297400 | 42.2 | 17.8 | 0.0 | 17.8 |
| FSP-09 | 38.513709 | -77.298160 | 3.1 | 24.8 | 32.1 | 56.9 |
| FSP-10 | 38.513661 | -77.297611 | 41.1 | 7.4 | 11.6 | 18.9 |
| FSP-11 | 38.513646 | -77.297203 | 26.3 | 28.1 | 5.6 | 33.8 |
| FSP-12 | 38.513928 | -77.298393 | 7.2 | 24.8 | 27.9 | 52.8 |
| FSP-13 | 38.513918 | -77.297950 | 23.0 | 31.0 | 6.0 | 37.0 |
| FSP-14 | 38.513917 | -77.297365 | 6.2 | 9.3 | 44.5 | 53.8 |
| FSP-15 | 38.513853 | -77.296987 | 27.5 | 26.6 | 5.9 | 32.5 |
| FSP-16 | 38.514154 | -77.297845 | 0.9 | 20.6 | 38.4 | 59.1 |
| FSP-17 | 38.514210 | -77.297198 | 43.5 | 9.7 | 6.8 | 16.5 |
| FSP-18 | 38.514197 | -77.296787 | 40.6 | 14.8 | 4.6 | 19.4 |
| FSP-19 | 38.514526 | -77.297058 | 24.4 | 11.3 | 24.4 | 35.6 |
| FSP-20 | 38.514508 | -77.296469 | 46.2 | 13.8 | 0.0 | 13.8 |
| FSP-21 | 38.514880 | -77.296657 | 29.1 | 8.4 | 22.5 | 30.9 |
| FSP-22 | 38.514415 | -77.296265 | 53.5 | 6.5 | 0.0 | 6.5 |
| FSP-23 | 38.514326 | -77.295592 | 57.2 | 2.8 | 0.0 | 2.8 |
| FSP-24 | 38.514250 | -77.295034 | 60.0 | 0.0 | 0.0 | 0.0 |
| FSP-25 | 38.512611 | -77.298154 | 60.0 | 0.0 | 0.0 | 0.0 |
| FSP-26 | 38.512314 | -77.297859 | 60.0 | 0.0 | 0.0 | 0.0 |
| FSP-27 | 38.512071 | -77.297429 | 60.0 | 0.0 | 0.0 | 0.0 |
| QB-01 | 38.514467 | -77.296907 | 33.3 | 16.2 | 10.5 | 26.7 |
| QB-02 | 38.514037 | -77.297267 | 42.7 | 6.1 | 11.2 | 17.3 |
| QB-03 | 38.513667 | -77.297777 | 38.6 | 7.5 | 13.9 | 21.4 |
| QB-04 | 38.513073 | -77.298061 | 37.5 | 8.6 | 13.9 | 22.5 |
| QB-05 | 38.512875 | -77.298557 | 23.2 | 4.2 | 32.6 | 36.8 |
| QB-06 | 38.514215 | -77.294443 | 57.9 | 2.1 | 0.0 | 2.1 |
| QB-07 | 38.511933 | -77.297516 | 58.9 | 1.1 | 0.0 | 1.1 |

**Table 18. Comparison of the cap thickness estimated from coring and SED-FSP, and the change in elevation from the bathymetry measurements (inches).**

| Station | 2016 | | |
|---|---|---|---|
| | Coring | Bathy | FSP |
| QT-1 | 5.9 | 5.6 | 10.5 |
| QT-2 | 6.7 | 7.3 | 6.8 |
| QT-3 | 9.8 | 1.6 | 8.4 |
| QT-4 | 9.4 | 10.4 | 8.9 |
| QT-5 | 17.5 | 12.2 | 14.5 |
| Average | 9.9 | 7.4 | 9.8 |

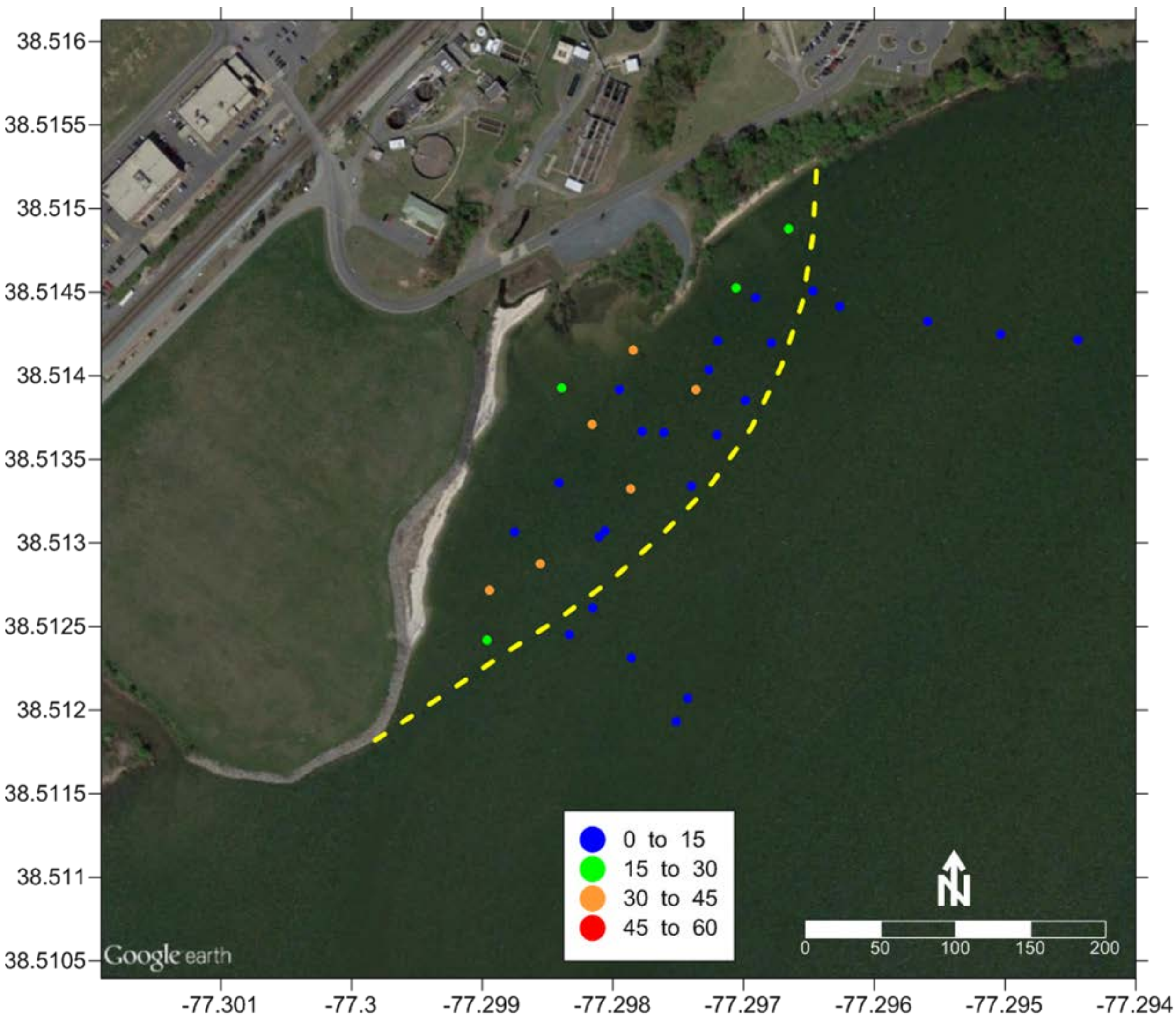



**Figure 58. Cap thickness results from the SED-FSP post-cap survey in 2016 for predominantly cap material.**

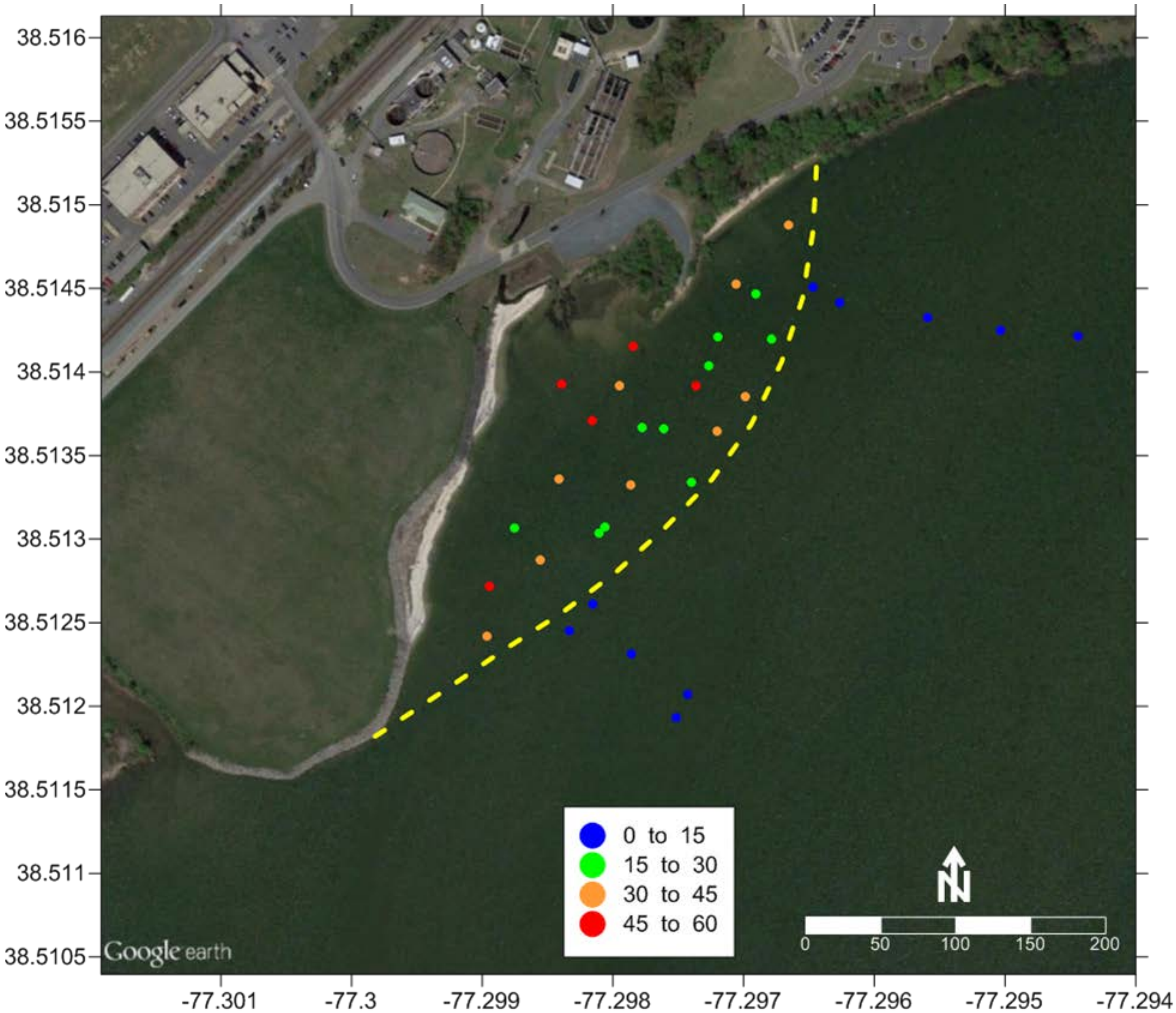



**Figure 59. Cap thickness results from the SED-FSP post-cap survey in 2016 for mixed plus cap material.**

**Table 19. Deposition and mixing analysis results from the 2016 SED-FSP survey.**

| Station | Top of Cap Deposit Thickness (cm) | Upper Cap Mixing Layer (cm) | Interleaved Layers (cm) | Lower Cap Mixing Layer (cm) |
|---|---|---|---|---|
| FSP-01 | 1.1 | 10.7 | 0.0 | 5.4 |
| FSP-02 | 1.9 | 10.6 | 0.0 | 1.9 |
| FSP-03 | 0.0 | 0.0 | 0.0 | 0.0 |
| FSP-04 | 3.1 | 8.1 | 0.0 | 5.1 |
| FSP-05 | 5.9 | 16.7 | 0.0 | 0.0 |
| FSP-06 | 3.1 | 9.3 | 0.0 | 3.1 |
| FSP-07 | 2.1 | 5.2 | 1.0 | 6.2 |
| FSP-08 | 2.8 | 17.8 | 0.0 | 5.6 |
| FSP-09 | 3.1 | 7.2 | 14.5 | 4.1 |
| FSP-10 | 7.4 | 9.5 | 0.0 | 2.1 |
| FSP-11 | 2.8 | 3.8 | 15.9 | 9.4 |
| FSP-12 | 2.1 | 12.4 | 7.2 | 4.1 |
| FSP-13 | 2.0 | 16.0 | 0.0 | 6.0 |
| FSP-14 | 2.1 | 6.2 | 0.0 | 3.1 |
| FSP-15 | 2.0 | 37.4 | 0.0 | 0.0 |
| FSP-16 | 0.9 | 0.9 | 17.8 | 1.9 |
| FSP-17 | 3.9 | 0.0 | 0.0 | 9.7 |
| FSP-18 | 10.2 | 6.5 | 0.9 | 7.4 |
| FSP-19 | 7.5 | 4.7 | 0.0 | 2.8 |
| FSP-20 | 1.8 | 13.8 | 0.0 | 0.0 |
| FSP-21 | 0.9 | 3.8 | 0.0 | 4.7 |
| FSP-22 | 16.6 | 6.5 | 0.0 | 0.0 |
| FSP-23 | 12.9 | 2.8 | 0.0 | 0.0 |
| FSP-24 | 0.0 | 0.0 | 0.0 | 0.0 |
| FSP-25 | 0.0 | 0.0 | 0.0 | 0.0 |
| FSP-26 | 0.0 | 0.0 | 0.0 | 0.0 |
| FSP-27 | 0.0 | 0.0 | 0.0 | 0.0 |
| QB-01 | 3.8 | 1.0 | 1.0 | 9.5 |
| QB-02 | 3.1 | 3.1 | 0.0 | 3.1 |
| QB-03 | 10.7 | 2.1 | 0.0 | 5.4 |
| QB-04 | 3.2 | 3.2 | 0.0 | 5.4 |
| QB-05 | 3.2 | 3.2 | 0.0 | 2.1 |
| QB-06 | 8.4 | 2.1 | 0.0 | 0.0 |
| QB-07 | 13.7 | 1.1 | 0.0 | 0.0 |

### 5.7.4. Sediment Traps

Samples from the sediment traps were analyzed to determine deposition rates, particle physical characteristics, chemical concentrations, and chemical mass flux to the cap area at Quantico Embayment. Results for deposition rates are shown in Table 20. Deposition rates ranged from 5.6 – 14 $g/cm^2/y$ across the stations and the events. Average rates for each event were relatively consistent ranging from 7.3 – 10.0 $g/cm^2/y$ (Figure 60). A consistent spatial trend was observed across the events with highest deposition rates at the North station, while the deposition rates at the Mid and South stations were generally comparable (Figure 61). Assuming a sediment density of 2.66 $g/cm^3$, these rates translate to deposition thicknesses in the range of 4.3 – 9.0 cm/y. These are relatively high rates and likely represent a combination of both new deposition and local resuspension.

Particle size and TOC characteristics for the sediment trap samples are summarized in Table 21. The results indicate that deposited sediments were dominated by fines (silts and clays) with sand fractions generally in the range of 10% with the exception of the post-capping events at the North station where the sand fraction was in the range of 50% (Figure 62). The results suggest that the physical characteristics of the sediments depositing in the cap area did not change substantially between the baseline and post-capping conditions except at the North station. At the North station, the increase in sand content in the sediment traps during the post-capping events is an indication that there may be more physical disturbance in this area with sufficient energy to either transport or resuspend sand sized particles. Because the elevated sand content was not present in the baseline traps, it is more likely that the sand is associated with local resuspension of cap material, an indication of potential physical disturbance of the cap. TOC content in the trap samples generally decreased following the capping, especially in the 2016 event (Figure 63). Post capping TOC levels are generally consistent with off-cap TOC levels from the surface sediments at the reference stations which were typically in the range of 2-3%. As with the particle size, the North station was notably different than the Mid and South stations during the post capping events, with lower TOC levels consistent with the higher sand content.

Chemical concentrations for DDX compounds found in the traps sediments are summarized in Table 22. The results show a clear trend with reduced concentrations of total DDX following the cap placement as reflected in the low concentrations in trap materials from the 2014 and 2016 events (Figure 64). Averaged across the cap stations the reductions in trap sediment concentrations for the 2014 and 2016 events were about 70% and 65%, respectively. Congener ratios were similar across the sampling events although the post capping events both showed a general reduction in the fraction of 4,4’-DDT relative to other congeners suggesting a more weathered source associated with these particles. The total DDX and TOC concentrations observed in the post capping trap samples were consistent with levels found in the off-cap reference stations to the east of the cap, suggesting that deposition onto the cap is likely coming from off cap sediments rather than from disturbance of the cap sediments themselves with the possible exception of the North station area as discussed previously.

The depositional flux to the sediment bed is a function of the deposition rate and the chemical concentrations associated with the depositing particles. Flux estimates are shown in Table 23. As with the trap concentrations, the depositional fluxes showed a marked decrease following the installation of the cap (Figure 65). The reduction was consistent across both sampling events with reductions in mass flux of total DDX of about 63% for 2014 and 72% for 2016. Reductions in mass flux for the post capping events were driven primarily by changes in DDX concentrations, as the deposition rates were relatively constant across the baseline and post capping events. The North station was an exception especially during the 2014 event when both the deposition rate and higher concentrations led to a relatively high deposition flux compared to other stations.

Overall, the sediment trap results indicate relatively high deposition (or re-deposition) rates, with rates consistent between pre- and post-capping conditions. While deposition rates remained relatively constant, the DDX concentrations in the depositing sediments was substantially lower in both of the post capping sampling events. This was reflected in reductions of 65-70% in the depositional mass flux of DDX to the capping area. Grain size, TOC and DDX content of the post capping trap sediments are consistent with the characteristics of off-cap sediments to the east of the capping area.

**Table 20. Deposition results from the sediment trap deployments at Quantico Embayment.**

| Sampling Event | Station | Deployment Date/Time | Retrieval Date/Time | Duration (days) | Sediment Mass (g) | Trap Area ($cm^2$) | Deposition Rate ($g/cm^2/y$) | Soilds (%) | Bulk Density ($g/cm^3$) | Depostion Rate (cm/y) |
|---|---|---|---|---|---|---|---|---|---|---|
| Baseline Sept 2009 | South | 9/4/2009 9:47 | 9/27/2009 11:05 | 23.05 | 97.32 | 186.39 | 8.27 | 30.77 | 1.51 | 5.47 |
| | Mid | 9/4/2009 9:40 | 9/27/2009 10:42 | 23.04 | 75.21 | 186.39 | 6.39 | 30.19 | 1.50 | 4.26 |
| | North | 9/4/2009 9:34 | 9/27/2009 10:25 | 23.04 | 140.67 | 186.39 | 11.96 | 31.09 | 1.52 | 7.89 |
| Post-Cap Sept 2014 | South | 9/8/2014 12:26 | 9/24/2014 15:20 | 16.12 | 89.65 | 276.02 | 7.35 | 20.1 | 1.33 | 5.51 |
| | Mid | 9/8/2014 12:50 | 9/24/2014 16:25 | 16.15 | 103.10 | 276.02 | 8.44 | 17.2 | 1.29 | 6.57 |
| | North | 9/8/2014 13:20 | 9/24/2014 14:45 | 16.06 | 170.80 | 276.02 | 14.06 | 33.9 | 1.56 | 9.00 |
| Post-Cap Aug 2016 | South | 8/10/2016 12:41 | 8/24/2016 10:15 | 13.90 | 69.24 | 276.02 | 6.59 | 20.1 | 1.33 | 4.94 |
| | Mid | 8/10/2016 12:38 | 8/24/2016 9:05 | 13.85 | 58.45 | 276.02 | 5.58 | 17.2 | 1.29 | 4.34 |
| | North | 8/10/2016 12:34 | 8/24/2016 8:10 | 13.82 | 101.80 | 276.02 | 9.74 | 33.9 | 1.56 | 6.23 |

**Table 21. Grain size distribution and TOC for sediment trap samples.**

| Sampling Event | Station | %gravel | %sand | %silt | %clay | %fines | %TOC |
|---|---|---|---|---|---|---|---|
| Baseline Sept 2009 | South | 0.0 | 11.8 | 48.6 | 39.6 | 88.2 | 4.6 |
| | Mid | 0.0 | 15.8 | 53.0 | 31.2 | 84.2 | 5.7 |
| | North | 0.0 | 4.6 | 54.2 | 41.2 | 95.4 | 4.7 |
| Post-Cap Sept 2014 | South | 0.0 | 7.4 | 75.9 | 16.7 | 92.6 | 4.5 |
| | Mid | 0.0 | 10.4 | 72.4 | 17.2 | 89.6 | 3.9 |
| | North | 0.0 | 56.2 | 33.8 | 10.0 | 43.8 | 2.2 |
| Post-Cap Aug 2016 | South | 0.0 | 11.7 | 59.1 | 29.2 | 88.3 | 1.2 |
| | Mid | 0.0 | 11.9 | 58.4 | 29.7 | 88.1 | 1.2 |
| | North | 0.0 | 45.5 | 34.6 | 19.9 | 54.5 | 0.8 |

**Table 22. Chemistry results for the sediment trap samples. Grey shaded cells indicate non-detects listed at ½ the reporting limit. Units are µg/kg dry weight.**

| Sampling Event | Station | 2,4'-DDE | 4,4'-DDE | 2,4'-DDD | 4,4'-DDD | 2,4'-DDT | 4,4'-DDT | Sum DDx |
|---|---|---|---|---|---|---|---|---|
| Baseline Sept 2009 | South | 0.04 | 32.43 | 10.71 | 45.15 | 2.38 | 15.12 | 105.83 |
| | Mid | 0.04 | 24.19 | 10.86 | 68.22 | 1.91 | 33.32 | 138.54 |
| | North | 0.04 | 35.59 | 20.85 | 72.20 | 2.12 | 32.93 | 163.73 |
| Post-Cap Sept 2014 | South | 0.20 | 8.69 | 3.29 | 15.20 | 0.20 | 4.38 | 31.95 |
| | Mid | 0.23 | 7.30 | 3.92 | 8.43 | 0.23 | 4.24 | 24.35 |
| | North | 0.26 | 10.70 | 6.56 | 34.20 | 1.32 | 13.60 | 66.64 |
| Post-Cap Aug 2016 | South | 0.19 | 14.00 | 5.60 | 27.30 | 0.19 | 2.39 | 49.67 |
| | Mid | 0.21 | 12.80 | 5.17 | 29.40 | 0.21 | 1.85 | 49.64 |
| | North | 0.20 | 9.74 | 5.22 | 24.10 | 0.20 | 5.55 | 45.01 |

**Table 23 Mass flux results for the sediment trap stations. Grey shaded cells indicate flux rates based on non-detects listed at ½ the reporting limit. Units are ng/cm$^2$/y.**

| Sampling Event | Station | 2,4'-DDE | 4,4'-DDE | 2,4'-DDD | 4,4'-DDD | 2,4'-DDT | 4,4'-DDT | Sum DDx |
|---|---|---|---|---|---|---|---|---|
| Baseline Sept 2009 | South | 0.33 | 268 | 88.5 | 373 | 19.7 | 125 | 875 |
| | Mid | 0.26 | 155 | 69.4 | 436 | 12.2 | 213 | 885 |
| | North | 0.48 | 425 | 249 | 863 | 25.3 | 394 | 1957 |
| Post-Cap Sept 2014 | South | 1.43 | 63.9 | 24.2 | 112 | 1.43 | 32.2 | 235 |
| | Mid | 1.94 | 61.6 | 33.1 | 71.2 | 1.94 | 35.8 | 206 |
| | North | 3.66 | 150 | 92.3 | 481 | 18.6 | 191 | 937 |
| Post-Cap Aug 2016 | South | 1.25 | 92.2 | 36.9 | 180 | 1.25 | 15.7 | 327 |
| | Mid | 1.17 | 71.4 | 28.8 | 164 | 1.17 | 10.3 | 277 |
| | North | 1.95 | 94.9 | 50.9 | 235 | 1.95 | 54.1 | 439 |

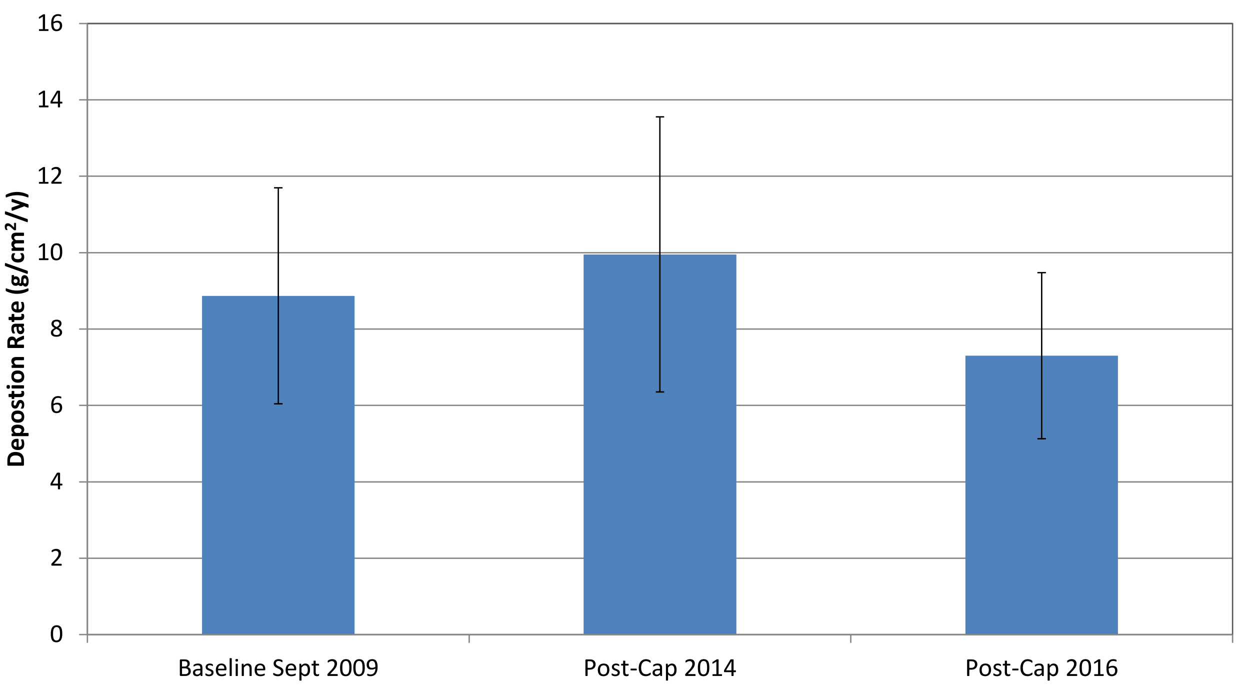



**Figure 60. Average deposition rates for the three sampling events. Error bars are standard deviations across the three stations.**

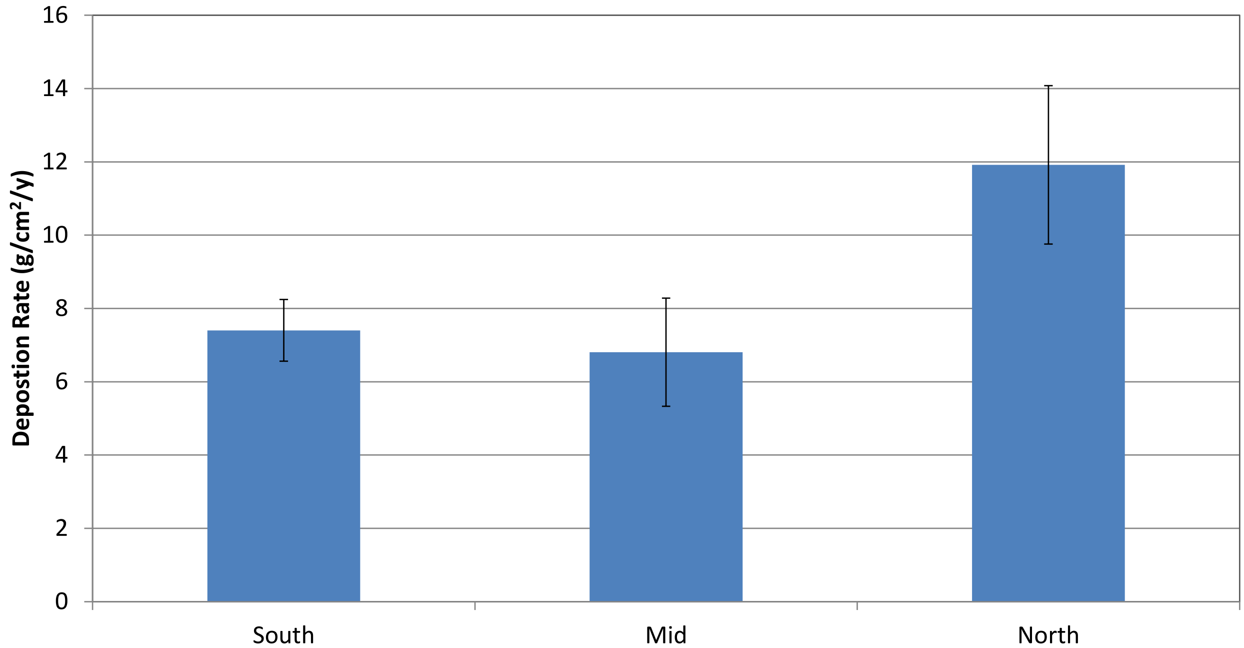



**Figure 61. Average deposition rates for the three capping stations. Error bars are standard deviations across the three sampling events.**

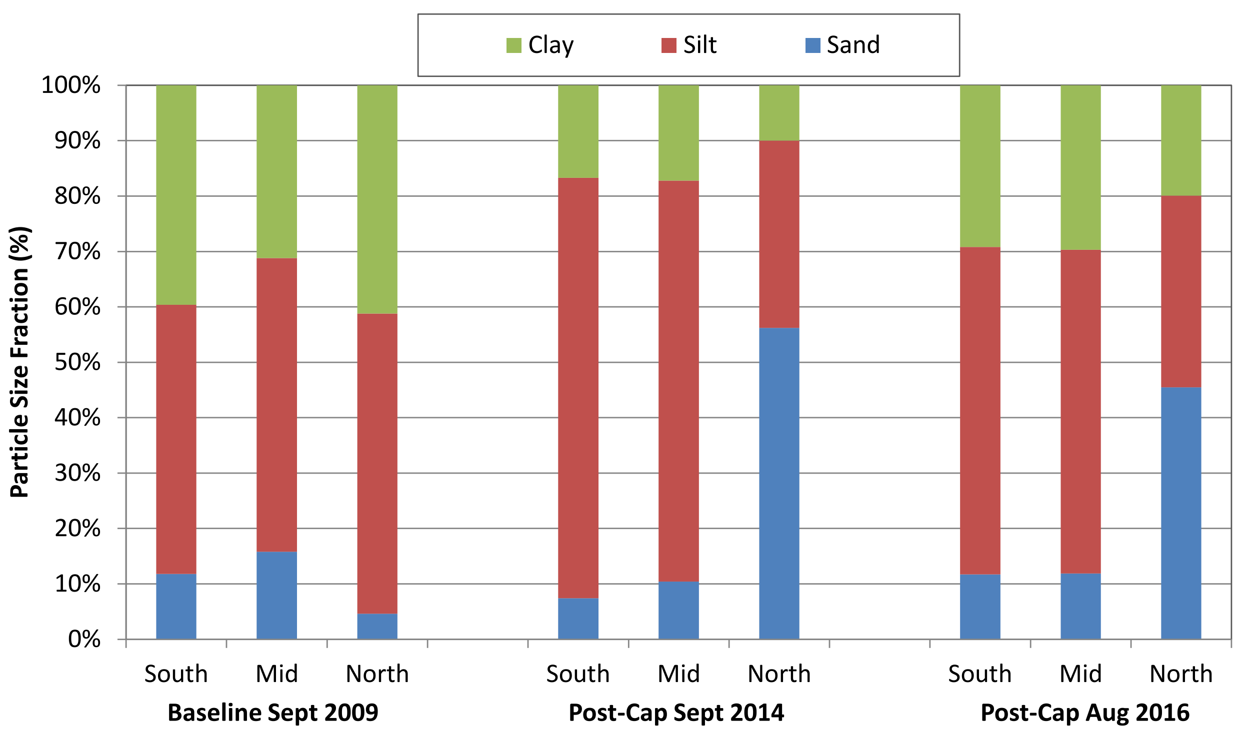



**Figure 62. Particle size distribution for the three sediment trap events and three stations at Quantico Embayment.**

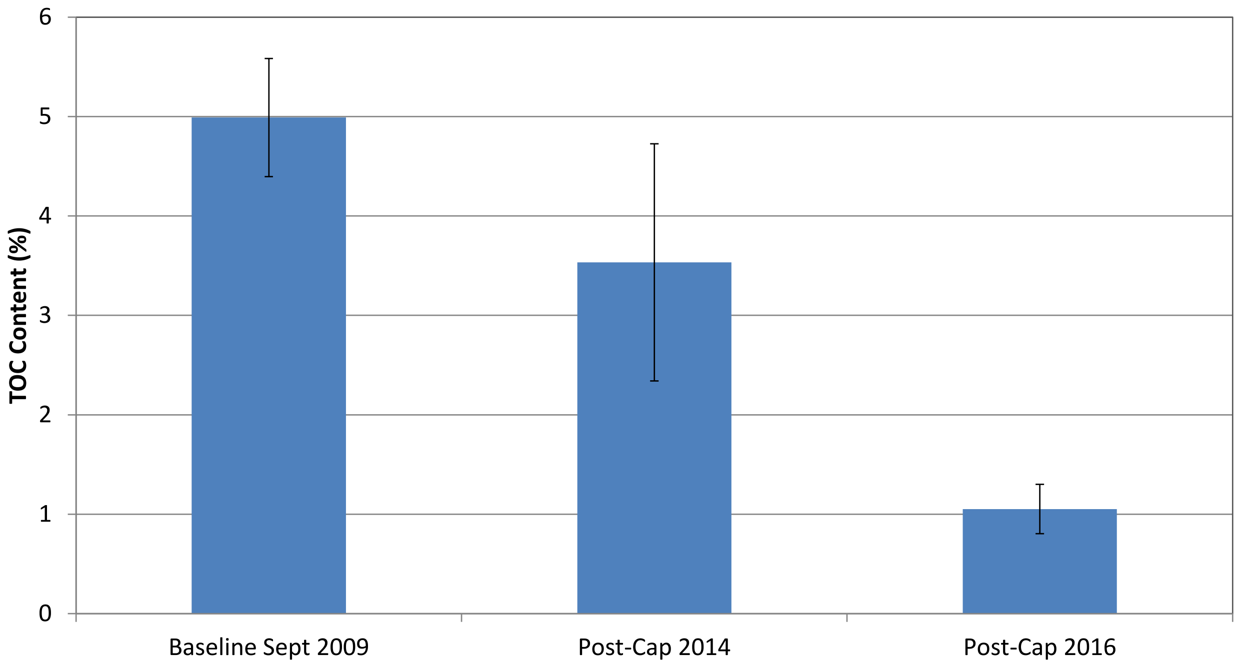



**Figure 63. TOC content in sediment trap samples.**

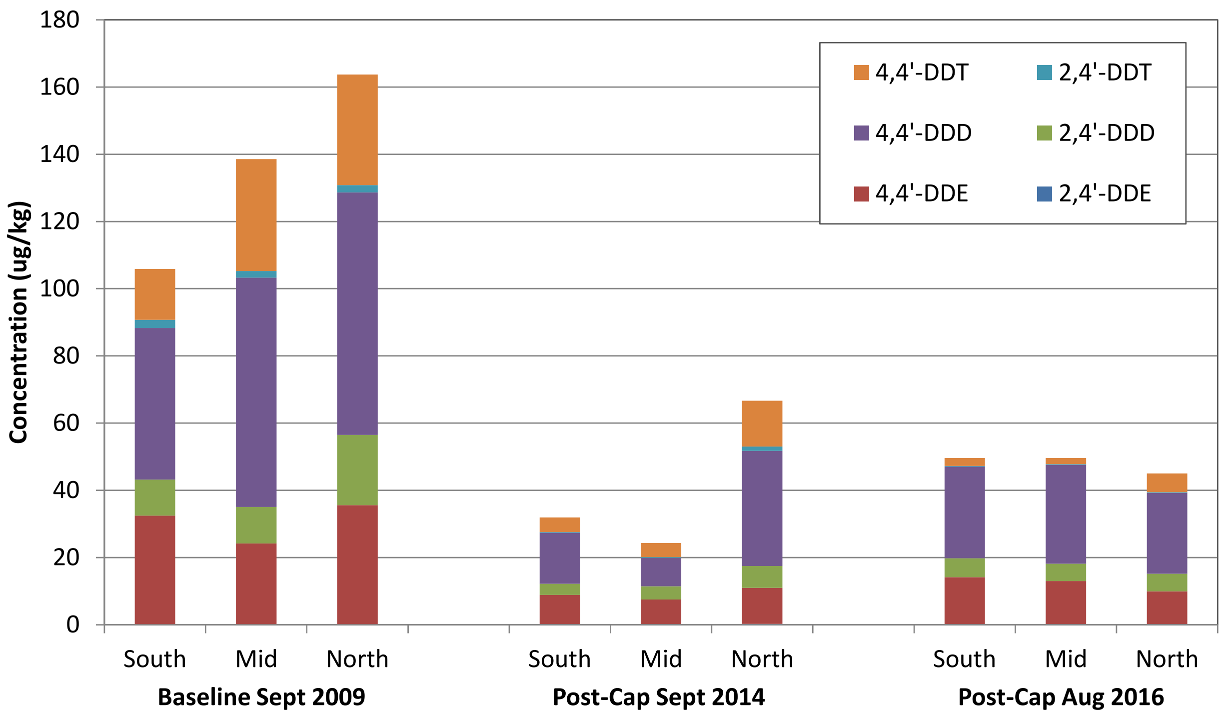



**Figure 64. DDX concentrations in trap sediments.**

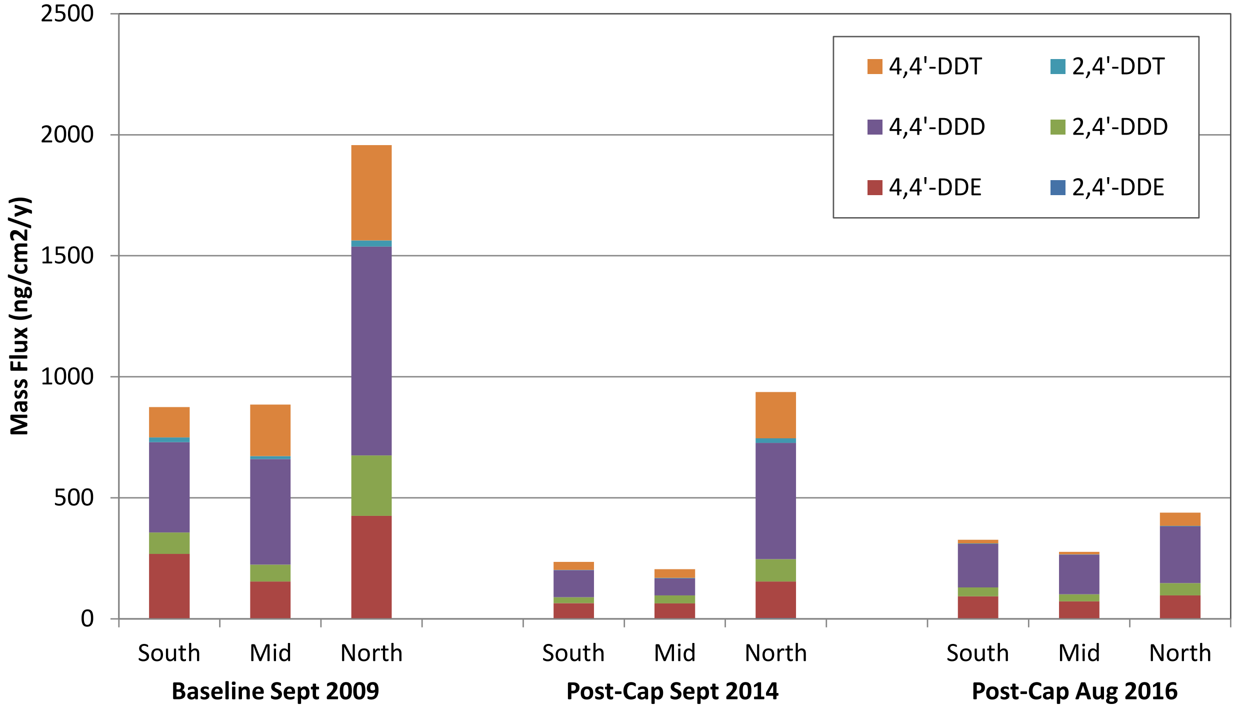



**Figure 65. Depositional mass flux of DDX compounds.**

### 5.7.5. Bulk Sediment

#### 5.7.5.1. Cap Thickness

The results of the cap thickness based on visual observations from sediment core profiling are summarized in Table 24. The detailed results are provided in Appendix E. In the 2-month event, the TLC was 18 cm to 40 cm as measured by sediment core profiling at the multimeric stations. The TLC thickness decreased at the northernmost stations in the 14-month event, and increased at the southernmost stations. In the 25-month event, cap thicknesses at the northernmost stations was consistent with the previous annual event; however, station 4 decreased in thickness while the southernmost station remained relatively consistent with the previous annual event. There appears to have been a slight shifting of the cap material from the northern end to the southern end; however, overall, the average thickness observed 2-month post-placement (30 cm), decreased slightly in the first annual event (25 cm) and remained constant in the second annual event (25 cm).

**Table 24. Comparison of depth (cm) to cap-native sediment interface, represented as mean ± standard deviation (minimum - maximum), for 2, 14, and 25-month monitoring events.**

| Station | 2-Month | 14-Month | Change from 2-Month (cm) | 25-Month | Change from 2-Month (cm) |
|---|---|---|---|---|---|
| 1 | 18 ± 1 (16 - 18) | 15 ± 1.2 (13 - 16) | -3 | 15 ± 8.6 (4 - 26) | -3 |
| 2 | 40 ± 5 (35.5 - 47.5) | 17 ± 1.8 (15 - 19) | -23 | 17 ± 1.3 (15 - 18) | -23 |
| 3 | 28 ± 4 (22 - 32) | 23 ± 1.3 (21 - 24) | -5 | 25 ± 8.2 (21 - 40) | -3 |
| 4 | 32 ± 1 (31.5 - 34) | 39 ± 0.9 (38 - 40) | 7 | 24 ± 3.9 (18 - 28) | -8 |
| 5 | 33 ± 2 (31 - 35.5) | 41 ± 2.3 (39 - 45) | 8 | 43 ± 1.5 (42 - 46) | 10 |
| 5DUP | 33 ± 1 (30.5 - 34) | 42 ± 1.3 (41 - 44) | 9 | 46 ± 1.5 (44 - 48) | 13 |

#### 5.7.5.2. Grain Size

The grain size distribution at Quantico Embayment was characterized prior to cap placement, and was, on average, 59% sand in the cap footprint (Table 25). Prior to cap placement, the fraction of sand in the surface sediment remained similar throughout the three post-cap monitoring events, at around 93%. This consistency indicates that the cap was successfully placed and also indicates the overall stability of the material over 2 years post-capping. There are station by station differences in grain size distributions that are further explored below.

**Table 25. Mean percent sand in sample intervals on- and off-cap collected during each event.**

| Interval (cm) | Location | Baseline 2 | 2-Month | 14-Month | 25-Month |
|---|---|---|---|---|---|
| 0-2 | On Cap | 62% | 95% | 97% | 89% |
| 2-5 | On Cap | 58% | 93% | 93% | 92% |
| 5-7 | On Cap | 57% | 87% | 96% | 92% |
| 0-2 AI | On Cap | --[a] | 95% | 97% | 97% |
| 0-2 BI | On Cap | 62% | 73% | 73% | 77% |
| 2-5 BI | On Cap | 58% | 64% | 69% | 68% |
| 5-7 BI | On Cap | 57% | 60% | 75% | 54% |
| 0-10 | Off Cap | 37% | 48% | 44% | 22% |

a. 0-2 AI interval did not exist prior to cap placement

During the Baseline 2 event, sand was the major grain size in surface sediment (0-7 cm below SWI) in the northern half of the cap footprint (monitoring stations 2 and 3), while fines were more prevalent on the southern end of the footprint (monitoring station 5), indicating this area was lower energy (Figure 66). In general, the top 7 cm of sediment appeared to be well mixed with no strong depth gradients. The northern off cap location (station 6) contained an equal mix of sand and fines, while the southern off cap location (station 7) was 77% fines and 23% sand. Overall, during the baseline event there is a gradient of increasing percent fines as you move south along the cap footprint.

During the short-term monitoring event, 2-months post-placement, the upper 7 cm was dominated by sand (92% on average, Figure 67). Stations in the southern end of the cap footprint (Stations 3, 4 and 5) had a layer of depositional material mixed in the 5-7 cm below SWI interval, which aligns with visual observations in the core photolog (Appendix E). The 0-2 cm above the cap native sediment interface (0-2 AI) remained sand-dominated, indicating the mixing was likely top down, rather than bottom up. Additionally, it appears the cap material is mixing with the native sediment, causing increases in percent sand of the 0-2 BI samples compared to baselines distributions.

During the one year monitoring event, the upper 7 cm was composed of a higher average sand content compared to the 2-month event (> 96% on average, Figure 68). Stations 4 and 5 had a net gain of approximately 8 cm of compared to the 2-month event (Table 24), with this material potentially coming from the northern portion of the cap footprint, which had losses of cap material over the same timeframe. Based on the grain size profile and photolog, finer grained sediments appear to be mixing with cap material at Station 3.

During the two year monitoring event, additional top down mixing of fine grained material occurred in the surface sediment (0-7 cm below SWI) at Stations 1 and 3 (Figure 69). The sample above the cap-native sediment interface (0-2 AI) remained predominately sand, indicating that top-down mixing was the likely mechanism occurring. Additionally, sand continued to mix from the cap material with the 0-2 BI sample, which was especially prevalent at stations 4 and 5.

Based on the consistency of percent sand across the stations and events, it seems that the cap material is exhibiting overall stability. It appears that the 0-2 cm above interface sample is remaining predominately sand (> 95%), indicating that bottom up mixing is not likely occurring at these five monitoring locations. It appears more likely that the sand is mixing with native sediment, mostly in the 0-2 cm just below the cap-native sediment interface. There is slight variability in the percent fines in the surface sediments over the events, indicating that natural deposition, resuspension and burial processes are occurring.

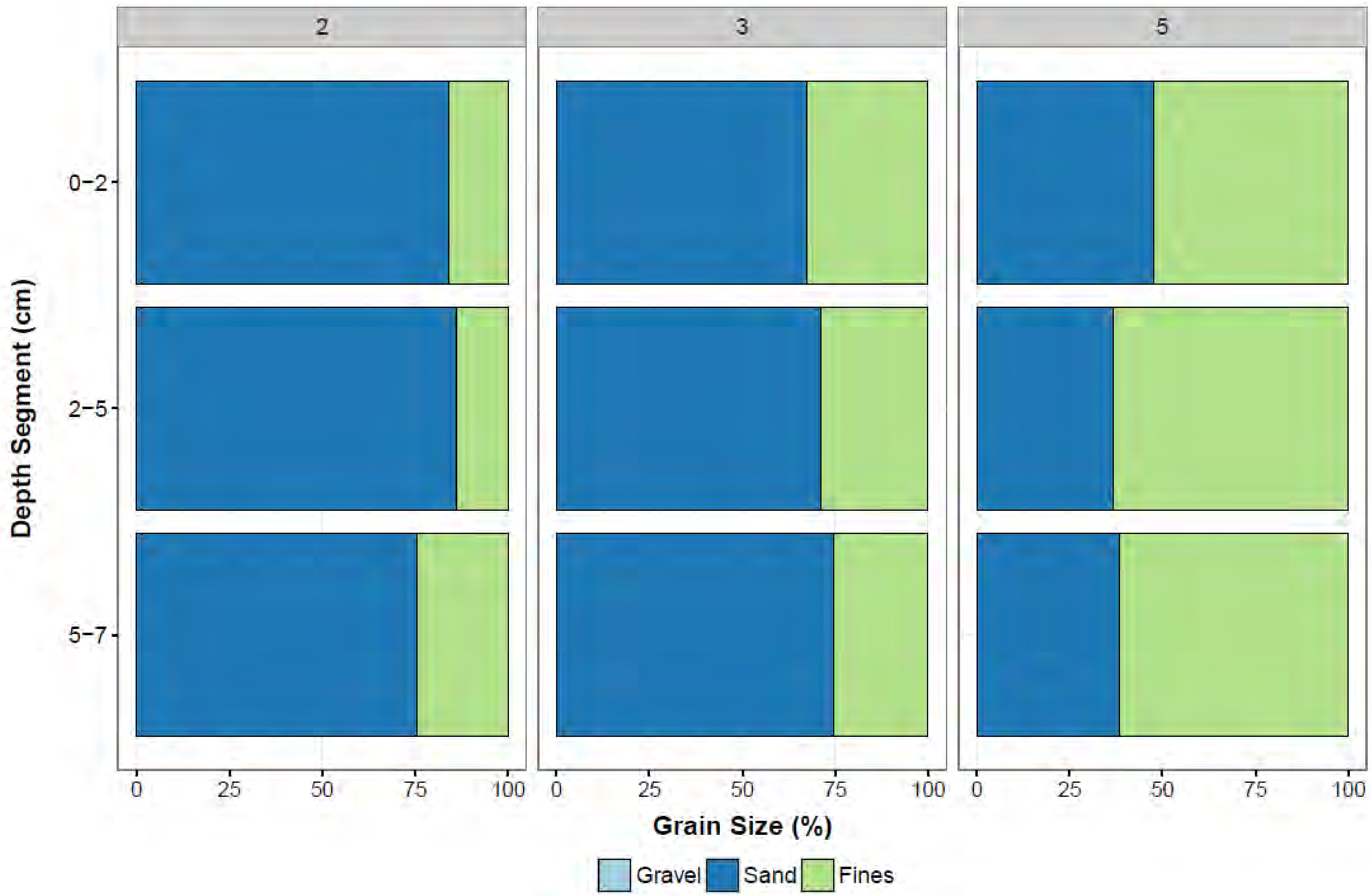



**Figure 66. Baseline 2 station-by-station comparison of grain size distribution depth profiles of on-cap sediment (0-2, 2-5, 5-7 cm below SWI). Note: Stations 1 and 4 do not have baseline results.**

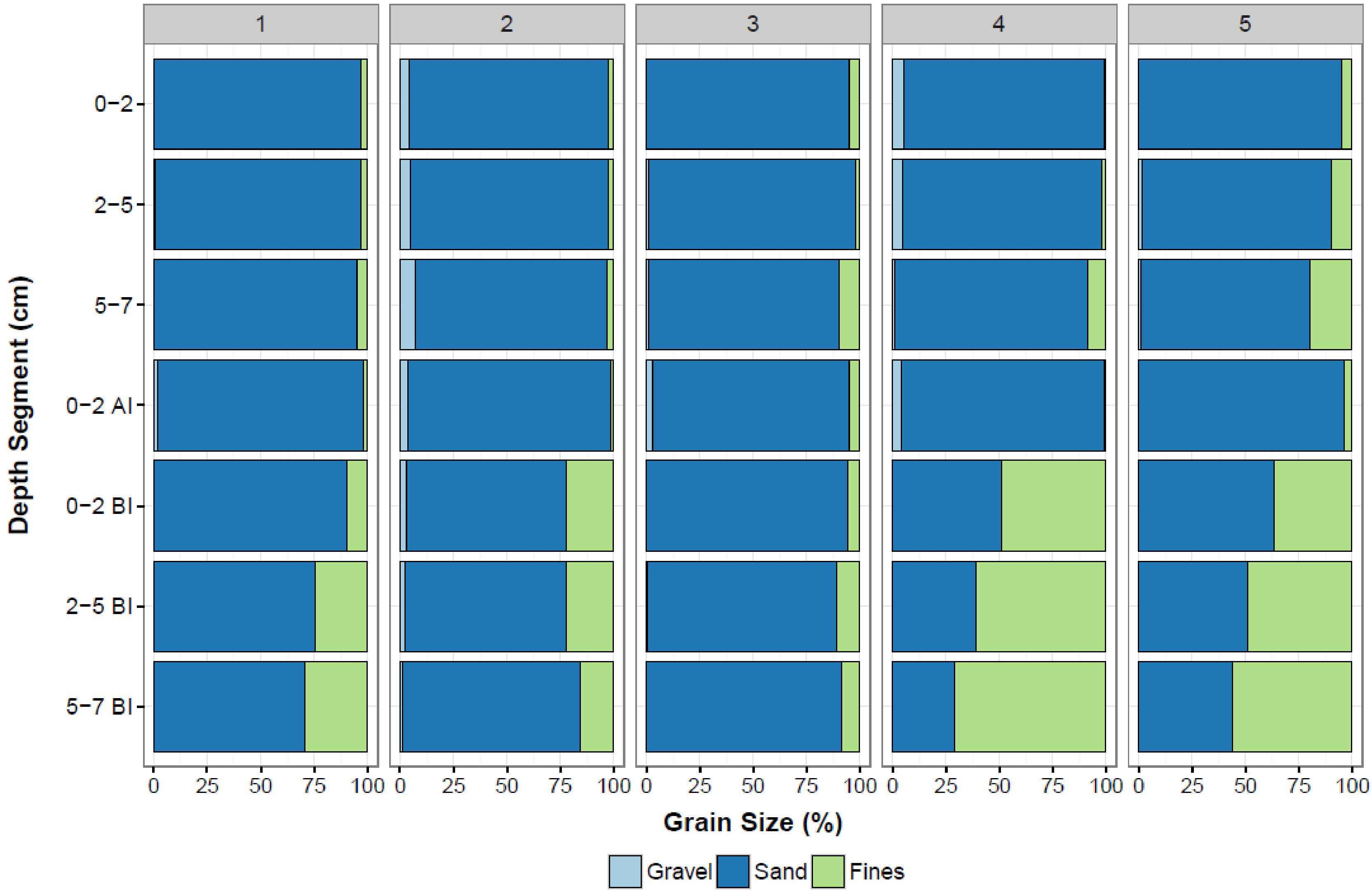



**Figure 67. 2-Month event station-by-station comparison of grain size distribution depth profiles of on-cap sediment.**

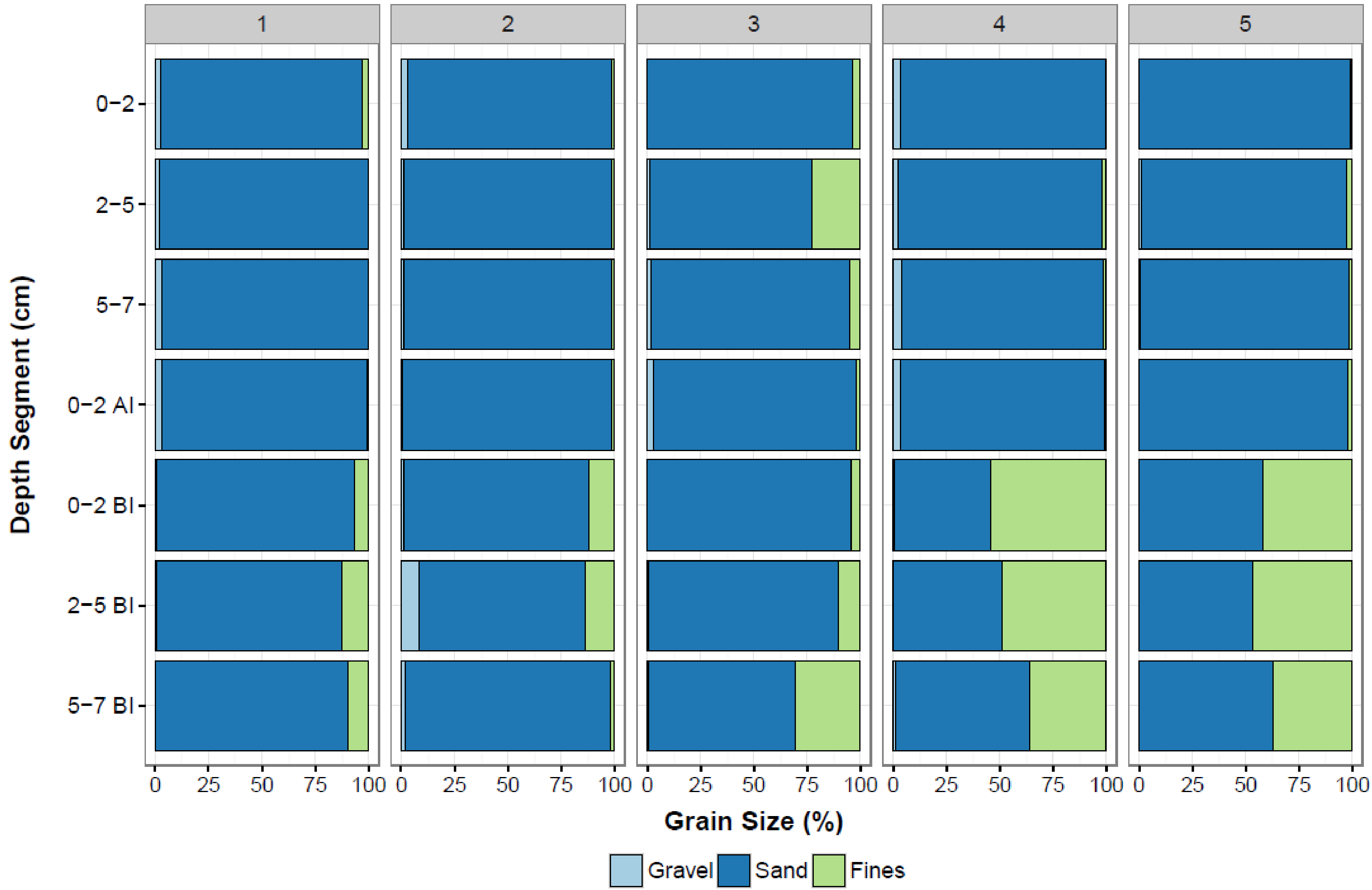



**Figure 68. 14-Month event station-by-station comparison of grain size distribution depth profiles of on-cap sediment (0-2, 2-5, 5-7 cm below SWI).**

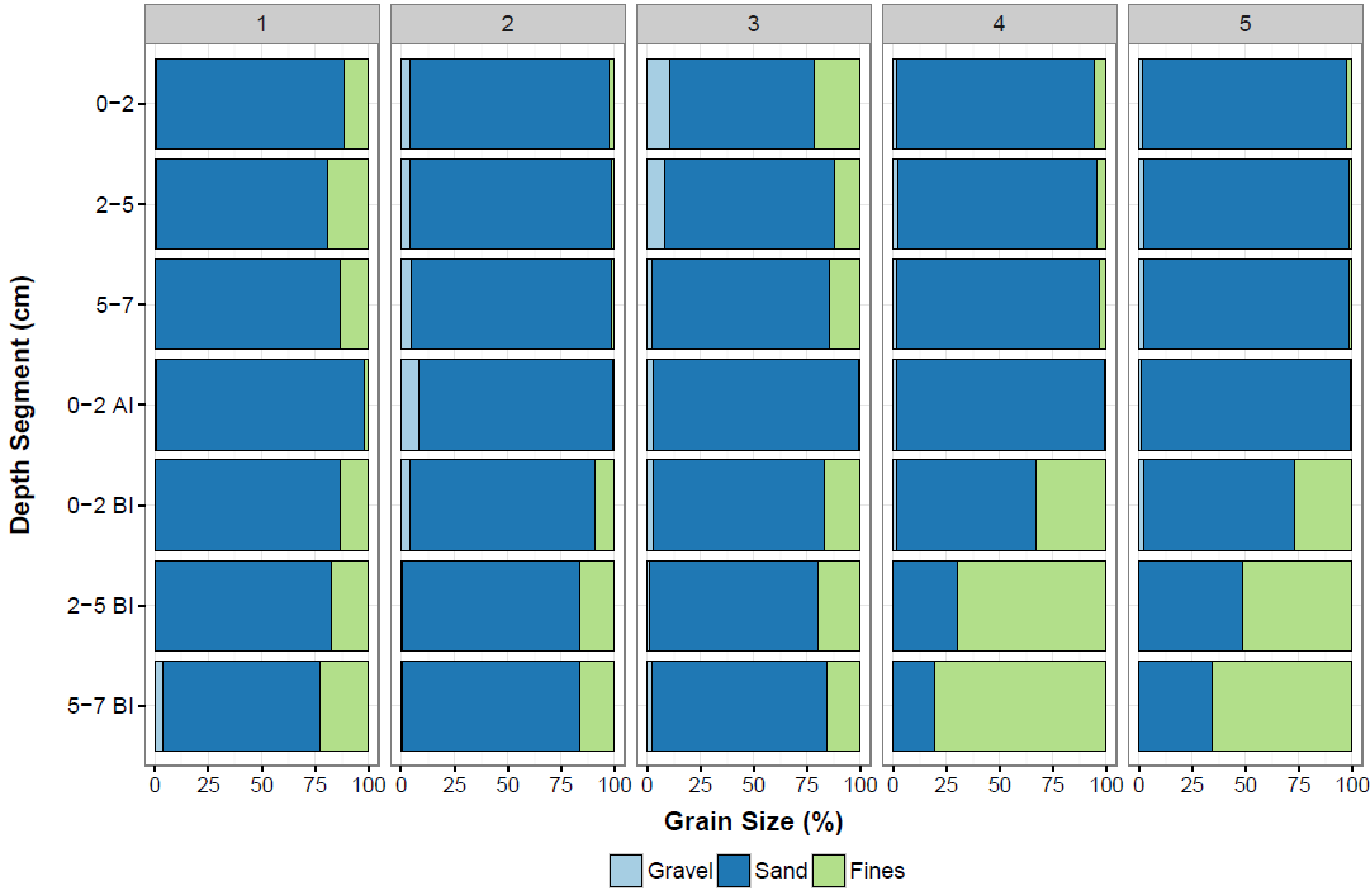



**Figure 69. 25-Month event station-by-station comparison of grain size distribution depth profiles of on-cap sediment (0-2, 2-5, 5-7 cm below SWI).**

#### 5.7.5.3. Total Organic Carbon

Total organic carbon (TOC) content results are summarized in Table 26. Event specific TOC depth profiles are presented in Figure 70, Figure 71, Figure 72, and Figure 73. TOC was reduced in the 2-month post-placement event surface sediment (0-7 cm below SWI) compared to baseline, indicating placement of clean sand. TOC content in underlying sediment was similar in the baseline 2 and 2-month events, indicating a lack of mixing of cap material and native sediment. TOC content in the 14-month and 25-month events was lower in all samples (cap material and native sediment) compared to baseline 2 and 2-month events. This was unexpected since the cap material was observed to have native sediment layers mixed within the sand, particularly in the 25-month. These discrepancies are likely due to unexpected deviations in sample analysis methods as well as unexplained analytical artefacts during, as discussed in Section 5.6.5.

Despite uncertainties in event to event results, useful information could be obtained by comparing intra-event and -station patterns. TOC results tracked well with patterns observed in grain size profiles. Native sediment in the southern half of the cap footprint contained more TOC compared to northern stations.

TOC content was reduced in surface sediment (0-7 cm below SWI) from the 2-month post-placement event compared to baseline sediment, indicating successful placement of clean sand. In the 2-month event, elevated TOC content within the top 7 cm below the SWI, relative to the 0-2 cm above the cap-native sediment interface, likely indicates deposition and mixing of native sediment, especially at the southern half of the cap footprint (stations 3, 4 and 5). It also appeared that cap material was mixing with native, underlying sediment at stations 1 and 3, given that the 0-2 cm interval below the cap-native sediment interface had reduced TOC content compared to deeper intervals.

In the 14-month event, deposited native sediment was likely mixed in the top 7 cm at station 3, which had relatively higher TOC content, compared to surface sediment at other stations. Mixing of TLC material into native sediment occurred at stations 2 and 4, in addition to stations 1 and 3, as was noted during the 2-month event.

In the 25-month event, TOC content was nearly uniform in the top 7 cm of the TLC, indicating mixing within the surface cap materials. Stations 2, 4 and 5 maintained lower surface sediment TOC content relative to underlying sediment, indicating neither bottom up nor top down mixing of organic rich sediments were occurring at in these areas. After 25-months, stations 1 and 3 exhibited the highest organic enrichment relative to native sediments. Stations 1 and 3 may have had deposition of organic-rich material on the surface or mixing with native sediments. The interval 0-2 cm above the cap-native sediment interface remained lower in TOC content through 25 months, indicating the relative stability of at least a portion of the cap material. This potentially indicates that top down mixing is the more likely mechanism leading to the observed patterns.

**Table 26. Mean[a] (± standard deviation, minimum – maximum) concentrations of total organic carbon content (%, dw).**

| Depth Interval Below SWI (cm) | Location | Baseline 2 | Baseline 3 | 2-Month Post-Placement | 14-Month Post-Placement | 25-Month Post-Placement |
|---|---|---|---|---|---|---|
| 0-2 | On Cap | 5.0 ± 2.2 (2.4 - 6.7) | NS[b] | 0.5 ± 0.2 (0.3 - 0.7) | 0.14 ± 0.12 (0.06 - 0.36) | 0.15 ± 0.13 (0.05 - 0.34) |
| 2-5 | On Cap | 3.3 ± 2.1 (0.9 - 4.9) | NS | 0.4 ± 0.3 (0.1 - 0.7) | 0.1 ± 0.08 (0.0 - 0.2) | 0.13 ± 0.1 (0.03 - 0.26) |
| 5-7 | On Cap | 4.0 ± 2.2 (1.5 - 6) | NS | 0.9 ± 0.7 (0.1 - 1.7) | 0.07 ± 0.08 (0.0 - 0.19) | 0.11 ± 0.11 (0.02 - 0.24) |
| 0-10 | On Cap | 5.5 ± 3.7 (1.7 - 9) | 5.3 ± 3.0 (1.2 - 8.2) | NS | NS | NS |
| 0-2 AI[c] | On Cap | --[d] | NS | 0.2 ± 0.1 (0.1 - 0.4) | 0.02 ± 0.02 (0.0 - 0.05) | 0.02 ± 0.01 (0.01 - 0.03) |
| 0-2 BI[e] | On Cap | 5.0 ± 2.2 (2.4 - 6.7)[f] | NS | 3.3 ± 1.6 (1.8 - 6) | 0.7 ± 0.55 (0.17 - 1.32) | 0.22 ± 0.14 (0.07 - 0.42) |
| 2-5 BI | On Cap | 3.3 ± 2.1 (0.9 - 4.9) | NS | 4.5 ± 2.9 (1.8 - 8.7) | 1.14 ± 0.55 (0.64 - 2) | 0.37 ± 0.26 (0.09 - 0.76) |
| 5-7 BI | On Cap | 4.0 ± 2.2 (1.5 - 6) | NS | 5.3 ± 3.4 (1.6 - 10) | 1.13 ± 0.46 (0.57 - 1.7) | 0.4 ± 0.28 (0.22 - 0.87) |
| 0-10 | Off Cap | 2.6 ± 0.8 (2.1 - 3.2) | 0.9 | 3.0 ± 0.8 (2.4 - 3.5) | 2.15 ± 0.28 (1.95 - 2.34) | 1 ± 0.43 (0.7 - 1.31) |

a. Sample size: 2 for off cap samples, 3 for on cap baseline 2, and 5 for remainder
b. NS: Not sampled during event
c. AI collected from 0 – 2 cm above cap-native sediment interface
d. Interval did not exist for baseline event
e. BI collected from 0 – 2, 2 – 5 and 5 – 7 cm below cap-native sediment interface
f. Baseline BI sample concentrations are repeated from standard intervals (0 – 2, 2 – 5, and 5 – 7) for comparison purposes

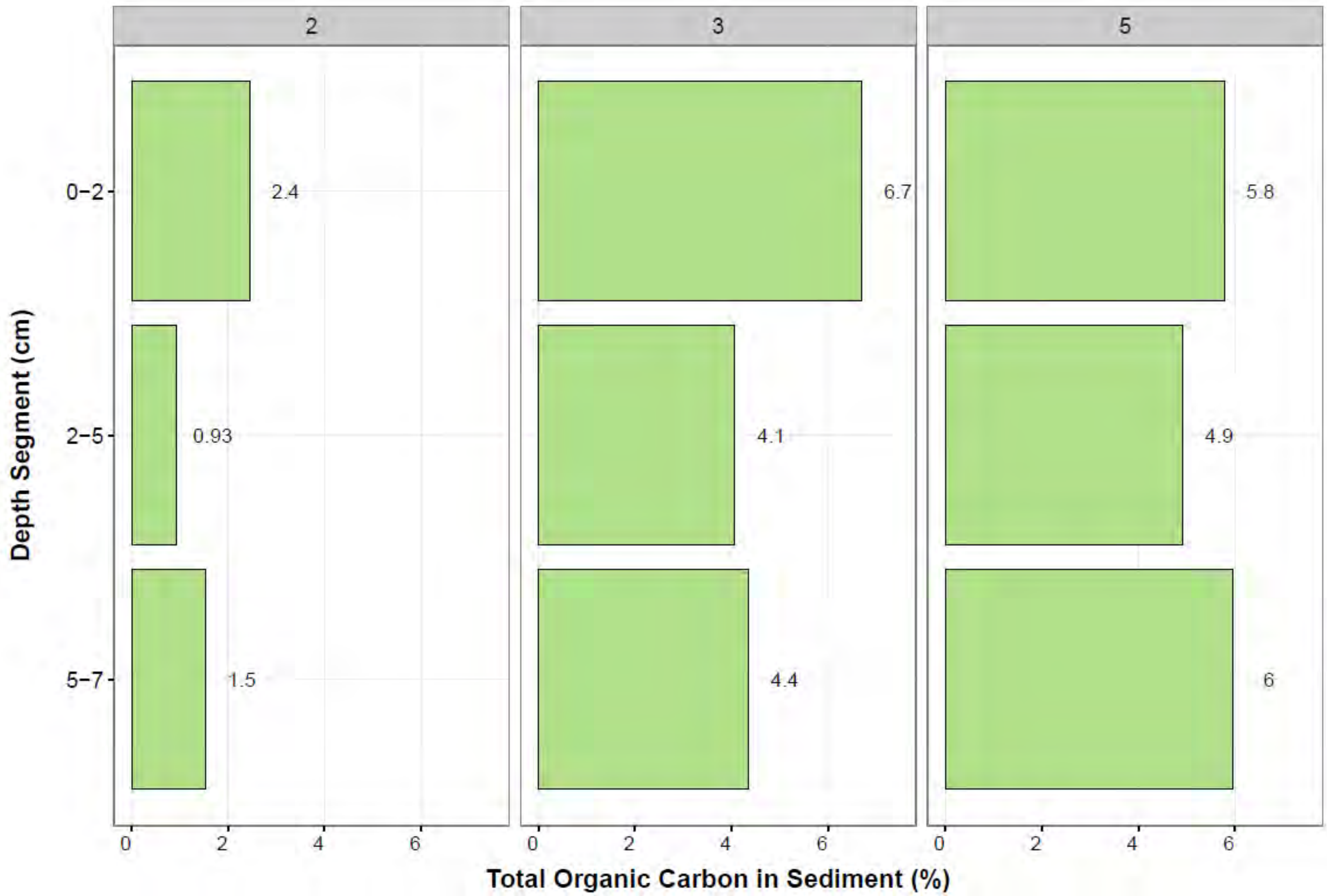



**Figure 70. Baseline 2 station-by-station comparison of total organic carbon of on-cap sediment (0-2, 2-5, 5-7 cm below SWI). Note: No samples collected from stations 1 and 4 during the baseline 2 event.**

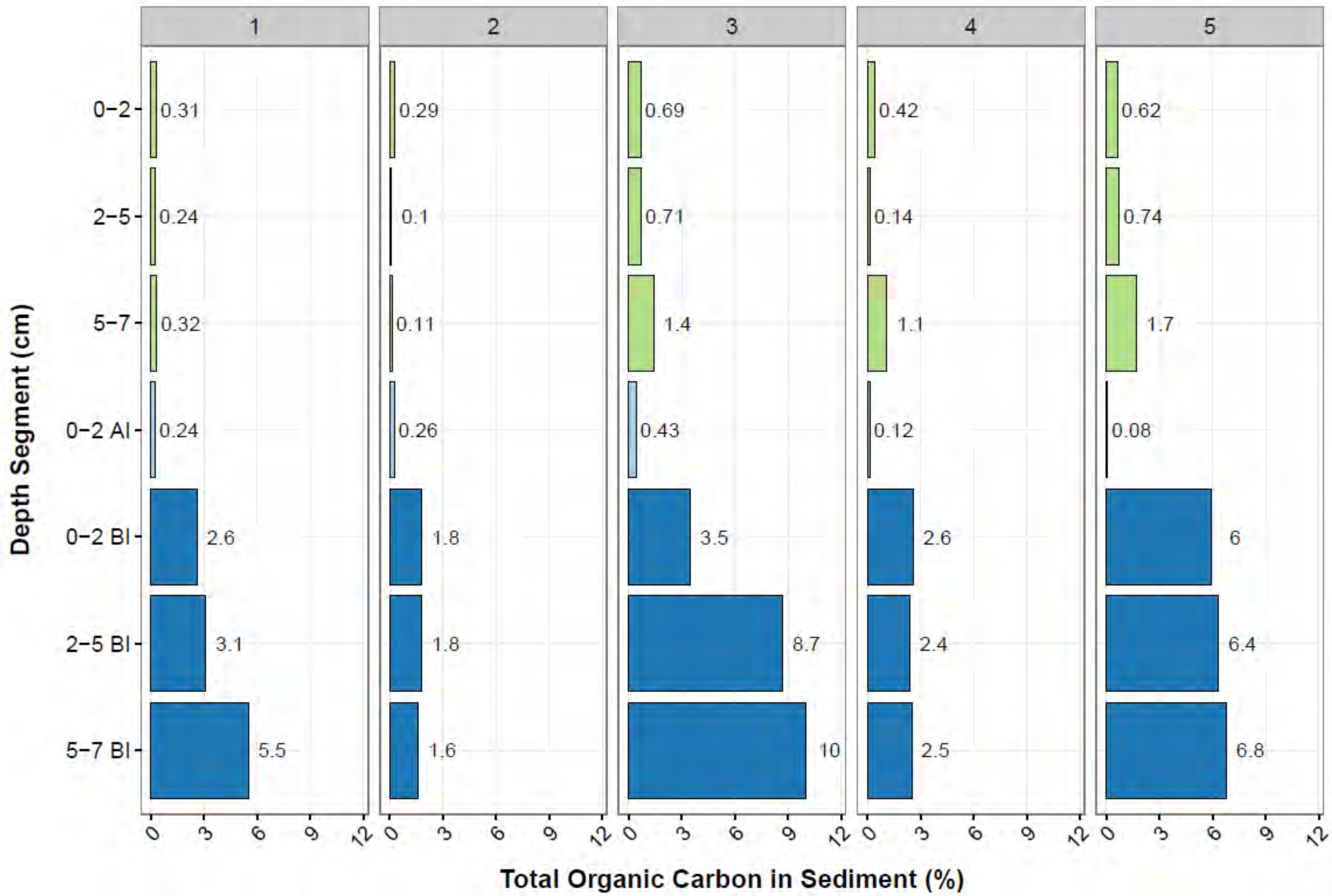



**Figure 71. 2-Month event station-by-station comparison of total organic carbon of on-cap sediment. Note: Green bars represent samples taken from within cap material, light blue represent the sample 0-2 cm above the cap-native sediment interface and dark blue represent samples below the cap-native sediment interface.**

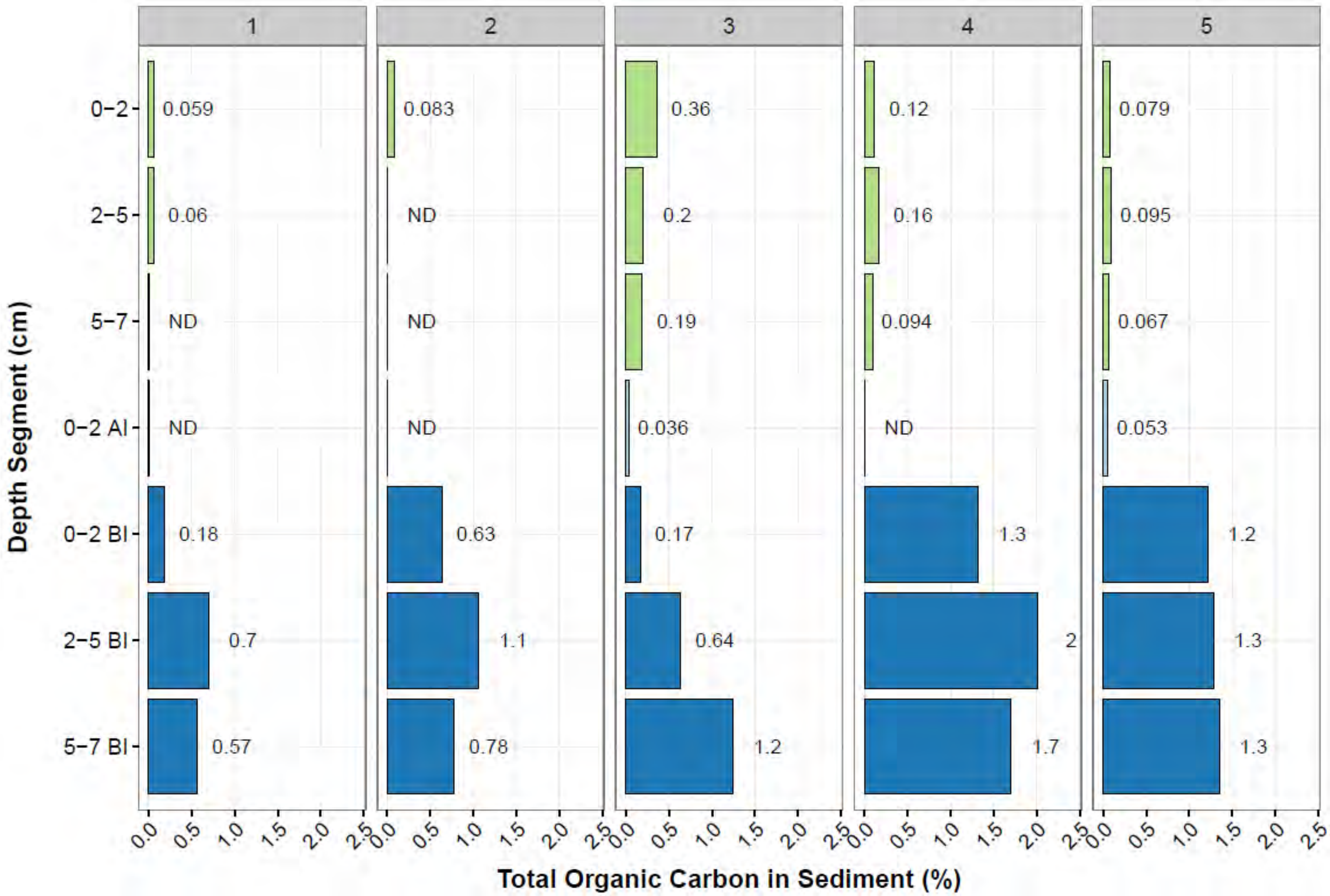



**Figure 72. 14-Month event station-by-station comparison of total organic carbon of on-cap sediment. Note: ND are not detected samples, represented as ½ the detection limit. Green bars represent samples taken from within cap material, light blue represent the sample 0-2 cm above the cap-native sediment interface and dark blue represent samples below the cap-native sediment interface.**

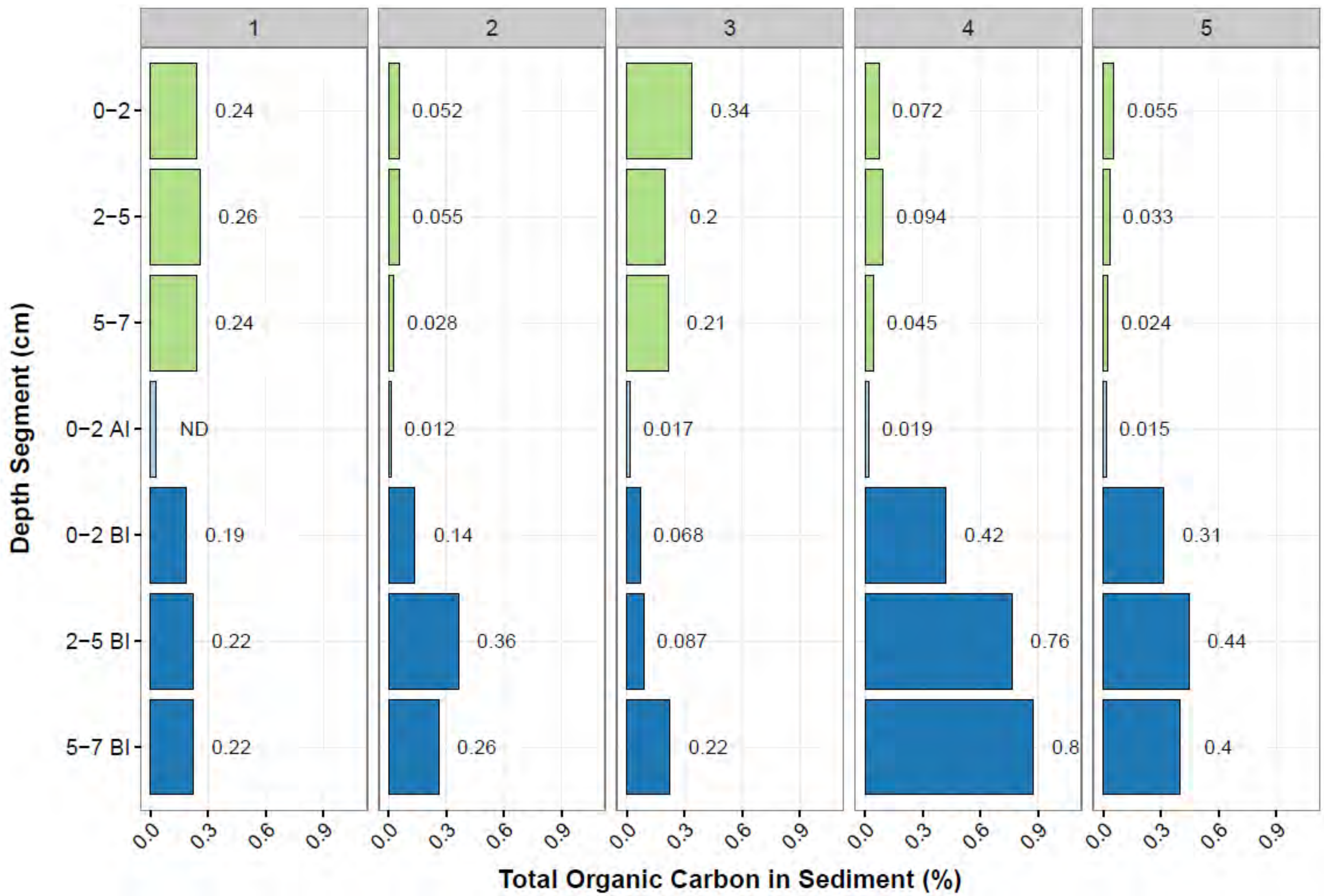



Figure 73. 25-Month **event station-by-station comparison of total organic carbon of on-cap sediment. Note: ND are not detected samples, represented as ½ the detection limit. Green bars represent samples taken from within cap material, light blue represent the sample 0-2 cm above the cap-native sediment interface and dark blue represent samples below the cap-native sediment interface.**

#### 5.7.5.4. Bulk Sediment Chemistry

Concentrations of total DDX in sediment are summarized in Table 27. In all post-placement events, concentrations of total DDX in surface sediments (0-2 cm, 2-5 cm, and 5-7 cm below the SWI) were below the most stringent preliminary remedial goal for Site 99 Quantico Embayment of 650 µg/kg, dw (NAVFAC 2011), with the exception of one sample in the 2-month event (Station 1 0-2 cm below SWI, northern end of TLC). Concentrations of total DDX in surface sediment for the on cap stations is shown in Figure 75 and all intervals in Figure 76.

Concentrations of total DDX in surface sediment (0-10 cm) of stations 2, 3 and 5 were similar between the two baseline events (2009 and 2012). Concentrations were on average 21% higher in baseline 3 than baseline 2, indicating conclusions made regarding the reduction of concentrations based on comparison of results from post-placement events to the baseline 2 would be similar to those based on baseline 3. Therefore, a separate comparison of concentrations from baseline 3 have not been conducted.

Concentrations of total DDX in surface sediment (top 7 cm below SWI) were an average of 973 µg/kg, dw in the baseline 2 event, decreased in the short-term monitoring (210 µg/kg, dw) and continued to decrease in the first and second annual long-term post-placement events (104 µg/kg, dw in the 14-month event and 51 µg/kg, dw in the 25-month).

Concentrations of DDX were highest at station 3 in the baseline (Figure 77). Concentrations of DDX in 2-month show potential surface deposition of contaminated material at station 1 (Figure 78). In the 14-month, top down mixing was observed at station 3 as was observed for grain size and TOC. Additionally, potential surface deposition of contaminated materials was observed at stations 1 and 2 (Figure 79). Concentrations in the top 7 cm were most well mixed in 25-month event (Figure 80).

Significant reductions in log transformed concentrations of total DDX in surface sediment (top 7 cm below SWI) between the baseline and 2-month ($p = 0.02$, 77% decrease), 14-month ($p = 0.002$, 48% decrease) and 25-month ($p < 0.0001$, 91% decrease) events were observed (Table 28, Figure 81). At Station 2, an increase in concentrations was observed in the 0-2 cm interval below SWI in the first annual post-placement event; however, in the second annual event, the reductions were greater than had been observed in the short-term event (97% decrease from baseline in the 25-month post-placement event, dry weight basis). Similarly, short-term reductions at station 3 in the 2-5 cm interval below SWI (64% decrease) were observed to continue in the 25-month event (57% decrease) following an increase in the 14-month event (15% increase). While monitoring stations 1 and 4 were not included in the percent reductions due to lack of co-located baseline stations, it can be seen from Figure 75, concentrations of total DDX in surface sediment at these stations were well below the PRG (with the exception of one sample, at station 1 [northern end of cap] in 0-2 cm interval below SWI in the 2-month event).

Greater reductions were observed on cap than off cap stations for each event, on average in the top 7cm below SWI. In the short term, Reductions off cap in the 2-month event were 52% at the off cap stations compared to 77% decrease observed at the on cap stations. Over the long term, reductions of 39% and 41% were found at the off cap station while decreases of 48% and 91% were observed at the on cap stations for 14- and 25-month events, respectively (Table 28).

Additionally, comparisons of DDX reductions were made between the TLC material (average of 0-2 cm, 2-5 cm, and 5-7 cm below SWI) and the underlying native sediment (0-2 cm, 2-5 cm, and 5-7 cm below cap-native sediment) for each monitoring event (Table 29). Significant reductions in log DDX concentrations were observed in the short-term event ($p < 0.001$, 55% decrease), the first annual post-placement event ($p=0.02$, 17% decrease), and the last long-term post-placement monitoring event ($p <0.001$, 81% decrease, Figure 83). In the 2-month event, station 1 had greater concentrations of total DDX in surface sediment compared to underlying sediment due to elevated concentrations in the 0-2 cm interval below SWI; however, reductions in the subsequent long-term monitoring events (14- and 25-month events) were 14% and 65% at this station, respectively. Also, due to elevated concentrations in the 0-2cm interval below SWI at station 2 in the 14-month post-placement event, greater concentrations were observed in the surface sediment than underlying native sediment; however, a 99% decrease was observed in the subsequent second annual long-term event at this station. This analysis indicates that the TLC surface sediment is remaining below pre-TLC placement levels and that recontamination from either top-down or bottom up mixing has not occurred.

A finer scale analysis was completed to evaluate the potential for bottom up mixing by comparing DDX concentrations in the 0-2 cm above the cap native sediment interface to 0-2 cm below the interface. Concentrations in the sediment interval 0-2 cm above the cap-native sediment interface was significantly less than concentrations 0-2 cm below the interface when combining data from all events ($p < 0.001$, Figure 82). An exception was observed at station 3 during the 2-month event, where the 0-2 cm AI sample contained elevated DDX (590 µg/kg dw, Figure 78 and Figure 82). This analysis was compared to observations in co-located porewater measurements in the sections below. Overall, DDX concentrations in the 0-2 AI interval remained low and these results indicate the cap material successfully prevented bottom up mixing, contributing to an acceleration of contaminant burial.

Overall, these results indicate the thin-layer cap effectively reduced concentrations of total DDX in surface sediment after placement, and these significant reductions were sustained and were greatest in the second annual monitoring event as natural deposition continued to sequester contaminated sediments.

#### 5.7.5.5. Carbon Normalized Sediment DDX

Concentrations of total DDX in surface sediment (top 7 cm below SWI) were evaluated on an organic carbon normalized basis as toxicity in sediments is expected to better correlate with these concentrations, compared to dry weight basis. Significant reductions from baseline to 2-months post capping were not observed ($p > 0.05$) when comparing concentrations of total DDX in surface sediment (average of 0-2 cm, 2-5 cm, 5-7 cm below SWI) on an organic carbon normalized basis (Figure 84). This differs from trends observed on with dry weight concentrations (Figure 81), and observations in porewater as measured by ex situ approach in the 2-month (significant decrease). Concentrations on an organic carbon basis in the 14- and 25-month were not statistically evaluated due to the low organic carbon contents observed in these events which are not expected to reflect field conditions, but rather artefacts of TOC analysis methods and changes in those methods between sampling events (discussed further in TOC results section).

**Table 27. Mean[a] (± standard deviation, minimum – maximum) concentrations of total DDX in sediment (µg/kg dw).**

| Depth Interval Below SWI (cm) | Location | Baseline 2 | Baseline 3 | 2-Month Post-Placement | 14-Month Post-Placement | 25-Month Post-Placement |
|---|---|---|---|---|---|---|
| 0-2 | On Cap | 607 ± 559 (169 - 1236) | NS[b] | 535 ± 947 (13 - 2219) | 210 ± 230 (7 - 509) | 52 ± 55 (2 - 118) |
| 2-5 | On Cap | 164 ± 65 (90 - 210) | NS | 31 ± 27 (6 - 70) | 50 ± 96 (3 - 221) | 46 ± 40 (3 - 91) |
| 5-7 | On Cap | 2147 ± 3397 (89 - 6068) | NS | 64 ± 50 (5 - 127) | 52 ± 106 (2 - 240) | 56 ± 64 (2 - 145) |
| 0-10 | On Cap | 172 ± 79 (98 - 255) | 264 ± 174 (153 - 563) | NS | NS | NS |
| 0-2 AI[b] | On Cap | --[c] | 264 ± 174 (153 - 563) | 148 ± 254 (1 - 593) | 2 ± 2 (0 - 5) | 9 ± 8 (1 - 23) |
| 0-2 BI[d] | On Cap | 607 ± 559[e] (169 - 1236) | NS | 183 ± 129 (41 - 391) | 117 ± 98 (0 - 270) | 362 ± 264 (132 - 743) |
| 2-5 BI | On Cap | 164 ± 65 (90 - 210) | NS | 1143 ± 1975 (123 - 4667) | 173 ± 156 (21 - 399) | 245 ± 152 (85 - 439) |
| 5-7 BI | On Cap | 2147 ± 3397 (89 - 6068) | NS | 494 ± 429 (96 - 1080) | 319 ± 324 (103 - 865) | 679 ± 1131 (47 - 2693) |
| 0-10 | Off Cap | 36 ± 10 (29 - 43) | NS | 18 ± 6 (14 - 22) | 22 ± 6 (18 - 27) | 21 ± 3 (19 - 22) |

a. Sample size: 2 for off cap samples, 3 for on cap baseline, 5 for remainder
b. NS: Not sampled during event
c. AI collected from 0 – 2 cm above cap-native sediment interface
d. Interval did not exist for baseline event
e. BI collected from 0 – 2, 2 – 5 and 5 – 7 cm below cap-native sediment interface
f. Baseline BI sample concentrations are repeated from standard intervals (0 – 2, 2 – 5, and 5 – 7) for comparison purposes

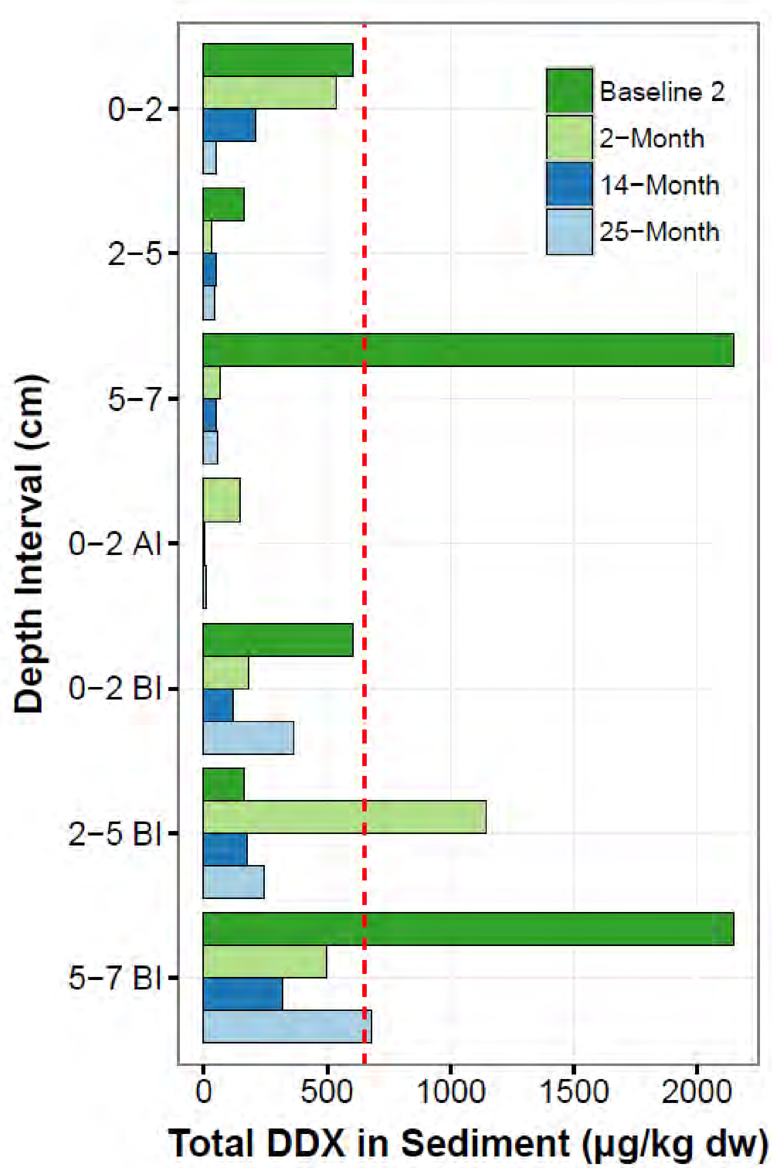



**Figure 74. Mean Total DDX concentrations for on-cap sediment by event and depth interval. Red line indicates the site specific PRG of 650 µg/kg dw.**

**Table 28. Change in concentrations of Total DDX in surface sediment compared to baseline for five stations with baseline monitoring data.**

| Station | Location | Interval | Percent Change from Baseline | | |
|---|---|---|---|---|---|
| | | | 2-Month | 14-Month | 25-Month |
| 2 | On Cap | 0-2 | -78% | +202% | -97% |
| 2 | On Cap | 2-5 | -89% | -89% | -88% |
| 2 | On Cap | 5-7 | -94% | -95% | -94% |
| 3 | On Cap | 0-2 | -89% | -68% | -92% |
| 3 | On Cap | 2-5 | -64% | +15% | -57% |
| 3 | On Cap | 5-7 | -98% | -96% | -98% |
| 5 | On Cap | 0-2 | -35% | -98% | -100% |
| 5 | On Cap | 2-5 | -77% | -98% | -99% |
| 5 | On Cap | 5-7 | -68% | -99% | -99% |
| 6 | Off Cap | 0-10 | -54% | -39% | -24% |
| 7 | Off Cap | 0-10 | -49% | -38% | -57% |
| Overall Reduction by Event On Cap | | | -77% | -48% | -91% |
| Overall Reduction by Event Off Cap | | | -52% | -39% | -41% |

a. Negative numbers indicate a reduction, positive numbers are increases.

**Table 29. Change in concentrations of Total DDX in surface sediment (average of 0–2, 2–5 and 5–7 cm below SWI) compared to native sediment underlying the cap (average of 0 – 2 BI, 2 – 5 BI and 5 – 7 BI cm below cap-native sediment interface).**

| Station | Percent Change from Underlying Native Sediment | | |
|---|---|---|---|
| | 2-Month | 14-Month | 25-Month |
| 1 | +52% | -14%[a] | -65% |
| 2 | -88% | +139% | -99% |
| 3 | -94% | -18% | -64% |
| 4 | -78% | -94% | -75% |
| 5 | -68% | -99% | -99% |
| Overall Reduction by Event[b] | -55% | -17% | -81% |

a. Negative numbers indicate a reduction, positive numbers are increases.
b. Overall reduction by event includes on cap stations only

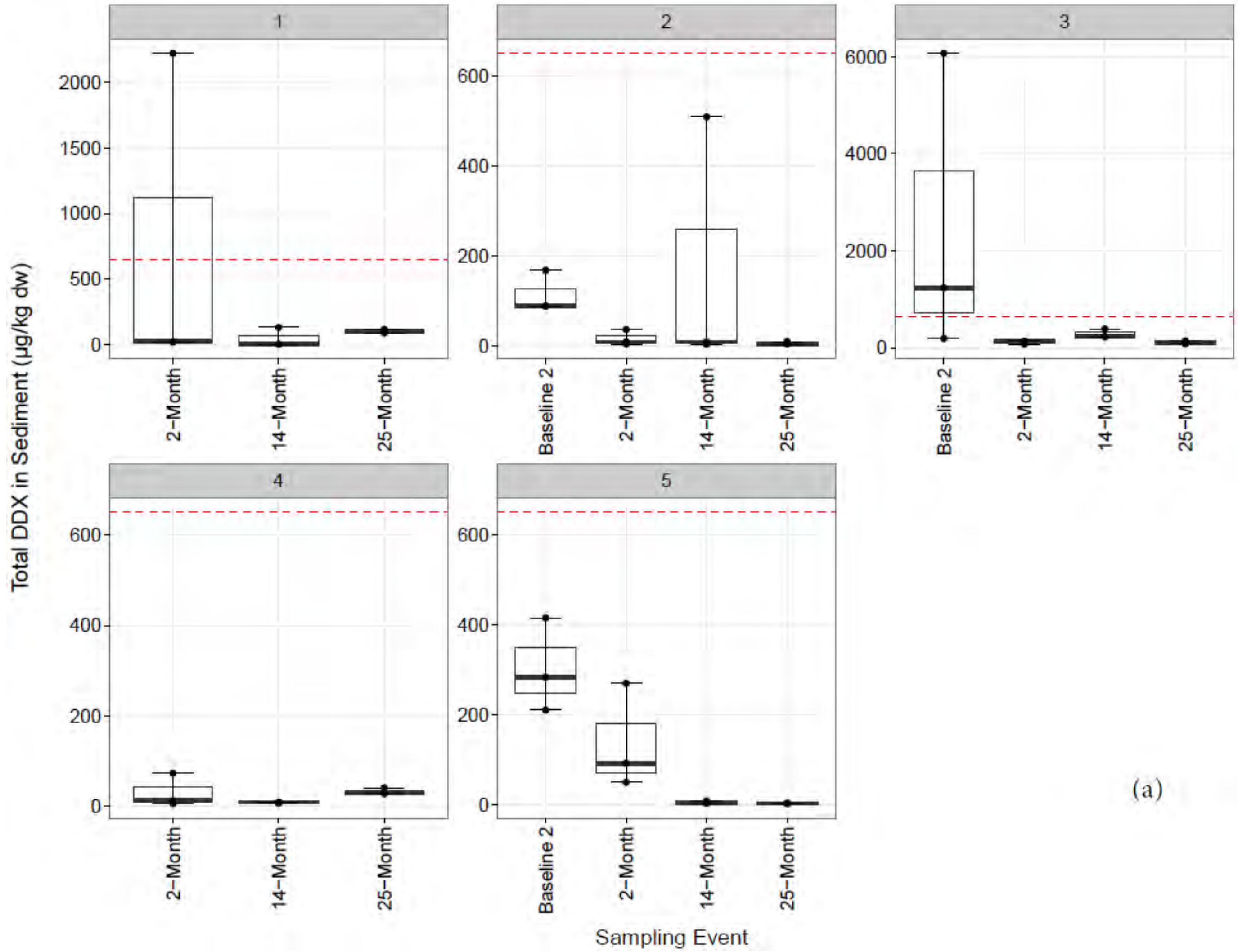



**Figure 75a. Station by station comparison of Total DDX concentrations in on cap surface sediment (0-2, 2-5, 5-7 cm). Results are plotted as the median (horizontal bar), IQR (limits of boxes are 25th and 75th percentiles), and error bars extend from the IQR to the lowest value within 1.5 * IQR. Data beyond the end of the whiskers are outliers and plotted as red points (as specified by Tukey). Notes: Red line indicates site specific PRG. Different scales on each graph pane. Stations 1 and 4 do not have baseline results. Note figure (a) has each chart with a different y-axis scale and (b) has same scale for y-axis.**

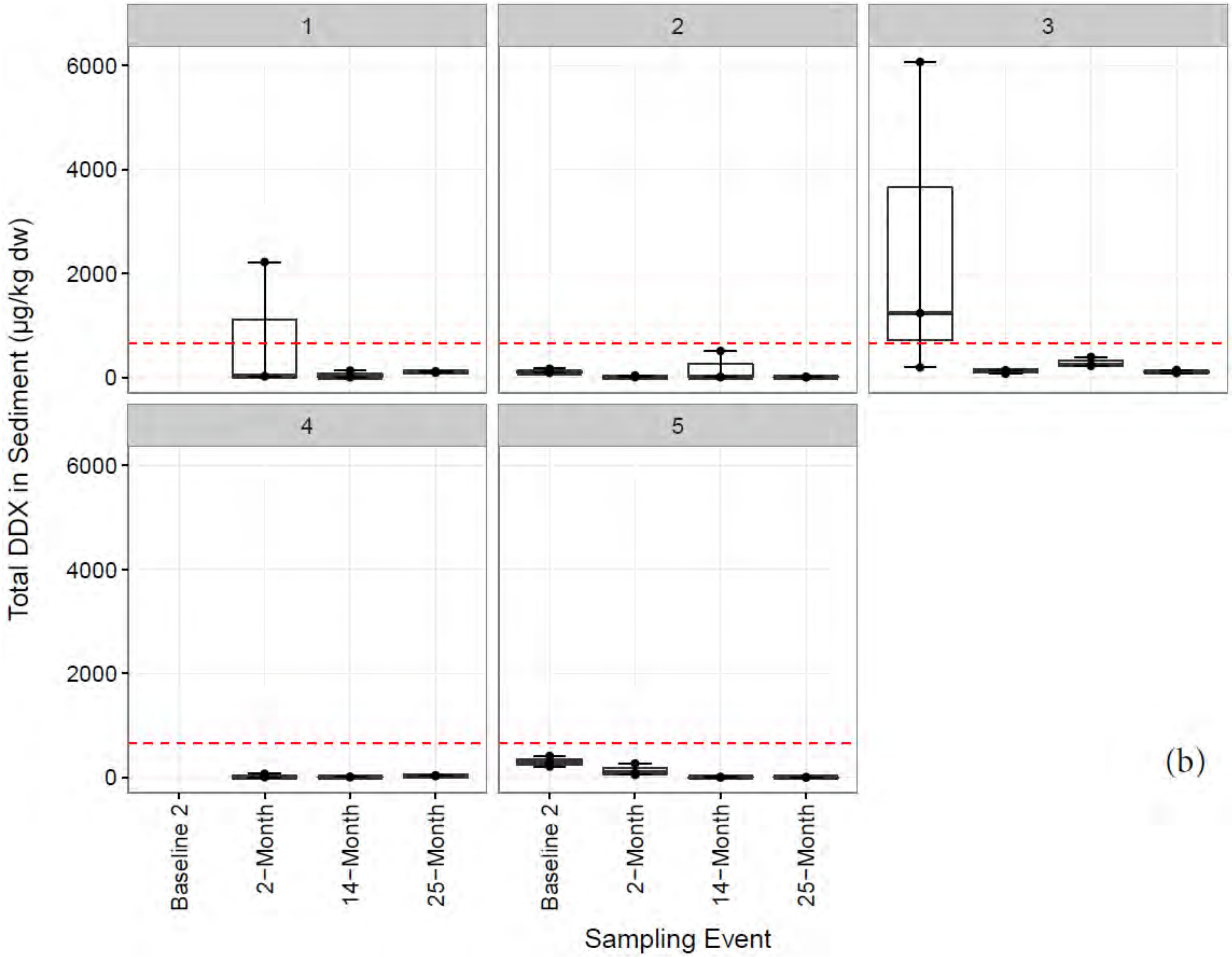
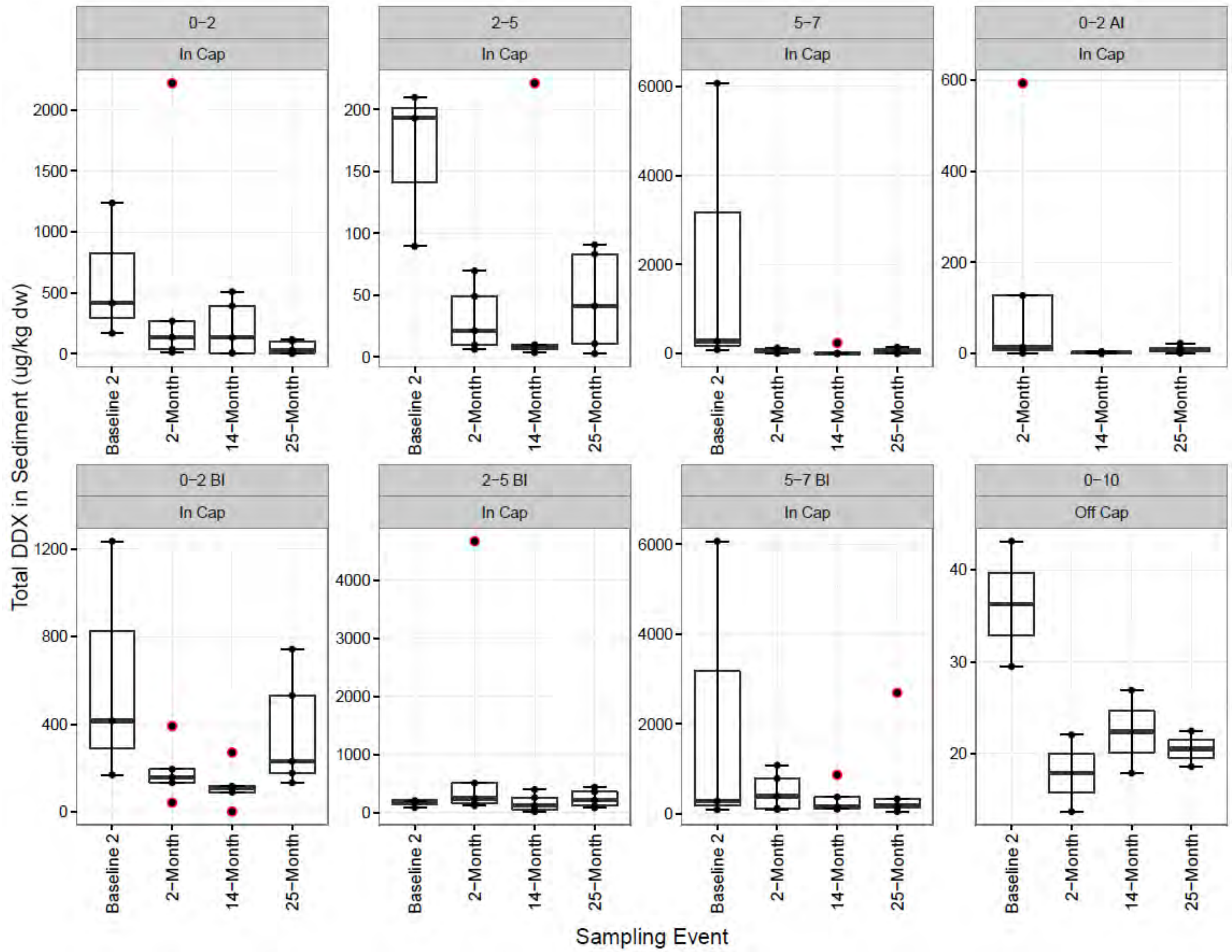

1
2
3
4
5
6000
4000
2000
0
Total DDX in Sediment (µg/kg dw)
Baseline 2
2−Month
14−Month
25−Month
Sampling Event
(b)

**Figure 75b.**




(a)

**Figure 76a. Site-wide comparison of Total DDX concentrations, by sample interval (i.e., each on-cap boxplot comprised of data from all 5 LTM stations). Results are plotted as the median (horizontal bar), IQR (limits of boxes are 25th and 75th percentiles), and error bars extend from the IQR to the lowest value within 1.5 * IQR. Data beyond the end of the whiskers are outliers and plotted as red points (as specified by Tukey). Note different scales on each graph pane. For on-cap stations, n = 3 for Baseline 2 and n=5 for post-cap monitoring. Red line indicates the site specific PRG of 650 µg/kg dw. Note figure (a) has each chart with a different y-axis scale and (b) has same scale for y-axis.**

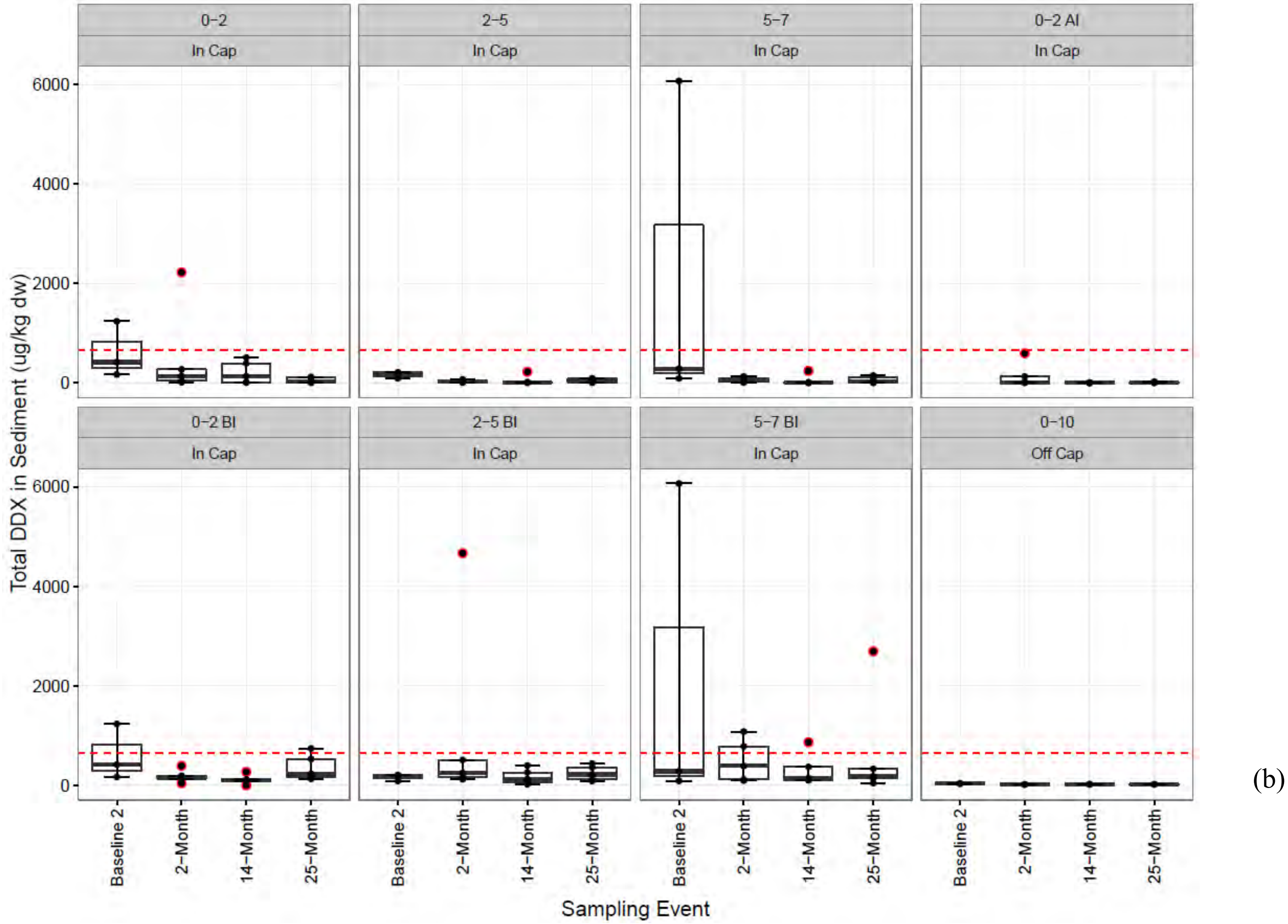

0–2
In Cap
2–5
In Cap
5–7
In Cap
0–2 AI
In Cap
0–2 BI
In Cap
2–5 BI
In Cap
5–7 BI
In Cap
0–10
Off Cap
6000
4000
2000
0
Total DDX in Sediment (ug/kg dw)
Baseline 2
2–Month
14–Month
25–Month
Sampling Event
(b)

Figure 76b.

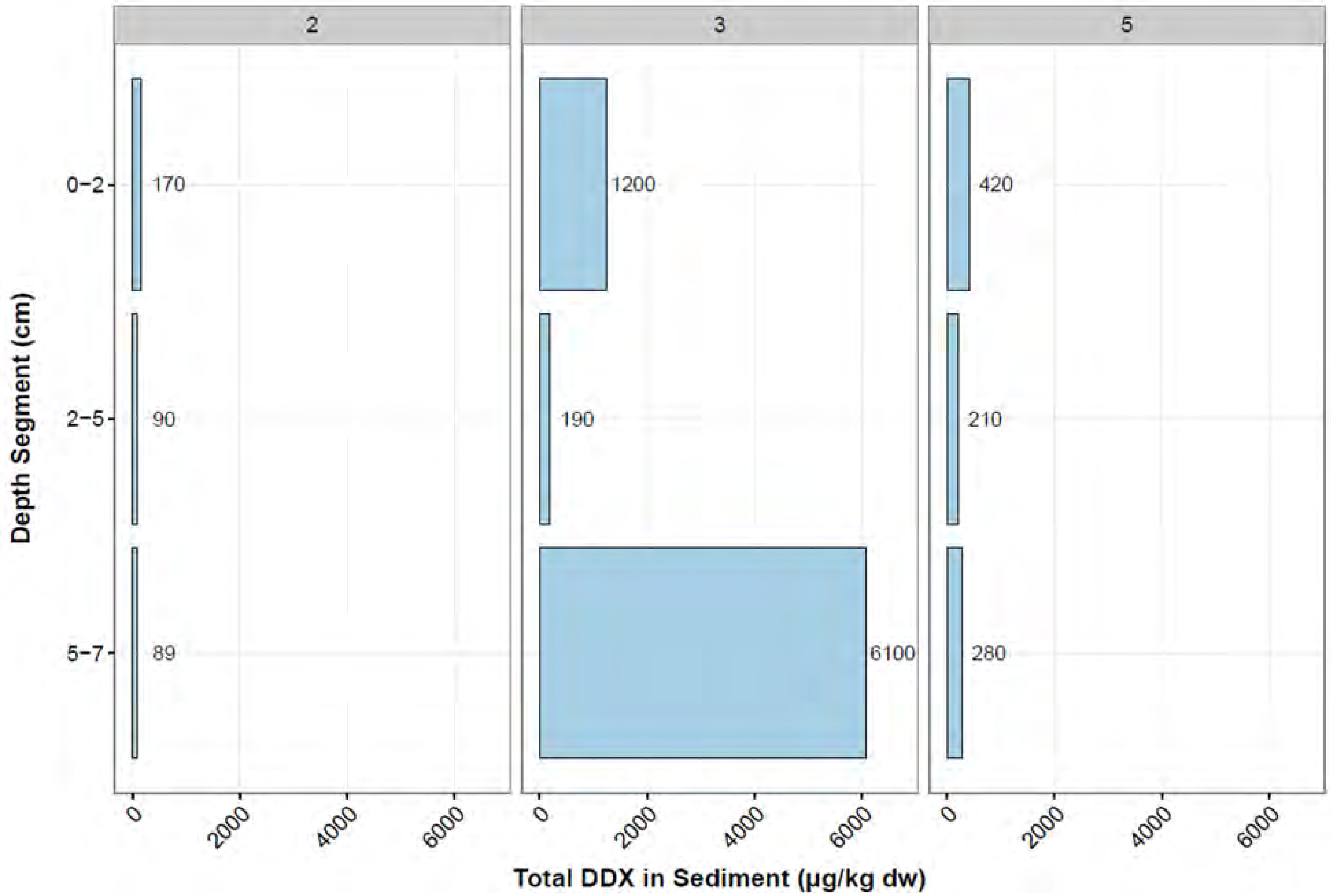



**Figure 77. Baseline station-by-station comparison of total sediment DDX concentrations (µg/kg dw) by depth segment for on-cap locations.**

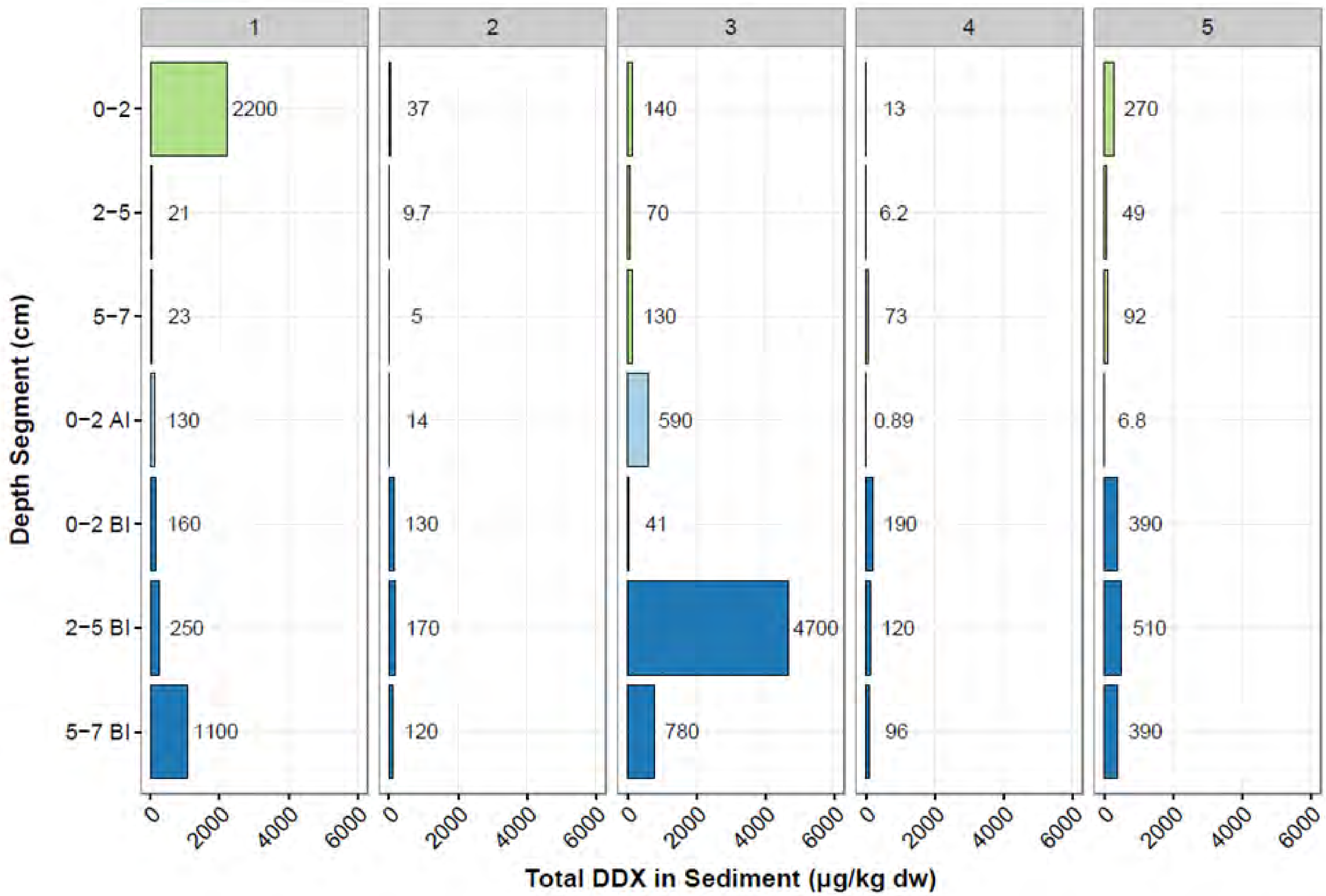



**Figure 78. 2-Month station-by-station comparison of total sediment DDX concentrations (µg/kg dw) by depth segment for on-cap locations. Note: Green bars represent samples taken from within cap material, light blue represent the sample 0-2 cm above the cap-native sediment interface and dark blue represent samples below the cap-native sediment interface.**

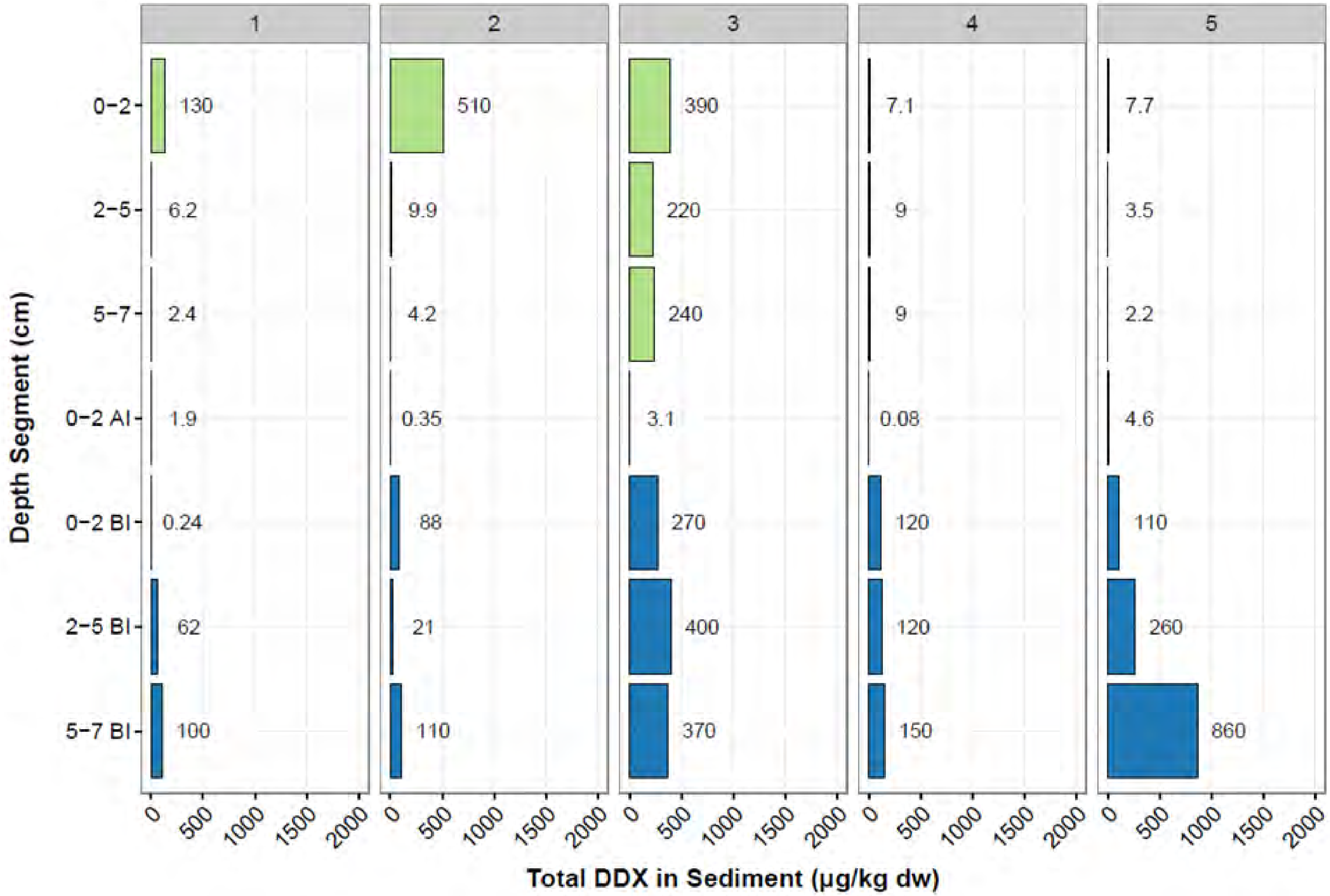



**Figure 79. 14-Month station-by-station comparison of total sediment DDX concentrations (µg/kg dw) by depth segment for on-cap locations. Note: Green bars represent samples taken from within cap material, light blue represent the sample 0-2 cm above the cap-native sediment interface and dark blue represent samples below the cap-native sediment interface.**

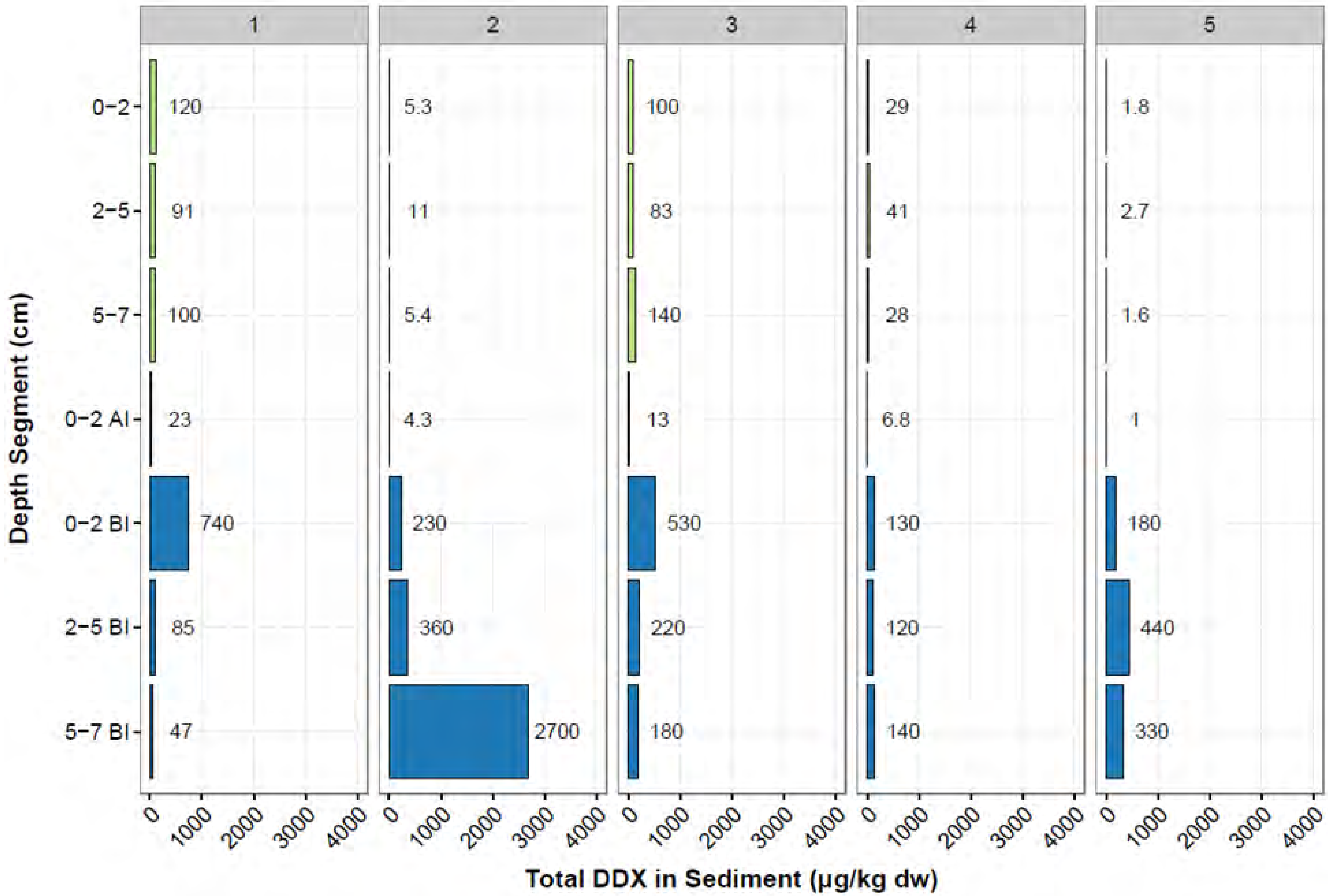



**Figure 80. 25-Month station-by-station comparison of total sediment DDX concentrations (µg/kg dw) by depth segment for on-cap locations. Note: Green bars represent samples taken from within cap material, light blue represent the sample 0-2 cm above the cap-native sediment interface and dark blue represent samples below the cap-native sediment interface.**

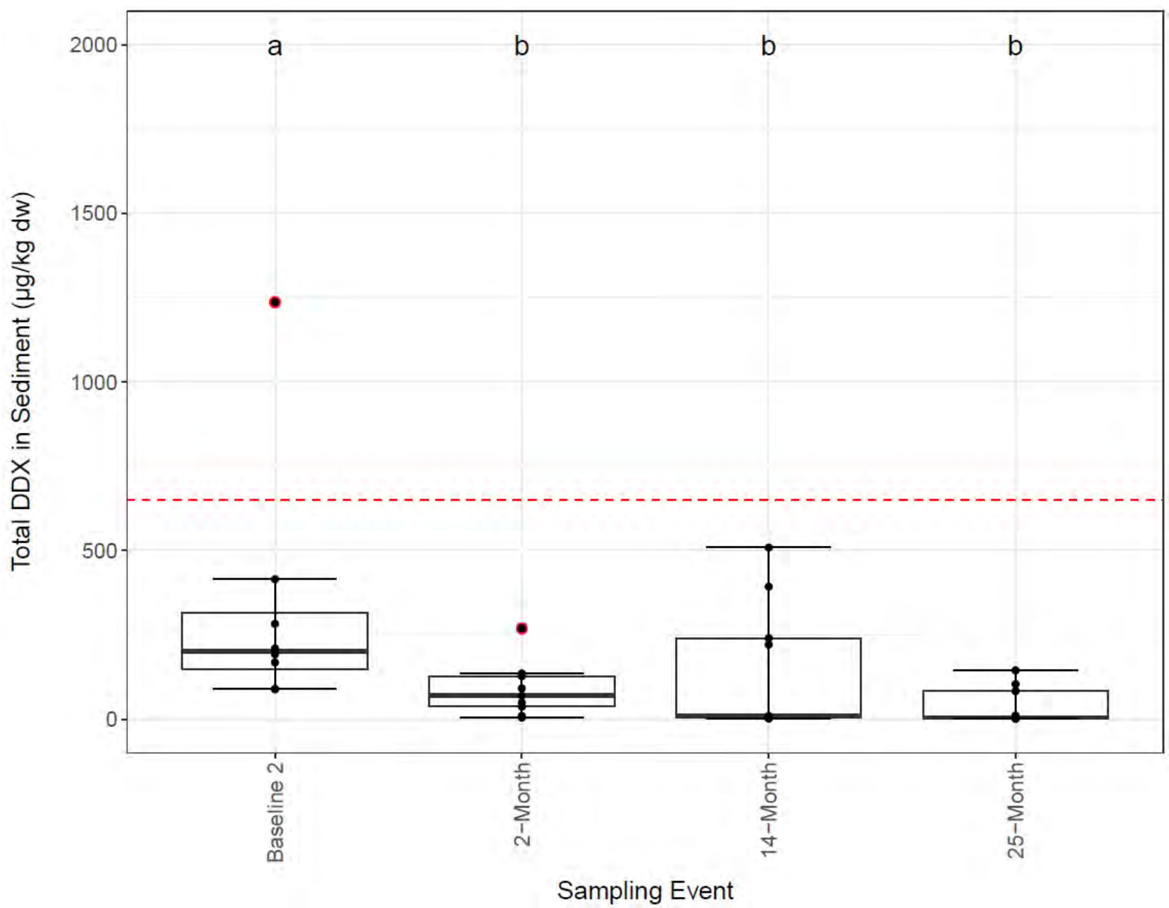



**Figure 81. Comparison of Total DDX concentrations in surface sediment (0-2, 2-5, 5-7) for on-cap stations (2, 3 and 5). Significant differences ($p < 0.05$) represented as different letters above boxes. Results are plotted as the median (horizontal bar), IQR (limits of boxes are 25th and 75th percentiles), and error bars extend from the IQR to the lowest value within 1.5 * IQR. Data beyond the end of the whiskers are outliers and plotted as red points (as specified by Tukey). Notes: Red line indicates site specific PRG (650 ppb). Stations 1 and 4 do not have baseline results and were excluded from this graph. An outlier data point at 6,000 µg/kg dw is excluded from the plot for graphical purposes.**

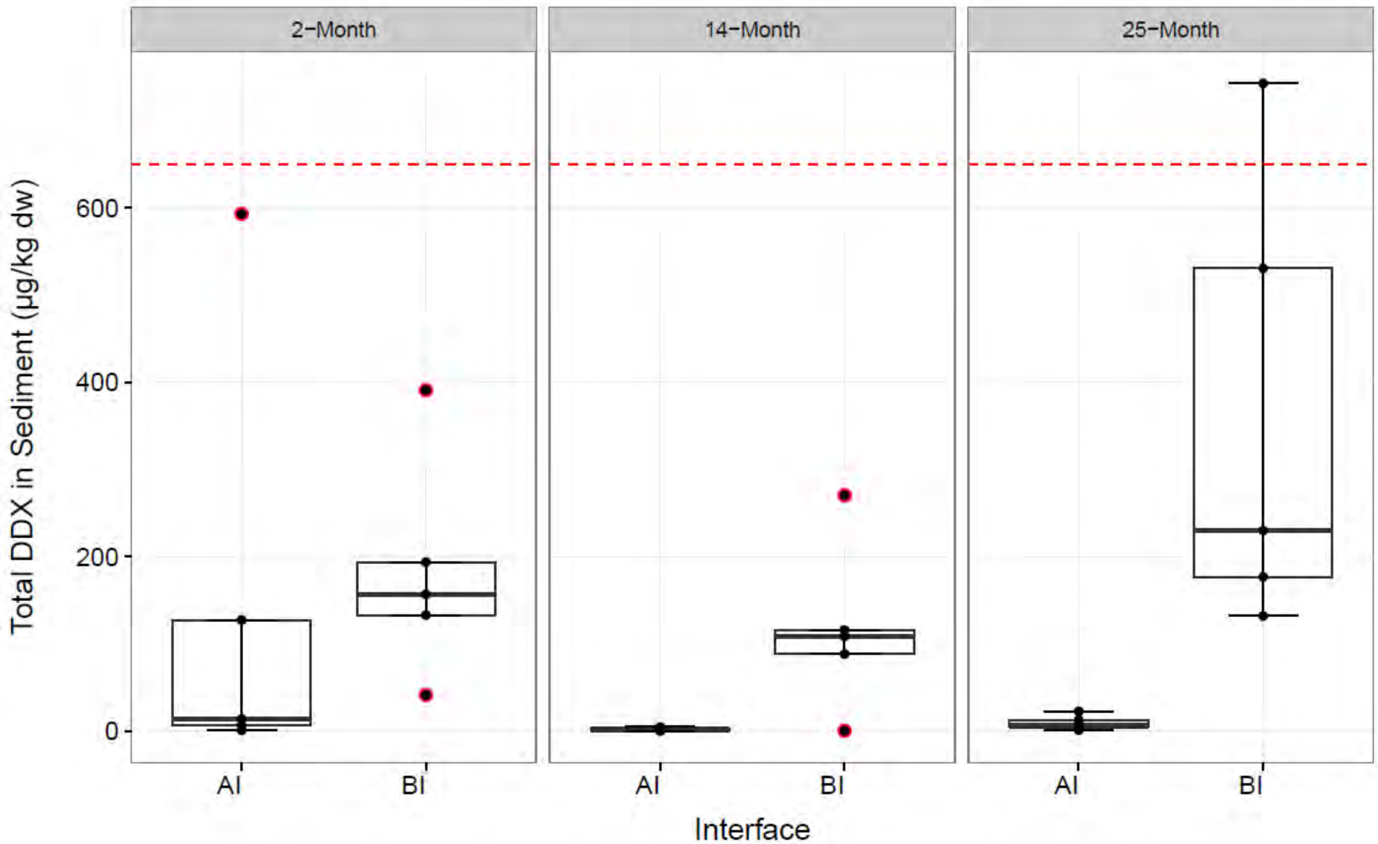



**Figure 82. Concentrations of total DDX concentrations above (0-2 cm AI) and below (0-2 cm BI) the cap-native sediment interface by event for the 5 on cap stations. Results are plotted as the median (horizontal bar), IQR (limits of boxes are 25th and 75th percentiles), and error bars extend from the IQR to the lowest value within 1.5 * IQR. Data beyond the end of the whiskers are outliers and plotted as red points (as specified by Tukey). Notes: Red line indicates site specific PRG (650 ppb).**

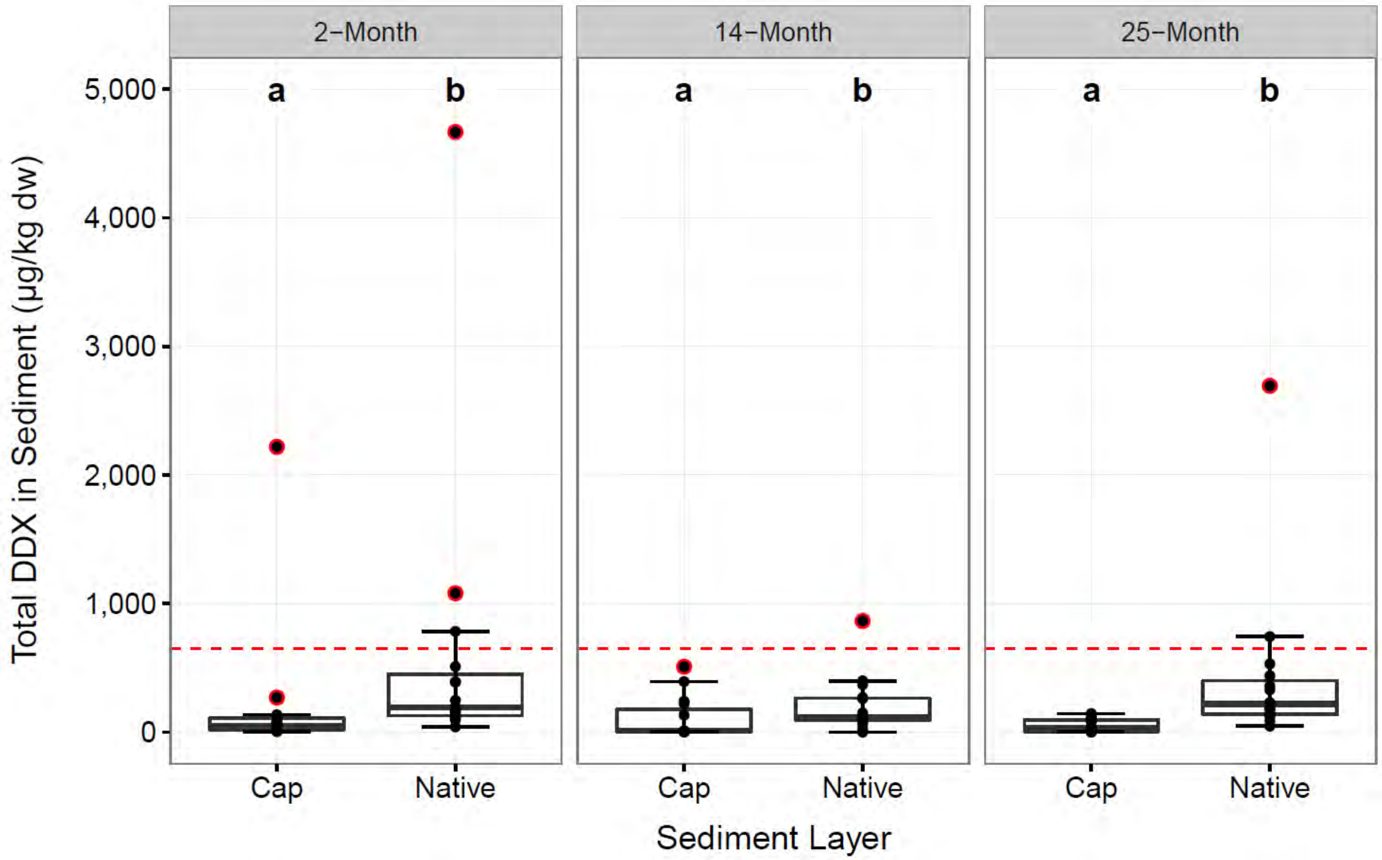



**Figure 83. Concentrations of total DDX concentrations in cap sediment (0-2 cm, 2-5 and 5-7 cm below SWI) and native sediment (0-2 cm BI, 2-5 cm BI and 5-7 cm BI) by event for the 5 on cap stations. Significant differences ($p < 0.05$) indicated by different letters above boxes. Results are plotted as the median (horizontal bar), IQR (limits of boxes are 25th and 75th percentiles), and error bars extend from the IQR to the lowest value within 1.5 * IQR. Data beyond the end of the whiskers are outliers and plotted as red points (as specified by Tukey). Notes: Red line indicates site specific PRG (650 ppb).**

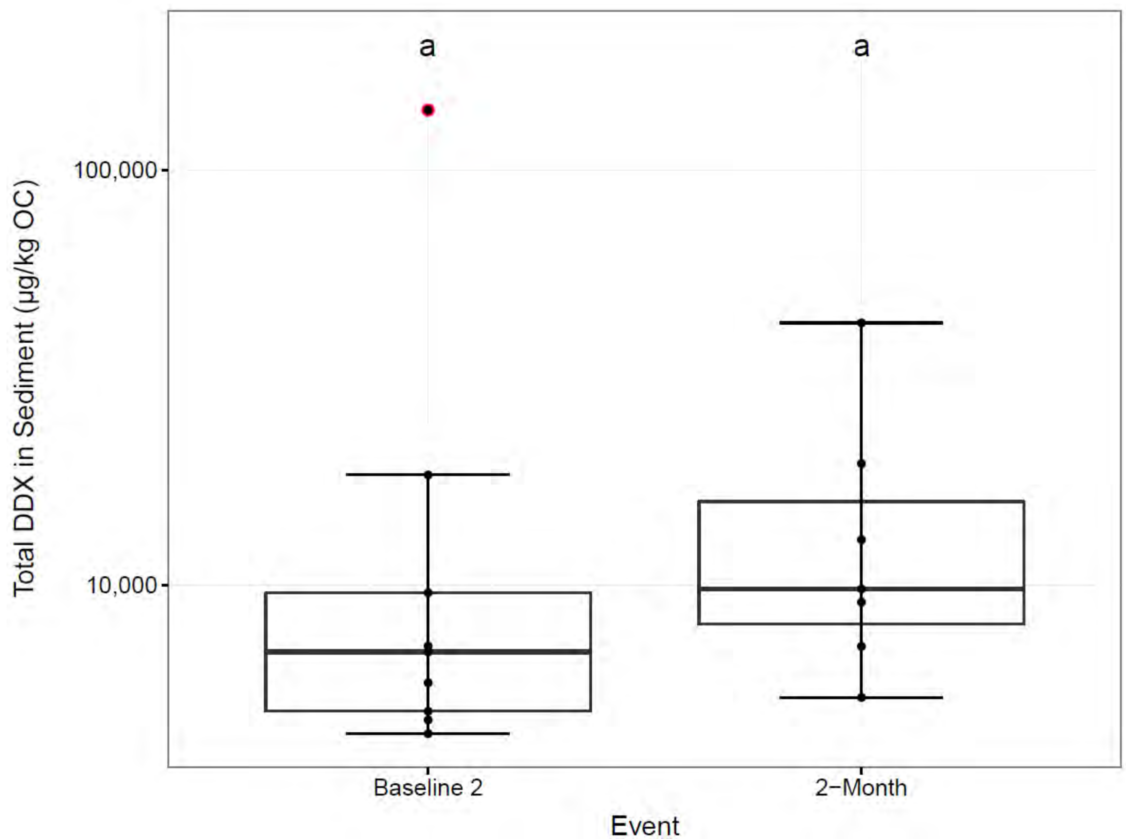



**Figure 84. Comparison of organic carbon normalized total DDX (µg/kg OC) concentrations during baseline and 2-month events for stations 2, 3 and 5, representing 0-2, 2-5 and 5-7 cm depth intervals. Significant differences ($p < 0.05$) represented as different letters above boxes. Results are plotted as the median (horizontal bar), IQR (limits of boxes are 25th and 75th percentiles), and error bars extend from the IQR to the lowest value within 1.5 * IQR. Data beyond the end of the whiskers are outliers and plotted as red points (as specified by Tukey).**

### 5.7.6. *In situ* Bioaccumulation

Concentrations of total DDX in *Lumbriculus variegatus* tissue on a wet weight basis are summarized in Table 30. Concentrations of total DDX in *L. variegatus* tissue on a lipid weight basis are summarized in Table 31. Concentrations of total DDX in *Corbicula fluminea* tissue on a wet weight basis are summarized in Table 32. Concentrations of total DDX in *C. fluminea* tissue on a lipid weight basis are summarized in Table 33. Detailed results are provided in Appendix E.

Concentrations of total DDX in *L. variegatus* tissue were not significantly different between baseline 2 and baseline 3 ($p = 0.7$, Figure 85). In baseline 3, the multi-metric station locations and SEA Ring design were more similar to post-placement events; therefore, statistical evaluation has been completed with comparison of the baseline 3 to post-placement events.

Uptake of total DDX in *L. variegatus* tissue was reduced in the 2-, 14- and 25-month post remedy events at the on cap stations by an average of 72%, 67% and 86%, respectively, compared to baseline 3 (lipid weight basis, Table 34). Concentrations in the short- and long-term post-placement events were significantly ($p < 0.05$) lower than baseline 3 (Figure 85). There was no difference between on cap stations during the three post-cap monitoring events ($p > 0.05$). Uptake was also reduced for the off cap station, 32%, 41%, 71% reductions for the 2-, 14-, and 25-month post-placement events compared to baseline 3, respectively. It should be noted that the baseline bioaccumulation levels were already quite low, so while the percent reductions in the off-cap stations are substantial, the levels themselves are generally just remaining in an already low range of values.

Uptake of total DDX in *C. fluminea* tissue was reduced in the 2-, 14- and 25-month post remedy events at the on cap stations by an average of 55%, 25% and 33%, respectively, compared to baseline 3 (lipid weight basis, Table 35). At station 3, a short-term reduction in uptake of 25% was observed in the 2-month event; however, uptake increased in the 14- and 25-month events (74% and 57%, respectively) compared to the baseline 3 event. At the off cap station, the greatest reductions were observed in the short-term (83%), followed by increase in uptake in the 14-month event, then a reduction of 58% in the 25-month event. Concentrations in the 2-month event were significantly less than the baseline 3 ($p < 0.05$), but there were no differences between the baseline, 14-, and 25-Month events ($p > 0.05$, Figure 86). Results from the off-cap stations show variable total DDX tissue concentrations over time, with the lowest concentrations observed in the 2- and 25-month events.

**Table 30. Concentrations of Total DDX (µg/kg ww) in *Lumbriculus variegatus* tissue.**

| Monitoring Station | Location | Baseline 2 (2009) | Baseline 3 (2012) | 2-Month | 14-Month | 25-Month |
|---|---|---|---|---|---|---|
| 1 | On Cap | -- | 78 | 23 | 29 | 54 |
| 2 | On Cap | 61 | 31 | 27 | 19 | -- |
| 3 | On Cap | 186 | 71 | -- | 47 | 37 |
| 4 | On Cap | -- | 31 | 20 | 34 | 14 |
| 5 | On Cap | 80 | 32 | 121 | 38 | -- |
| 6 | Off Cap | 15 | 12 | 26 | 16 | 10 |
| 7 | Off Cap | -- | -- | 19 | 9 | 9 |
| Time 0 Average[b] | NA | -- | 28 ± 20 | 1.2 ± 0.5 | < 0.2 | 4 ± 0.3 |

a. “--" indicates SEA Ring not deployed or no sample recovery
b. Represents an average (± standard deviation) of 3 to 6 separate subsamples randomly selected from the test batch and were not field deployed.
c. Non-detects reported as < the detection limit

**Table 31. Concentrations of Total DDX (µg/kg lipid) in *Lumbriculus variegatus* tissue.**

| Monitoring Station | Location | Baseline 2 (2009) | Baseline 3 (2012) | 2-Month | 14-Month | 25-Month |
|---|---|---|---|---|---|---|
| 1 | On Cap | -- | 22,168 | 791 | 1,690 | 2,541 |
| 2 | On Cap | 6,534 | 3,050 | 978 | 1,357 | -- |
| 3 | On Cap | 9,076 | 7,858 | -- | 3,225 | 1,399 |
| 4 | On Cap | -- | 3,893 | 871 | 1,646 | 450 |
| 5 | On Cap | 4,965 | 6,413 | 3,553 | 1,904 | -- |
| 6 | Off Cap | 1,385 | 1,460 | 996 | 865 | 429 |
| 7 | Off Cap | -- | -- | 819 | 955 | 449 |
| Time 0 Average[b] | NA | -- | 2,111 ± 1,615 | 27 ± 16 | < 5.6 | 113 ± 25 |

a. “--" indicates SEA Ring not deployed or no sample recovery
b. Represents an average (± standard deviation) of 3 to 6 separate subsamples randomly selected from the test batch and were not field deployed.
c. Non-detects reported as < the detection limit

**Table 32. Concentrations of Total DDX (µg/kg ww) in *Corbicula fluminea* tissue.**

| Monitoring Station | Location | Baseline 2 (2009) | Baseline 3 (2012) | 2-Month | 14-Month | 25-Month |
|---|---|---|---|---|---|---|
| 1 | On Cap | -- | 21 | 19 | 60 | 41 |
| 2 | On Cap | -- | 30 | 19 | 16 | 20 |
| 3 | On Cap | -- | 13 | 15 | 66 | 35 |
| 4 | On Cap | -- | 20 | 15 | 20 | 19 |
| 5 | On Cap | -- | 31 | 16 | 59 | 26 |
| 6 | Off Cap | -- | 14 | 3 | 32 | 9 |
| 7 | Off Cap | -- | -- | 6 | 26 | 12 |
| Time 0 Average[b] | NA | -- | 16 ± 20 | 1.3 ± 0.3 | 1.8 ± 0.3 | < 0.2 |

a. “--" indicates SEA Ring not deployed or no sample recovery
b. Represents an average (± standard deviation) of 3 to 6 separate subsamples randomly selected from the test batch and were not field deployed.
c. Non-detects reported as < the detection limit

**Table 33. Concentrations of Total DDX (µg/kg lipid) in *Corbicula fluminea* tissue.**

| Monitoring Station | Location | Baseline 2 (2009) | Baseline 3 (2012) | 2-Month | 14-Month | 25-Month |
|---|---|---|---|---|---|---|
| 1 | On Cap | -- | 2,473 | 1,241 | 2,366 | 1,795 |
| 2 | On Cap | -- | 3,035 | 1,296 | 480 | 924 |
| 3 | On Cap | -- | 1,332 | 993 | 2,313 | 2,085 |
| 4 | On Cap | -- | 2,207 | 600 | 761 | 895 |
| 5 | On Cap | -- | 3,480 | 1,002 | 2,010 | 1,156 |
| 6 | Off Cap | -- | 1,260 | 215 | 1,357 | 529 |
| 7 | Off Cap | -- | -- | 439 | 970 | 701 |
| Time 0 Average[b] | NA | -- | 3,353 ± 2,917 | 75 ± 9 | 191 ± 314 | < 20 |

a. “--" indicates SEA Ring not deployed or no sample recovery
b. Represents an average (± standard deviation) of 3 to 6 separate subsamples randomly selected from the test batch and were not field deployed.
c. Non-detects reported as < the detection limit

**Table 34. Percent change in concentrations of Total DDX in *Lumbriculus variegatus* tissue (lipid normalized).**

| Monitoring Station [a] | Location | Baseline 2 - Baseline 3 Reduction | Percent Change from Baseline 3 | | |
|---|---|---|---|---|---|
| | | | 2-Month | 14-Month | 25-Month |
| 1 | On Cap | -- | -96% | -92% | -89% |
| 2 | On Cap | -53% | -68% | -56% | -- |
| 3 | On Cap | -13% | -- | -59% | -82% |
| 4 | On Cap | -- | -78% | -58% | -88% |
| 5 | On Cap | 29% | -45% | -70% | -- |
| 6 | Off Cap | 5% | -32% | -41% | -71% |
| Average Reduction On-Cap | | -13% | -72% | -67% | -86% |

a. Baseline 2 sampling event did not include stations 1, 4 and 7. Baseline 3 sampling event did not include station 7.

b. “--" indicates SEA Ring not deployed or no sample recovery

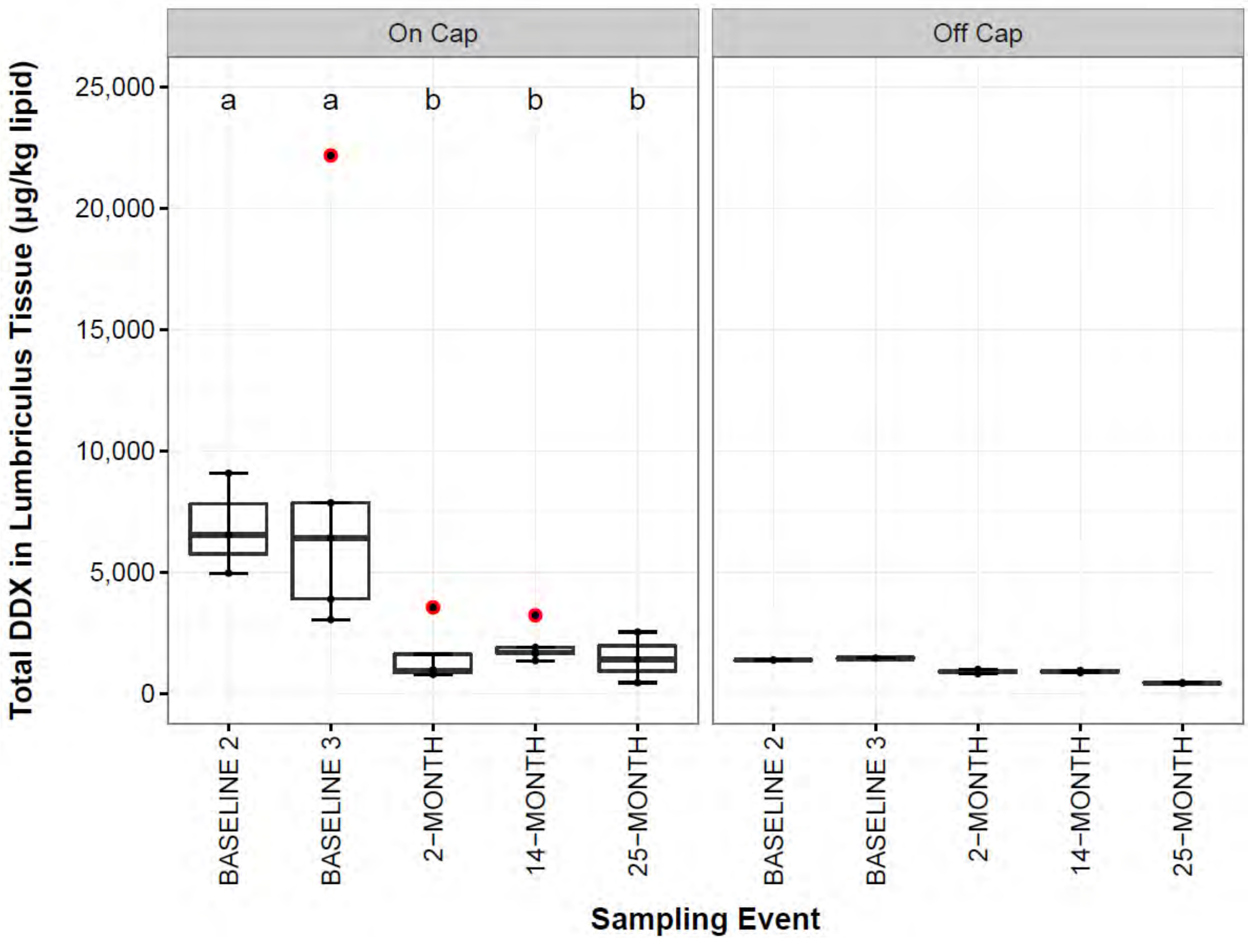



**Figure 85. Concentration of total DDX in *Lumbriculus variegatus* tissue (µg/kg lipid) for all available on- and off cap stations. Significant differences ($p < 0.05$) represented as different letters above boxes. Results are plotted as the median (horizontal bar), IQR (limits of boxes are 25th and 75th percentiles), and error bars extend from the IQR to the lowest value within 1.5 * IQR. Data beyond the end of the whiskers are outliers and plotted as red points (as specified by Tukey).**

**Table 35. Percent change in concentrations of Total DDX in *Corbicula fluminea* tissue (lipid normalized).**

| Monitoring Station [a] | Location | Baseline 2 - Baseline 3 Reduction | Percent Change from Baseline 3 | | |
|---|---|---|---|---|---|
| | | | 2-Month | 14-Month | 25-Month |
| 1 | On Cap | -- | -50% | -4% | -27% |
| 2 | On Cap | -- | -57% | -84% | -70% |
| 3 | On Cap | -- | -25% | +74% | +57% |
| 4 | On Cap | -- | -73% | -66% | -59% |
| 5 | On Cap | -- | -71% | -42% | -67% |
| 6 | Off Cap | -- | -83% | +8% | -58% |
| Average Reduction On Cap | | -- | -55% | -25% | -33% |

a. Baseline 2 sampling event did not include *Corbicula fluminea.* Baseline 3 sampling event did not include station 7.

b. “--" indicates SEA Ring not deployed or no sample recovery

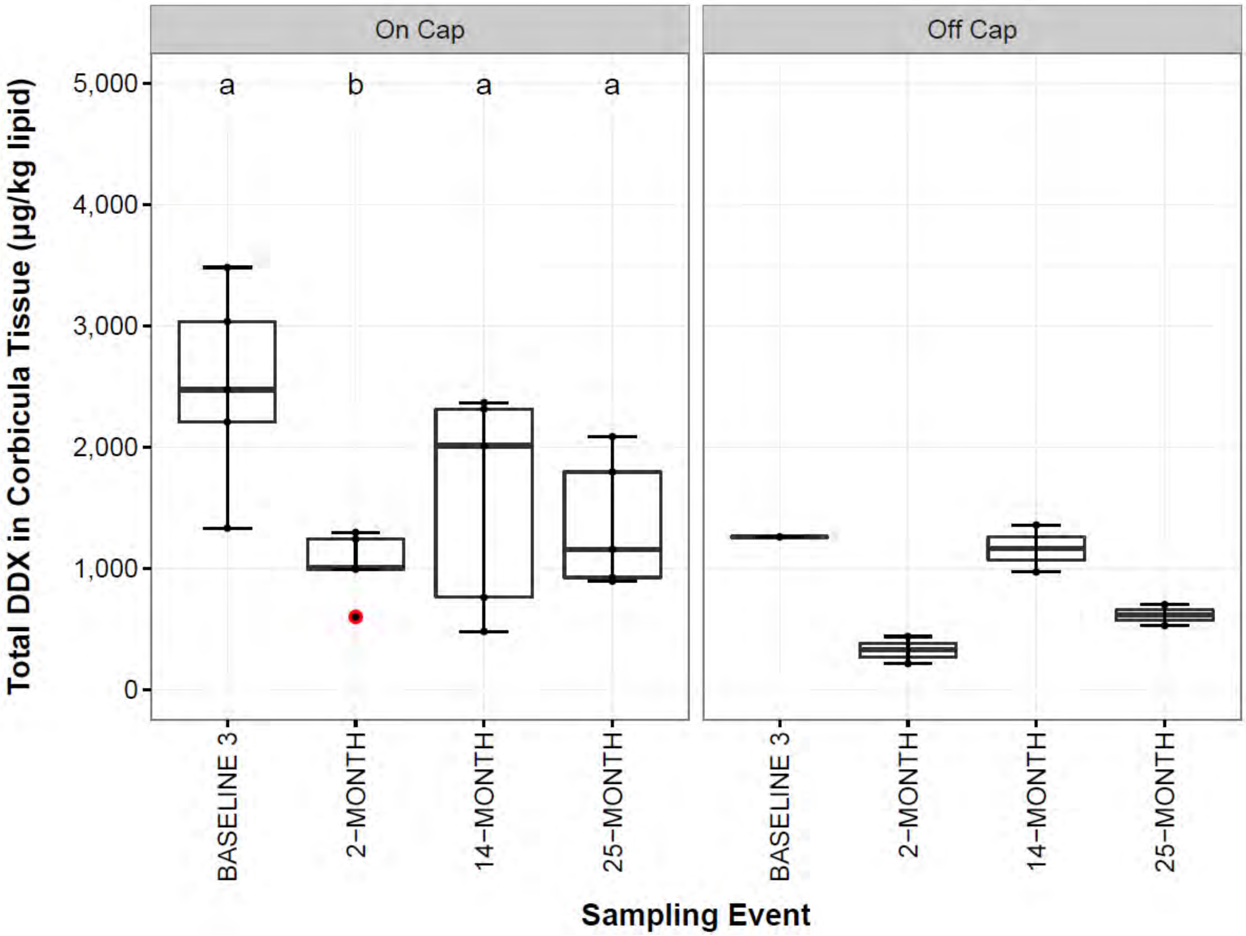



**Figure 86. Concentrations of total DDX in *Corbicula fluminea* tissue (µg/kg lipid) for all available on- and off cap stations. Significant differences ($p < 0.05$) represented as different letters above boxes. Results are plotted as the median (horizontal bar), IQR (limits of boxes are 25th and 75th percentiles), and error bars extend from the IQR to the lowest value within 1.5 * IQR. Data beyond the end of the whiskers are outliers and plotted as red points (as specified by Tukey).**

### 5.7.7. Native Pelagic Invertebrate Tissue

Due to issues with sample collection, pelagic invertebrates were sampled in Baseline 2 only and not in the post-placement monitoring events. Concentrations of total DDX in pelagic invertebrate tissue were greater in the proposed on-cap stations (1,482 ± 1,074 µg/kg ww) compared to the off-cap stations (523 ± 46 µg/kg ww, Table 36). This observation is consistent with sediment and bioaccumulation tissue observations.

**Table 36. Concentrations of Total DDX in pelagic invertebrate tissues on a wet weight (µg/kg ww) and lipid weight (µg/kg lipid) basis.**

| Monitoring Station | Baseline 2 (2009) | |
|---|---|---|
| | Wet weight (µg/kg ww) | Lipid Weight (µg/kg ww) |
| 2 | 9 | 745 |
| 3 | 11 | 988 |
| 5 | 25 | 2,714 |
| 6 | 5 | 490 |
| 7 | 5 | 556 |

### 5.7.8. Porewater (*Ex Situ* Passive Sampling)

Concentrations of total DDX in surface porewater for on cap sediments were on average 7.1 ng/L in the baseline 2 event, decreased in the short-term monitoring (2.9 ng/L) and remained below baseline concentrations in the first and second annual long-term post-placement events (3.7 ng/L in the 14-month event and 3.0 ng/L in the 25-month, average top 7 cm below SWI, Table 37). Results from all sample intervals and events are presented in Figure 87.

Significant reduction in Total DDX concentrations in the upper 7 cm were observed between the baseline event, the 2-month ($p < 0.001$, 61% reduction), and the 25-Month ($p < 0.01$, 48% reduction) events (Table 38, Figure 88). The 14-Month porewater DDX was reduced compared to baseline, but the difference was only marginally significant ($p=0.1$, 30% reduction, Table 38, Figure 88). This analysis indicated that station 5 had significantly lower Total DDX porewater concentrations ($p < 0.01$) during all the events compared to both stations 2 and 3. Results of this analysis indicate that cap placement resulted in slight but significant reductions in porewater total DDX concentrations in surface sediments (0-7 cm), and reductions were sustained through 25-months.

A comparison was made between the porewater directly above (0-2 AI) and below (0-2 BI) the cap-native sediment interface utilizing a 2-way ANOVA, comparing: 1) interface (0-2 Above Interface and 0-2 Below Interface) and 2) Event (2-, 14 and 25-Month). Prior to analysis, a 2-Month 0-2 AI sample from station 4 was removed from the analysis because of an elevated detection limit (31 ng/L) caused by low SPME fiber recovery. The analysis indicated that there were no differences in porewater concentrations between samples collected above- and below the cap-native sediment interface and there were also no differences in porewater concentrations between the 3 events (both $p > 0.05$, Figure 89).

This analysis contrasted that of sediment, which showed significantly lower DDX concentrations above compared to below the interface, indicating that porewater has mixed across this interface. Median concentrations in above interface samples have remained relativity consistent through the three events, typically < 5 ng/L, but overall there is a large degree of variability among all samples.

**Table 37. Mean[a] (± standard deviation, minimum – maximum) detected total DDX concentrations (ng/L) in sediment porewater collected by *ex situ* passive samplers from various events and depth intervals on and off the cap footprint.**

| Depth Interval (cm) | Location | Baseline 2 | 2-Month | 14-Month | 25-Month |
|---|---|---|---|---|---|
| 0-2 | On Cap | 5.3 ± 2.2 (3 - 7.4) | 4.8 ± 6.2 (0.1 - 15.4) | 2.9 ± 2.2 (1.2 - 6.2) | 2.1 ± 1.2 (1 - 3.5) |
| 2-5 | On Cap | 9 ± 7.1 (2.6 - 16.6) | 2.6 ± 2.3 (0.7 - 5.1) | 4.4 ± 2.4 (1.6 - 6.2) | 2.5 ± 1.3 (1.2 - 4.5) |
| 5-7 | On Cap | 6.8 ± 3.9 (3 - 10.8) | 0.9 ± 0.3 (0.6 - 1.3) | 3.8 ± 2.2 (2 - 6.9) | 4.3 ± 1 (3 - 5.6) |
| 0-2 AI[b] | On Cap | --[c] | 3.5 ± 2.7 (1.2 - 6.5) | 4.5 ± 3.2 (1.4 - 8.1) | 15.2 ± 25.9 (0.8 - 61.3) |
| 0-2 BI[d] | On Cap | 5.3 ± 2.2 (3 - 7.4)[e] | 3.7 ± 5 (0.6 - 11.1) | 7.6 ± 7.3 (1.5 - 19.8) | 27.2 ± 45.3 (1.9 - 107.8) |
| 2-5 BI | On Cap | 9 ± 7.1 (2.6 - 16.6) | 3.3 ± 5 (0.8 - 10.8) | 8.5 ± 12.9 (0.1 - 31.3) | 29.4 ± 51.5 (1.1 - 121) |
| 5-7 BI | On Cap | 6.8 ± 3.9 (3 - 10.8) | 2 ± 0.5 (1.2 - 2.5) | 8.3 ± 5.9 (2.2 - 15.4) | 4 ± 1.8 (2 - 6) |
| 0-10 | On Cap | 4.8 ± 2.2 (3.5 - 7.3) | -- | -- | -- |
| 0-10 | Off Cap | <1.5[f] | 0.8[g] | 0.1 ± 0.1 (0.1 - 0.2) | 0.1[g] |

a. Sample size: 1 for off cap baseline, 2 for off cap post-TLC events, 3 for on cap baseline, 5 on cap post-TLC events
b. AI collected from 0 – 2 cm above cap-native sediment interface
c. Interval did not exist or not collected
d. BI collected from 0 – 2, 2 – 5 and 5 – 7 cm below cap-native sediment interface
e. Baseline BI sample concentrations are repeated from standard intervals (0 – 2, 2 – 5, and 5 – 7) for comparison purposes
f. Both off cap samples were ND, reported as < detection limit.
g. Station 7 sample was ND (<0.4), thus only detected value reported.

**Table 38. Average percent reduction in surface sediment porewater Total DDX concentrations compared to baseline for five stations with baseline monitoring data.**

| Station | Location | Interval | Percent Change from Baseline | | | |
|---|---|---|---|---|---|---|
| | | | 2-Month | 14-Month | 25-Month | Overall Reduction by Station |
| 2 | On Cap | 0-2 | -36%[a] | +12% | -73% | -32% |
| 2 | On Cap | 2-5 | --[b] | -64% | -90% | -77% |
| 2 | On Cap | 5-7 | -87% | -36% | -48% | -57% |
| 3 | On Cap | 0-2 | -38% | -42% | -52% | -44% |
| 3 | On Cap | 2-5 | -35% | -21% | -43% | -33% |
| 3 | On Cap | 5-7 | -90% | -18% | -28% | -46% |
| 5 | On Cap | 0-2 | -85% | -56% | -68% | -69% |
| 5 | On Cap | 2-5 | -72% | -20% | -53% | -48% |
| 5 | On Cap | 5-7 | -47% | -22% | +21% | -16% |
| 6 | Off Cap | 0-10 | +11% | -90% | -79% | -53% |
| 7 | Off Cap | 0-10 | -71% | -78% | -75% | -75% |
| Overall Reduction by Event[c] | | | -61% | -30% | -48% | |

a. Negative numbers indicate a reduction, positive numbers are increases.
b. No sample recovered during 2-month event.
c. Overall reduction by event includes on cap stations only
d. When concentration was below the detection limit (ND), it was assumed to be equal to ½ of the detection limit (DL).
e. Concentrations at Station 7 were ND for the baseline, 2- and 25-Month events, and was detected on the 14-Month event. Therefore the apparent decline reflects reductions in DLs from the baseline event.
f. Concentrations at Station 6 were ND for Baseline.

**Table 39. Average percent reduction in surface sediment porewater Total DDX concentrations (average of 0–2, 2–5 and 5–7 cm below SWI) compared to native sediment underlying the cap (average of 0 – 2 BI, 2 – 5 BI and 5 – 7 BI cm below cap-native sediment interface).**

| Station | Percent Change from Underlying Native Sediment | | |
|---|---|---|---|
| | 2-Month | 14-Month | 25-Month |
| 1 | +598% | -75% | -92% |
| 2 | +63% | +62% | -74% |
| 3 | -23% | -71% | -89% |
| 4 | -31% | 36% | +7% |
| 5 | -81% | -51% | -49% |
| Overall Reduction by Event | +105% | -20% | -59% |

a. Negative numbers indicate a reduction, positive numbers are increases.

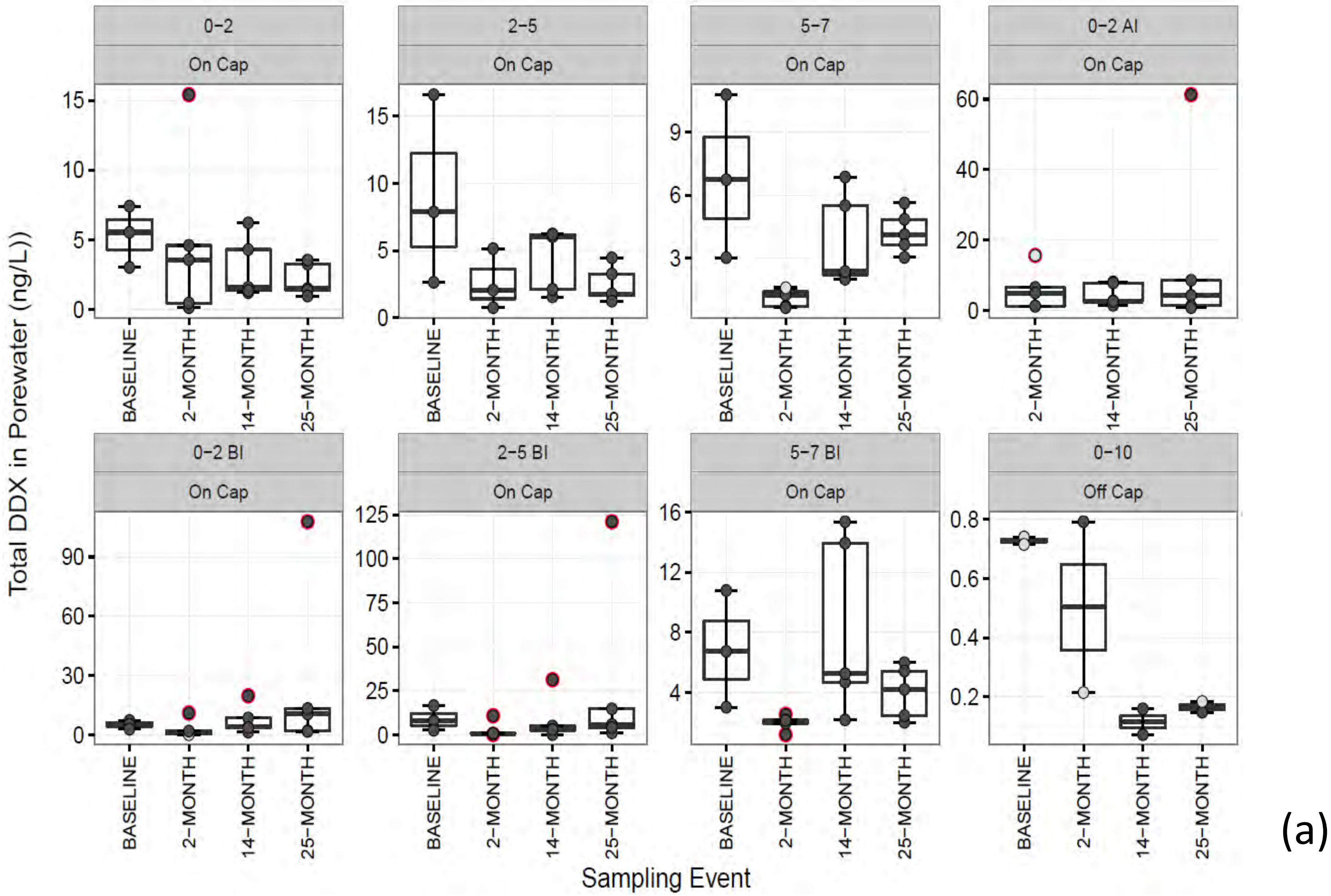



**Figure 87. Site-wide comparison of Total DDX in porewater measured *ex situ*, separated by sample interval. Results are plotted as the median (horizontal bar), IQR (limits of boxes are 25th and 75th percentiles), and error bars extend from the IQR to the lowest value within 1.5 * IQR. Data beyond the end of the whiskers are outliers and points are outlined in red (as specified by Tukey). Note different scales on each graph pane. ND results are represented by grey points. For on-cap stations, n = 3 for Baseline 2 and n=5 for post-cap monitoring. Note, (a) has differing scales and (b) has same scale.**

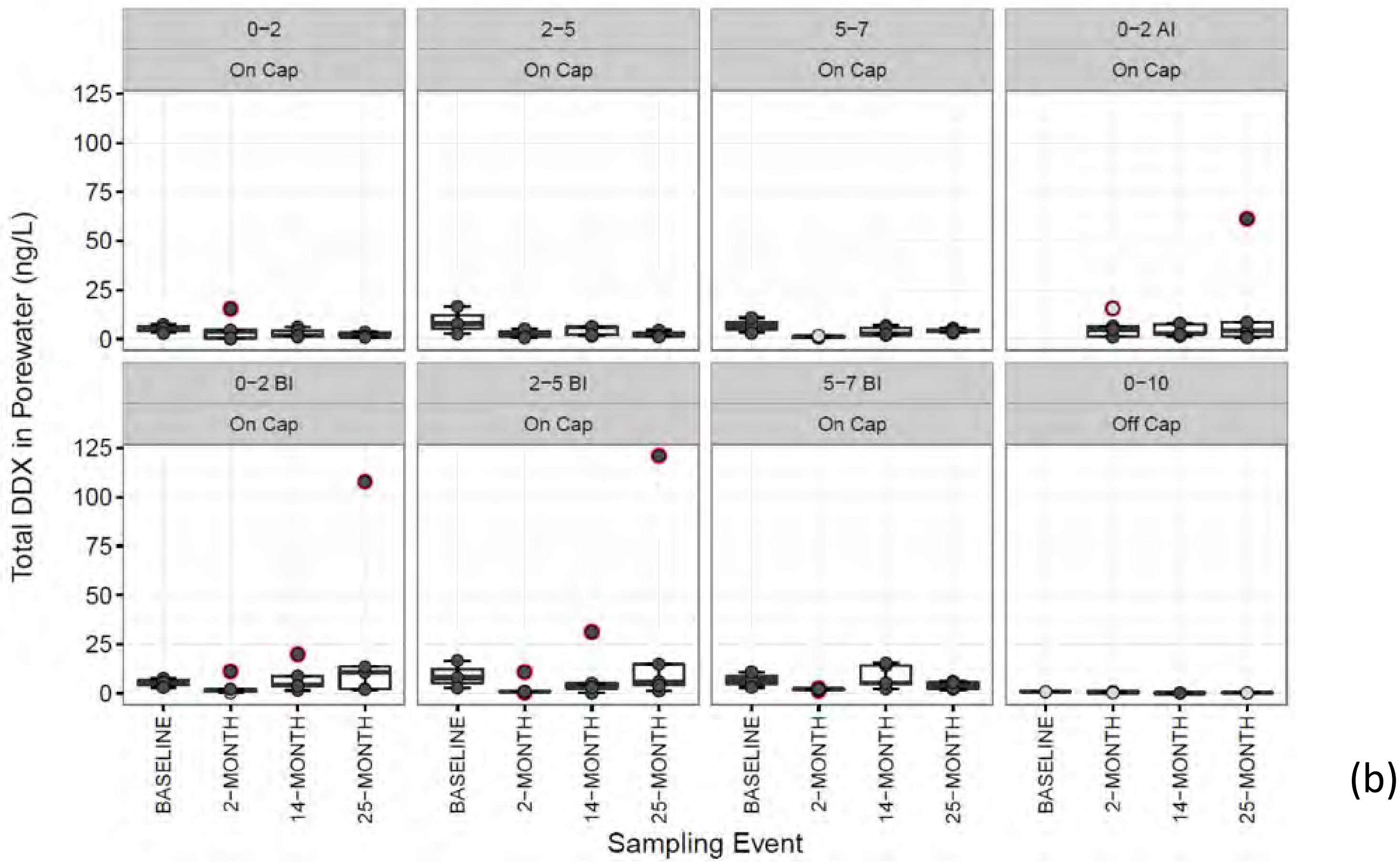

0−2
On Cap
2−5
On Cap
5−7
On Cap
0−2 AI
On Cap
0−2 BI
On Cap
2−5 BI
On Cap
5−7 BI
On Cap
0−10
Off Cap
125
100
75
50
25
0
Total DDX in Porewater (ng/L)
BASELINE
2−MONTH
14−MONTH
25−MONTH
Sampling Event
(b)

Figure 87b.

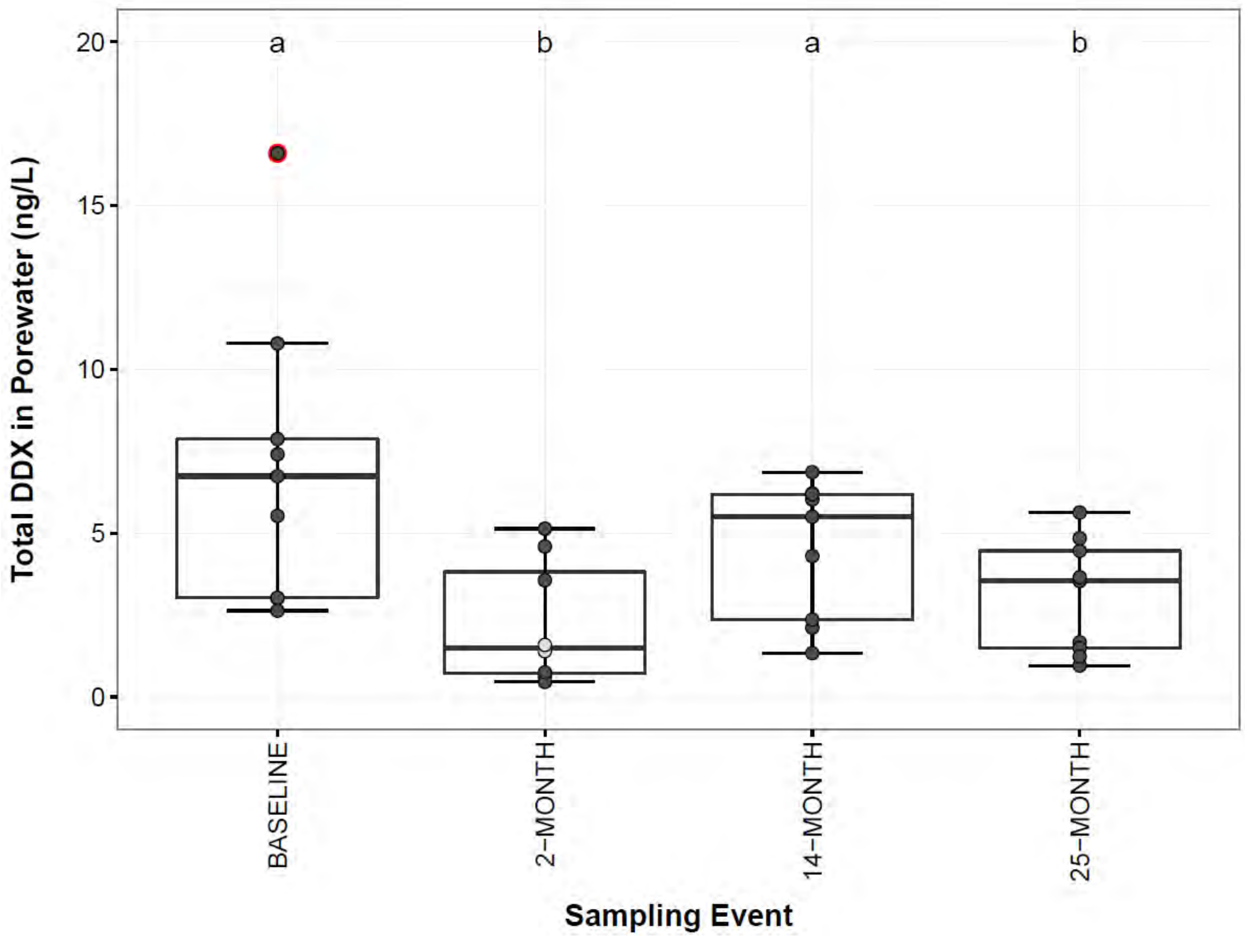



**Figure 88. Comparison of Total DDX concentrations in surface porewater (0-2, 2-5, 5-7) for on-cap stations (2, 3 and 5). Significant differences ($p < 0.05$) represented as different letters above boxes. Results are plotted as the median (horizontal bar), IQR (limits of boxes are 25th and 75th percentiles), and error bars extend from the IQR to the lowest value within 1.5 * IQR. Data beyond the end of the whiskers are outliers and plotted with a red outline (as specified by Tukey). Notes: Stations 1 and 4 do not have baseline results and were excluded from this graph. Two samples were not detected during the 2-month event and were plotted as grey points.**

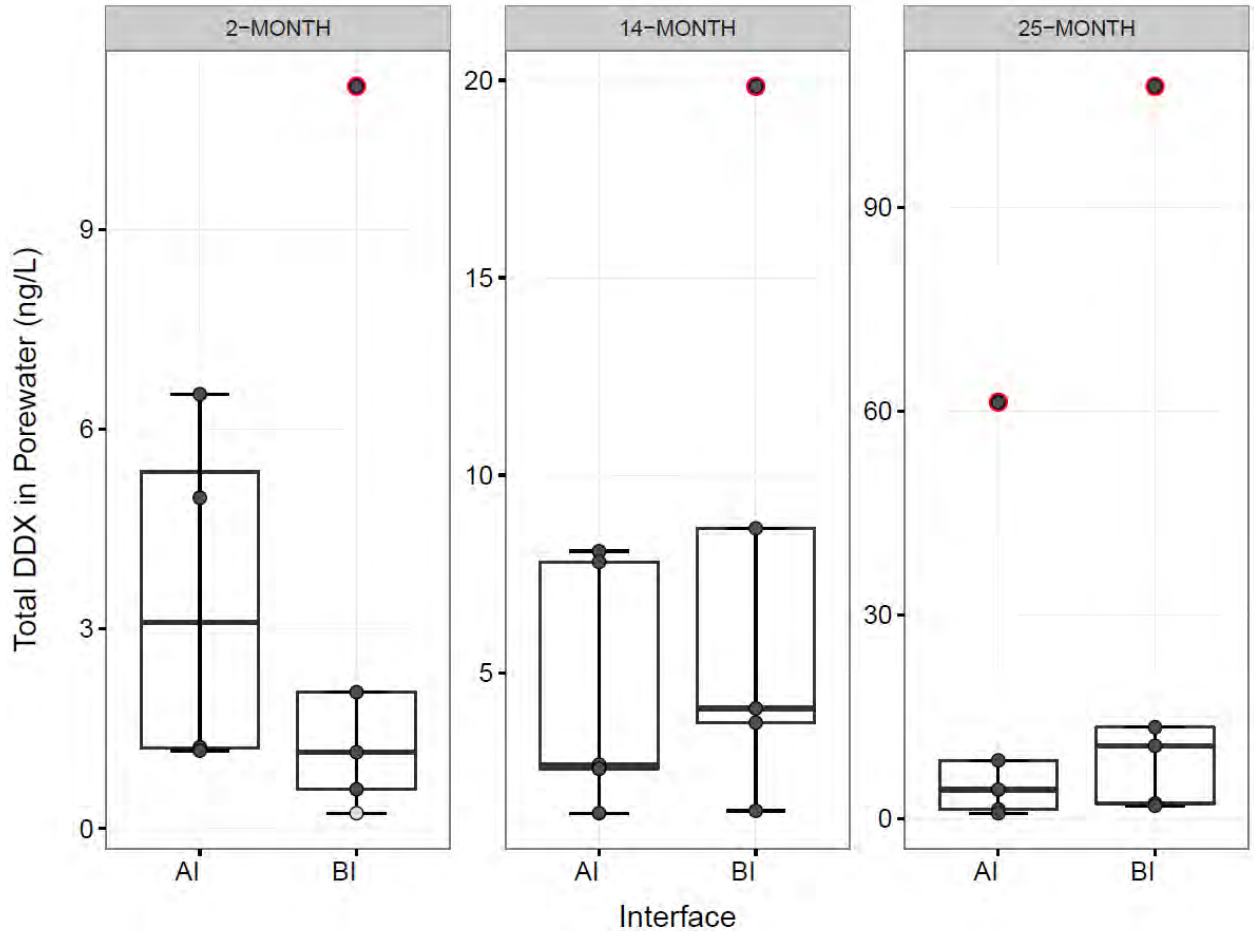



**Figure 89. Comparison of Total DDX in Porewater measured *ex situ* above (AI) and below (BI) the cap-native sediment interface by event for the 5 on cap stations. Results are plotted as the median (horizontal bar), IQR (limits of boxes are 25th and 75th percentiles), and error bars extend from the IQR to the lowest value within 1.5 * IQR. Data beyond the end of the whiskers are outliers and plotted as red points (as specified by Tukey). Notes: Different scales on the three graph panes to allow reader to see patterns between events. ND samples were plotted as grey points.**

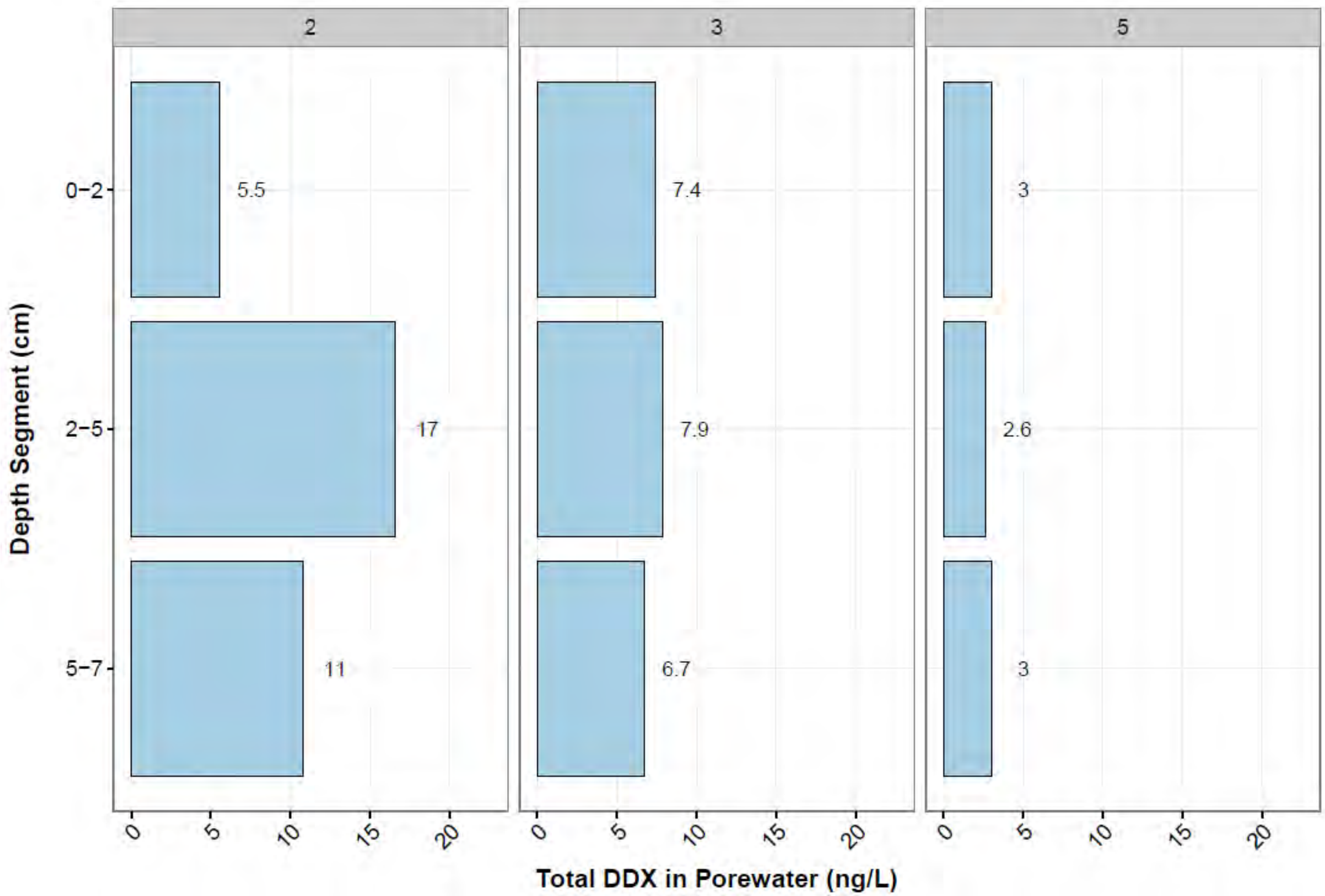



**Figure 90. Baseline event station-by-station comparison of Total Porewater DDX concentrations of on-cap sediment. Note: ND are not detected samples, represented as ½ the detection limit. Green bars represent samples taken from within cap material, light blue represent the sample 0-2 cm above the cap-native sediment interface and dark blue represent samples below the cap-native sediment interface.**

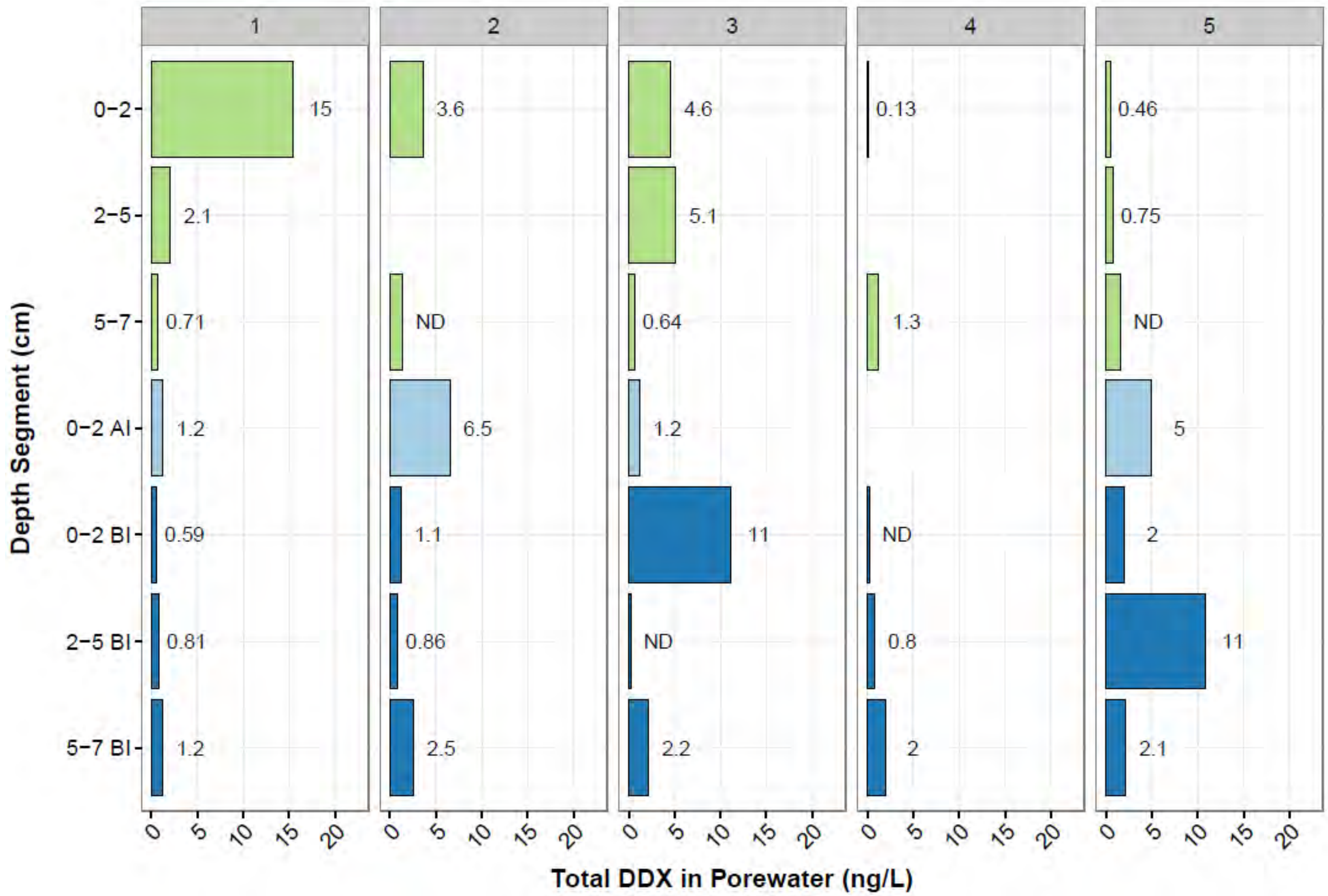



**Figure 91. 2-Month event station-by-station comparison of Total Porewater DDX concentrations of on-cap sediment. Note: ND are not detected samples, represented as ½ the detection limit. Green bars represent samples taken from within cap material, light blue represent the sample 0-2 cm above the cap-native sediment interface and dark blue represent samples below the cap-native sediment interface.**

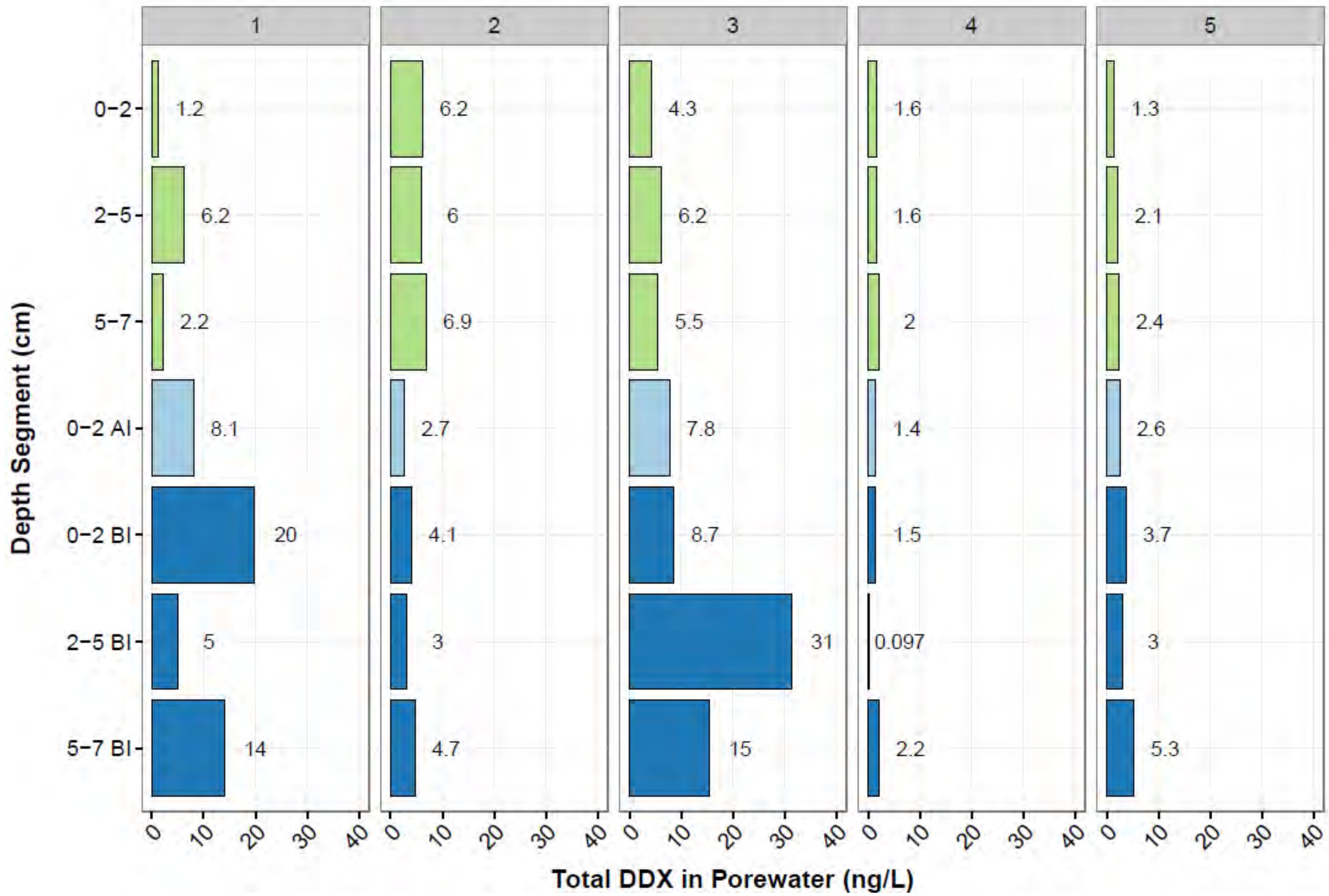



**Figure 92. 14-Month event station-by-station comparison of Total Porewater DDX concentrations of on-cap sediment. Note: ND are not detected samples, represented as ½ the detection limit. Green bars represent samples taken from within cap material, light blue represent the sample 0-2 cm above the cap-native sediment interface and dark blue represent samples below the cap-native sediment interface.**

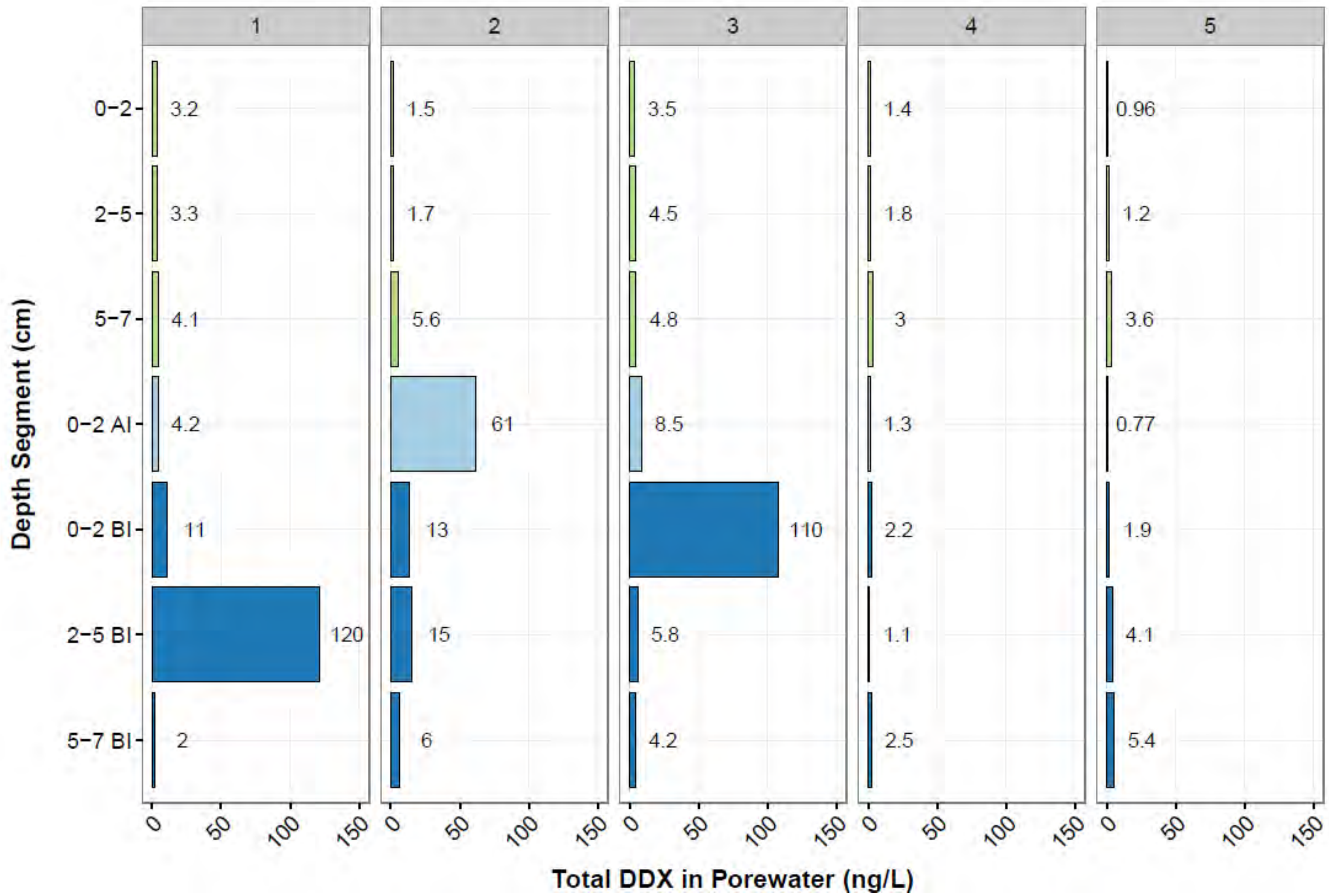



**Figure 93. 25-Month event station-by-station comparison of Total Porewater DDX concentrations of on-cap sediment. Note: ND are not detected samples, represented as ½ the detection limit. Green bars represent samples taken from within cap material, light blue represent the sample 0-2 cm above the cap-native sediment interface and dark blue represent samples below the cap-native sediment interface.**

### 5.7.9. Sediment Profile Imagery

#### 5.7.9.1. 2009 Baseline Event

Sediments at most of the stations in the north-northeast half of the site and closer to shore were primarily silty fine to very fine sand; as one moved away from land and into the southwest quadrant of the sampling area, the river bed graded into softer silt-clay sediments. Some of the nearshore stations, e.g., Station 357, 359, 372, showed evidence of distinct depositional intervals that were most likely due to land runoff following heavy rainfall (Figure 94). Surface boundary roughness ranged from 0.6 to 4.2 cm with an overall site average of 1.7 cm, principally due to surface irregularities from river currents or wind energy that was transferred to the sediment bed. Small-scale topographic roughness measured in the sediment bed appeared to be primarily due to physical forcing factors and not from infaunal burrowing or feeding activities.

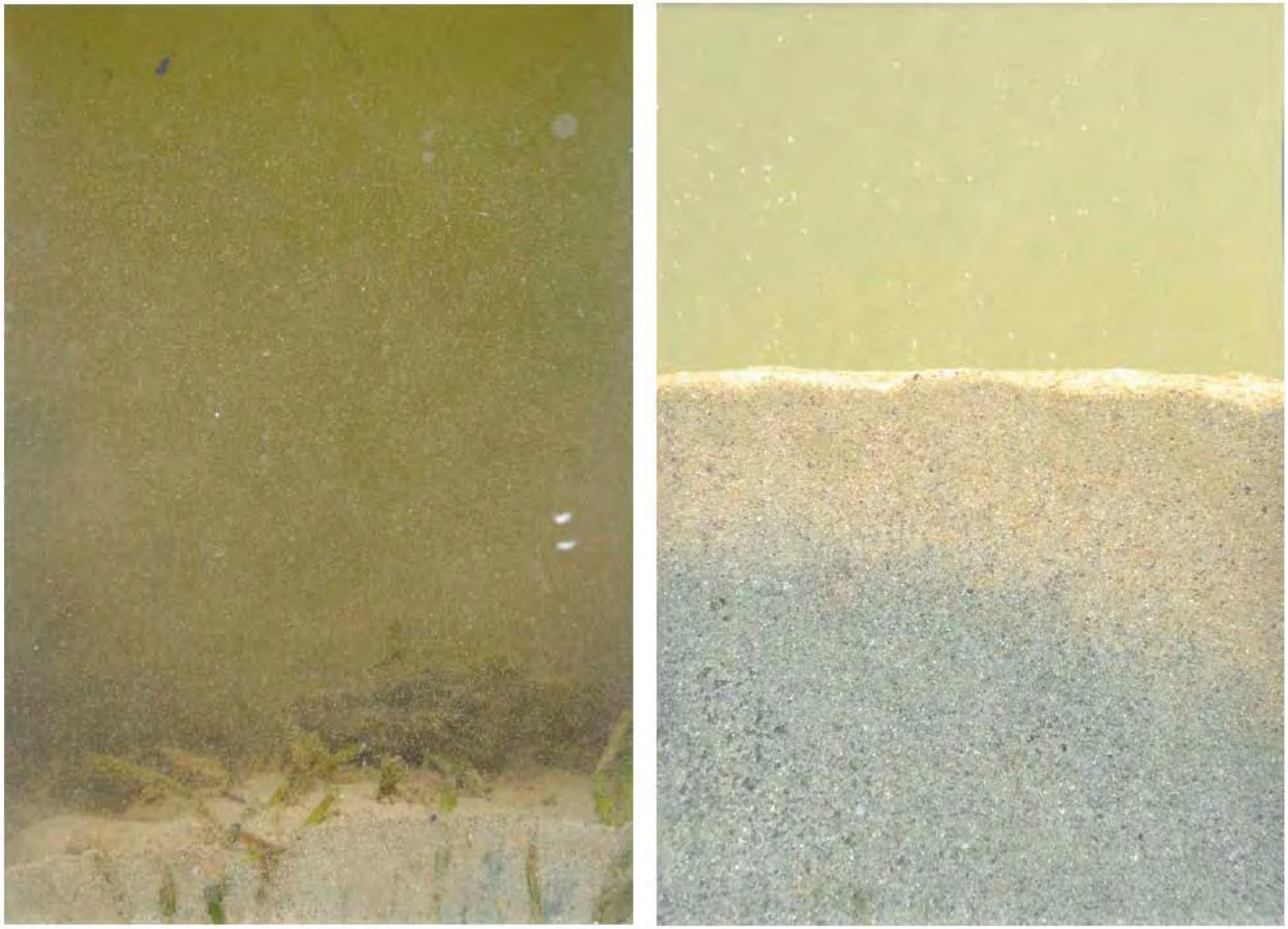
The average station camera prism penetration depth ranged from 0 (no penetration) to 21.6 cm (overpenetration), with an overall site average penetration depth of 12.8 cm. The variation in prism penetration depth was inferred to be primarily an indication of sediment grain-size major mode; at those locations with a notable percentage (>20%) of particles in the sand sized range (0.125 mm or larger), prism penetration ranged between 2-15 cm (Figure 95). In the southwest quadrant of the site where methanogenic silt-clay sediments with a high water content were found, compromised images were collected at 12 stations where the camera prism over-penetrated the bottom (Figure 96).

The distribution of mean apparent RPD depths ranged from 0 to 3.7 cm, with an overall site average aRPD depth of 1.6 cm. The shallowest aRPD depths were found in a cluster of stations in the middle of the sampling area and extending to the southwest closest to shore; aRPD depths in the northeast section of the site (in the sandier, less-organically loaded areas) were generally higher. Subsurface methane was quite common throughout the area and found at 40 of the 51 stations sampled; in addition to the sedimentary organic carbon, the other major source of organic input to the sediments was the high inventory of macrophytes. Two main types of aquatic vegetation were evident in the profile images, both a flat bladed grass and a branched milfoil (it appears to be the invasive Eurasian milfoil Myriophillum; Figure 97). Submerged aquatic vegetation (SAV) was found at virtually every station sampled.

The freshwater successional model developed for lake bottoms was not a particularly useful paradigm for characterizing infauna in rivers. Biogenic subsurface structures (burrows, feeding pits, subsurface feeding voids) can be quickly destroyed in an extremely shallow area like this site by either river currents or wind-driven energy (affecting the bottom in the sandier areas), or deposition of additional sedimentary layers from land-based runoff at the nearshore stations. Apparent faunal densities were low, with only chironomids and oligochaetes visible as the dominant taxonomic groups, although one freshwater bivalve was seen at Station 381 (Figure 98). While the more mature successional assemblages were found in the northern half of the sampling area where aRPD depths were greatest, a somewhat incomplete picture of the infaunal community exists because successional stage could not be determined for over one-third of the images collected.

Station 357 Station 372

**Figure 94. Evidence of recently deposited sedimentary intervals was detected at some of the nearshore stations as seen in these profile images from Station 357 (left) and Station 372 (right); the arrows in each image show the buried contact boundary that was the former sediment-water interface. Scale: width of each image = 14.5 cm.**



Station 336 Station 369

**Figure 95. These profile images from Station 336 (left) and 369 (right) both have a sediment grain-size major mode of fine sand but show a notable difference in penetration depth, mainly due to the presence of subsurface methane at Station 369 which reduces sediment shear strength. Scale: width of each image = 14.5 cm.**

Station 345 Station 387

**Figure 96. These profile images from Station 345 (left) and 387 (right) both show low shear-strength, highly fluid silt-clays with subsurface methane that could not support the weight of the camera prism. Scale: width of each image = 14.5 cm.**

**Figure 97. This profile image from Station 356 shows both types of the dominant submerged aquatic vegetation found at the site, both branched milfoil prominently displayed in the left part of the image and the single-frond grasses seen in the right half of the image. Scale: width of image = 14.5 cm.**

Station 344 Station 381

**Figure 98. The profile image from Station 344 (left) shows oligochaetes projecting above the sediment-water interface in the right half of the image (arrows), while the profile image from Station 381 (right) shows the only freshwater bivalve found in all the images collected at the site. Scale: width of each image = 14.5 cm.**

#### 5.7.9.2.2-Month Event

During the 2-month event, modal sediment grain-size at the Quantico Embayment Site 99 ranged from fine-sand-silt-clay to medium-coarse-sand. The coarsest sediments occurred at Station 03 being a mixture of medium-coarse-sand-gravel with some pebble sized grains. Stations 01, 06a, 08, 16 and 19 were all clean medium-coarse sand. About two-thirds of the stations (19 of 32 stations) were a mixture of fine-medium-coarse-sand some with silty sediments. An additional seven stations were a mixture of fine-sand-silt-clay (Figure 99 and Figure 100).

Sediment sampling prior to cap placement determined that native sediments were primarily silt-clay. Based on this it was concluded that the presence of sediments that were medium-sand and coarser were generally cap material. The cap was present at all stations except off-cap Stations 23, 24, 26, 27, and 28 that, as expected, appeared to be native silt-clay. Cap thickness exceeded prism penetration depth at 23 of 28 stations with cap material. At Stations 02, 11, 25, 29, and 32 what appeared to be native siltly and clayey sediments were under or mixed in with the cap sediments (Figure 99 - Figure 101). Over the two-months since cap placement, it did not appear that native sediments from the surrounding bottom were transported very far from the edge of the capped site. All stations with significant amounts of fine sediments mixed with surface cap material were along the edge of the site.

The sediment surface at all stations appeared to be dominated by physical processes with little indication of biological processes, such as bioturbation, being important. What appeared to be small tubes (<1 mm in diameter) occurred in low densities (1 to 9 per image) at about half the stations (15 of 32 stations) with Station 04 having 10 to 24 tube per image. These tubes could also have been small fecal pellets as there are not many tube building species in marine-freshwater transitional habitats. Tubes could also be from newly settled *Marenzelleria viridis*, *Streblospio benedicti*, or *Boccardiella ligerica* three small tube building polychaete species common in fine-grained sediments from tidal freshwater to about salinities of 3 psu, which seasonally can occur at Site 99. The fecal pellets are likely from the bivalves *Rangia cuneata* or *Corbicula fluminea*, both of which were found at the Quantico Embayment Site 99 during fieldwork. They are also known to be common in the low salinity and tidal freshwater Potomac. Oligochaetes were observed below the sediment surface at less than a third of all stations (9 of 32 stations). Infauna were all very small on the order 0.5 mm. There was no evidence of burrowing by any other infaunal species, such as Chironomid larvae that are common in tidal freshwater and low salinity habitats.

The dominance of surfical sediments by physical processes appeared to be the principal factor determining oxidation-reduction state of the sediments. There was no evidence of bioturbation by infauna or other benthic species at any of the Quantico Embayment stations. The shallowest depth of the aRPD occurred at Station 30 (0.5 cm) that was cap sand mixed with native silty sediment. At native sediment stations, four of the five had aRPD layer depths >1 cm. This indicated that resuspension-deposition events were likely responsible for the deeper aRPD layer at these four stations. In silt-clay sediments, physical diffusion limits oxygen penetration to <1 cm. At native sediment Station 27 the aRPD layer depth of 0.7 cm could have been due to physical diffusion. In sandy porous sediment, deep aRPD layers appeared primarily to be a function of porewater circulation driven by current or wave action that pumps oxygenated water in the sediment. This appeared to be the factor responsible for the deep aRPDs at many of the cap stations. The most obvious signs of biogenic activity were gas voids produced by anaerobic methanogenic microbes. Gas voids occurred at half of stations (16 of 32 stations) with over 50 small gas voids in the images from Stations 01, 23, and 32 (Figure 99). Gas voids were primarily associated with silt-clay sediments but also occurred in what appeared to be clean cap sand, for example Stations 13 or 21 (Figure 100).

The general muddy nature of native sediments facilitated the determination of cap material which were primarily medium- to coarse-sand (Figure 99 - Figure 101). About two-months after cap placement the sediment surface at cap stations were primarily clean sands. Native sediments under cap material were observed at five of the Quantico Embayment Site 99 SPI stations along the outer perimeter of the cap (four on the southeast side of the capped site and one on the northwest side). Stations that were located 25 to 50 m away from the cap to the southeast appeared to be all native sediments with no cap sediment. This indicated that the cap material had not migrated far.

The cap appeared to completely cover the SPI stations located on the cap. Over the center of the capped area the cap was thicker then prism penetration and was at least about 10 to 20 cm thick. Cap sediments thinned to the southeast of the site and did not appear to be present 25 to 50 m away from the perimeter of the site. Native sediments at the Quantico Embayment Site 99 appeared to be typical of other marine-freshwater transitional zone within the Potomac River and other Chesapeake Bay tributaries. Native sediments in these tidal freshwater habitats are primarily silt-clays with sandy sediments being mostly fine-sand. There was no evidence in the sediment profile images that biological processes were involved in sediment mixing at the Site 99. Bioturbation, which is a primary mixing process in marine sediments, is not an important factor in transitional or tidal freshwater benthic habitats.

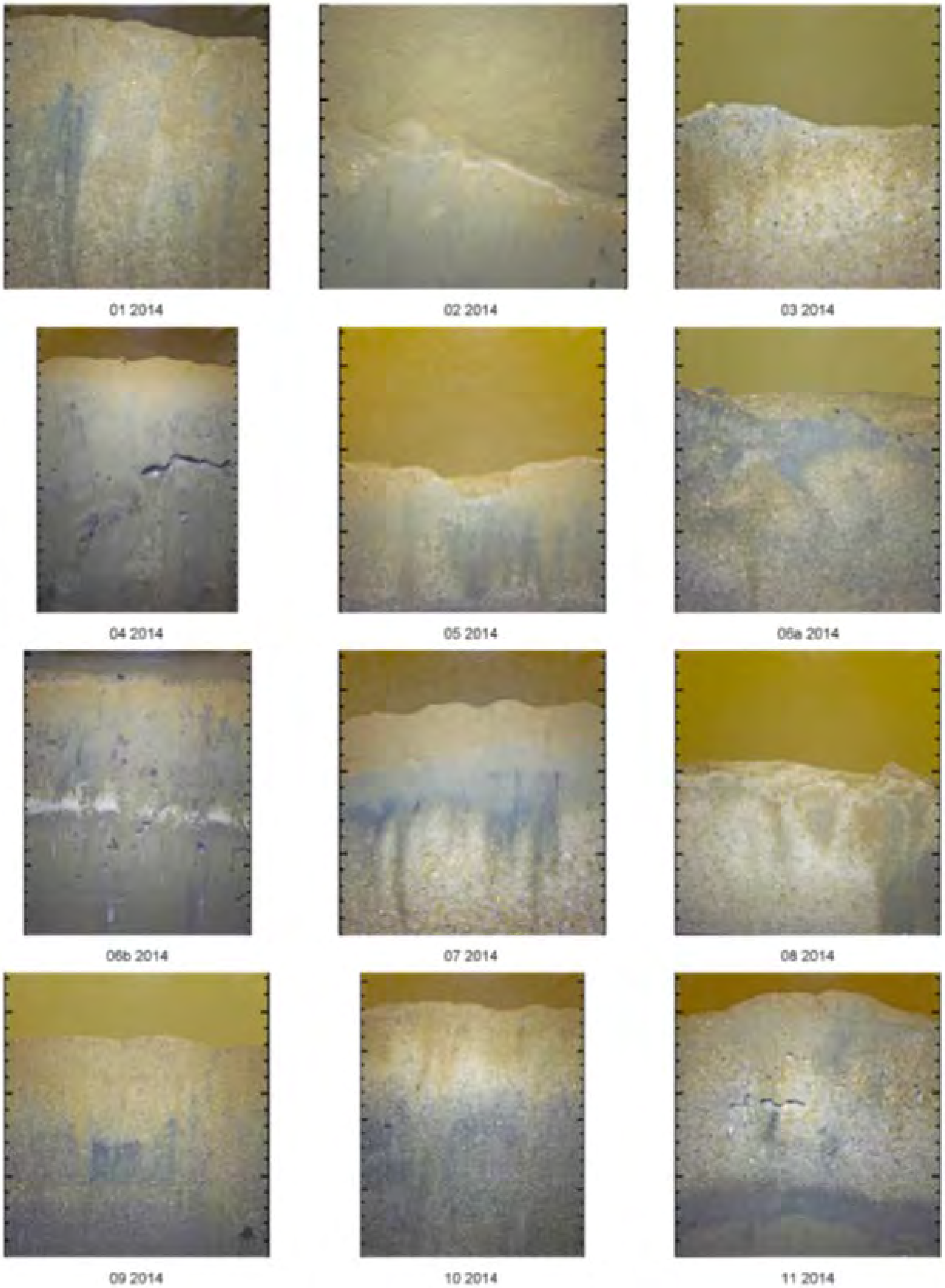



**Figure 99. Mosaic of images from Quantico Embayment Site 99 stations 01 to 11 for 2-month post-cap SPI survey September 24, 2014. Scale on side of images is in cm.**

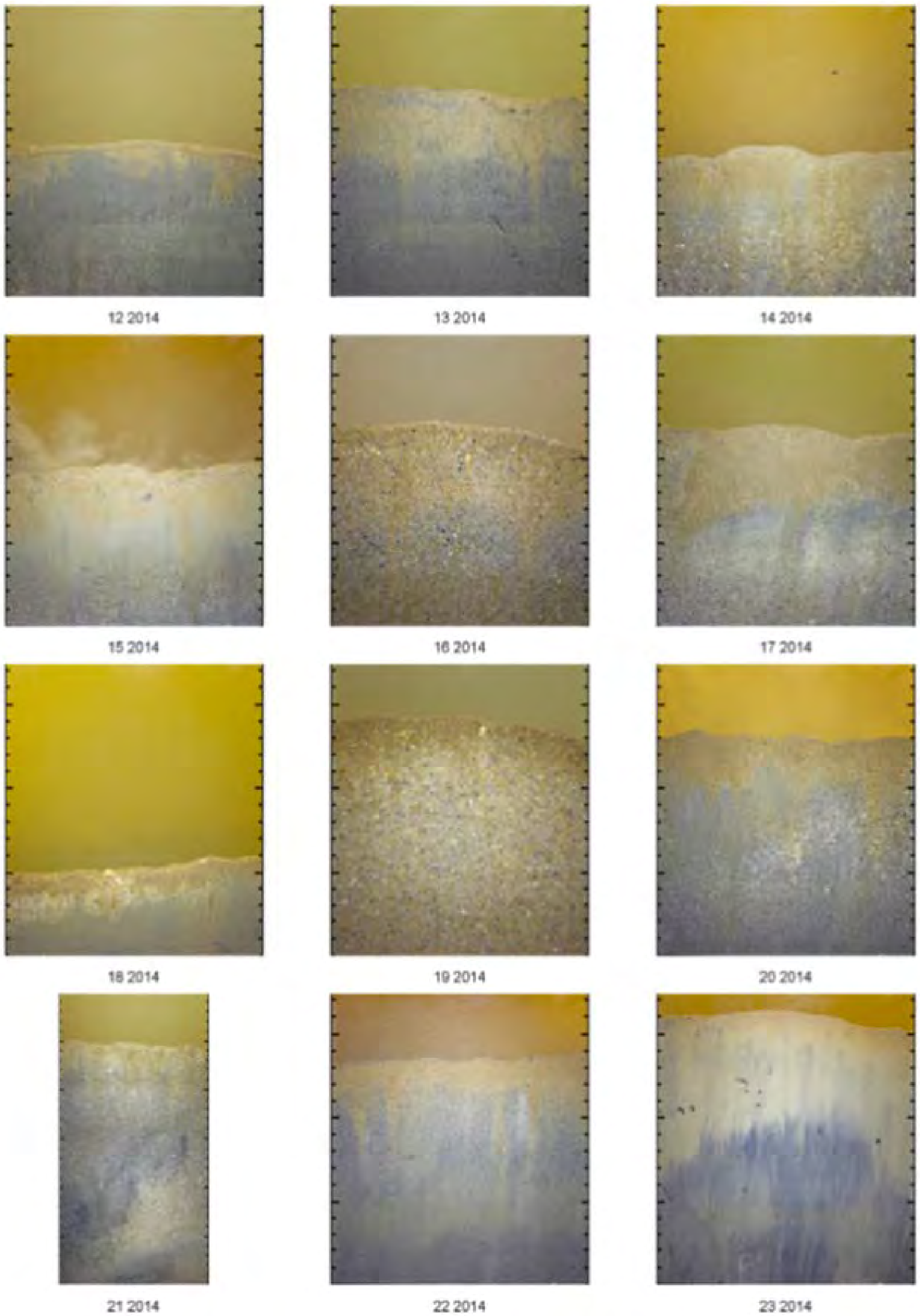



**Figure 100. Mosaic of images from Quantico Embayment Site 99 stations 12 to 23 for 2-month post-cap SPI survey September 24, 2014. Scale on side of images is in cm.**

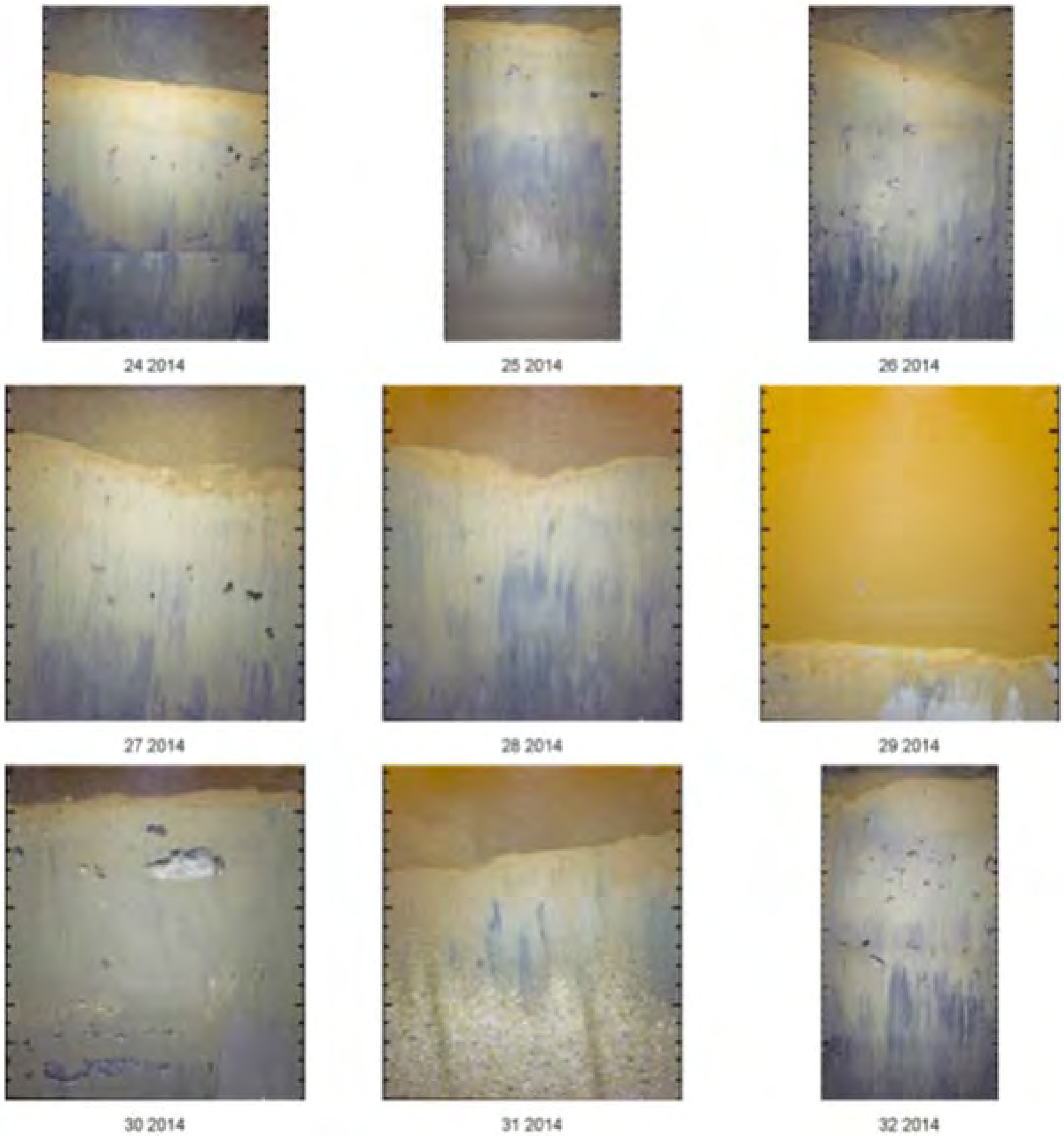



**Figure 101. Mosaic of images from Quantico Embayment Site 99 stations 24 to 32 for 2-month post-cap SPI survey September 24, 2014. Scale on side of images is in cm.**

**5.7.9.3.14-Month Event**

During the 14-month event, twenty-three SPI images were analyzed from the 21 SPI stations. Replicate images from Stations 05 and 07 indicated that there was some small scale spatial heterogeneity, on the order of 3 to 5 meters, within the Quantico Embayment site so both images were analyzed. All of the stations were targeted to the cap area. A mosaic of all SPI images analyzed is in Figure 102 and Figure 103. Modal sediment grain size at Quantico Embayment Site 99 ranged from silt-clay to medium-coarse sand. The coarsest sediments occurred at Station 05, which has a mixture of medium-coarse sand and gravel, and Station 16, which is composed of medium-coarse sand (Figure 102 and Figure 103). About half of the stations (11 of 21 stations) were a mixture of fine-medium coarse sand. An additional three stations were a mixture of silt-clay and fine-medium-coarse sand. The finest silt-clay sediments occurred at Station 03. Maximum grain size of pebbles was observed at Stations 05 and 08.

The sediment surface at all stations was dominated by physical processes. Appearances of current-generated asymmetric bedforms or ripples were observed at about half of the stations (11 of 21 stations). The boundary roughness associated with these bedforms could be measured when the profile prism cut the bedforms at nearly a right angle. This occurred at eight stations (7a, 13, 14, 15, 18, 19, 20, and 21) giving estimates of roughness that ranged from 1.3 cm at Stations 15 and 18 to 3.0 cm at Station 13. Spatially, stations toward the north-east end of the site tended to have bedforms.

Sediment sampling prior to cap placement determined that native sediments were primarily silt-clay. Therefore, based on the presence of sediments that were medium sand and coarser and layering of finer sediment over coarser sediments, it was concluded that grain sizes from medium sand to gravel were generally cap material. The cap was present at all stations except Station 03 which appeared to be native silt clay. Cap thickness exceeded prism penetration depth at all stations with cap material. At Stations 01, 02, 07, 10, and 17, appearances of silt clay native sediment layers were on top of or mixed into the cap sediments (Figure 102 and Figure 103). Over the year since cap placement, it appears that native sediments from the surrounding bottom were transported to the capped site and mixed with cap material.

Appearances of small tubes occurred in low densities (one to nine per image) at about half the stations (9 of 21 stations). These tubes could also have been small fecal pellets as there are not many tube-building species in marine-freshwater transitional habitats. Tubes could be from newly settled Marenzelleria viridis, Streblospio benedicti, or Boccardiella ligerica, which are three small tube-building polychaete species common in fine grained sediments from tidal freshwater to about salinities of 3 psu. The fecal pellets are likely from the bivalves Rangia cuneata or Corbicula fluminea, both of which were found at the Quantico Embayment Site 99 during fieldwork. They are also known to be common in the low salinity and tidal freshwater Potomac River.

Oligochaetes were observed below the sediment surface at one third (seven of 21 stations) stations. The largest oligochaetes were observed at Stations 06, 07, and 10 (Figure 104). There was no evidence of burrowing by any other infaunal species, such as Chironomid larvae.

The dominance of surficial sediments by physical processes appeared to be the principal factor determining oxidation-reduction state of the sediments. There was no evidence of bioturbation by infauna or other benthic species at any of the Quantico Embayment stations. The shallowest depth of the aRPD occurred at Station 03 (1.1 cm) which was native sediment with a flocculent surface sediment. In silt-clay sediments, physical diffusion limits oxygen penetration to <1 cm. This indicated that resuspension-deposition events were likely responsible for the shallower aRPD layer at Station 03. In sandy porous sediment, deep aRPD layers appeared primarily to be a function of porewater circulation driven by current or wave action that pumps oxygenated water into the sediment. This appeared to be the factor responsible for the deep aRPDs at many stations.

The most obvious signs of biogenic activity were gas voids produced by anaerobic methanogenic microbes. When sediment sulfate is depleted, methanogenesis becomes the dominating diagenetic process producing methane and carbon dioxide. Gas voids occurred at about half of the stations (10 of 21 stations) with over 50 small gas voids in the image from Station 10 (Figure 102). Gas voids were primarily associated with silt-clay sediments, but also occurred in what appeared to be clean sand, for example at Station 13 (Figure 103).

Overall, the Quantico Embayment Site 99 appeared to be typical of other marine-freshwater transitional zones within the Potomac River and other Chesapeake Bay tributaries. Native sediments in these tidal freshwater habitats are primarily silt-clays with sandy sediments composed mostly of fine sand. The general muddy nature of native sediments facilitated the identification of the cap material which was primarily medium- to coarse-sand (Figure 102 and Figure 103). Shortly after cap placement in 2014, the surface of cap stations was primarily clean sands. One year after cap placement, the surface sediments at most cap stations had significant amounts of fine silt-clay sediments on top of cap sands or mixed into the surface. For example, at Station 02, there was an approximate 4 cm layer of native silt clay sediment over a layer of about 8 cm of silty medium sand that was over clean medium-coarse sand cap sediments (Figure 6). It was likely that storm-related resuspension-deposition events were responsible for mixing native and cap sediments. Due to limited prism penetration, native sediments under cap material were not observed at any of the Quantico Embayment Site 99 SPI stations. Only Station 03 on the south-eastern edge of the cap site appeared to be without cap sediment.

There was no evidence in the sediment profile images that biological processes were involved in sediment mixing at the Site 99 HEC. Bioturbation, which is a primary mixing process in marine sediments, is not an important factor in transitional or tidal freshwater benthic habitats.

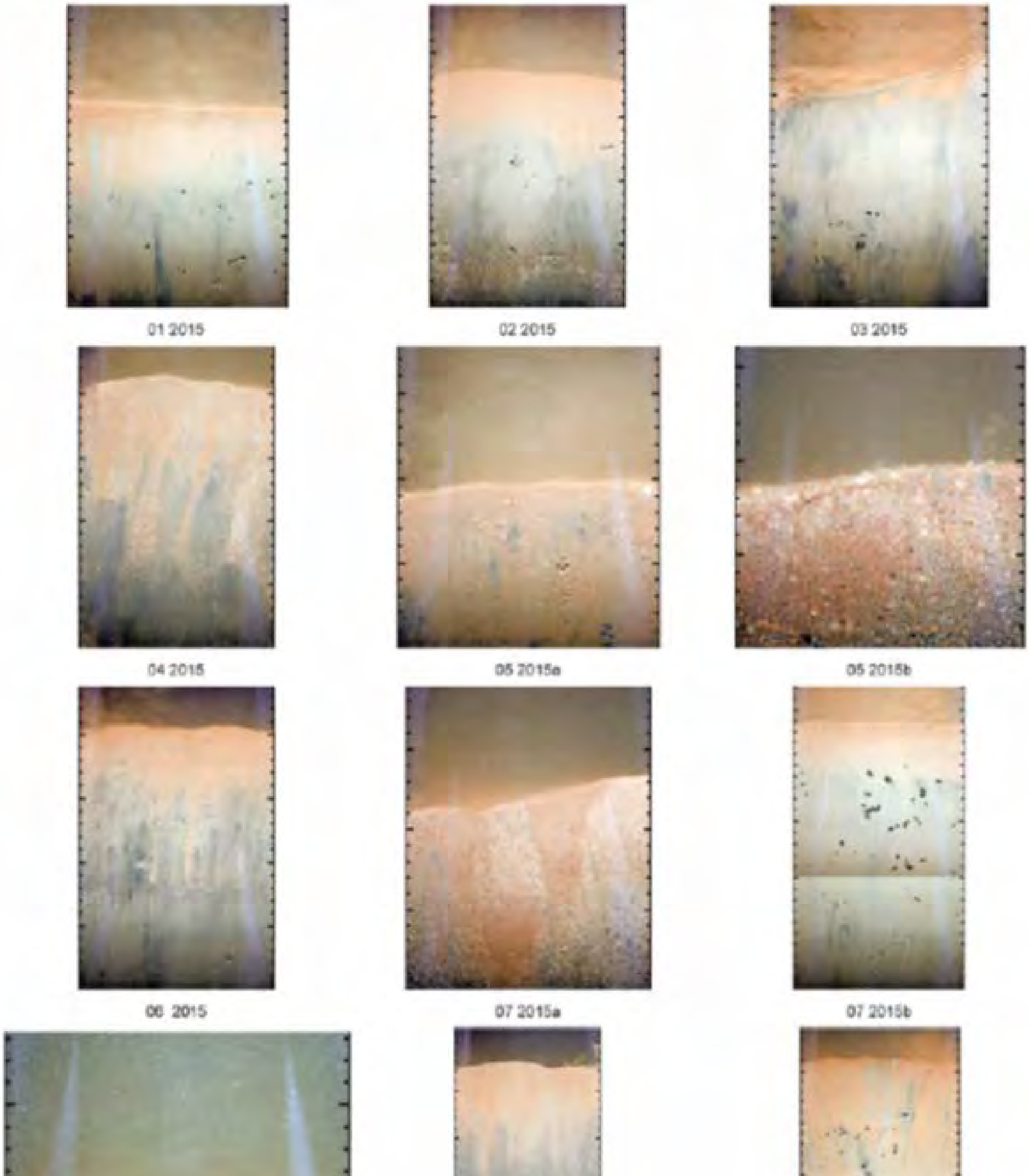



**Figure 102. Mosaic of images from Quantico Embayment Site 99 Stations 01 to 10 for the 14-month post-cap SPI Survey June 9, 2015.**

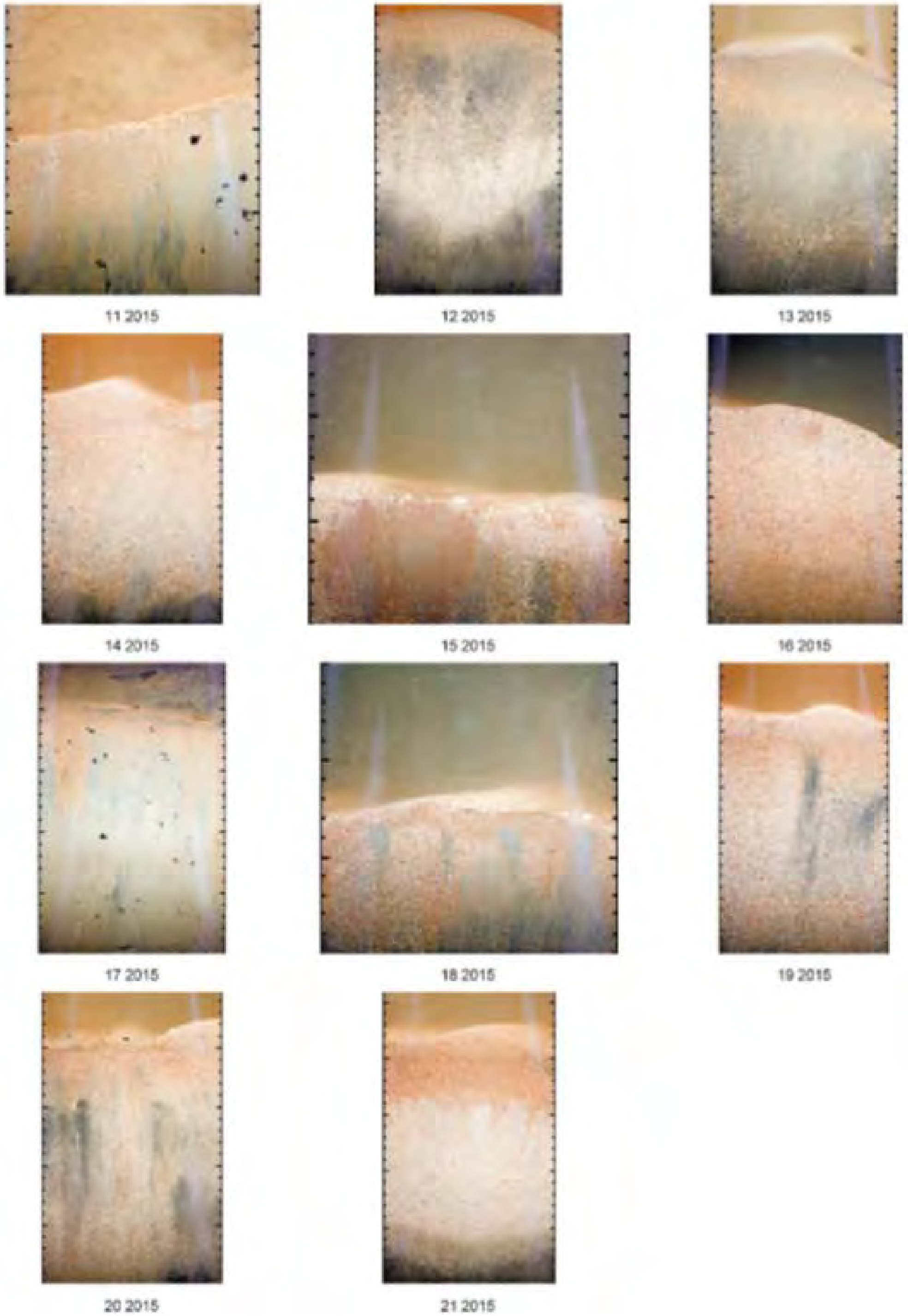



**Figure 103. Mosaic of images from Quantico Embayment Site 99 Stations 11 to 21 for the 14-month post-cap SPI survey June 9, 2015.**

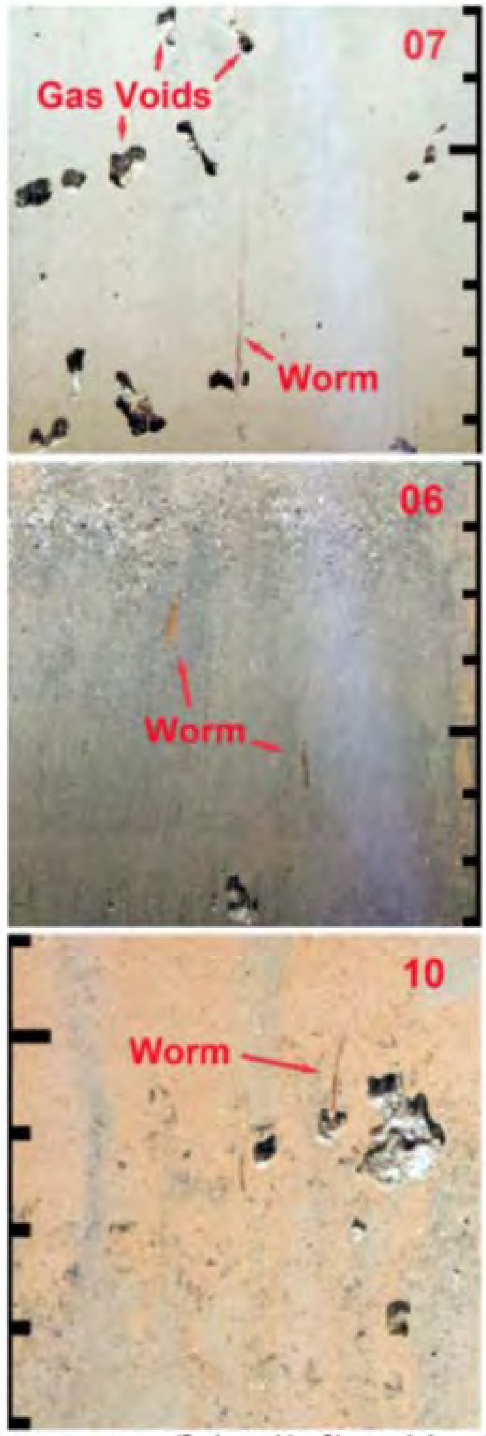



**Figure 104. Oligochaetes observed at Quantico Embayment Site 99 SPI Station 06 at 14 and 16 cm below sediment surface, Station 07 at 12 cm below the surface, and Station 10 at 7 cm below the surface, June 9, 2015.**

#### 5.7.9.4. Cap Thickness Summary

In the 2-month post-placement event, the cap appeared to completely cover the stations with the target area. For the stations within the target area, the average thickness was 5 inches; however, it should be noted that 90% of the stations (19 out of 21 stations) did not achieve penetration into the native sediment (and therefore the thickness of the cap was not observed due to insufficient penetration). 19 of 21 stations had a cap thickness of at least 2 inches (one station with 1 inch thickness was on the edge of the TLC). Results are summarized in Table 40 and detailed in the report provided in Appendix E.

In the 14-month event, an average thickness of 6 inches was observed; however, it should be noted 90% of stations did not achieve sufficient penetration to observe the total thickness of the cap (17 of 19 stations). Stations had a cap thickness of at least 2 inches, with the exception of one station on the edge of the target area. Results are summarized in Table 41 and detailed in the report provided in Appendix E.

The SPI survey was conducted in the 25-month sampling event; however, the results are currently pending.

#### 5.7.9.5. Infaunal Observations Summary

The freshwater successional model developed for lake bottoms was not a particularly useful paradigm for characterizing infauna in rivers because burrows, feeding pits, and subsurface voids can be quickly destroyed by either river currents or wind-driven energy or deposition of additional sedimentary layers. In the baseline 2 event, apparent faunal densities were low, with only chironomids and oligochaetes visible as the dominant taxonomic groups. One freshwater bivalve was observed. More mature infaunal successional stages were observed in the northern half of the sampling area; however, a somewhat incomplete evaluation was conducted due to indeterminate successional stage at over one-third of the stations. Results are detailed in Appendix E.

In the 2-month event, little to no evidence in the sediment profile images was found that biological processes were occurring, such as bioturbation. Small tubes were observed at half the stations and fecal pellets likely from bivalves were observed at several stations. Oligochaetes were dominant at less than one-third of stations. Gas voids occurred at half the stations and were the most obvious signs of biogenic activity.

In the 14-month event, small tubes were present at half of the stations, or these tubes could have also been fecal pellets. Oligochaetes were dominant at one-third of stations. Chironomids larvae was not evident. Gas voids were evident and a sign of biogenic activity at half the stations.

The SPI survey was conducted in the 25-month sampling event; however, the results are currently pending.

**Table 40. Cap thickness based on SPI Survey in 2-month post-placement event.**

| Station | Cap Thickness within Target Area (inches) | Penetration within Target Area (inches) |
|---|---|---|
| 1 | >6.3 | 6.3 |
| 2 | 0.9 | 2.6 |
| 3 | >4.2 | 4.2 |
| 4 | >7.8 | 7.8 |
| 5 | >3.3 | 3.3 |
| 06a | >4.8 | 4.8 |
| 06b | >7.2 | 7.2 |
| 7 | >5.4 | 5.4 |
| 8 | >3.8 | 3.8 |
| 9 | >5.2 | 5.2 |
| 10 | >7.2 | 7.2 |
| 11 | 4.7 | 6.0 |
| 12 | >3.4 | 3.4 |
| 13 | >4.8 | 4.8 |
| 14 | >3.4 | 3.4 |
| 15 | >3.7 | 3.7 |
| 16 | >4.4 | 4.4 |
| 17 | >4.6 | 4.6 |
| 18 | >2.0 | 2.0 |
| 19 | >5.3 | 5.3 |
| 20 | >5.2 | 5.2 |
| 21 | >9.7 | 9.7 |

**Table 41. Cap thickness based on SPI survey in 14-month post-placement event.**

| Station | Cap Thickness within Target Area (inches) | Penetration within Target Area (inches) |
|---|---|---|
| 1 | 4.6 | 5.5 |
| 2 | 4.9 | 7.1 |
| 3 | 0.0 | 6.4 |
| 4 | >8.2 | 8.2 |
| 05a | >3.6 | 3.6 |
| 05b | >3.3 | 3.3 |
| 6 | >8.1 | 8.1 |
| 07a | >4.8 | 4.8 |
| 07b | 8.5 | 9.3 |
| 8 | >1.4 | 1.4 |
| 9 | >10.8 | 10.8 |
| 10 | 8.7 | 10.2 |
| 11 | >4.2 | 4.2 |
| 12 | >8.8 | 8.8 |
| 13 | >7.4 | 7.4 |
| 14 | >7.6 | 7.6 |
| 15 | >2.1 | 2.1 |
| 16 | >6.1 | 6.1 |
| 17 | 6.3 | 7.7 |
| 18 | >2.8 | 2.8 |
| 19 | >8.4 | 8.4 |
| 20 | >8.3 | 8.3 |
| 21 | >8.4 | 8.4 |

### 5.7.10. Benthic Community Census

Success of this performance objective is defined as no significant effects to benthic communities due to presence of the cap (Table 42). Based on this evaluation, TLC placement initially affected the benthic community but succession is occurring based on the increased observations of infauna between the 2- and 14-month events. Benthic community recovery will continue to progress as natural environmental gradients are re-established on the cap material.

Abundances for stations within the cap footprint were significantly different between the 5 sampling events ($p < 0.0001$). The two baseline events were not significantly different from one another ($p = 0.62$). The 2- and 14-Month events had significantly greater abundances compared to both baseline events, while the 25-month event was greater than baseline 1 ($p = 0.02$) but not different from baseline 3 ($p = 0.15$). On and off cap abundances were similar for the two baseline events and the 2-month event. During the 14- and 25-month events, abundances were greater for on-cap stations compared to off-cap stations.

Taxa Richness for stations within the cap footprint were significantly different between the 5 sampling events ($p < 0.001$). The two baseline events were not significantly different from one another ($p = 0.8$). The 2- and 14-Month events had significantly greater taxa richness compared to both baseline events, while the 25-month event was not different from either baseline event ($p > 0.09$). The 25-Month event had quite a bit of variability in taxa richness (7 to 29 taxa), resulting in difficulty in differentiating it from the baseline events. Overall, the 25-Month event had the greatest richness out of all of the project events. On cap stations had greater median taxa richness compared to their corresponding off cap medians, though there was variability between off cap stations through the events.

Diversity, as measured by the Shannon-Wiener Diversity Index, for stations within the cap footprint were significantly different between the 5 sampling events ($p = 0.026$). The two baseline events were not significantly different from one another ($p = 0.7$). The 2- and 14-Month events had significantly greater diversity compared to Baseline 1 ($p <0.05$), but were not different than Baseline 3 ($p > 0.2$). The 25-month event was not different from either baseline event ($p > 0.33$), likely due to the variability in diversity (1.1 to 2.6). Overall, the 25-Month event had the greatest richness out of all of the project events. Post TLC placement, the on cap stations had greater median diversity compared to their corresponding off cap medians.

Species evenness, as measured by Pielou's Evenness index, for stations within the cap footprint were not significantly different between the 5 sampling events ($p = 0.9$). There was large variability in the initial baseline event, which subsequently decreased until the 14-month event. In the off cap stations, evenness trended upward for each of the five events and reached a max in the 25-month event.

The benthic index of integrity for the two baseline events were not significantly different from one another ($p = 0.24$). The 25-month event had a significantly greater B-IBI score compared to Baseline 1 ($p <0.05$), but was not different than Baseline 3 ($p = 0.6$). Generally, it looks like the initial cap placement effected B-IBI scores, but these rebounded by the 25-month event. The off cap stations during baseline 1, 14- and 25-month events were very consistent, while the baseline 3 and 2-month B-IBI scores were elevated. The 14- and 25-Month events B-IBI scores were > 3, indicating that the benthic community condition is meeting restoration goals (Llanso, 2002). These two time periods also had greater B-IBIs than the off cap stations, indicating the possibility that the cap did enhance benthic communities compared to the native sediment.

**Table 42. Benthic community census results summary.**

| Event | Station Type | B-IBI Score | Pielou's Evenness | Shannon-Wiener Diversity Index | Taxa Richness | Total Abundance |
|---|---|---|---|---|---|---|
| Baseline 1 | On Cap | 2.7 ± 0.3 (2.3 - 3) | 0.7 ± 0.3 (0.4 - 0.9) | 1.4 ± 0.6 (0.7 - 1.9) | 7.5 ± 1.3 (6 - 8.5) | 476 ± 223 (239 - 681) |
| | Off Cap | 2.8 ± 0.2 (2.7 - 3) | 0.5 ± 0.1 (0.4 - 0.6) | 1.3 ± 0.2 (1.1 - 1.5) | 13.3 ± 3.1 (10 - 16) | 2121 ± 1767 (884 - 4145) |
| Baseline 3 | On Cap | 3.3 ± 0.6 (2.7 - 4) | 0.7 ± 0.1 (0.6 - 0.8) | 1.7 ± 0.4 (1.3 - 2.1) | 11.4 ± 4.1 (6 - 15) | 1490 ± 871 (362 - 2478) |
| | Off Cap[a] | 3.4 | 0.6 | 1.3 | 9.0 | 551 |
| 2-Month | On Cap | 3 ± 0.4 (2.7 - 3.7) | 0.7 ± 0.1 (0.6 - 0.8) | 2.2 ± 0.3 (1.8 - 2.5) | 21.8 ± 2.5 (20 - 25) | 4307 ± 923 (3348 - 5638) |
| | Off Cap | 3.3 ± 0 (3.3 - 3.3) | 0.6 ± 0.1 (0.5 - 0.7) | 1.8 ± 0.1 (1.7 - 1.8) | 20 ± 7.1 (14 - 24) | 4370 ± 2798 (2391 - 6348) |
| 14-Month | On Cap | 3.3 ± 0 (3.3 - 3.3) | 0.7 ± 0.0 (0.7 - 0.7) | 2.2 ± 0.1 (2.1 - 2.3) | 22.6 ± 1.9 (20 - 25) | 5519 ± 481 (5145 - 6333) |
| | Off Cap | 2.8 ± 0.2 (2.7 - 3) | 0.8 ± 0.1 (0.7 - 0.8) | 2 ± 0.6 (1.6 - 2.4) | 14 ± 7.1 (9 - 19) | 1210 ± 912 (565 - 1855) |
| 25-Month | On Cap | 3.7 ± 0.4 (3.3 - 4.3) | 0.7 ± 0.1 (0.6 - 0.8) | 1.9 ± 0.5 (1.1 - 2.6) | 17.2 ± 9 (7 - 29) | 2988 ± 1518 (1000 - 5072) |
| | Off Cap | 2.7 ± 0.5 (2.3 - 3) | 0.8 ± 0.1 (0.7 - 0.9) | 1.4 ± 0 (1.4 - 1.4) | 6 ± 1.4 (5 - 7) | 225 ± 113 (145 - 304) |

Results shown as average ± SD (minimum – maximum)
a. Baseline 3 Off Cap consisted of 1 sample.

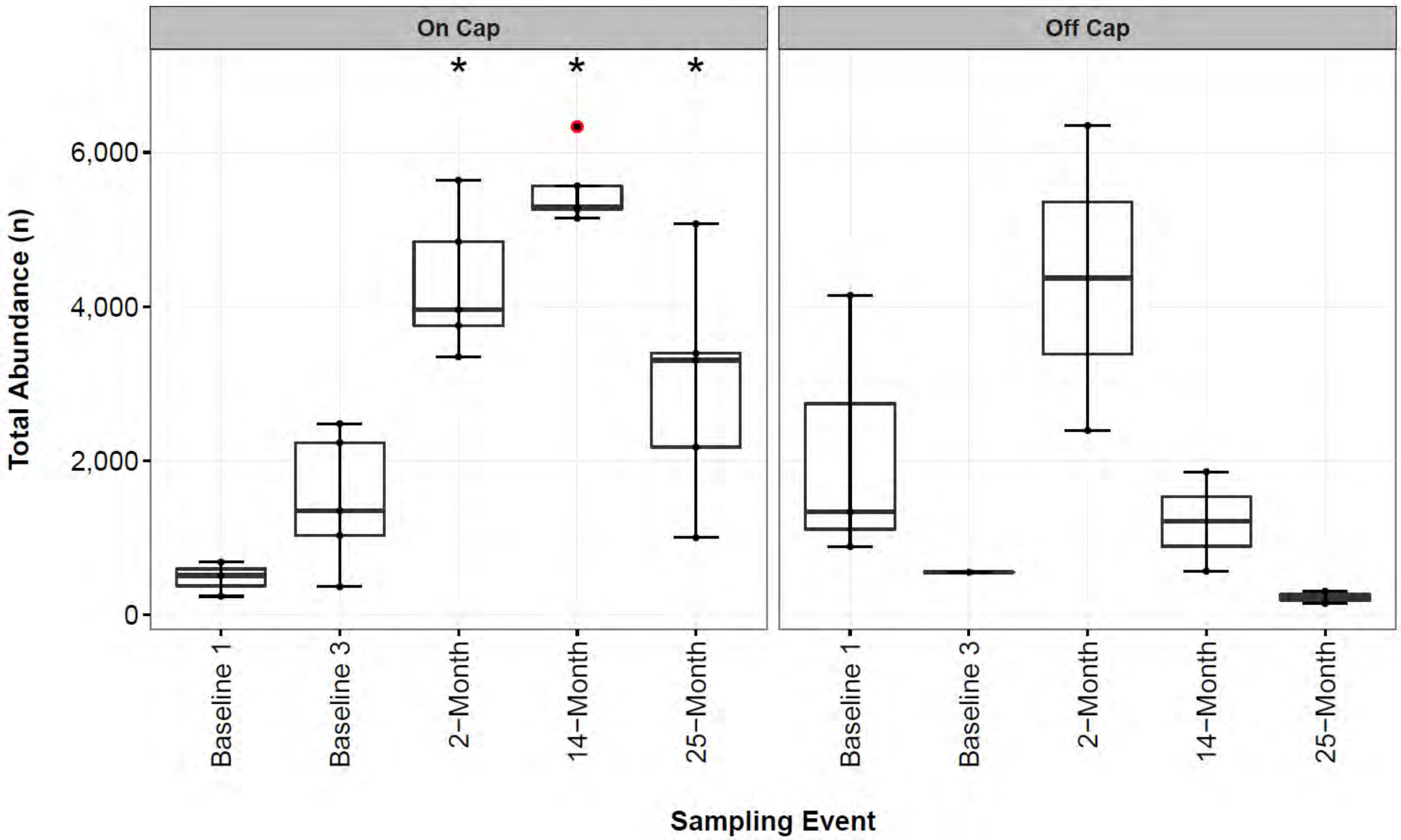



**Figure 105. Total abundance from the benthic community census, separated by stations on and off the cap footprint. Significant differences ($p < 0.05$) from either baseline event represented as a star (*) above box. 25-Month event is significantly greater than baseline 1 but not baseline 3. Results are plotted as the median (horizontal bar), IQR (limits of boxes are 25th and 75th percentiles), and error bars extend from the IQR to the lowest value within 1.5 * IQR. Data beyond the end of the whiskers are outliers and plotted as red points (as specified by Tukey).**

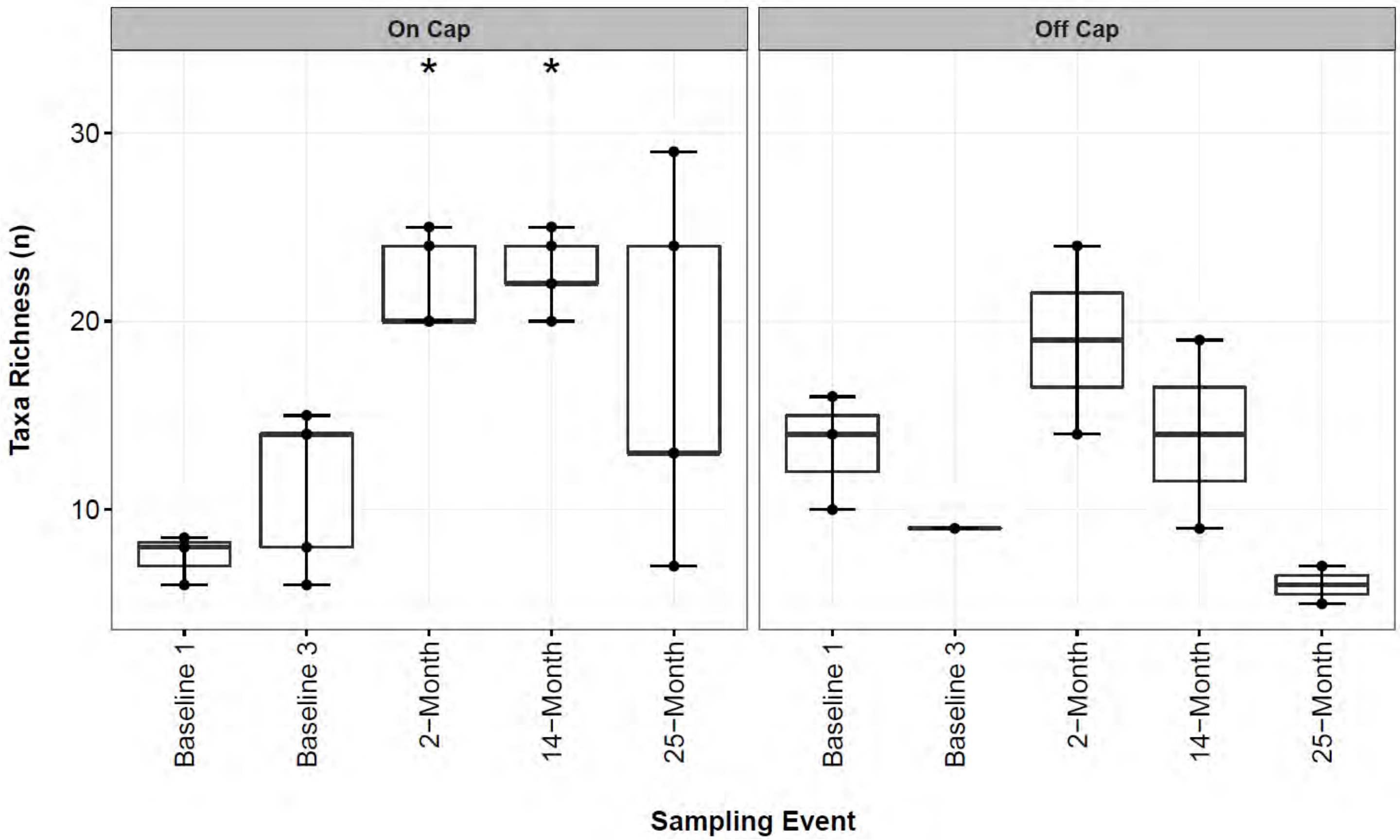



**Figure 106. Taxa Richness from the benthic community census, separated by stations on and off the cap footprint. Significant differences ($p < 0.05$) from either baseline event represented as a star (*) above box. Results are plotted as the median (horizontal bar), IQR (limits of boxes are 25th and 75th percentiles), and error bars extend from the IQR to the lowest value within 1.5 * IQR. Data beyond the end of the whiskers are outliers and plotted as red points (as specified by Tukey).**

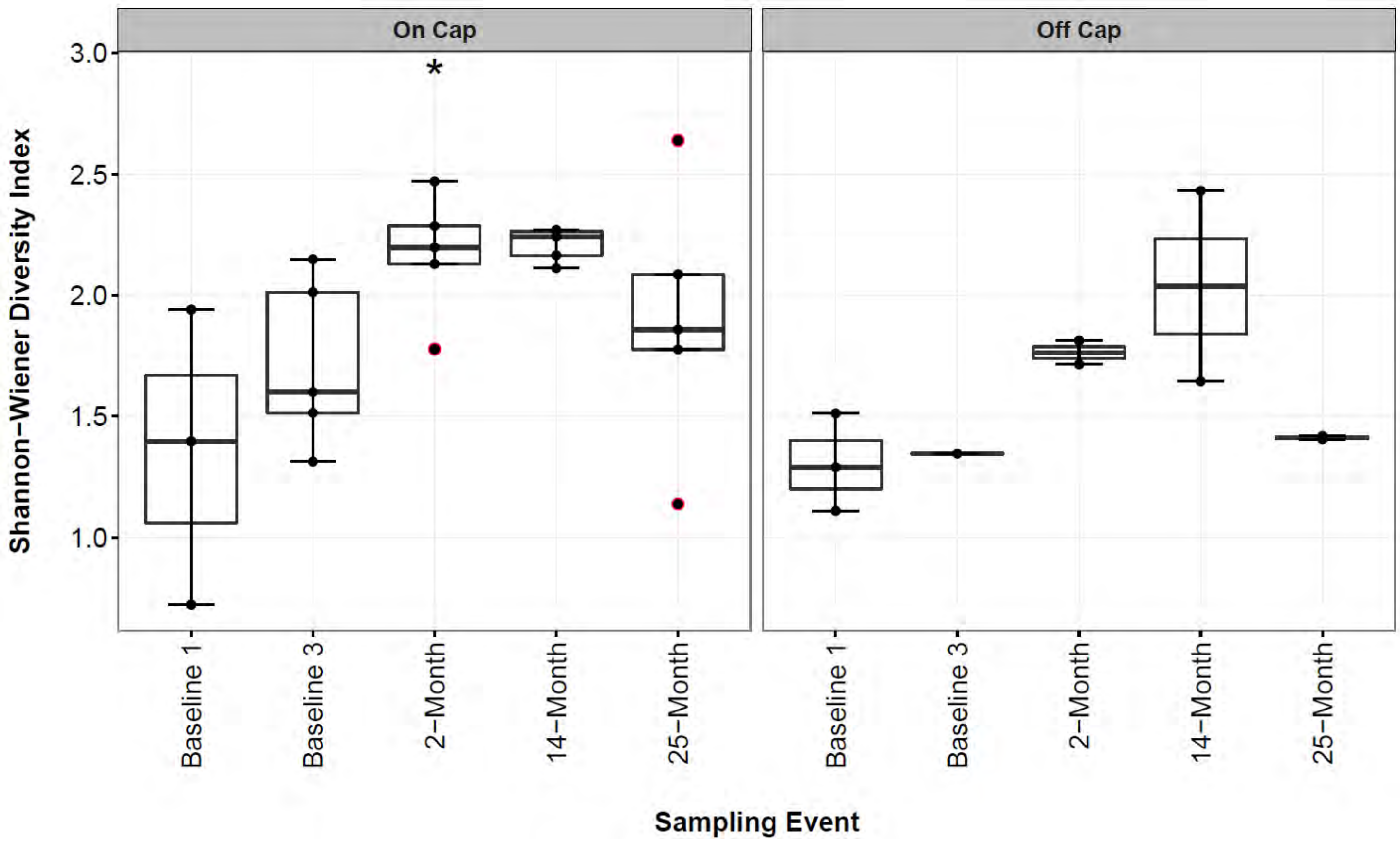



**Figure 107. Shannon-Wiener Diversity Index from the benthic community census, separated by stations on and off the cap footprint. Significant differences ($p < 0.05$) from either baseline event represented as a star (*) above box. 2-Month event is significantly greater than baseline 1 but not baseline 3. Results are plotted as the median (horizontal bar), IQR (limits of boxes are 25th and 75th percentiles), and error bars extend from the IQR to the lowest value within 1.5 * IQR. Data beyond the end of the whiskers are outliers and plotted as red points (as specified by Tukey).**

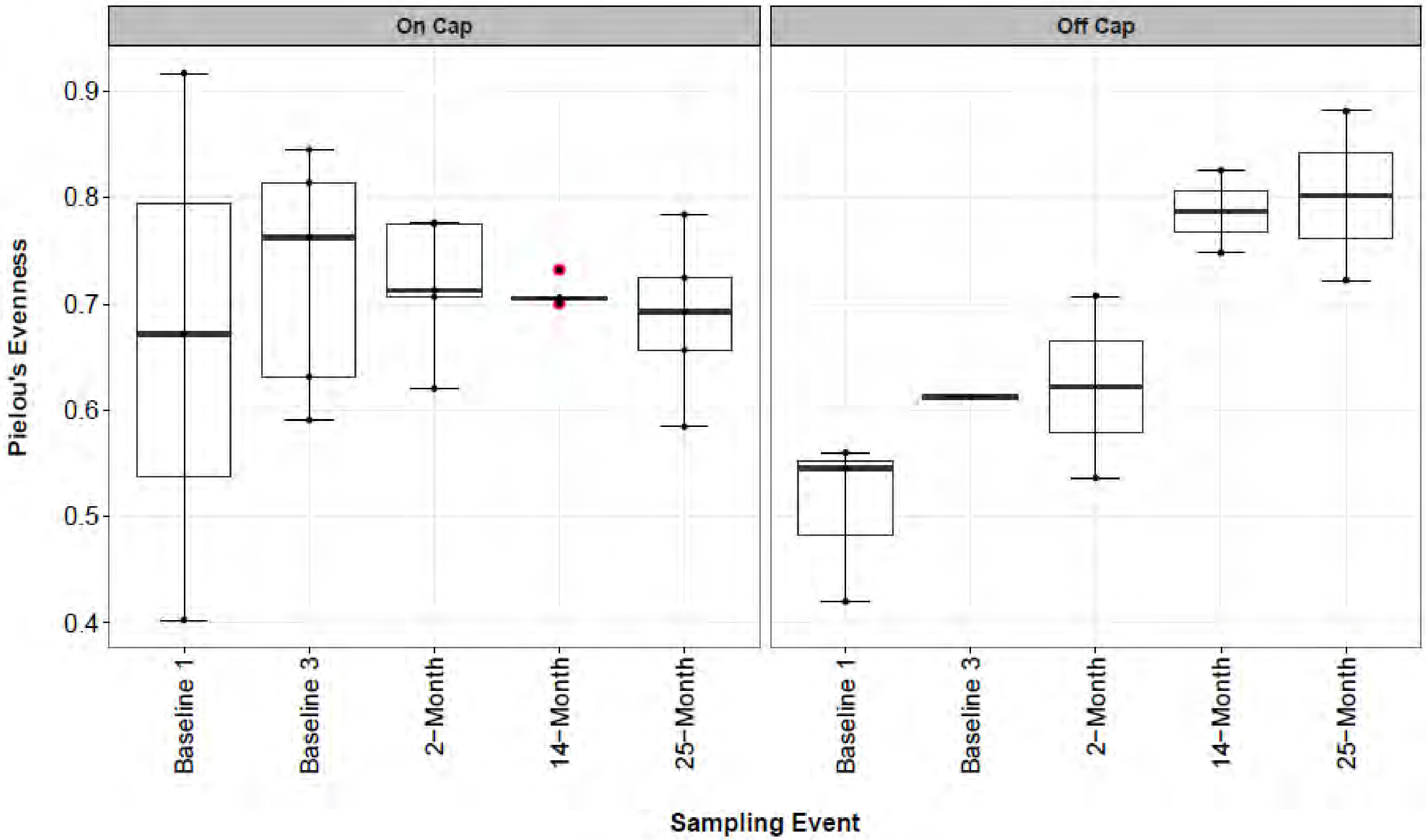



**Figure 108 .Pielou's Evenness index from the benthic community census, separated by stations on and off the cap footprint. Results are plotted as the median (horizontal bar), IQR (limits of boxes are 25th and 75th percentiles), and error bars extend from the IQR to the lowest value within 1.5 * IQR. Data beyond the end of the whiskers are outliers and plotted as red points (as specified by Tukey).**

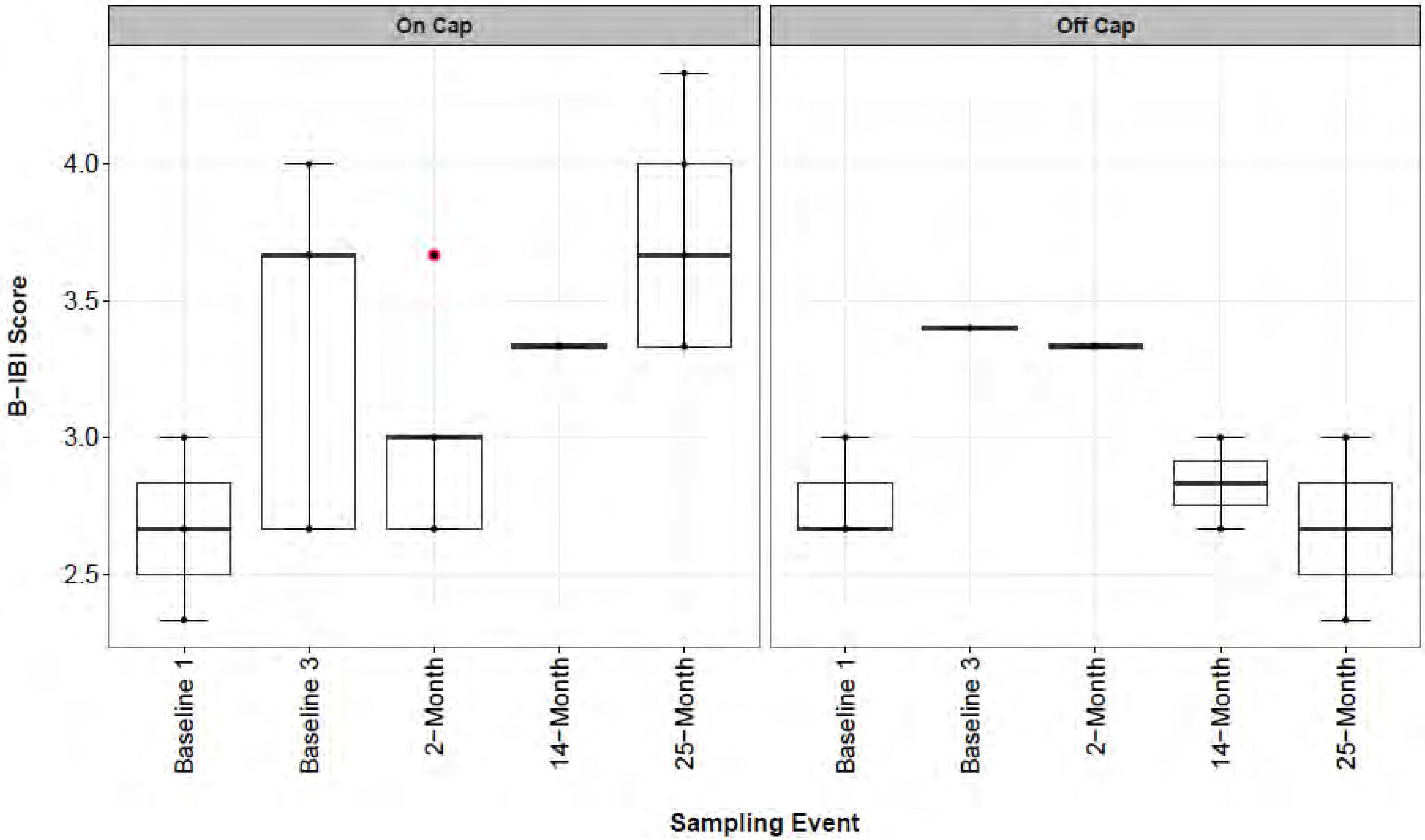


**Figure 109. B-IBI Scores from the benthic community census, separated by stations on and off the cap footprint. Results are plotted as the median (horizontal bar), IQR (limits of boxes are 25th and 75th percentiles), and error bars extend from the IQR to the lowest value within 1.5 * IQR. Data beyond the end of the whiskers are outliers and plotted as red points (as specified by Tukey).**

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# 6. Performance Assessment

A summary of the data collected and analysis performed in support of the assessment of performance objectives is summarized in Section 3 Performance Objectives. A summary of the data treatment in support of the assessment of performance objectives is summarized in Section 3 Performance Objectives and detailed in Section 5.6 Sampling Methods. A summary of the results and evaluation in support of the assessment of performance objectives is provided in Section 3 Performance Objectives and Section 5.7 Sampling Results.

**Performance Objective 1** was the evaluation of cap placement and determination of physical stability of TLC. Success was measured based on cap thickness by differentiating the cap material from the underlying native sediment as measured using multiple methods including sediment core profiling, bathymetry, Sediment Profile Imagery (SPI), and Sediment Friction Sound Probe (SED-FSP). Success of this phase of the project was evaluated based on the overall stability in the thickness of the cap over time, as well as by the ability of the different measurement techniques to gage the stability. While the coring measurements provide the most direct measure of cap thickness, they were limited spatially, so other measurements such as the bathymetric mapping, SED-FSP and SPI provide additional information on the spatial stability of the TLC. Stability of the EMNR cap was a reflection of the cap design and of site-specific conditions including placement accuracy and distribution, hydrodynamics, cap material grain size, natural sedimentation rates, and benthic mixing processes. Results provided insight into cap placement and thickness and into mixing processes that may have occurred during or after cap placement.

Overall, the performance objectives for cap placement and stability were met. The sediment coring confirmed that the cap was remaining relatively stable over time, and the bathymetric mapping, SPI camera and SED-FSP system all provided confirmatory evidence for cap stability. These additional measures also provided much broader spatial coverage which enhanced the understanding of the overall stability of the cap. Sediment core profiling demonstrated the average cap depth was at least inches 6 inches at all stations (average of 10 inches in the most recent long-term monitoring event). The bathymetric surveys clearly show the changes in elevation related to the cap placement, and these measured changes were consistent with the target thickness for the cap. In the SPI survey, only Station 03 on the south-eastern edge of the cap site appeared to be without cap sediment. SED-FSP was in general agreement with other measurements of thickness and provided additional insight into vertical mixing of the cap with underlying and newly deposited sediments.

The stability of the TLC was further supported by the current meter results that indicated currents at the site were generally low relative to critical threshold velocities at both measurement stations and under flow conditions for two different seasons (spring and summer). Thus it is unexpected that the cap would be disturbed by normal spring and summer currents. It is still possible that the cap could be disturbed under storm conditions, especially storm associated waves due to the shallow nature of the site.

**Performance Objective 2** was an evaluation of the extent of sediment and contaminant mixing. Data collected to support assessment of this performance objective included measures that elucidated the mixing and deposition of sediment, and measures that directly measured the mixing and deposition of contaminants. In this project, we evaluated the use of sediment core visual analysis, sediment core TOC and grain size analysis, SPI camera, SED-FSP, and sediment trap mass collection as measures of sediment mixing and deposition. We also evaluated sediment core contaminant profiles for direct measurement of the influence of mixing and deposition on contaminant distributions within the TLC. Visual analysis of sediment cores was used to qualitatively evaluate evidence of mixing within the cap over time based on observable differences in coloration and particle size between the native material, new deposition material, and the TLC material. TOC and grain size analysis provided a more quantitative measure of these same differences. SPI camera results were particularly useful for distinguishing sediment deposition layers and surface sediment mixing zones. The SED-FSP provided evidence for both bottom-up and top-down mixing based on vertical variations in mean grain size (limited to the 2016 event). Material collected in the sediment traps was used to estimate the mass flux of depositional sediment to the cap as well as the contaminant flux associated with this deposition. Vertically-segmented bulk sediment chemistry measurements provided a direct measure of the vertical movement of contamination associated with mixing and deposition processes. And finally, passive sampler porewater profiling was used to evaluate changes in porewater exposure that might have been associated with mixing processes or other porewater processes such as advection or diffusion.

Success of this performance objective was gaged by how well these measures could assess benthic mixing, and ultimately by how these processes influenced the broader performance metric for surface sediment exposure and ecological response (see PO4 and PO5). As with all natural environments, sediment mixing was expected to occur, and TLCs are not necessarily designed to prevent mixing. This element of the project focused on quantifying the extent of sediment mixing and the extent to which these processes increased or reduced the exposure to DDX in surface sediments.

Overall, the performance objectives for sediment and contaminant mixing in the cap were met. Multiple lines of evidence indicated that the dominant processes observed were some disturbance associated with the installation of the cap, followed by longer term top-down mixing. The SPI camera results and the SED-FSP results provided a broader spatial context, while the visual analysis, TOC, grain size, and bulk sediment chemistry provided a more detailed and quantitative assessment of the focus stations at the site. While the long-term trends indicate that top-down mixing is ongoing and wide spread, the material depositing at the site appears to be relatively low in concentration, and thus the top-down mixing is not expected to result in a loss of performance of the EMNR remedy. Importantly, the multiple lines of evidence also indicated the relatively limited amount of bottom-up mixing. This is critical to the performance of the TLC because bottom up mixing could bring higher concentration sediments into the surface zone where biological exposure is much more likely. These findings were confirmed by the bulk sediment chemistry data that indicated minimal change in the DDX concentrations in the bottom interval of the cap just above the native sediments.

**Performance Objective 3** was the evaluation of reductions in surface sediment chemical concentrations. Reduction in surface sediment concentrations was a key remedy objective for the TLC in order to reduce the ecological risk of DDX exposure. As described above, processes such as bottom-up mixing of native sediment, or top-down mixing of new deposition had the potential to influence the success of the EMNR remedy in achieving the expected reductions in surface sediment concentrations. Under this performance objective, we evaluated the performance of the remedy with respected to achieving the desired level of reduction in concentration in surface sediments. Data required for the assessment of the performance objective included DDX concentrations in surface sediment samples and sediment cores. Results for the performance objective were supplemented by the results of the cap mixing PO2, which provide information on mixing rates and extent. Sediment samples were obtained prior to and following TLC placement (2-, 14-, and 25-month post-placement) on and off cap. Success was measured by the change in surface sediment DDX concentrations following the installation of the cap, and the long-term persistence of the change out to the 25-month sampling event.

The analysis for PO3 indicated that the TLC surface sediment is remaining below pre-TLC placement levels and that recontamination from either top-down or bottom up mixing has not occurred to an extent that would compromise the remedy. Thus the success criteria were met. Bulk sediment chemistry found reductions in concentration of total DDX were below the PRG, significant reductions over time as well as significantly lower concentrations in the TLC compared to underlying native sediment, and reductions for on cap stations were greater than off cap stations for all events on average. Sediment traps indicated relatively high deposition rates of material with lower concentrations in the post-placement events compared to baseline.

**Performance Objective 4** was the evaluation of reductions in chemical bioavailability and bioaccumulation. Reducing the concentration of DDX in surface sediment was expected to in turn reduce exposure of the native benthic invertebrate community, potential direct adverse effects, as well as reduction in the potential to indirectly or directly adversely affect higher trophic level fish, birds, and mammals. The extent to which the TLC contributed to reductions in bioavailability and consequently reduced the potential for bioaccumulation up the food web was the focus of this performance objective.

The parameters to evaluate changes in bioavailability and bioaccumulation included direct measurement of DDX concentrations in benthic invertebrate tissue using *in situ* bioaccumulation testing, as well as measurement of sediment porewater concentrations with ex situ passive samplers as an indicator of the bioavailable chemical fraction in sediments. Success was measured based on reduction in uptake by benthic invertebrates as measured by *in situ* bioaccumulation testing, and reductions in surface sediment porewater DDX concentrations as measured by ex situ passive samplers, respectively.

Overall, the success criteria for reductions in bioavailability were met. Significant reductions in concentrations of total DDX in *L. variegatus* tissue (lipid weight basis) was observed in short- and long-term events (on average). Reductions in concentrations of total DDX in *C. fuminea* tissue were also observed in short-term and long-term events on average, with significant reductions in the short-term event. Concentrations of total DDX in surface sediment porewater were reduced in all events compared to baseline, with significant reductions in the short-term monitoring and most recent long-term monitoring event.

**Performance Objective 5** was an evaluation of the rate of benthic recovery following TLC placement. Along with reducing contaminant levels and bioaccumulation, a key goal of the EMNR remedy was to enhance the subtidal habitat at the site for benthic invertebrates. High levels of contaminants can have direct impacts on the health and composition of the benthic community, and creating a relatively clean environment for benthic colonization is an important aspect of the EMNR remedy. The time for benthic recovery and potential impact of the cap on the benthic community was evaluated. Projection of the long-term effectiveness of the TLC remedy was evaluated based on the rate at which the benthic community recovered after cap placement and the extent to which the benthic community showed improvement compared to baseline conditions.

Laboratory treatability studies performed prior to the installation of the TLC suggested a conceptual model for the benthic recovery in which the cap would initially reduce the benthic populations due to smothering of the native population beneath the cap, followed by a relatively rapid recolonization that should continue to improve over longer time periods as more clean, natural sediment was mixed into the cap from top-down mixing. To test this, the rate and extent of sediment cap colonization was evaluated as well as the way in which cap conditions were similar to or differ from regional background conditions. Of interest was whether the TLC improved, hindered, or was otherwise neutral regarding the quality of benthic habitat. Data required to evaluate the impact of the TLC on the benthic community included benthic taxonomic surveys before and after cap placement (five on-cap stations and two off-cap stations), and SPI camera photos to document benthic colonization. Results were used to document the effects of TLC placement on the presence of the benthic community and to document changes in community structure over time after cap placement.

Overall, the performance objective success criteria were met using the direct benthic census data over the long-term with the TLC increasing scores for abundance, richness, and diversity. The B-IBI was scored in the highest category in the long-term monitoring events. SPI survey results were not found to be in agreement with the benthic community census, and significantly less confidence was placed in the SPI results due to noted limitations under the conditions present at the site.

**Future Projections**

Recovery of surface sediment concentrations with EMNR (thin-layer Habitat Enhancement Cap) provides physical isolation of the impacted sediments to the benthic community and prevents resuspension or transport of impacted-sediments. Reduction in concentrations of DDX in surface sediments with the EMNR remedial option occurs in a shorter timeframe compared to MNR as shown in Figure 110. The measured concentrations in surface sediment decreased from an average of 573 µg/kg, dw in 2009 (57 months prior to TLC placement) and 264 µg/kg, dw in 2012 (20 months prior to TLC placement). After EMNR placement, measured concentrations in the 2-, 14-, and 25-month events show the concentration reaching 51 µg/kg, dw (average surface sediment) and projected to reach concentrations similar to off-cap measurement within 60 months or sooner. Concentrations in surface sediment with MNR remedy are projected to continue to decline; however, at a much slower rate of recovery. The rate of recovery under MNR was estimated based on reductions in DDX concentrations for the two off cap stations from 57 months pre-placement to 25-months post-placement, and assuming a linear rate of decline. This rate of decline was applied to surface concentrations measured at the time of cap placement to derive the MNR curve.

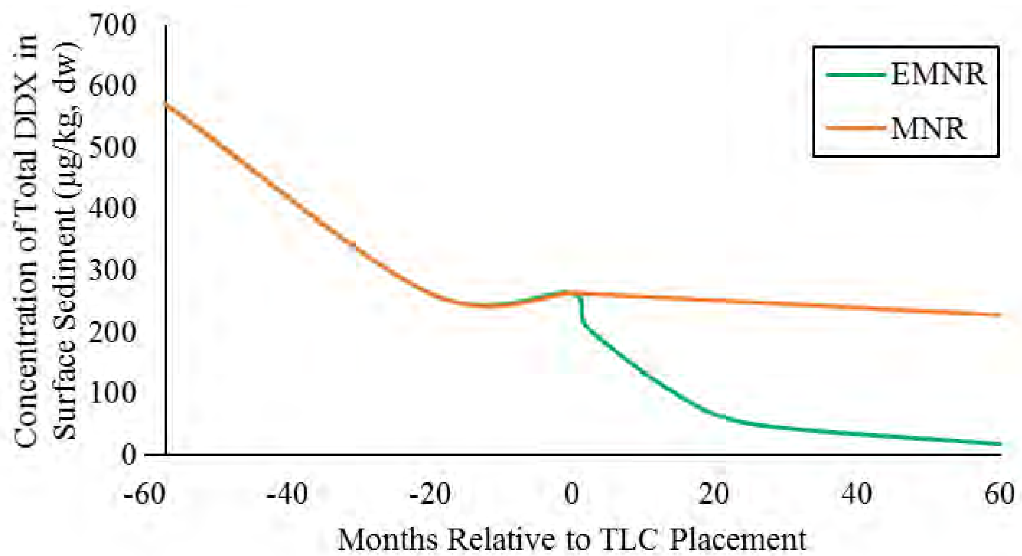


**Figure 110. Illustration of EMNR and MNR Performance relative to total sediment DDX concentrations.**

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# 7. Cost Assessment

Cost issues are critical to the evaluation and acceptance of innovative technologies. As a component of demonstrating and validating the performance of EMNR as a sediment remedy, this project will develop and validate the expected operational costs of the proposed remedy. Relevant costs will be detailed during the demonstration project so that the operational costs of EMNR implementation can be documented. Cost-related data obtained during the demonstration will be used in the ESTCP cost and performance report, as well as the ESTCP final report. Costs will be reported in the recommended Federal Remediation Technologies Roundtable format.

## 7.1. Cost Model

The demonstration area at Quantico Embayment is 10.9 acres and includes placement of a minimum of 6 inches over the target area. To place a cap with a minimum thickness of 6 inches, it would be necessary to place an average of 9 to 12 inches of material over the remedial footprint (NAVFAC WA 2011). Therefore, placement of 12 inches of material is conservatively assumed in this cost assessment. Costs and assumptions presented below are based on estimates derived in the Quantico Embayment Feasibility Study (Battelle, et al., 2007) and the Record of Decision (NAVFAC 2011) and have not been adjusted to reflect subsequent inflation. The costs associated with placement of the TLC include materials, labor, equipment, and subcontracts associated with design, construction, oversight/quality control costs and baseline monitoring costs (Table 43). Additionally, it was assumed that annual monitoring and maintenance will occur in years 1 to 5, followed by monitoring and maintenance every 5 years for 30 years. The present worth cost is the sum of the capital cost and the present worth of the monitoring and maintenance costs for 30 years.

**Table 43. Cost model for a thin-layer sand cap for a 10.9 acre area.**

| Cost Element | EMNR Thin-Layer Cap Costs | |
|---|---|---|
| Construction Cost | Materials<br>Labor<br>Equipment<br>Subcontracts<br>**Total** | $950,000<br>$540,000<br>$620,000<br>$240,000<br>**$2,340,000** |
| Design costs | Materials<br>Labor<br>Equipment<br>Subcontracts<br>**Total** | $20,000<br>$300,000<br>$40,000<br>$30,000<br>**$390,000** |
| Construction Oversight & QC costs | Materials<br>Labor<br>Equipment<br>Subcontracts<br>**Total** | $30,000<br>$230,000<br>$100,000<br>$100,000<br>**$460,000** |
| **Contingency** | **25% of above costs** | **$800,000** |
| **Post-construction (baseline) Monitoring** | **Materials, Labor, Equipment and subcontracts** | **$80,000** |
| **Total Capital Costs** | **Total** | **$4,070,000** |
| Annual Monitoring & Maintenance Years 1-5 | Monitoring<br>Maintenance<br>**Total** | $110,000<br>$10,000<br>**$120,000** |
| Annual Monitoring & Maintenance Years 6-30 | Monitoring<br>Maintenance<br>**Total** | $20,000<br>$10,000<br>**$30,000** |
| **Present Worth O&M** | **Total** | **$770,000** |
| **Total Present Worth[1]** | **Total** | **$4,840,000** |

Note: Present worth was calculated assuming a 7% discount rate.

## 7.2. Cost Drivers

Cost drivers to consider in selecting this technology include:

- **Material** costs will vary by amount required and the location of the project relative to the source of cap material. Estimates for the purchase and shipment of sand for this project were assumed to be $30/ton, but deviations from this can significantly impact overall costs.
- **Placement** costs can vary significantly based on the complexity of the site, including considerations for bathymetry, currents, infrastructure, regulatory requirements, and other considerations as well as site access and logistical considerations.
- **Monitoring** is needed to ensure performance meets remedial action objectives. Monitoring and maintenance costs for EMNR are largely a function of the monitoring plan and are controlled by the labor rates and number of personnel required to operate field equipment, analyze data, and generate the documentation associated with the project. Other operating costs include analytical laboratory costs and consumables.

## 7.3. Cost Analysis

The cost analysis will evaluate and compare the costs of EMNR thin-layer capping with monitored natural recovery (MNR) and traditional remedy alternatives, including installing a 4-foot thick isolation cap and dredging to 3-feet with offsite disposal of dredged material (assumed to be non-hazardous). With the exception of dredging, long-term monitoring at the site is expected to be required to ensure remedy effectiveness for all options. Long-term monitoring costs are driven by labor, equipment, laboratory analyses, supplies, and transportation costs, but are not expected to vary significantly among MNR, EMNR and isolation capping. Dredging is assumed to meet remedial goals during sediment removal so no substantial long-term monitoring costs are incurred.

The estimated costs presented in this assessment are prepared for alternative comparison and are based on the information available at the time of the estimate (2007). The actual costs of remediation depend on many variables, including quantity of contaminated sediments, disposal fees, health and safety regulations, and labor and equipment costs. In order for cost estimates to best reflect the differences between alternatives and relative costs, a number of assumptions are necessary regarding project scope, especially for design, construction oversight and long-term monitoring.

The key assumptions for construction costs are:

- Construction unit costs include overhead and profit for the implementing contractor or subcontractor. The costs do not include general contractor or construction manager mark-up on subcontracted work as this would not affect cost comparisons and is dependent on the acquisition strategy.
- Labor rates are based on Building Construction Cost Data 2004, RS Means Construction Publishers & Consultants, in Kingston, Massachusetts using union wage rates. Equipment rates are based on RS Means and professional judgement based on past

dredging projects. Material costs are based on personal communications from local vendors or professional judgement based on past projects.
- Construction production rates are based on equipment's rated capacity, modified for work in shallow water. All work will be done in one eight-hour shift per work day, working five days per week.

The key assumptions for design costs are:

- Pre-design sampling for all alternatives except dredging includes 5 days for sediment chemistry sampling, 2 days for benthic community sampling and sediment profile imaging (SPI), and 2 days for physical surveys. Laboratory analysis includes 20 sediment samples, 20 water samples, and 10 fish tissue samples for chemical analysis of DDX compounds, and 10 samples for benthic community analyses. The physical survey includes one day for divers with an underwater video camera.
- Pre-design sampling for dredging includes 10 days for sediment chemistry sampling, 2 days for benthic community sampling and SPI, and 2 days for physical surveys. Laboratory analysis includes 80 sediment samples, 20 water samples, and 10 fish tissue samples for chemical analysis, and 10 samples for benthic community analysis. The physical survey includes one day for divers with an underwater video camera.
- Design costs are based on preparation of design reports (including engineering calculations) and drawings for 30%, 90%, and final designs; technical specifications for 90% and final designs and construction work plans.
- Costs for procurement are not included as they would not affect cost comparisons and are dependent on the acquisition strategy.

The key assumptions for construction oversight and quality control are:

- The project manager, resident engineer, and administrative support person are be on-site fulltime for one eight-hour shift per work day.
- Water quality monitoring and sampling are completed daily during the first 10 working days, then weekly for the duration of the project. The monitoring is assumed to include analysis of six water chemistry samples per event.
- Bathymetric surveys are completed once a week for the project duration.
- Confirmation sediment sampling is done at the end of construction and includes 20 sediment samples for chemical analyses.
- Post-construction benthic survey includes SPI. Laboratory analysis for post-construction baseline includes 10 fish tissue samples and 10 samples for benthic community analysis.

The key assumptions for long-term monitoring are:

- Post-construction monitoring is done in the first year for all alternatives and is the baseline for long-term monitoring. The field work includes 5 days for sediment sampling and 2 days for benthic sampling and SPI. Laboratory analysis includes 20 samples for sediment chemical analyses and 10 fish tissue samples for chemical analyses.
- Annual monitoring is needed for years 1 through 5 for all alternatives except dredging. Each annual event includes 5 days for sediment chemistry sampling, 2 days for benthic

community sampling and SPI, and 2 days for physical surveys. The physical survey includes one day for divers with an underwater video camera. Laboratory analysis includes 20 sediment samples, 20 water samples, and 10 fish tissue samples for chemical analysis, and 10 samples for benthic community analyses.

- Monitoring occurs once every 5 years for years 6 through 30 and includes the same sampling and surveys as for years 1 through 5.
- Annual maintenance for capping alternatives includes placement of 100 tons of sand and re-planting of 0.10 acres each year and is conducted on the same schedule as monitoring.

The comparative analysis of remedial alternatives for Quantico Embayment is presented in Table 44. Overall, MNR is the least expensive option because no construction activities are involved. The majority of costs for MNR are incurred during long-term monitoring. MNR long-term monitoring costs are estimated to be less than both EMNR and isolation capping because no maintenance is required (saving approximately $10,000 per maintenance event). The costs for EMNR are greater than those for MNR, however EMNR is 2-3 times less expensive than isolation capping and dredging, which both require substantially higher capital costs.

**Table 44. Cost assessment for EMNR thin-layer Cap compared to monitored natural recovery, isolation cap and dredging for a 10.9 acre area.**

| Cost Element | EMNR Thin-Layer Cap | Monitored Natural Recovery | Isolation Cap | Dredge and Off-site Landfill |
|---|---|---|---|---|
| Construction Costs | $2,340,000 | $0 | $6,851,000 | $10,035,000 |
| Design Costs | $397,000 | $204,000 | $523,000 | $473,000 |
| Oversight & QC Costs | $456,000 | $0 | $876,000 | $825,000 |
| Contingency (25%) | $798,000 | $51,000 | $2,063,000 | $2,833,000 |
| Post-Construction (Baseline) Monitoring | $76,000 | $76,000 | $76,000 | $76,000 |
| **Total Capital Costs** | **$4,070,000** | **$330,000** | **$10,400,000** | **$14,200,000** |
| **Annual Monitoring & Maintenance Years 1-5** | **$123,000** | **$113,000** | **$123,000** | **$0** |
| **Annual Monitoring & Maintenance Years 6-30** | **$32,000** | **$23,000** | **$32,000** | **$0** |
| Present Worth O&M | $770,000 | $650,000 | $770,000 | $0 |
| **Total Present Worth** | **$4,840,000** | **$980,000** | **$11,200,000** | **$14,200,000** |

Note: Present worth was calculated using a discount rate of 7%.

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# 8. Implementation Issues

Although conventional isolation caps have demonstrated effectiveness in the management and remediation of chemically impacted sediment, rigorous demonstration and validation of the effectiveness of EMNR remains limited (USEPA 2005). Ongoing questions regarding the application, performance, and ecological impacts of EMNR have limited its widespread implementation. To address these implementation issues, the following relevant questions were posed. Evaluation of these questions based on the literature compiled and the demonstrations conducted as part of this project are presented below.

***Is artificially-increased sediment deposition via TLC placement an effective strategy for enhancing MNR and accelerating natural system recovery rates?***

The effectiveness of the TLC strategy for accelerating MNR appears to be a viable remediation approach depending on site conditions. From a process perspective, key aspects of the success of the TLC and the overall EMNR approach are that: (1) the TLC remain relatively stable above the sediment to be isolated; (2) any new deposition is relatively clean compared to surface sediment goals, even if the rate of deposition is low; (3) bottom-up mixing of the TLC is limited to the extent that the elevated levels of contamination in the underlying sediment do not unduly influence the exposure in the surface sediments following placement of the TLC; (4) advection rates through the cap are not so significant that they lead to a high level of porewater movement from below the TLC into the TLC; and (5) the remedy should demonstrate direct reduction in bioavailability over the short-term and long-term. For the Quantico embayment site where we conducted our demonstration, all of these conditions were documented to be satisfied. Multiple measures of cap thickness and elevation indicated that the cap material was remaining relatively stable and within design guidelines. New deposition, as characterized by sediment traps and surface sediment interval samples, was generally low in DDX. Bottom-up mixing was documented to be limited based on multiple lines of evidence. While advection rates were not directly measured, porewater measurements at critical intervals within the cap showed that advection was not significant enough to unduly influence the concentrations within the cap. Finally, direct measurements of bioavailability including uptake in organisms and porewater concentrations generally indicated significant reductions over both short and long time periods out to 2 years.

***How sensitive is EMNR performance to the accuracy of TLC placement?***

Sensitivity of the EMNR performance to the accuracy of TLC placement appears to be relatively high. This is because the layer being applied is generally thin, and on the same order of magnitude in thickness as the bioactive zone of the sediments. To be effective, the TLC must also accommodate a certain degree of bottom-up mixing that is likely to occur either during the installation or due to physical or biological disturbance over time. Thus key aspects of the sensitivity to placement include the relative thickness of the TLC compared to the bioactive zone, and the degree of bottom-up mixing that is expected based on construction methods and site specific likelihood of physical and biological disturbance following placement. For the demonstration at Quantico Embayment, the bioactive zone was relatively shallow because of the freshwater, riverine nature of the site. Also, it was observed that the installation of the TLC generally achieved target thickness throughout the site so that there were few areas where biological activity was likely to interact with the underlying sediments. In addition, physical disturbance of the TLC appeared to have been limited to localized resuspension during the installation of the cap, resulting in some interleaving of native sediments with the cap material, but not to the extent that it interfered with the effectiveness of the remedy over the 2 years of observations.

***What are the short-term construction (risk-of-remedy) effects associated with EMNR and to what extent does TLC application influence benthic community survival?***

The primary risks related to the construction of the TLC appear to be potential short- to mid-term effects on the benthic community, along with some amount of disturbance of the native sediment associated with the depositing of the TLC material. The effects on the benthic community are expected to be a function of both the initial covering of the native sediments that can result in smothering of the existing infaunal community, as well as the potential that the community could be degraded over the mid-term as a result of the differing grain size and TOC characteristics of the TLC material. From our laboratory treatability studies, we observed significant smothering effects from placement of thin layers of sand over infaunal organisms. However, at the demonstration site at Quantico Embayment, we observed relatively rapid recovery of the benthic community following construction of the TLC. While the sand material may not have provided optimal habitat initially, it was observed that over time, top-down mixing of relatively clean sediment deposits into the surface layer tended to improve the habitat characteristics, and a general improvement in benthic community health was observed relative to the pre-construction conditions.

***Under what range of physical, biological, and chemical conditions will EMNR be effective?***

The range of effectiveness of EMNR was not completely explored in this project. However, general considerations for the selection of EMNR are becoming well established. From a physical perspective, the remedy should generally be applied at sites that are relatively quiescent, and not subject to significant physical disturbance that would disrupt or penetrate the cap to a degree that the underlying sediments would be re-exposed or significantly mixed into the TLC. The native materials must also have the physical strength to support the TLC so that gravitational mixing does not lead to failure of the TLC. From a biological perspective, the TLC thickness should consider the nature and scale of bioactivity in the surface sediments, and the expected route of exposure for the risk endpoints under consideration. From a chemical perspective, EMNR is generally viewed as being most effective at sites where MNR would be effective, but deposition rates are potentially too low to reach the desired clean up goals in a reasonable amount of time. Thus most sites where EMNR has been applied have exposure levels that are near risk thresholds, as opposed to higher concentration hot spots. For the Quantico Embayment site, our results reflect these physical, biological and chemical conditions. The site is in a relatively protected embayment, the bioactivity was limited due to the freshwater nature of the site, and the concentrations (other than in areas targeted for removal) were relatively close to the target PRG.

***With respect to grain size, total organic carbon (TOC) content, and other biogeochemical parameters that influence habitat quality, how can EMNR design be optimized?***

This remains a key question that was not thoroughly addressed in this project. Follow-on studies have been proposed to address this optimization question. In general, EMNR has been carried out using TLCs constructed with sand, which is optimal from a stability and construction perspective, but not necessarily optimal from a habitat or environmental protection perspective. The sand materials are often not consistent with the grain size characteristics of the native sediments, and thus create a habitat that is also inconsistent with the site conditions. In addition, the sand material contains essentially no TOC, which may create a less optimal habitat while also providing little to no binding capacity for contaminants. While the traditional sand TLC was shown to be effective over 2 years at the Quantico Embayment site, future development of a more comprehensive approach and guidance for the selection and optimization of EMNR that addressed this question would be highly beneficial to the broader implementation of the remedy.

***How effective is EMNR in reducing chemical mobility and biological exposure potential in surface sediment?***

Overall, review of the historical literature, and our experience with the Quantico Embayment site indicated that EMNR can be highly effective and reducing exposure in surface sediments. EMNR remedy effectiveness seems to be a function of three primary considerations, including careful consideration of site condition for the selection of EMNR, proper design of the EMNR remedy to meet site-specific conditions, and adequate monitoring to assure remedy success and address any potential defects in the TLC. For the Quantico Embayment site, the EMNR remedy was shown to be effective in reducing exposure in surface sediments as measured by bulk sediment total DDX concentrations, porewater DDX concentrations, and direct measurement of bioaccumulation in two site-exposed benthic organisms.

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# Appendix A
# Points of Contact

| POINT OF CONTACT<br>Name | ORGANIZATION<br>Name<br>Address | Phone<br>E-mail | Role in Project |
|---|---|---|---|
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| Gunther Rosen | Space and Naval Warfare Systems Center Pacific<br>Advanced Systems & Applied Sciences Division<br>Environmental Sciences Branch<br>53475 Strothe Rd.<br>San Diego, CA 92152 | 619-553-0886<br>Gunther.rosen@nav y.mil | SEAP Technology<br>Technical and Field Support |
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| POINT OF CONTACT<br>Name | ORGANIZATION<br>Name<br>Address | Phone<br>E-mail | Role in Project |
|---|---|---|---|
| Chuck Katz | Space and Naval Warfare Systems Center Pacific<br>Advanced Systems & Applied Sciences Division<br>Environmental Sciences Branch<br>53475 Strothe Rd.<br>San Diego, CA 92152 | 619-55305332<br>Chuck.katz@navy.mil | Bathymetric survey<br>Technical and Field Support |
| Melissa Grover | Geosyntec Consultants<br>16644 West Bernardo Dive,<br>Suite 301<br>San Diego, California 92127 | 858-716-2928<br>Mgrover@geosyntec .com | Technical and field support and consultation |
| Jason Conder | Geosyntec Consultants<br>2100 Main Street,<br>Suite 150<br>Huntington Beach, CA 92648 | 714-465-1226<br>Jconder@geosyntec. com | Technical and field support and consultation |
| Kyle Fetters | Ramboll Environ<br>136 Commercial Street,<br>Suite 402<br>Portland, ME 04101 | 207-517-8260<br>Kfetters@ramboll.com | Technical and field support and consultation |
| Victor Magar | Ramboll Environ<br>333 W Wacker Dr.,<br>Suite 2700<br>Chicago, IL 60606 | 312-288-3840<br>Vmagar@ramboll.co m | Co-Principal Investigator<br>Technical and field support and consultation |
| Todd Weidner | Battelle<br>505 King Avenue<br>Columbus, OH 43201 | 410-306-8649<br>weidnert@battelle.org | Contract Management |
| Lyndsay Kelsey | NAVFAC Washington<br>1314 Harwood St SE,<br>Building 212<br>Washington Navy Yard, DC 20374 | 202-685-3266<br>lyndsay.kelsey@navy.mil | Navy Site Remedial Project Manager |
| Marc Greenburg | USEPA - Region 2<br>Superfund Division<br>2890 Woodbridge Avenue<br>Building 18, MS 101<br>Edison, NJ 08837 | 732-321-6754<br>greenberg.marc@epa.gov | Regulatory oversight |

# Appendix B
# Laboratory Biological Characterization Studies

## BIOLOGICAL CHARACTERIZATION: LABORATORY STUDIES

- **Laboratory Sediment Exposure**. Prior to field sampling, laboratory sediment will be employed to examine the uptake of DDX by a representative benthic invertebrate and to assess survival, and growth of representative benthic species following placement of the TLC, as well as fate and transport mechanisms of DDX (initial mixing of TLC material with native sediment, bioaccumulation and biotransport of DDX in benthic organisms, etc.). Data will allow several fundamental uncertainties regarding capping and DDX fate and transport to be addressed under controlled laboratory conditions, as well as provide information to optimize the experimental design for post-capping chemical and biological measurements. For laboratory physical burial effects and bioaccumulation experiments, three experiments will be conducted.
  - **Experiment 1** will be a standard bioaccumulation experiment to understand the uptake kinetics of DDX in invertebrates exposed to Quantico sediment. Concentrations of DDX will be measured in oligochaetes (*Lumbriculus variegatus*) exposed to native, DDX-impacted Quantico sediment for 1, 2, 4, 8, 12, 18 or 28 days (n = 3 for each time period). Data will allow an estimation of steady-state (equilibrium) DDX concentrations in benthic invertebrates. Steady-state concentrations better-represents concentrations in native organisms exposed for periods longer than that feasible in laboratory tests, and thus, better represent the bioavailability of DDX to on-site food webs relevant to ecological risk. *Lumbriculus* sediment exposures will follow standard guidelines. (U.S. EPA 2000; ASTM 2000). *Lumbriculus variegatus* (300 mg wet wt, approximately fifty mixed aged individuals) will be placed in 2 L tall glass beakers containing 500 g (wet wt.) of sediment and 1.2550 L of overlying water (dechlorinated tap water). The ratio of TOC in sediment to dry weight of experimental animals will be 50:1 or higher to minimize the depletion of sediment contaminants and to ensure an adequate food supply to infaunal experimental organisms. Overlying water will be aerated gently if the dissolved oxygen concentration falls below 2.5 mg/L. Chambers will be maintained at 23 °C. Two-thirds of the overlying water in the chambers will be changed three times a week. The frequency of water exchange is less from that recommended in standard guidelines for bioaccumulation to minimize contaminant loss from the exposure system. Experimental chambers will not receive external food source during the exposure to maximize the exposure of experimental animals to the contaminated sediment. The organisms will be removed at experiment termination by sieving the sediment through a 0.5 mm sieve and placed in clean water to depurate their gut contents. To minimize excessive depuration chemicals from tissues, the sediment purging period of 6 h recommended by Mount et al. (1999) for *L. variegatus* will be employed. Surviving worms will be frozen prior to solvent extraction and chemical analysis for DDX.

    The kinetic relationship produced from Experiment 1 will optimize *in situ* bioaccumulation testing (detailed below). For example, DDX may take several weeks to reach steady-state concentrations in invertebrates. Deployment of *in situ* bioaccumulation chambers for long time periods needed to reach steady-state may not be feasible or cost-effective. However, DDX *in situ* bioaccumulation data from very short (e.g., 1-week) can be extrapolated to steady-state data using the kinetic relationship derived in Experiment 1. For example, the laboratory study may suggest that at 7 days of exposure, DDX concentrations in organisms are approximately 25% of their steady state concentrations. Using that relationship, results from a 7-day *in situ* bioaccumulation deployment could be multiplied by 4 to yield steady-state data.

- **Experiment 2** (Figure 1) will assess the "risk-of-remedy" of cap placement. The expected detrimental effect of cap placement is smothering of the benthic community by TLC material. Chemical bioaccumulation in the capped sediment will also be addressed, assuming survival of test invertebrates following TLC cap placement. Experimental details are provided below:

  At the initiation of the experiment (t = 0 days [d]), amphipods (*Hyallela azteca*, approximately 100 mature individuals) and oligochaetes (*Lumbriculus variegatus*, approximately 200 mixed aged individuals)) will be added to 16 experimental units. Experimental units will consist of 8-L jar-shaped glass chambers containing 1.5 L of sediment and 5 L of overlying water. Exposure conditions will be as described for experiment 1. Four units will contain clean sediment and serve as controls, whereas 12 units will contain native Quantico sediments with elevated DDX concentrations.

  At t = 28 d, 4 control and 4 Quantico sediments will be sieved to obtain organisms for enumeration. This data will be used to verify the suitability of Quantico sediments to support performance of the laboratory organisms, and will be used as data with which to compare biological effects results from the TLC physical burial portion of the experiment (below).

  TLC cap material will be added to address physical "smothering" effects on benthic communities, and provide initial data on mixing of TLC material with native Quantico sediment that may better optimize sediment chemistry sampling that will be conducted in the field (e.g., optimizing which TLC depths to sample to obtain information on mixing) (Figure 5-7). For the 8 experimental units, 4 units will be used as controls (i.e., no cap material addition) and 4 units will receive 15 cm of cap material, which will be gently dispensed into the chamber. Exposure will be assessed following a further 28 days (t = 56 d) at which point the effect of cap placement on organism survival and chemical bioaccumulation in *Lumbriculus variegatus* will be assessed. The concentration of DDX in the native sediment layer and the cap layer will be also measured at the end of the experimental period (t = 56 d) to determine the extent of DDX migration/mixing into the TLC.

- **Experiment 3** (Figure 2) will simulate the bioaccumulation of DDX in invertebrates that may attempt to colonize the TLC following placement, as well as the suitability of the TLC to support benthic communities. Experimental details are provided below:

  At the initiation of the experiment (t = 0 d), four experimental units will contain Quantico Embayment sediment characterized by elevated DDX concentration. Experimental units will consist of 8-L jar-shaped glass chambers containing 1.5 L of sediment and 5 L of overlying water. Exposure conditions will be as described for experiment 1, except of no exchange of overlying water will be performed. Experimental units will not contain organisms. At t = 28 d, 15 cm of cap material will be added to each experimental unit. Following an interval in which cap material is allowed to settle, amphipods and oligochaetes will be added to each unit for an interval of 28 days.

At t = 28 d, surviving amphipods and oligochaetes will be enumerated for evaluation of the suitability of the TLC to support benthic communities. Tissue DDX concentrations will be assessed in oligochaetes to understand post-capping DDX bioavailability. The concentration of DDX in both the native sediment layer and the cap layer will also be measured to assess the extent of DDX migration into the cap layer. DDX bioaccumulation data and DDX TLC and sediment data will be used to optimize post-capping experimental design.

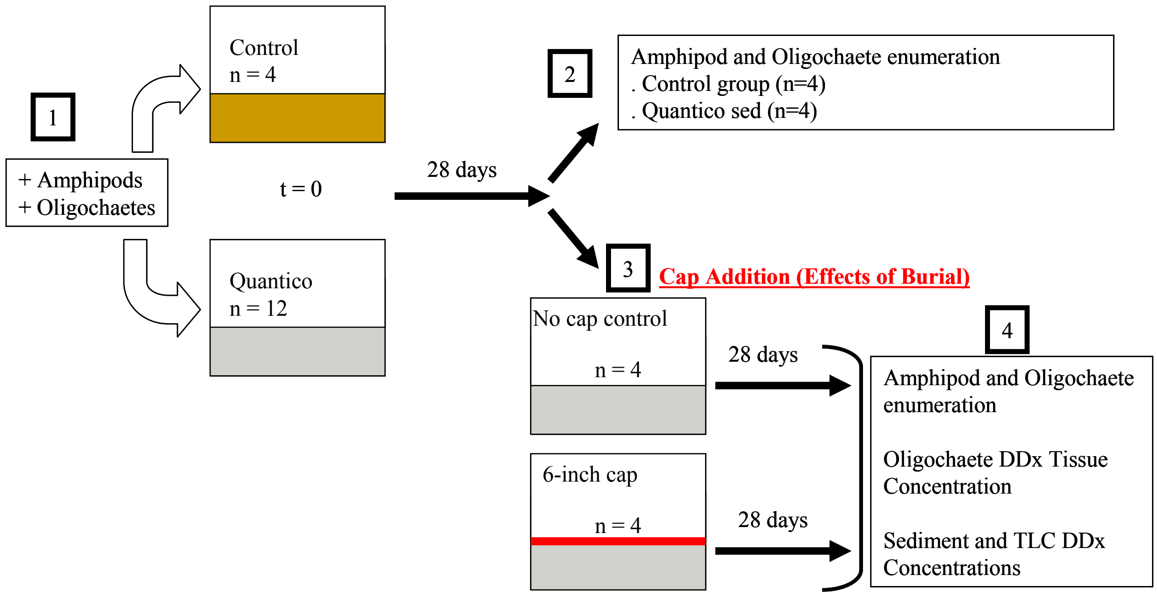


**Figure 1. Experimental design for Experiment 2, conducted to understand the effects of burial on benthic organism survival and bioaccumulation of DDX, and the mixing of TLC with native sediment that occurs during TLC placement.**

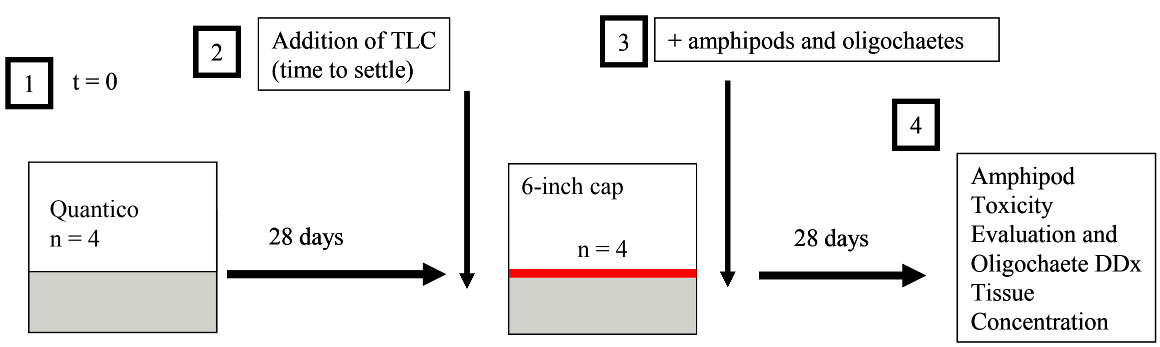


**Figure 2. Experimental design for Experiment 3, conducted to understand the bioaccumulation of DDX and survival of organisms colonizing the TLC.**

# Appendix C
# Quality Assurance Project Plan

**Quality Assurance Project Plan**

**Purpose and Scope of the Plan**

The Quality Assurance Project Plan (QAPP) for this demonstration project specifies procedures that will be used to ensure data quality and integrity for the demonstration and validation of enhanced natural recovery at Department of Defense (DoD) sediment sites. Careful adherence to these procedures will ensure that data generated from this demonstration and validation will meet the desired performance objectives and will yield appropriate analytical results. The content of this QAPP is based on guidance provided by ESTCP (ESTCP 2004), and USEPA (USEPA 1998; 2001). The format approximately follows the format provided in the ESTCP guidance (ESTCP 2004); however, additional information is also included.

In order to collect performance data of known quality, sampling and analysis procedures are critical. Approved QA/QC procedures must be implemented throughout the evaluation. All staff members participating in sample collection and handling in support of the demonstration and validation project are required to read this QAPP, and must keep it in their possession during field activities. All project participants are required to comply with the procedures identified in this QAP in order to determine that the data collected are of known and documented quality, and are useful for the purposes for which they were collected.

**Quality Assurance Responsibilities**

A well-organized project team, combined with adequate experience and proper training, will ensure consistent quality throughout the demonstration and validation project. Section 3.9 provides points of contact and project roles, while the organization of demonstration team members is shown in Figure 1. Primary responsibility for execution of the demonstration and validation project will be taken by Bart Chadwick (SSC Pacific) and Victor Magar (ENVIRON). The primary site representatives are Mr. Fred Evans (NAVFAC Washington) and Ms. Heather Thurston (Battelle). Project Manager and QA officer for the project will be Victoria Kirtay (SSC Pacific) who will coordinate all QA activities with site and laboratory personnel.

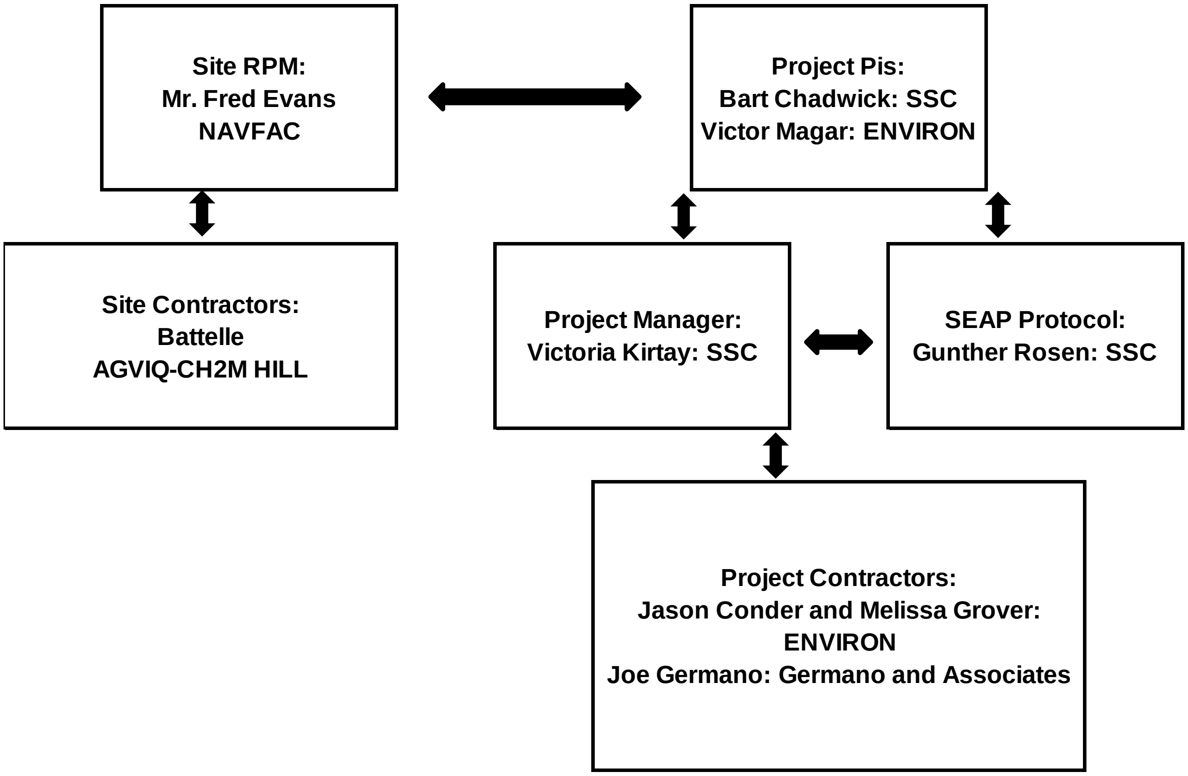


**Figure 1. Project management and staffing.**

## Data Quality Parameters

### Project Description

The overall objective of this project is to foster broader understanding and acceptance of the Enhanced Monitored Natural Recovery (EMNR) remedy through demonstration and validation of performance and cost-effectiveness at DoD contaminated sediment sites. This effort will focus on key performance issues including: 1) the effectiveness of EMNR as a remedy; 2) the effectiveness of available monitoring tools to gauge remedy performance; 3) validation of recovery processes and construction issues related to EMNR; and 4) evaluation of short-term implementation success and the ability to project the potential for long-term remedy success. The effectiveness of the remedy will be assessed through the collection and interpretation of physical, chemical and biological data from the area supporting the EMNR remedy. Data gathered during this demonstration and validation project will provide DoD site managers and regulatory agencies with cost, performance and risk-oremedy data from which to evaluate the effectiveness of EMNR as a remedial strategy.

The site chosen for implementation of this demonstration and validation project is the Quantico Embayment in Quantico, VA, also known as Site 99. The Quantico Embayment is located at the Quantico Marine Corps Base (MCB), approximately 35 miles south of Washington, D.C. The embayment is shallow, with an average depth of 1.5 meters (m), and minimally influenced by tidal effects. The application of EMNR at this site will entail the placement of a thin layer cap over sediments characterized by elevated concentrations of the pesticide dichlorodiphenyltrichloroethane (DDT) and its derivatives. DDT and its derivatives are collectively defined in this QAPP as DDX. Information regarding the development and implementation of the thin layer cap will be provided by the site contractor and will not be generated as a component of this demonstration and validation project.

As noted, the specific technical objectives of this field effort are to:

1. Demonstrate the effectiveness of thin layer capping and EMNR as a remedy.
2. Evaluate the effectiveness of available monitoring tools to gauge performance of the implemented remedy.
3. Provide validation of natural recovery processes (i.e., reduced bioavailability, succession of benthic community structure) and construction issues related to EMNR and the placement of the thin layer cap.
4. Evaluate implementation success through short-term monitoring and assess the ability of monitoring results to project potential for long-term remedy success.

Sampling objectives will be achieved based on the collection of biological, chemical and physical data from (as relevant) on-cap and ofcap sampling stations.

**Data Types and Uses**

A number of different data types will be collected as part of the demonstration and validation project (Table 1). The data types are targeted for the purpose of meeting the project objectives described above, and have specific uses within the project framework as described below.

Physical and hydrodynamic monitoring includes evaluation of changes to bathymetry, cap thickness, current/flow structure, water column turbidity, sediment physical properties, sediment mixing and cap structure/consolidation during and after placement of the thin layer cap. Assessment of changes to physical parameter over time will allow documentation of: 1) the stability of the thin layer cap; 2) consolidation of the cap over time; 3) changes in system hydrodynamics resulting from cap placement; and 4) the effect of cap placement on the redistribution of bed sediment.

Chemical monitoring includes the concentration of DDX and ancillary chemical parameters (such as organic carbon content) in cap material and underlying sediment, the estimated concentration and bioavailability of DDX in porewater, and the concentration of DDX and ancillary chemical parameters in suspended particulate matter. Assessment of changes to chemical parameters over time will allow documentation of changes in surface sediment chemistry following cap placement and monitoring of the extent to which the new sediment surface (i.e. the cap material) is contaminated from either water column (top-down) or via mixing with underlying sediment (bottom-up).

Biological monitoring includes experiments to assess the effect of cap placement on the benthic community and tissue analyses to assess the extent of ongoing DDX bioaccumulation following remedy implementation. Assessment of the benthic community will focus on changes to community structure and composition following remedy implementation, and the effect of cap placement on the health and composition of native benthic invertebrates.

## Table 1. Monitoring Parameters for Demonstration and Validation Project

| ***EVENT*** | ***Baseline 1&2 (ER0827)*** | ***Baseline 3 (ER201130)*** | ***2 Months Post-Construction (ER201368)*** | ***1 Year Post-Construction (ER201368)*** | ***2 Year Post-Construction (ER201368)*** | | |
|---|---|---|---|---|---|---|---|
| **ACTIVITY/TOOL** | **May 2009, Sept. 2009** | **Oct-12** | **March 2014** | **March 2015** | **March 2016** | **Focus Question Addressed** | **Notes** |
| *In situ* Biaccumulation: SeaRings | ◇ | ● | ● | ● | ● | Risk | No adequate baseline data available on site invertebrates, although adequate baseline data are available for plants and fish; Post placement assessment of bioaccumulation potential. |
| Benthic Census | ◇ | ● | ● | ● | ● | Risk of remedy | Census includes reference areas. |
| Bathymetry | ◇ | | ⦿ | ⦿ | ⦿ | Stability | Monitor the extent to which changes in bathymetry are resulting in changes to system energetics. |
| Sediment chemical and physical profiling: sediment cores | ◇ | ⦿ | ⦿ | ⦿ | ⦿ | Mixing; Concentration; Deposition/Winnowing | Sediment profiling for determination of DDx in sediment porewater for 1) estimation of diffusion of DDx in sediment porewater and 2) monitoring DDx bioavailability within the cap layer. Sediment profiling for determination of grain size to monitor effect of deposition and winnowing that may occur. |
| Bioavailability: Passive Sampler (in situ and ex situ) | ◇ | ⦿ | ⦿ | ⦿ | ⦿ | Risk; Mixing | Assessment of bioavailability through use of tissue proxies (SPMEs) or porewater samplers. |
| SPI Camera | ◇ | | ⦿ | | ⦿ | Stability; Mixing; Risk of remedy | Assesseement of bioturbation depth and extent of benthic activity, potential for observing cap-native sediment interface following cap placement. |
| Water Depth | ◇ | | ⦿ | ⦿ | ⦿ | Stability | Depth at fixed sample stations. |
| Cap Thickness | | | ⦿ | ⦿ | ⦿ | Stability | Monitor cap thickness post-placement and an changes over time. |
| Sedimentation and/or Erosion: Sediment trap analysis | ◇ | | ⦿ | | ⦿ | Concentration | Including reference areas and 1) physical analyses to estimate sedimentation rate on the cap and 2) chemical fingerprinting to identify potential sources of recontamination. |

Symbol Key:

| | |
|---|---|
| ● | Biological Measurement |
| ⦿ | Physical/Chemical Measurement |
| ◇ | Measured in 2009 (ER0827) |

## Data Quality Requirements

The QA objective of this field investigation is to obtain results that are of known and acceptable quality and are representative of the conditions present at the site. The sampling plan for physical, chemical and biological characterization of the thin layer cap has been developed to ensure the collection of sufficient samples from appropriate locations to achieve the goals described in the data quality objectives (DQOs). Field sampling procedures will include safeguards to ensure that the samples provided to the laboratories are intact and representative of field conditions. Measurement quality objectives (MQOs) have been established for this project to ensure that the collected data are of known and sufficiently high quality to support the project objectives. Qualitative MQOs are described below. Examples of quantitative MQOs and sample handling requirements are presented in Tables 2 and 3 for DDX.

**Table 2. Analytical limits for analysis of DDX in sediment, tissue and porewater samples.**

| Chemical Analysis | Method Reference | Units | Method Detection Limit |
|---|---|---|---|
| DDX (sediment) | EPA 8081A | µg/kg | 0.5 µg/kg (with 10 g dry wt) |
| DDX (tissue) | EPA8081A -- micro | µg/kg | 2 µg/kg (with 100 mg wet) |
| DDX (porewater, SPME) | EPA 8081A | ng | 0.2 ng in 100 ul |

**Table 3. Required Containers, Preservation Technique, and Holding Times for Analysis of DDX in Sediment or Tissue Samples.**

| Parameter | Volume Required | Container | Preservative | Holding Time |
|---|---|---|---|---|
| Organochlorine Pesticides | 32 oz. for sediment; 10 g for tissue | Glass | 4º C for sediment; < 0º C for tissue | 14 days until extraction, 40 days after extraction for sediment; 1 year for tissue |

## Precision

Precision is the reproducibility of measurements of the same characteristic, usually under a specific set of conditions. For replicate measurements, precision is expressed as the relative percent difference (RPD) or the standard deviation (SD, or the relative standard deviation (RSD). Precision for the physical, chemical and biological data collected in support of the demonstration and validation project will be assessed as appropriate for each instrument or analysis. Assessment of precision may include, as examples, calculation of the SD from replicate analysis performed under controlled laboratory conditions (such as for mesocosm experiments) or calculation of the RPD from replicate analysis of samples collected at a subset of stations in the field (such as for field chemical analysis).

RPD is defined as follows:

$$RPD = \frac{C_1 - C_2}{0.5(C_1 + C_2)} \times 100$$

Where $C_1$ is the first measurement value and $C_2$ is the second measurement value.

The % RSD is calculated from the standard deviation of replicate analytical results and the mean value of those same results. That is, the % RSD can be expressed as:

$$\%RSD = \frac{StdDev}{Mean} \times 100$$

**Accuracy**

Accuracy is the degree to which a measurement agrees with the true value. Accuracy for the physical, chemical and biological data collected in support of the demonstration and validation project will be assessed as appropriate for each instrument or analysis. Accuracy may be assessed, as examples, on the basis of sensor readings under controlled conditions, with respect to concentrations measured in certified standards (such as from National Institute of Standards and Technology) and on the basis of blank and/or spiked samples (i.e., MS/MSD samples). MS/MSD samples or blank spike samples are typically analyzed at a frequency of one for every 20 samples. Accuracy is expressed in terms of percent recovery (%R) as follows:

$$\%R = \frac{A_T - A_o}{A_F} \times 100$$

Where $A_T$ is the total amount of analyte recovered in a spiked sample, $A_o$ is the total amount of analyte recovered in an unspiked sample, and $A_F$ is the magnitude of the spike addition.

**Representativeness**

Representativeness is a qualitative expression of the degree to which sample data accurately represent the characteristics of a population, parameter variations at a sampling point, or an environmental condition that they are intended to represent. Representativeness is maximized by (1) selecting the appropriate number of samples and sampling locations, and (2) using appropriate and established sample collection, handling, and analysis techniques to provide information that reflects actual site conditions.

**Completeness**

Completeness assesses the amount of valid data obtained from a measurement system. The percent completeness is calculated by the number of samples yielding acceptable data divided by the total number of samples planned to be collected and multiplied by 100. The data validation process will determine whether a particular data point is valid and acceptable, estimated and acceptable, or rejected and unacceptable. Complete results are considered acceptable and usable when they are valid or estimated. Sampling results that are considered rejected and unacceptable are considered incomplete. Although, completeness may be assessed differently for various aspects of the physical, chemical and biological data collected in support of project objectives, a degree of completeness of 90 percent (%) may be considered a baseline goal for data utility.

**Comparability**

Comparability is a qualitative parameter that expresses the degree of confidence that one data set may be compared to another. This goal is achieved through the use of (1) standardized techniques to collect and analyze samples, and (2) appropriate units to report analytical results. The comparability of the data will be maximized by using standard analytical methods when possible, reporting data in consistent units, reporting data in a tabular format, and by validating the results against commonly accepted methodologies.

Procedures, observations and test results will be documented for all sample collection, laboratory analysis and reporting, and data validation activities. In addition to data reports provided by the laboratories, reports will be prepared that address data quality and usability, provide tabulated laboratory and field data, and interpret the field data.

**Field Records**

Field records will be maintained during all stages of sample collection and preparation for shipment to the laboratory. Field records will include:

- Sampling activities and methods used
- Conditions that may impact sampling results (e.g. weather conditions, high turbidity)
- Sample collection duration and GPS coordinates of each sampling locations
- Sample labels
- Combined chain-ocustody/sample analysis request (COC/SAR) forms
- Custody seals to monitor sample security during shipment
- Photographic documentation

**Laboratory Data Reports**

The laboratory will perform data reduction as described in each test method for this project, and submit a complete data package with full documentation for all analyses. The laboratory quality assurance officer is responsible for reviewing laboratory data packages and checking data reduction prior to submittal. The laboratory will provide all information required for a complete quality assurance review including:

- A cover letter describing analytical procedures and methods that were followed and any problems that were encountered during the analyses.
- A summary of analyte concentrations and method reporting limits.
- Laboratory data qualifier codes appended to analyte concentrations and a summary of code definitions.
- Initial and continuing calibration data including instrument printouts and quantification summaries for all analytes.
- Results for method and calibration blanks.

- Results for all QA/QC checks including laboratory control samples, matrix spike samples, surrogate spikes, duplicate matrix spike samples, and laboratory duplicate or triplicate samples.
- Original data quantification reports for all analyses and samples.

QA/QC checks, including method blanks, laboratory control samples, matrix spike and matrix spike duplicates and/or analytical duplicates will be conducted at a frequency of 1 per 20 analytical samples. QA/QC checks will therefore be conducted at a rate of 5% of sample analysis.

**Data Quality and Usability**

A data quality and usability analysis will be performed with a subset of the instrumentation employed for the demonstration and validation project. The analysis will summarize the results of the data validation and data quality review, and will describe any significant quality assurance problems that were encountered. All data and any qualifiers applied to the data as a result of the quality assurance review will be included in the final report.

**F5. Sample Handling and Custody**

Documentation during sampling activities is essential to ensure proper sample identification, integrity and custody. A description of standard sample custody procedures that will be used to maintain and document sample integrity during collection, transportation, storage, and analysis is provided below.

Sample Custody Procedures

The field team will follow standard EPA chain-ocustody procedures for each sample as it is collected. Until shipped to the laboratory, the samples will be retained at all times in the field crew's custody. A sample is considered to be in custody if one of the following statements applies:

- It is in a person's physical possession or view.
- It is in a secure area with restricted access.
- It is placed in a container and secured with an official seal such that the sample cannot be reached without breaking the seal.

The Quality Assurance Officer is responsible for ensuring proper sample handling and documentation that will allow tracking the possession and handling of individual samples from the time of collection to laboratory receipt. The laboratory QC manager is responsible for establishing a sample control system that will allow tracking sample possession from laboratory receipt to final disposition of the sample.

**Sample Labels**

A sample label will be affixed to all sample containers sent to the laboratory. This identification label will contain the following information written in indelible ink:

- Project name and location
- Sample location

- Sample identification number
- Date and time of sample collection
- Preservative used
- Sample collector's name and initials
- Filtering (if applicable)
- Type of sample (grab or composite)
- Analysis required

If a sample is split with another party, sample labels with identical information will be attached to each sample container. After labeling, each sample will be refrigerated or placed in a cooler containing ice to maintain the sample temperature at 4±2° C.

**Sample Documentation**

Sampling activities during the field effort require several forms of documentation. The documents are prepared to maintain sample identification and chain of custody, and to provide records of significant events or observations. In addition, other documents will be prepared, such as field logbooks.

**Shipping Procedures**

All U.S. Department of Transportation regulations will be followed during sample packaging and shipment. Samples will be collected at the end of each of the field study phases. They will be transferred to appropriate laboratory containers, labeled, placed in a chilled ice chest, and shipped overnight to the laboratory.

**Laboratory Procedures**

Upon receipt of a cooler, laboratory personnel will review the contents, and sign and retain the chain-ocustody record and the air bill. Information that will be recorded on the chain-ocustody record or another appropriate document at the time of sample receipt will include the following:

- Status of the custody seals
- Temperature of the cooler upon receipt
- Identification number of any broken sample containers
- Description of discrepancies between the chain-ocustody records, sample labels, and requested analyses
- Storage location of the sample and sample extracts

Laboratory personnel will contact the analytical coordinator regarding discrepancies in paperwork and sample preservation, and will document nonconformance and corrective actions in accordance with laboratory SOPs. These procedures will be available on file at the laboratory. After samples have been accepted, checked, and logged in by the laboratory, they must be maintained in a manner consistent with the custody and security requirements specified in the laboratory QA plan.

All samples and sample extracts will be assigned to a specific refrigerator within the laboratory. All laboratory refrigerators will be assigned a number, and the refrigerator number will be recorded on an appropriate document that references the sample and extract locations. Only laboratory personnel will have access to the samples and will be required to sign a log sheet when removing samples and extracts from the refrigerators or replacing them. These log sheets will provide a chain-ocustody record as the samples move within the laboratory. A chain-ocustody record, similar to the chain-ocustody record used for sampling procedures, will be completed for samples removed from the laboratory for disposal or other purposes.

**Quality Control Requirements**

Quality control requirements consist of field quality control checks and laboratory quality control checks. Field quality control checks are intended to verify both that contamination during field sampling did not occur and that field instrumentation is functioning properly. Laboratory quality control checks are intended to verify that samples were analyzed to an acceptable level of PARCC parameters.

**Field Quality Control Checks**

Field quality control checks include equipment rinse blanks, trip blanks, and field duplicates.

Field duplicates will be collected to assess the homogeneity of the samples collected in the field, and the overall precision of the sampling process.

For pore water analysis, a trip blank will be collected by placing a sample of deionized water in a sample cooler at the beginning of the demonstration. The trip blank will be used as a quality control measure to ensure that samples are not contaminated during sample storage and shipment to the laboratory.

**Laboratory Quality Control Checks.**

Each analytical protocol used in this technology demonstration includes specific instructions for analysis of quality control samples and completion of quality control procedures during sample analysis. Laboratory QC checks are designed to assess the precision and accuracy of the analysis, to demonstrate the absence of interferences and contamination from glassware and reagents, and to ensure the comparability of data. Laboratory QC checks consist of method blanks, laboratory control samples, laboratory duplicates, surrogates, and MS/MSDs.

Method blanks are used to verify that preparation of samples was contamination-free. Each batch of extracted and digested samples is accompanied by a blank that is analyzed in parallel with the rest of the samples, and carried through the entire preparation and analysis procedure. Method blanks for DDX and potentially other chemical analytes will be analyzed for every sample preparation group or 1 for every 20 samples, whichever is more frequent.

Laboratory control samples (reference material or spiked blanks) are used to check overall method performance. A laboratory control sample for DDX will be analyzed for every sample delivery group or 1 for every 20 samples, whichever is more frequent.

Replicate laboratory analyses are indicators of laboratory precision. Laboratory duplicates for DDX and potentially other chemical analytes will be analyzed by splitting 1 in 20 field samples or one sample from every sample delivery group, whichever is more frequent.

Matrix spike samples and matrix spike duplicates are used to assess the effects of the sample matrix on the accuracy and precision of analytical measurements. MS/MSDs for DDX and potentially other chemical analytes will be analyzed for every sample delivery group or 1 for every 20 samples, whichever is more frequent.

Surrogate spike compounds will be added to all field and quality control samples for DDX analysis to evaluate the recovery of analytes for each sample.

**Instrument and Equipment Maintenance and Calibration Requirements**

In general, the principal investigator will be responsible for ensuring that routine preventative maintenance and calibrations are performed and documented for all field instrumentation and equipment. The laboratory quality assurance officer will be responsible for ensuring that routine maintenance and calibrations are performed and documented for analytical instrumentation.

**Field Equipment**

Detailed information regarding maintenance and servicing of field equipment is available in the guidance documents and manuals for the specific instrument to be used. Field personnel will record service and maintenance information in field logbooks. In general, the sensor area on any piece of deployed equipment should be kept clean and free of residues. All sensors should be tested and the calibration checked prior to the demonstration to assure that the precision and accuracy are within manufactures specification. If any sensor is found to be out of specification, it can be returned to the manufacturer for recalibration, or recalibrated in the laboratory under closely controlled conditions. Sensors should generally be tested, zeroed and calibrated prior to each deployment, and re-zeroed following deployment. Sampling probes should be visually inspected before and after each deployment. If there is evidence of damage to filter screens or sonde housings, screens and housings should be replaced.

**Laboratory Equipment**

The analytical laboratory will prepare and follow a maintenance schedule for each instrument used to analyze demonstration samples. All instruments will be serviced at scheduled intervals to optimize factory specifications. Routine preventive maintenance and major repairs will be documented in a maintenance logbook.

Initial and continuing calibration procedures for laboratory equipment and instrumentation will be completed in accordance with the cited analytical method for each analysis. The method descriptions for each analysis specify the acceptance criteria for initial and continuing calibration and state the conditions where recalibration is necessary.

**Data Management**

Computerized systems will be used to record, store, sort and analyze the technical data that will be generated from all instrument deployments. Automated data handling processes will be utilized that increase data integrity by reducing errors, omissions, and ambiguities that can be introduced by manual procedures. In addition, automated procedures will be used by the analytical laboratory to capture and summarize analytical results. This will also improve efficiency and reduce errors by allowing direct electronic transfer form the laboratory to the project computer systems. Information form field log books, COC/SAR forms and other sources will be entered manually into the data system. Each data record will include a unique sample code, station ID, sample type, analyte, analyte concentration, and concentration units. Data qualifiers are entered into the data system once the data validation process is completed.

Project data tables and reports are generated using both standardized templates and customized retrievals and filters based on user specified criteria. Results from physical, chemical and biological monitoring will generally be transformed into either spatial maps using a Geographic Information System, or time-series output.

**Performance and System Audits**

This section describes the types of audits that may be conducted, appropriate corrective action procedures that will be taken in the event of problems in the field and in the laboratory, and quality assurance reports to management. QA audits evaluate the capability and performance of a measurement system or its components, and identifies problems that warrant correction. Audits may include reviews of project plan adherence; training status; health and safety procedures; activity performance and records; budget status; QC data; calibrations; conformance to SOPs; and compliance with laws, regulations, policies, and procedures. Personnel, who are independent of the sampling and analytical teams, conduct internal audits. For example, these personnel may be ESTCP certification program auditors. Copies of field audit reports will be forwarded to the project Principal Investigator. This chapter describes laboratory system, performance, and field audits.

**System Audits**

System audits include a thorough evaluation of both field and laboratory QC procedures and are normally completed before data are collected. This type of audit may consist of site reviews of measurement systems, including facilities, equipment, and personnel. In addition, measurement, QC, and documentation procedures may be evaluated. System audits are conducted on a regularly scheduled basis; the first audit is conducted shortly after a system becomes operational.

**Performance Audits**

A performance audit reviews the existing project and QC data to determine the accuracy of a total measurement system or a component of the system. Performance audits of sampling and analysis procedures will be conducted for field and laboratory activities. The audits may consist of the following, as appropriate:

- A field audit during the demonstration to verify that sampling and monitoring procedures and frequencies specified in the technology evaluation plan are being followed
- A laboratory audit during analysis of evaluation samples to verify that procedures and frequencies specified in the technology evaluation plan are being followed
- Issuance of blind QC samples for analysis of specified critical parameters

Internal audit routines for the laboratory are described in the laboratory QA plan.

**Field Audits**

A field audit involves a site visit by the auditor or auditing team. Items to be examined include the following:

- Availability and implementation of SOPs
- Calibration and operation of equipment
- Packaging, storage, and shipping of samples
- Documentation of on-site procedures and instructions
- Documentation of nonconformance's

**Corrective Action Procedures**

An effective QA program requires prompt and thorough correction of nonconformance conditions affecting quality. Rapid and effective corrective action minimizes the possibility that questionable data or documentation will be produced.

Two types of corrective actions exist: immediate and long term. Immediate corrective actions include correction of documentation deficiencies or errors, repair of inaccurate instrumentation, or correction of inadequate procedures. Often, the source of the problem is obvious and can be corrected at the time of the observation. Long-term corrective actions are designed to eliminate the sources of problems. Examples of long-term corrective actions are correction of systematic errors in sampling or analysis, and correction of procedures producing questionable results. Corrections can be made through additional personnel training, instrument replacement, or procedural improvements. One or more corrections may be necessary.

All QA problems and corrective actions will be documented to provide a complete record of QA activities and to help to identify needed long-term corrective actions. Defined responsibilities are required for scheduling, performing, documenting, and ensuring the effectiveness of the corrective action. This section describes the corrective action procedures to be followed in the field and laboratory.

**Field Procedures**

Field nonconformance conditions are defined as occurrences or measurements that are either unexpected or that do not meet established acceptance criteria and will affect data quality if corrective action is not implemented. Examples of nonconformance include:

- Incorrect use of field equipment
- Improper sample collection, preservation, and shipment procedures
- Incomplete field documentation, including chain-ocustody records
- Incorrect decontamination procedures
- Incorrect collection of QC samples

Corrective action procedures will depend on the severity of the nonconformance. In cases where immediate and complete corrective action is implemented by field personnel, the corrective actions will be recorded in the field log notebook.

Nonconformance identified during an audit that has a substantial impact on data quality requires the completion of a corrective action request form. This form may be filled out by an auditor or by any individual who suspects that any aspect of data integrity is being affected by a field nonconformance. Each form is limited to a single nonconformance; if additional problems are identified, multiple forms will be used for documentation.

In the event that a corrective action is required due to improper field technique, the program manager will be notified. The program manager, program scientist, and the project QA/QC officer will meet to discuss the appropriate steps to resolve the problem, and will use the following list:

- Determine when and how the problem developed
- Assign responsibility for problem investigation and documentation
- Determine the corrective action to eliminate the problem
- Set a schedule for completion of the corrective action
- Assign responsibility for implementing the corrective action
- Document and verify that the corrective action has eliminated the problem
- Include report of the problem and the corrective action taken in final report

A corrective action status report must be used by the project QA/QC officer to monitor the status of all corrective actions. In addition to a brief description of the problem and the individual who identified it, the report will list personnel responsible for determining and implementing the corrective action. The report also will list completion dates for each phase of the corrective action procedure and the due date for the project QA/QC officer to review and check the effectiveness of the solution. Follow-up data also will be listed to check that the problem has not reappeared. The follow-up review is conducted to ensure that the solution has adequately and permanently corrected the problem.

The project QA/QC officer can require data acquisition to be limited or discontinued until the corrective action is complete and the nonconformance is eliminated. The project QA/QC officer can also request re-analysis of any or all data acquired since the system was last in control.

**Laboratory Procedures**

Internal laboratory corrective action procedures and a description of out-ocontrol situations requiring corrective action are contained in the laboratory QA plan. At a minimum, corrective action will be implemented when any of the following three conditions occurs: control chart warning or control limits are exceeded; method QC requirements are not met; or sample holding times are exceeded. Out-ocontrol situations will be reported to the program manager within 2 working days of identification. In addition, a corrective action report, signed by the laboratory director or project managers and the laboratory QC coordinator, will be provided to the program manager.

### Data Review, Validation and Verification

Correct equations and procedures must be used to ensure that all laboratory data generated and processed are scientifically valid, defensible, and comparable. The following sections describe the data review, validation, verification, and reporting procedures that will be used in this evaluation.

### Data Review

Each analytical method contains detailed instructions and equations for calculating compound concentrations or parameters. Data will be reduced using the procedures given in the analytical methods. Final data presentation will be checked for compliance with data documentation requirements, and will be approved and certified by the laboratory senior officer. In general, data package requirements include, but are not limited to, the following categories:

- Custody of sample
- Performance of instruments
- Identification and quantitation of parameters
- Integrity, precision, and accuracy (QC checks) of samples

Field data recorded during sampling will be reduced to tables for review and verification. After they have been verified, the data will be compiled and reported in summary tables and figures, as appropriate. Corresponding descriptions and units of measure will also be provided to accurately reflect field conditions.

The analysts responsible for the measurements will enter raw data into logbooks or on data sheets. In accordance with standard document control procedures, the laboratory will maintain on file the original copies of all data sheets and logbooks containing raw data, signed and dated by the responsible analyst. Separate instrument logs will also be maintained by the laboratory to enable run sequences to be reconstructed for individual instruments.

### Data Validation and Verification

Data validation is a systematic process of reviewing and qualifying data against a set of criteria to determine that the data are adequate for their intended use. During the validation process, all results will be identified as either (1) acceptable for use, (2) estimated and acceptable for limited use, or (3) rejected and unacceptable for use. Results considered rejected will be retained in the database but will not be used in quantitative evaluations. Estimated and rejected data can result from improper sampling or analytical methodology, matrix interferences, errors in data transcription, and changes in instrument performance. Erroneous results found during data validation will be identified and corrected.

### Field Validation and Verification

Field personnel will review field data to identify inconsistencies or anomalous values in accordance with the MQOs for the field equipment and instrumentation. Any inconsistencies discovered will be resolved immediately, if possible, by seeking clarification from the personnel responsible for collecting data. All field personnel will be responsible for following the sampling and documentation procedures described in the demonstration plan and the QAPP in order to assure that defensible and justifiable data are obtained. Specific requirements for field sampling include but are not limited to the following:

- Sampling locations must be fully documented and correct. Errors in sampling location (e.g. as a result of GPS failure) may result in the rejection of data for the subject station.
- Sample collection procedures must be completed as planned and fully documented. Deviations from designated procedures may affect the representativeness of the samples and must be minimized and documented where they occur.
- Sample shipping and handling procedures must be completed as described in the Demonstration Plan and the QAPP, in particular the maintenance of sample integrity and proper temperature.
- Results of the field sensor tests and field quality control samples should meet MQO limits.

Failure to meet these requirements may result in the qualification or rejection of data during the data validation process.

**Laboratory Validation and Verification**

During analysis and reporting, laboratory personnel will assess data by reviewing raw data for any nonconformance in analytical method protocols. The laboratory QA plan describes detailed procedures for laboratory validation and corrective action. The laboratory QA plan also discusses sample control, methods of analysis, calibration procedures, document control, QC, corrective actions, QC checks, QA, and data review.

Validation will be completed on data packages for analysis of the water samples. The data reviewer is required to notify the Principal Investigator of any missing information and request it from the laboratory. Data may not be eliminated from the review process. All data will continue through the validation process and be qualified and re-qualified as many times as necessary to meet the established criteria. Full data validation will be required on approximately 10 percent of a sample data group, although this percentage will vary with data type. Data packages consist of sample results, QA/QC summaries, and a review of all raw data associated with the sample results and QA/QC summaries. Data may be qualified as estimated or rejected if any of the following quality control samples and procedures do not meet control limits:

- Sample holding times
- Method of analysis
- Initial and continuing instrument calibration
- Calibration and method blanks
- Laboratory control samples
- Matrix spike and matrix spike duplicate samples
- Surrogate recovery
- Analyte identification and quantification

Project personnel will review the data validation reports from the laboratory to (1) assess whether data quality indicators for chemical measurement were met, and (2) determine whether the data are usable for their intended purpose. The laboratory project manager and the project QA/QC officer will approve the completed laboratory report before it is used to prepare the demonstration and validation report.

**Reconciliation with Data Quality Objectives**

The goal of data validation is to determine the quality of the data and to identify data that do not meet the project MQOs. Nonconforming data may be qualified as estimated or rejected as unusable. Rejected data will not be used for any purpose within the context of the demonstration except to guide recommendations for future corrective actions. If the rejected data are needed to complete the demonstration or to make a decision at the site, it may be necessary to resample. Any decision to resample will be based on discussions among the project team. Data qualified as estimated will be used for the demonstration. These data may be less accurate or precise than unqualified data. The Principal Investigator and the data users are responsible for assessing the potential ramifications of the inaccuracy or imprecision associated with the qualified data.

# Appendix D
# Methods and Standard Operating Procedures

**Friction Sound Probe (FSP) Technology**

Friction-sound is a simple and robust technique for in-situ, screening-level measurement of grain size. Friction-sound is believed to be generated when phonons are produced by the breaking or excitation of atomic or molecular bonds as the probe moves over or through the sediment. Theory and previous empirical studies suggest that friction-sound intensity is linearly related to grain size and probe velocity. A prototype SED-FSP has been constructed and tested in the laboratory. In the prototype SED-FSP, the acoustic pickup was integrated into an existing Trident porewater probe that had been sealed to preclude damage to the microphone. The results confirmed that a Trident-based SED-FSP provides a sensitive measure of grain size and that the amplitude of the sound intensity can clearly delineate between sediments with mean diameters in the clay, silt, and sand size ranges (Chadwick 2009).

The SED-FSP probe consists of a stainless steel shaft of 1/2 inch diameter and 1 meter length. The stainless steel probe tip containing the microphone sensor is approximately 1 1/4 inches in length, screwing into a Delrin section 1 1/4 inches length that serves to acoustically isolate the microphone tip assembly from the rest of the SED-FSP unit. The tip assembly has been sealed to preclude damage to the microphone sensor The SED-FSP is coupled to a 5/8 inch diameter pneumatic piston/cylinder drive unit that is vertically mounted onto a submersible frame assembly. The interface incorporates rubber vibration dampeners that serve to acoustically isolate the drive system from the probe sensor. The pneumatic system operates at an air pressure of 85 – 120 psi, controlled by a multiple-valve mechanism that regulates air pressure applied to both the input and output stroke of the piston. The air source is a portable air compressor capable of providing 85 – 120 pounds per square inch gauge (psig) for 10 – 12 seconds duration. For deployments of only a few pushes or where space or utility limitations prevent the use of an air compressor, compressed air tanks (e.g., diver tanks) may be used. When fully retracted the probe tip is near or just in contact to the sediment bed, as the pneumatic cylinder is deployed the SED-FSP extends and penetrates the sediment bed at a controlled and constant speed. The sediment penetration depth of the SED-FSP tip sensor is dependent on the pneumatic piston/cylinder stroke length (the current configuration has a stroke length of 2 feet). The entire SED-FSP assembly weighs around 50 pounds.

Chadwick, D.B. 2009. Demonstration of an In-Situ Friction-Sound Probe for Mapping Particle Size at Contaminated Sediment Sites (ER-200919) Fact Sheet. http://www.serdp.org/Program-Areas/Environmental-Restoration/Contaminated-Sediments/ER-200919

## Sediment Profile Imaging Camera (SPI)

The purpose of this document is to describe the purpose and operation of the sediment profile imaging (SPI) system and the procedures used to collect SPI data.

### SPI Camera Purpose

The sediment profile imaging (SPI) survey is intended to characterize physical, chemical, and biological conditions in surface sediments in the Quantico Embayment. SPI data provide the following quantitative and qualitative information:

- Indications of aerobic and/or anaerobic conditions in surface sediments.
- Indications of the composition of the benthic community and evidence (if any) of disturbance gradients in the community.
- Evidence of the depth of sediment bioturbation.
- Indications of sediment geophysical conditions (e.g., relative density and grain size).
- Evidence of erosion or deposition.

SPI surveys supplement geotechnical analysis of sediments, confirm the depth of the biologically active zone, and provide preliminary data on benthic habitat and fauna. SPI images will be acquired using a model sediment-profile camera system mounted on top of a wedge-shaped prism with a Plexiglas faceplate that captures a photograph of the sediment bed surface when the prism penetrates the sediment up to a depth of 18 inches.

### SPI Camera Operation

The SPI images will be acquired using a model 3731-D sediment-profile camera system (Ocean Imaging Systems, North Falmouth, MA) with a Nikon D200 10-megapixel SLR camera mounted inside the housing. The SPI camera consists of a camera mounted on top of a wedge-shaped prism with a Plexiglas faceplate; light is provided by an internal strobe. The back of the prism has a mirror mounted at a 45-degree angle to reflect the profile of the sediment-water interface toward the camera, which is mounted horizontally on the top of the prism. The camera prism is mounted on an assembly that can be moved up and down by producing tension or slack on the winch wire. As the camera is lowered, tension on the wire keeps the prism' in the 'up' position. Once the camera frame contacts the bottom, slack on the wire allows the prism to vertically descend into the seafloor. The rate at which the optical prism penetrates into the sediments is controlled by a passive hydraulic piston. This allows the optical prism to descend at approximately 6 cm per second and minimizes disturbance to the sediment column. Once on the seafloor, the SPI camera is controlled by the descent of the prism assembly past a magnetic switch. When the magnetic switch is closed by contact with the prism assembly, photographs of the sediment column are taken at 5 and 15-second intervals from the time of switch contact. Two replicate images are collected per deployment, on taken 5 seconds after the camera contacts the seafloor and the other 15 seconds after the camera contacts the seafloor.

As the camera is raised off the bottom, a wiper blade automatically cleans any sediment off of the prism faceplate. The film is automatically advanced by a motor drive, the strobes are recharged, and the camera can be lowered for another replicate image.

When the camera is brought to the surface, the frame count is verified and the camera prism penetration is estimated from a penetration indicator that measures the distance the prism fell relative to the camera base. If penetration is minimal, weight packs can be loaded to give the assembly increased penetration. If penetration is too great, adjustable stops (which control the distance the prism descends) can be lowered, and "mud" doors can be attached to each side of the frame to increase the bearing surface.

To conduct a SPI survey, the following equipment is needed:

**SPI Camera Components**

Benthos Sediment Profile Camera

- 12 v Nicad Battery Packs
- 12 Kilogram Lead Weights (10 Sets)
- "Mud" Doors
- Nikon D200 Camera & Spare body
- Tool Kit
- Shackles, swivels and hardware

**SPI Camera Field Collections**

At the beginning of each survey day, the time on the data logger mounted on the SPI camera will be synchronized with the navigation system clock. A Nikon digital SLR camera and a charged battery are loaded in the camera housing. Test shots are fired on deck at the beginning of each day to verify all internal electronics systems are working according to specifications.

Each SPI station replicate will be identified by the time recorded in the image file and the corresponding time and position recorded by the navigation system. A position will be recorded for each of the three replicate images taken at each SPI station. Redundant sample logs will be kept by the field crew. Information recorded in the field log includes:

- Time
- Date
- Station Location
- Replicate ID
- Frame Count
- Water Depth
- Penetration
- Observations on weather conditions, environmental conditions, or other pertinent observations
- Sampling Crew
- Time of arrival at vessel

- Time of survey commencement
- Time of survey conclusion
- Time departing vessel

Three replicate images will be taken at each SPI station. At regular intervals during each survey day, the frame counter is checked to make sure that the desired number of replicates has been taken. If images have been missed or the penetration depth is insufficient, then proper adjustments are made (e.g., weight is added to the frame) and additional replicates are taken.

To collect SPI data, a vessel will be piloted to the target sampling location. Once within 20 feet of the target location, the SPI camera will be deployed. It is lowered to the seafloor until it lands on the bottom. Once on the bottom, an electronic trigger is activated signaling the camera to collect images 5 seconds after contact and 20 seconds after contact. Once the image set is acquired, the SPI camera is raised off the seafloor and lowered again to collect the remaining two replicate image sets.

Following completion of the field survey, SPI specialists will measure and characterize physical biological parameters from the digital images using a computer-image analysis system. SPI image analysis will include data on the following:

- Total prism penetration depth
- Grain size major mode and range
- Sediment boundary roughness
- Mean apparent redox potential discontinuity depth
- Presence of sediment methane
- Bedforms, mudclasts, and recently deposited sedimentary intervals, allowing identification of high and low kinetic energy areas.
- Infaunal successional stage
- Bioturbation depth
- Presence of surface microbial aggregations (indicative of hypoxic areas)
- Evidence of excess organic loading.

The SPI survey and analyses will be conducted consistent with industry-accepted standards and the equipment manufacture specifications.

**SPI Data Management**

Measurements of physical and some biological parameters are made directly from the digital image files using a computer-image analysis system. The color image analysis system can discriminate up to 16.7 million different shades of color, so subtle features can be digitized and measured. Data stored electronically and backed up on disks or CDs. Measured data are edited and verified by a senior-level scientist before being approved for final data synthesis, statistical analyses, and interpretation. Automatic disk storage of measured parameters allows data of interest to be compiled, sorted, displayed graphically, contoured, or compared statistically.

# INTEGRITY CORER STANDARD OPERATING PROCEDURES

## BACKGROUND

In situ capping of contaminated sediments with layers of clean material is an accepted and widely applied remediation technique (EPA, 2005; EPA, 2009; Palermo et al., 1998). Addition of reactive amendments to surface sediment is also emerging as an important alternative remedy. Because contamination is left in place, and natural and anthropogenic processes may lead to failure of these remedies, monitoring is generally required to verify that the cap or the amendment is meeting design goals and providing the required level of environmental protection (EPA, 2005). To the extent that capping or amendment is designed as a permanent remedy, monitoring is essentially required in perpetuity. Methods for verifying continued effectiveness of the remedy almost always involve vertical core profiling through the capping or amendment material and into the underlying sediment. These core profiles, either in the porewater phase, the particle phase, or both, are used to evaluate the effectiveness of the remedy in isolating contamination, stabilizing the sediment bed, reducing chemical fluxes to the environment, or controlling bioavailability (EPA, 1998; Ghosh et al., 2009). Because coring involves removal of the cap or amendment material, which must be repeated over a sufficient number of locations, and repeated indefinitely through time, there is a potential that monitoring activities themselves may establish pathways of exposure or lead to at least localized areas of remedy failure over time. This potential is most significant for thin-layer caps, shallow amendments, or areas of clean backfill where the vertical migration associated with the coring process is likely to be more acute.

In terrestrial sites, this problem has been recognized for many years, and standard methods are in place for backfill and sealing of direct push sampling points, soil borings, and monitoring wells. At sediment sites, recent development of small diameter passive sampling probes may help to minimize these impacts, however these methods are still in development, and provide only a limited range of chemical characterization. There currently is no demonstrated aquatic analog for sediment remedy monitoring that provides a comparable capability to the terrestrial methods to minimize potential vertical migration of contamination associated with coring. However, recently SSC PAC, in collaboration with the University of California San Diego (UCSD), has developed a prototype coring device that can provide this capability. The Integrity Corer (iCorer) provides a simple means maintaining cap integrity by collecting sediment cores and subsequently replacing the sampling void with clean cap material.

## TECHNOLOGY DESCRIPTION

The Integrity Corer (ICorer) is a device that allows for collecting intact sediment cores from thin-layer caps and subsequently replacing the cap material so that the integrity of the cap is not compromised by the coring process. The system consists of an external sleeve (2” PVC pipe), an internal core liner (2” cellulose acetate butyrate tubing), a head unit (stainless steel), and a slide hammer (Figure 1). The external sleeve can consist of a single length of pipe, or multiple lengths to allow adjustment for core length and water depth. The bottom end of the sleeve is form-fitted to provide a tight seal to the core liner and prevent sediment from entering the gap between the sleeve and the liner which could cause binding. The bottom end of the sleeve is also beveled to reduce resistance during the installation of the corer into the sediment.

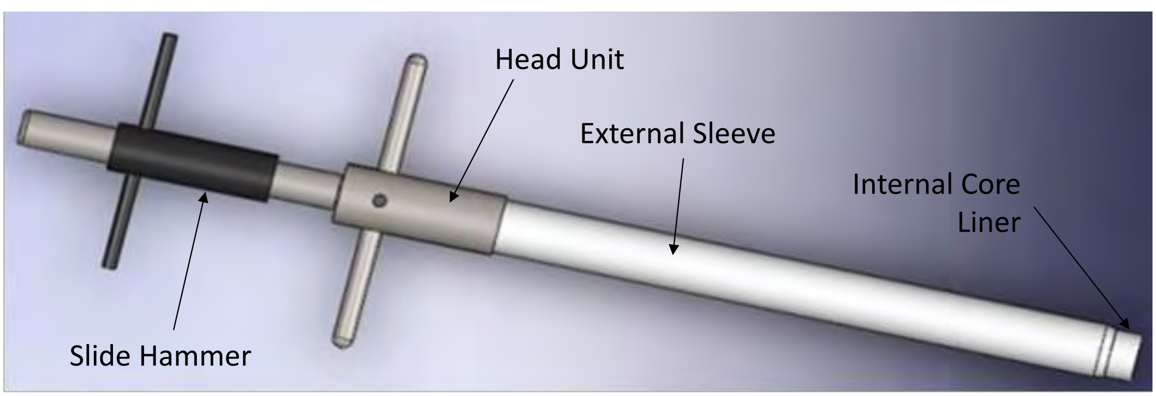


***Figure 1. Assembled components of the Integrity Corer.***

The core liner is a standard 2” CAB liner such as those produced by Wildco and others for standard hand-push and gravity coring systems. The liner length is adjusted such that it extends a short distance (~0.25”) beyond the end of the external sleeve at the bottom, and approximately 6” beyond the sleeve at the top end to provide alignment into the head unit. The head unit is a stainless steel cylinder with a recess that accommodates the outside diameter of the core liner. The core liner fits inside this recess while the outer sleeve butts up against the base of the head unit. The head unit has threaded holes that accommodate handles to allow the system to be pushed by hand. It also has a rod on the top that accommodates the slide hammer. The slide hammer fits over the rod on the top of the head unit and has foam cushioned handles that proved a means of actively pounding the corer into the sediment.

## FIELD SAMPLING PROCEDURE

Field sampling procedures for the iCorer are described below. The methods described are generally applicable to field sampling from a small boat in shallow water. Application to deeper water is possible by diver or by modification of the system but those methods are not described here. Because different projects call for different procedures for post-collection processing of the cores, those procedures and the associated equipment requirements are not included here.

### Required Equipment

The required equipment for field sampling with the iCorer is summarized in Table 1. This includes the corer components, accessories and tools required for the core collection.

### Preparation of the iCorer

To prepare the iCorer for sampling, collect the equipment described in Table 1. The outer sleeve and core liner must be cut to the proper length for the sampling station. To do this, first measure or estimate the water depth at the station (WD). Then determine the desired penetration depth of the core (CPD). Then determine the required stick up of the core above the water surface to allow handling (SU). Then calculate the required length of the outer sleeve (SL) and core liner (CL) as follows:

$$SL = WD + CPD + SU$$

$$CL = SL + 6.25''$$

Assemble the outer sleeve using a tip section and as many extenstion sections as required to exceed the required SL. Then cut the assembled sleeve to the required SL using the PVC pipe cutter or a saw, using care to make the cut square. Insert the core liner into the head unit until it is fully inserted. Slide the outer sleeve over the core liner until it butts up against the head unit. Mark the core liner at a distance of 0.25” where it sticks out at the bottom of the sleeve. Slide the core liner out of the sleeve and cut it at the marked length using a saw or the PVC pipe cutter, using care to make the cut square. If a core-catcher is to be used (optional), apply Gorilla Glue (or similar) to the flange of the core-catcher and insert into the end of the core liner. Provide sufficient time for the glue to dry.

| Required Item | Number Required |
|---|---|
| Head Unit | 1 + spare |
| Head Unit Handles | 2 + spares |
| Slide Hammer | 1 + spare |
| External Sleeve w/ Bevel and Coupling | Depends on number of stations, can be deconed and reused but tips may need to be re-beveled. |
| External Sleeve Extensions | Depends on number of stations and water depth. Can be reused but after cutting may need to be replaced. |
| Core Liners | 1 per station |
| Core Liner Caps | 2 per station |
| Core Catchers (optional) | 1 per station |
| Glue for Core Catchers | As needed |
| Core Holder Rack | Sufficient to hold number of cores collected |
| Electrical Tape | As needed |
| Strap Wrench | 1 + spare |
| PVC Piper Cutter (2" min) | 1 + spare |
| Saw | 1 + spare |
| Tape Measurer | 1 + spare |
| Calculator | 1 + spare |
| Water Depth Gage | 1 + spare |
| Sharpies | As needed |
| Logsheets | 1 per station |
| Logbook | As needed |

*Table 1. Equipment list for the iCorer.*

**Assembling the iCorer**

To assemble the system, first install the handles into the head unit by threading them into the threaded holes (Figure 2). Then insert the pre-cut core liner into the recess in the head unit until it bottoms out. Now slip the pre-cut and assembled outer sleeve over the liner until it butts up against the head unit. About 0.25” of the liner should protrude from the bottom of the sleeve.

**Collecting the Core**

Hold the iCorer with one hand on the head unit and one hand on the outer sleeve to make sure that the sleeve and liner do not fall out of the head unit during installation (Figure 2). Lower the corer vertically until the tip of the corer reaches the sediment. Make sure the iCorer is aligned vertically and that you have a stable position from which to push the corer into the bottom. Using tape or a sharpie, mark the water level on the outside of the sleeve, and measure up the desired distance for the CPD and make another mark. Keep in mind that the core may compress and that core friction may lead to cores that are shorter than the target CPD so you may need to over push to reach the target. Using the handles on the head unit, push the iCorer into the bottom as far as possible until you reach refusal or you reach the CPD as indicated by the upper mark on the sleeve reaching the water level. If you reach refusal prior to the CPD, install the slide hammer on to the top of the head unit and pound the corer in until the target CPD is reached.

Once the target CPD is achieved, remove the slide hammer and remove the head unit. Install a cap onto the top of the protruding core liner and seal with electrical tape. Now pull the core liner out of the outer sleeve, making sure to hold the outer sleeve in place so it does not come out with the liner. If needed, install a strap wrench onto the top of the liner to aid in gripping and extraction. Install a cap onto the bottom of the core liner and seal with electrical tape. Stand the core vertically in a rack to minimize disturbance until ready for post-processing.

Measure the length of sediment in the core and confirm that the target CPD was reached. Cap a section of clean core liner that is at least the length of the measured core. Fill the liner with clean replacement cap material to the measure length. Pour the sand into the top of the outer sleeve that is still installed into the sediment bed. Now remove the outer sleeve carefully to minimize disturbance to the cap and the replacement material. Clean all parts prior to reuse to make sure there are no particles that would cause binding and no contaminants that could cross over between stations.


***Figure 2. Field sampling procedure for the iCorer including (A) install the handles, (B) liner protruding from sleeve, (C) initial hand push, (D) slide hammer installation, (E) slide hammering, (F) install the cap on top and remove the liner, (G) pour the replacement material, (H) remove the outer sleeve, and (I) the completed core location with replacement material installed.***

Log all required information for the station. At a minimum this should include:

- Station Number
- Latitude and Longitude
- Water Depth
- Sleeve Length
- Liner Length
- Sediment Core Length

- Sediment Core Visual Description
- General Notes

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**Determination of Concentrations of DDx in Porewater by Solid Phase Microextraction (SPME)**

Method

Ex situ measurement of DDx in sediment porewater will be performed by the following procedure, adapted from You et al. (2007) and Yang et al. (2008). The procedure is as follows:

1. In the field, bulk sediment will be removed from the sediment core (ideally 50-60 g, ww[1]) and placed in a 4-oz glass sample jar that has been weighed to 0.1 g (weighing jar without the lid), and preserved on ice.
2. Moisture content step: Pre-weigh (record weight) an empty labeled aluminum pan to ± 0.0001 g (i.e., 4-places), add 1-2 g, ww of sediment, re-weigh to ± 0.0001 g (record weight), place in drying oven (105°C) for 24 hours, and re-weigh to ± 0.0001 g (record weight).
3. Weigh 4-oz glass sample jar (containing sediment) to 0.1 g (weighing jar without the lid), record weight.
4. Deionized water will be added (record volume to nearest mL), as needed, to the sediment to obtain a "non-clumping" sediment slurry with > 60-90% moisture content.
5. 3 mg of $HgCl_2$ will be added to inhibit microbial growth and transformation of DDx via addition of 300 µL of a 10 mg/mL solution (1 g $HgCl_2$ in 100 mL reagent grade water). Note: 600 uL if 50-60 g, ww; 300 uL if only 20 g, ww.
6. 30 cm of SPME fiber (ten 3-cm pieces of fiber with 10-µm thickness polydimethylsiloxane (PDMS) coating, 210-µm silica core diameter, obtained from obtained from Fiber-guide Industries, Stirling, NJ ("SPC210/230R, No Jacket, CL-0097-1"); 0.06908 µL PDMS/cm PDMS), will be placed in a 110-µm stainless steel mesh envelope (4-5 cm long envelope) and added to the sediment. Envelopes must be double folded on both ends to avoid opening during mixing.
    a. To prepare envelopes, cut a 5-6cm x 4 cm square, and place 10 x 3cm long pieces of SPME fiber in the center, Fold in half length-wise twice, then fold each end inward twice.

[1] Per Mayer et al. (2014), the mass of the passive sampling sorbent phase should be about 100X less than the mass of the organic carbon in the *ex situ* sample to ensure non-depletive sampling. Assuming a 40% moisture content of wet sediment and a TOC of 4% on a dry weight basis, one needs approximately 10 g, ww or more (6 g, dw) of sediment. For lower TOC (1%), need 25 g, dw (40 g, ww). For sand (assuming 0.5% TOC, dw basis) and a 20% moisture content, need approximately 60 g, ww (50 g, dw) of sand.

   b. Prior to addition, the envelope containing the SPME fiber will be rinsed thoroughly with a 50:50 mixture of reagent grade water:acetonitrile to remove any impurities, rinsed three times with reagent grade water, and allowed to dry, and packed in sealed containers.
7. The jar containing sediment and SPME envelope will be sealed, covered with aluminum foil (or enclosed) to prevent photodegradation of chemicals, and mixed continuously at 20 rpm on a rotating shaker for 14 days at room temperature to allow SPME fiber to equilibrate with DDx in sediment porewater.
8. Following the 14-day period, remove envelopes from sediment, shake off excess sediment, open envelope, and remove the fiber pieces with Teflon-coated forceps or manually wearing nitrile gloves.
9. Pre-weigh (and record weight) an empty, labeled 2-mL amber autosampler vial to ± 0.0001 g (i.e., 4-places).
10. Wipe each fiber gently on a tissue (Kimwipe) moistened with MQ water to remove sediment particles and colloids that may/may not be visible to the naked eye. Measure and record each piece's length (in cm) if pieces are broken. If pieces are missing, this is not a problem (just record the lengths of fibers that go into the vials (next step)). If fiber pieces are present that are too small to be wiped or handled efficiently, it is OK to discard these pieces. Ideally person #1 will perform this step, handing each cleaned SPME fiber to person #2 for remaining steps
11. Place the fiber pieces in the pre-weighed 2-mL amber autosampler vial.
12. Weigh (and record weight) of the labeled 2-mL amber autosampler vial containing the fiber pieces to ± 0.0001 g (i.e., 4-places).
    a. Subtracting the weight of the empty vial provides the weight of the fiber in the vial, which is needed to estimate the length of the fiber that was extracted by dividing the weight of the fiber by 0.000834 g/cm. The lengths of the fiber pieces can also be measured with a ruler, although this is more time consuming.
13. 1.8 mL of ultrapure hexane will be added to the autosampler vial to extract DDx from the fiber (two 900-µL aliquots via pipettor).
14. The hexane extract will be stored and shipped at 4°C to ERDC.

15. The 1.8-mL extract will be spiked with an internal recovery standard (PCB 34 and PCB 152) and evaporated to a volume of approximately 100 µL with pure nitrogen (performed just prior to analysis via GC).
16. The concentrated hexane extract will be analyzed for DDx via GC using USEPA method 8081A (2-µL injection into GC).
17. Concentration of DDx analytes in the hexane extract will be used to estimate the concentration in the SPME's PDMS coating. The concentration of DDx in the SPME's PDMS coating ([PDMS DDx]) will be used to derive the porewater concentration ([Sediment porewater DDx]) according to the following relationship (You et al., 2007; Yang et al., 2008):

$$[\text{Sediment porewater DDx}] = \frac{[\text{PDMS DDx}]}{K_{fs}}$$

where the $K_{fs}$ is the compound-specific PDMS-water partition coefficient, a constant. $K_{fs}$ values for DDT, DDD, and DDE have been measured empirically (You et al., 2007; Yang et al., 2008) and can be calculated via a modeled relationship using each compound's octanol-water partition coefficient (Mayer et al., 2000).

Method Detection Limit

The method detection limit (MDL) for DDx in porewater for the above method is approximately 0.01-0.1 ng/L. This value is expected to be sufficiently sensitive to risk-based concentrations of DDx at Quantico. For example, the MDL is approximately 10-100X lower than the expected porewater concentration in sediment (1.6-3.2 ng/L) at the risk-based target concentration estimated for the Quantico great blue heron risk model (18-36 µg/kg in sediment; Battelle and Neptune & Co., 2007), assuming a log organic-water partition coefficient (log $K_{OC}$) of approximately 6 and an organic carbon sediment concentration of 1%. Other food web models for great blue heron (Trophic Trace; USACOE, 2005) suggest that the MDL for porewater using the SPME method (0.1 ng/L) would be equivalent to hazard quotient ranges of 0.7-20 and 0.007-7 for great blue heron and fish (hazard quotients of 1 suggest possible risk), suggesting that the above SPME method is sufficiently sensitive to detect concentrations of DDx in porewater that are relevant to ecological risk pathways that are of concern at Quantico.

QA/QC

QA/QC for the SPME porewater method will involve the following:

1. Laboratory Blank: SPME (30 cm) will be exposed to ultrapure reagent grade water instead of sediment as a check against cross contamination or background contamination.
2. Trip Blank: As for the laboratory blank, an SPME will be exposed to ultrapure water instead of sediment as a check against cross contamination or background contamination. The ultrapure water sample will travel to the site, be opened briefly at the site, and shipped back to the laboratory with sediment samples for SPME porewater analysis.
3. Spike: A length of SPME of 0.4 to 0.5 cm (record length with calipers to nearest 0.01 cm) will be exposed to 200 mL of ultrapure water spiked with a known concentration (100 ng/L) of DDD, DDE, and DDT.
    a. The 100 ng/L solution will be made via addition of 400 µL of intermediate spike solution (50 µg/L for DDX and most other pesticides) brought to a 200-mL volume of reagent grade water containing and 3 mg or $HgCl_2$ (via addition of 300 µL of a 10 mg/mL solution to the 200-mL volume).
        i. The intermediate spike solution is 250 µL of AccuStandard's Pesticide Mix 1 (catalog # AE-00010, 10,000 µg/L for DDX and most other pesticides) brought to a 50-mL volume with pesticide or GC-grade acetonitrile.
    b. Solubility of DDT is approximately 1.2-5.5 µg/L at 25°C. Concentration indicated by the SPME will be compared to the known concentration to gauge accuracy of the method.
4. Duplicate: Split samples of sediment from the same core and depth interval will be analyzed with the SPME method to evaluate precision.

Note

This method has been optimized for DDX compounds in sediment containing at least ~1% organic carbon (OC). Use in other matrices (water, sediment with low OC, etc.) and other compounds will require modifications of the above method.

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**In situ Bioaccumulation (SEA Rings)**

DDx bioaccumulation will be measured in situ using *Lumbriculus variegatus* (oligochaete worms) and *Corbicula fluminea* (freshwater clams).

*Field Requirements*

SEA Rings will be deployed at six to seven stations. Following a 14 day exposure, organisms from replicate chambers will be recovered, enumerated, purged in clean seawater, composited, weighed, and transferred to vials for shipment and chemical analysis.

*Tissue Requirements*

- Target 2 g tissue per sample on recovery
- 150 mg DDx, 150 mg Lipid minimum, MDLs increase with mass
- 500 mg acceptable

*Test Species*

- Worms: *Lumbriculus variegatus*
- At least 3g per chamber to meet tissue requirements
- Clam: *Corbicula fluminea*
- 5 clams per chamber

*SEA Ring Deployment*

- Field crew will load SEA Rings into 17 gallon plastic containers (Figure 1) with site seawater, and transfer to dive boat. SEA Rings will likely be loaded one at a time to minimize stress on organisms and adversely impact passive samplers.
  Containers will be lowered from the boat one at a time to divers in water over marked station locations.
- Divers will submerge containers at surface, and perform a manual purge of air from pump lines (as directed by field crew).
- Divers will descend to sea floor with SEA Ring in container, identify appropriate deployment location, and push the SEA Ring firmly into sediment so that the lower 5” of the exposure chambers are exposed to sediment. This is roughly in line with the white plastic SEA Ring base plate. Divers will observe approximate depth of sediment cores (in relation to base plate) and successful trigger of core catcher rings, if possible. The deeper the platform is submerged into surficial sediment the better, for maximum core depth.
- Divers will then depress plastic syringes that release pre-loaded organisms (worms) into designated chambers.
- Divers will make general observations that the SEA Ring is secure and that organisms are in contact with the sediment. They will also confirm that the pump is operational based on TWO (2) blinking lights on the control module. Divers might be able to observe slight opening of duck bill valves indicating water is pumping through chambers.
- Divers will secure a small surface buoy to the SEA Ring for easy identification.
- If deemed necessary, divers will secure two sand/screw anchors on opposite sides of the SEA Ring to ensure it does not come out of the sediment.
- Divers will return to boat and continue deployment procedure until all 10 SEA Rings are secured at the appropriate stations.

- Divers will also collect top 10 cm of sediment samples for sediment chemistry and benthic invertebrate analysis.
- SEA Rings will remain in place for 14 days.

*SEA Ring Recovery*

- On exposure day 14, divers will return to the site with empty plastic containers and plastic core tube end caps provided by SPAWAR field crew
- Divers will descend to location with 17 gallon containers and place them on the sea floor next to the SEA Ring to be recovered.
- Divers will note condition of SEA Ring, sediment core integrity, potential organism mortalities.
- Divers will clamp the two white plastic hose clamps down firmly.
- With end caps ready for secondary capping of core catcher covered chambers, divers will carefully pull SEA Ring directly upward out of sediment, and apply caps to prevent potential loss of sediment from chambers. Documentation of any substantial amount of sediment loss from individual chambers during the removal process should be made, if possible.
- Once caps are secured, divers will transfer SEA Ring into plastic container, and bring to surface.
- SPAWAR field crew will process samples either on the boat or pierside using 1 mm sieves, a 110V submersible pump, and various other equipment prior to an overnight purge in clean seawater. Following overnight purging, organisms will be weighed, composited as necessary, and frozen for analysis.

**Sample Handling and Custody**

Documentation during sampling activities is essential to ensure proper sample identification, integrity and custody. A description of standard sample custody procedures that will be used to maintain and document sample integrity during collection, transportation, storage, and analysis is provided below.

Sample Custody Procedures

The field team will follow standard EPA chain-of-custody procedures for each sample as it is collected. Until shipped to the laboratory, the samples will be retained at all times in the field crew's custody. A sample is considered to be in custody if one of the following statements applies:

- It is in a person's physical possession or view.
- It is in a secure area with restricted access.
- It is placed in a container and secured with an official seal such that the sample cannot be reached without breaking the seal.

The Quality Assurance Officer is responsible for ensuring proper sample handling and documentation that will allow tracking the possession and handling of individual samples from the time of collection to laboratory receipt. The laboratory QC manager is responsible for establishing a sample control system that will allow tracking sample possession from laboratory receipt to final disposition of the sample.

**Sample Labels**

A sample label will be affixed to all sample containers sent to the laboratory. This identification label will contain the following information written in indelible ink:

- Project name and location
- Sample location
- Sample identification number
- Date and time of sample collection
- Preservative used
- Sample collector's name and initials
- Filtering (if applicable)
- Type of sample (grab or composite)
- Analysis required

If a sample is split with another party, sample labels with identical information will be attached to each sample container. After labeling, each sample will be refrigerated or placed in a cooler containing ice to maintain the sample temperature at 4±2° C.

**Sample Documentation**
Sampling activities during the field effort require several forms of documentation. The documents are prepared to maintain sample identification and chain of custody, and to provide records of significant events or observations. In addition, other documents will be prepared, such as field logbooks.

**Shipping Procedures**
All U.S. Department of Transportation regulations will be followed during sample packaging and shipment. Samples will be collected at the end of each of the field study phases. They will be transferred to appropriate laboratory containers, labeled, placed in a chilled ice chest, and shipped overnight to the laboratory.

**Laboratory Procedures**
Upon receipt of a cooler, laboratory personnel will review the contents, and sign and retain the chain-of-custody record and the air bill. Information that will be recorded on the chain-of-custody record or another appropriate document at the time of sample receipt will include the following:

- Status of the custody seals
- Temperature of the cooler upon receipt
- Identification number of any broken sample containers
- Description of discrepancies between the chain-of-custody records, sample labels, and requested analyses
- Storage location of the sample and sample extracts

Laboratory personnel will contact the analytical coordinator regarding discrepancies in paperwork and sample preservation, and will document nonconformance and corrective actions in accordance with laboratory SOPs. These procedures will be available on file at the laboratory. After samples have been accepted, checked, and logged in by the laboratory, they must be maintained in a manner consistent with the custody and security requirements specified in the laboratory QA plan.

All samples and sample extracts will be assigned to a specific refrigerator within the laboratory. All laboratory refrigerators will be assigned a number, and the refrigerator number will be recorded on an appropriate document that references the sample and extract locations. Only laboratory personnel will have access to the samples and will be required to sign a log sheet when removing samples and extracts from the refrigerators or replacing them. These log sheets will provide a chain-of-custody record as the samples move within the laboratory. A chain-of-custody record, similar to the chain-of-custody record used for sampling procedures, will be completed for samples removed from the laboratory for disposal or other purposes.

# Methods for Calculating
# The Chesapeake Bay Benthic Index of Biotic Integrity

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# INTRODUCTION

The Chesapeake Bay benthic index of biotic integrity (B-IBI) was developed to assess benthic community health and environmental quality in Chesapeake Bay. The B-IBI evaluates the ecological condition of a sample by comparing values of key benthic community attributes ("metrics") to reference values expected under non-degraded conditions in similar habitat types. It is therefore a measure of deviation from reference conditions.

The B-IBI is used by the Chesapeake Bay Benthic Monitoring Program, which is conducted by the Maryland Department of Natural Resources (MD DNR) and by the Virginia Department of Environmental Quality (VA DEQ). The program contains two primary elements: a fixed site monitoring effort directed at identifying trends in benthic community condition, and a probability-based sampling effort intended to estimate the area of the Chesapeake Bay and its major tributaries with benthic communities meeting the Chesapeake Bay Program Benthic Community Restoration Goals (Ranasinghe et al. 1994). Further information about the benthic monitoring program can be found in the World Wide Web at www.baybenthos.versar.com.

The development of the Chesapeake Bay B-IBI has been described in Weisberg et al. (1997). In addition, a series of statistical and simulation studies were conducted to evaluate and optimize the B-IBI (Alden et al. 2002). The results of Alden et al. (2002) indicated that the B-IBI is sensitive, stable, robust, and statistically sound. New sets of metric and threshold combinations for the tidal freshwater and oligohaline habitats were also developed in Alden et al. (2002) with a larger dataset than was available to Weisberg et al. (1997) for these two habitats. The present document includes the latest updates and the necessary information to calculate the Chesapeake Bay B-IBI.

# OVERVIEW

The Chesapeake Bay B-IBI is calculated by scoring each of several attributes of benthic community structure and function (abundance, biomass, Shannon diversity, etc.) according to thresholds established from reference data distributions. The scores (on a 1 to 5 scale) are then averaged across attributes to form the index. Samples with index values of 3.0 or more are considered to have good benthic condition indicative of good habitat quality.

The B-IBI is both habitat and season dependent. Therefore data must be selected for time of year and pre-classified according to the habitat type from which the samples were collected. Habitats are defined by salinity and sediment type. The application of the B-IBI is limited to samples collected in summer, defined as July 15 through September 30.

## DATA COLLECTION AND PREPARATION

Samples to which the B-IBI is to be applied should be collected from unvegetated soft substrates (sand or mud) using a Young grab with a sampling area of 0.0440 $m^2$ to a depth of 10 cm, and within the July 15 through September 30 time period. The B-IBI has not been developed for vegetated or hard substrates (e.g., pebbly or rocky bottoms, oyster reefs), so these types of substrates should be avoided. The use of uniform sample collection and processing methods ensures within-program data comparability and avoids the need for data correction or standardization procedures.

Samples are gently sieved through a 0.5-mm mesh screen using ambient seawater. The material retained on the screen is transferred to 1-liter labeled plastic jars and preserved in seawater with 10% buffered formalin and Rose Bengal stain. The stain aids in the sorting of organisms in the laboratory.

In the laboratory, samples are washed in fresh water, and the organisms separated from the detritus and sorted into major taxa using a binocular dissecting microscope. After sorting, the organisms are stored in 70% ethanol and subsequently identified to the lowest possible taxonomic level (usually, species) and counted. Fragments without heads are eliminated from the counts but included in biomass determinations.

Ash-free dry weight biomass is measured for each species by drying the organisms to a constant weight at 60°C followed by ashing in a muffle furnace at 500°C for four hours. Because most species of oligochaetes need to be slide mounted for identification, species-specific biomass of oligochaetes cannot be provided except for *Tubificoides* spp., which do not require slide mounting for identification.

## DATA REDUCTION

The B-IBI is based on observations about macrofauna that indicate benthic community condition. Taxa that are not usually retained on a 0.5-mm mesh screen (e.g., nematods, copepods, and ostracods) are eliminated from the data. Data sets must be standardized by applying uniform naming conventions. Taxa that are not sampled quantitatively or that are not truly indicative of sediment conditions are retained in the data sets but excluded from the B-IBI calculations. These taxa include benthic algae, fish, pelagic invertebrates, and epifauna. See Table 1 for currently omitted Chesapeake Bay organisms.

## HABITATS

Benthic communities differ significantly according to habitat. The B-IBI was designed to account for this variability. Metrics and thresholds were derived for each of seven habitat types in Chesapeake Bay. The major factors affecting the structure of benthic communities in Chesapeake Bay are salinity and sediment type. Before metrics can be calculated, a sample must be assigned to one of five salinity classes: tidal freshwater, oligohaline, low mesohaline, high mesohaline, and polyhaline. These classes were defined according to a modified Venice System for the classification of marine waters (Symposium on the Classification of Brackish Waters 1958). See Table 2.

Salinity is determined by the long-term average of the data collected concurrently with the biological sample (Chesapeake Bay Benthic Monitoring Program fixed stations) or by the point-in-time measurement in the absence of long-term data (Chesapeake Bay Benthic Monitoring Program random stations).

Within the high mesohaline and polyhaline classes, a sample must be further assigned to one of two sediment classes according to the percent silt-clay content of the sample. Table 2 shows the resulting habitats into which samples are classified.

## METRICS

Eleven metrics are used to calculate the B-IBI:

- Shannon-Wiener species diversity index
- Total species abundance
- Total species biomass
- Percent abundance of pollution-indicative taxa
- Percent abundance of pollution-sensitive taxa
- Percent biomass of pollution-indicative taxa
- Percent biomass of pollution-sensitive taxa
- Percent abundance of carnivore and omnivores
- Percent abundance of deep-deposit feeders
- Tolerance Score
- Tanypodini to Chironomidae percent abundance ratio

Two additional metrics are used only at fixed stations by the Virginia Benthic Monitoring Program:

- Percent biomass of organisms found >5cm below the sediment-water interface
- Percent number of taxa found >5cm below the sediment-water interface

Data for the calculation of these two last metrics are obtained from box corers. Box core samples are partitioned into 2 sediment layers: 0-5 cm and 5-25 cm below the sediment-water interface. Data from the 5-25 cm layer are used to calculate the metrics.

Metrics used in the calculation of the B-IBI are those of Weisberg et al. (1997), except for the tidal freshwater and oligohaline habitats. Metrics for these two last habitats were developed in Alden et al. (2002). The metric selection process was based on Mann-Whitney U tests for differences in means between the reference and the degraded sites of the index development data sets, and on consistency with ecological principles (Weisberg et al. 1997). Not all the metrics are used in all habitats. Table 3 shows metric usage by habitat.

Metrics are calculated as follows:

- Shannon-Wiener species diversity index

The Shannon index of diversity (Shannon 1948) is computed for each sample as follows:

$$H' = -\sum_{i=1}^{S} p_i \cdot \log_2 \cdot p_i$$

where $S$ is the number of species per sample and $p_i$ is the proportion of total individuals in the $i^{th}$ species.

In counting the number of taxa present in a sample, general taxonomic designations at the generic, familial, and higher taxonomic levels are dropped if there is one valid lower-level designation for that group. For example, if both *Leitoscoloplos* sp. and *Leitoscoloplos fragilis* have been identified in one sample, *Leitoscoloplos* sp. is skipped when counting the number of taxa. Skip codes are used to track these general taxonomic designations.

- Total species abundance

  The total number of organisms present in a sample (after dropping the epifauna and incidental species, as it is done for all metrics, see Table 1) is normalized to number of organisms per meter squared of surface area. The conversion factor for the Young grab is 1 count = 22.73 individuals/ $m^2$.

- Total species biomass

  Total species biomass is the ash-free dry weight of each species, summed over all the species present in the sample, and normalized to grams per meter squared of surface area.

- Percent abundance of pollution-indicative taxa

  Percent abundance of pollution-indicative taxa is the percent abundance contribution of taxa classified as pollution-indicative to the total abundance of organisms in a sample.

Pollution-indicative taxa are species or higher taxonomic level designations that are tolerant of pollution. Many pollution-tolerant species display opportunistic life-history characteristics, such as small size, rapid growth, high reproductive potential, and short-life spans; however, not all opportunist species are classified as pollution-indicative. In addition to life-history characteristics, statistical testing comparing the abundance of each species at reference sites with the abundance at polluted sites, was used to develop pollution-indicative and sensitive species lists (Weisberg et al. 1997). Table 4 lists taxa that are currently defined as pollution indicative for Chesapeake Bay. The list is modified from that of Weisberg et al. (1997).

- Percent abundance of pollution-sensitive taxa

  Percent abundance of pollution-sensitive taxa is the percent abundance contribution of taxa classified as pollution-sensitive to the total abundance of organisms in a sample. Pollution-sensitive species are often called "equilibrium" species because they grow slowly and are relatively long-lived, and thus they tend to characterize undisturbed, mature communities. Table 5 lists taxa that are currently defined as pollution sensitive for Chesapeake Bay. The list is modified from that of Weisberg et al. (1997).

- Percent biomass of pollution-indicative taxa

Percent biomass of pollution-indicative taxa is the percent biomass contribution of taxa classified as pollution-indicative to the total biomass of organisms in a sample.

- Percent biomass of pollution-sensitive taxa

Percent biomass of pollution sensitive taxa is the percent biomass contribution of taxa classified as pollution-sensitive to the total biomass of organisms in a sample.

- Percent abundance of carnivore and omnivores

Percent abundance of carnivore and omnivores is the percent abundance contribution of taxa currently classified as carnivores or omnivores to the total abundance of organisms in a sample. See Table 6 for carnivore/omnivore assignments of species collected by the Chesapeake Bay Benthic Monitoring Program.

- Percent abundance of deep-deposit feeders

Percent abundance of deep-deposit feeders is the percent abundance contribution of taxa that feed below the sediment-water interface to the total abundance of organisms in a sample. See Table 7 for deep-deposit feeding assignments of species collected by the Chesapeake Bay Benthic Monitoring Program.

- Tolerance Score

The Tolerance Score is a weighted abundance average for taxa classified according to their sensitiveness to pollution. The Tolerance Score is based on the North Carolina biotic index of Lenat (1993):

$$\text{Tolerance Score} = \frac{\sum TV_i \cdot N_i}{\sum N_i}$$

where $TV_i$ is the tolerance value of the $i^{th}$ taxa, and $N_i$ is the abundance of the $i^{th}$ taxa. The tolerance values are those of Lenat (1993), expanded to include piedmont and coastal taxa from Chesapeake Bay streams and tributaries. The higher the tolerance value (on a 1-10 scale), the more resistant is the species to stress, whether from pollution or from other sources. Not all taxa occurring in tidal freshwater or oligohaline habitats of the Chesapeake Bay have tolerance values assigned. <u>Table 8</u> shows the list of taxa and their tolerance values.

- Tanypodini to Chironomidae percent abundance ratio

The Tanypodini to Chironomidae percent abundance ratio is a measure of the relative contribution of midges in the tribe Tanypodini to all the midges (Class Insecta, family Chironomidae) found in a sample. The Tanypodini are considered tolerant of pollution (Lenat 1993), and the ratio is expected to increase in perturbed areas. Similar ratios have been used in other studies (Barbour et al. 1996). The following Chesapeake Bay genera are classified in the tribe Tanypodini:

  - *Ablabesmyia* spp.
  - *Coelotanypus* spp.
  - *Procladius* spp.
  - *Tanypus* spp.

- Percent biomass of organisms found >5cm below the sediment-water interface

Percent biomass of organisms found >5cm below the sediment-water interface is the percent biomass contribution of organisms in the 5-25 cm layer of sediment to the total biomass of organisms (0-5 plus 5-25 cm layers) in a sample.

- Percent number of taxa found >5cm below the sediment-water interface

Percent number of taxa found >5cm below the sediment-water interface is the percent contribution of taxa found in the 5-25 cm layer of sediment to the total number of taxa in a sample. The total number of taxa in a sample is the number of species (or higher taxonomic level designations) found in the 0-5 cm sediment fraction plus those species found in the 5-25 cm sediment fraction that are not present in the 0-5 cm fraction. Species for which only parts of an individual are found in the 5-25 cm fraction (e.g., nemerteans), are counted as occurring in this fraction.

## SCORING OF METRICS

The scoring of metrics to calculate the B-IBI is done by comparing the value of a metric from the sample of unknown sediment quality to thresholds established from reference data distributions. These thresholds, called "Restoration Goals" (Ranasinghe et al. 1994), were established as the $5^{th}$ (or $95^{th}$, see below) and $50^{th}$ (median) percentile values of reference sites for each metric-habitat combination. Reference sites were those that showed no chemical contaminant impact or significant low dissolved oxygen events (see Weisberg et al. 1997).

1. For the following metrics,

- Shannon-Wiener species diversity index
- Percent abundance of pollution-sensitive taxa
- Percent biomass of pollution-sensitive taxa
- Percent abundance of carnivore and omnivores
- Percent abundance of deep-deposit feeders (polyhaline sand habitat)
- Percent biomass of organisms found >5cm below the sediment-water interface
- Percent number of taxa found >5cm below the sediment-water interface

a score of 1 is assigned to a metric if the value of the metric for the sample being evaluated is below the $5^{th}$ percentile of corresponding reference values, a score of 3 is assigned for values between the $5^{th}$ percentile and the median, and a score of 5 is assigned for values above the median. For any metric, a score of 1 indicates impaired conditions.

A maximum score of 3 is assigned for the pollution-sensitive taxa metric if the overall abundance in a sample is low (i.e., below the lower abundance threshold). This is done to avoid high scores due to the presence of a few organisms of pollution sensitive species found among a small number of organisms within a sample.

2. An upper threshold corresponding to the $95^{th}$ percentile of reference sites is used for the following metrics:

- Percent abundance of pollution-indicative taxa
- Percent biomass of pollution-indicative taxa
- Percent abundance of deep-deposit feeders (tidal freshwater habitat)
- Tolerance Score
- Tanypodini to Chironomidae percent abundance ratio

This is done because the direction of the response for these metrics is such that higher percentages are expected in degraded sites than in reference sites. For these metrics, the scoring is reversed so that a score of 1 is assigned for values above the $95^{th}$ percentile of corresponding reference values, a score of 3 is assigned for values between the 95th percentile and the median, and a score of 5 is assigned for values below the median.

No score is assigned to the Tanypodini to Chironomidae percent abundance ratio metric if there are no chironomids in the sample (the ratio cannot be calculated). Likewise, no score is assigned to the Tolerance Score metric if none of the species for which there are tolerance values (see Table 8) are present in the sample.

3. Abundance and biomass respond bimodally to pollution (Pearson and Rosenberg 1978). An increase in abundance and/or biomass of organisms is expected at polluted sites when stress from pollution is moderate, such as at sites where there is organic enrichment of the sediment. A decrease in the abundance and biomass of organisms is expected at sites with high degrees of stress from pollution. Therefore, for these two metrics, an upper threshold corresponding to the 95th percentile of reference sites was established in addition to the lower threshold corresponding to the 5th percentile.

For total species abundance and total biomass, a score of 1 is assigned if the value of these metrics for the sample being evaluated is below the 5th percentile or above the 95th percentile of corresponding reference values, a score of 3 is assigned for values between the 5th and 25th or between the 75th and 95th percentiles, and a score of 5 is assigned for values between the 25th and 75th percentiles.

Table 9 shows the thresholds used to score each metric of the Chesapeake Bay B-IBI. For the percent biomass of pollution-indicative and pollution-sensitive taxa metrics, abundance-based thresholds may be substituted for biomass-based thresholds whenever species-specific biomass is unavailable (Weisberg et al. 1997). Table 10 shows these abundance-based thresholds.

## B-IBI VALUE

The index value for a sample is computed by averaging the scores of the individual metrics (range 1-5). If the Tanypodini to Chironomidae percent abundance ratio or the Tolerance Score cannot be calculated (see above), the denominator to calculate the average of scores should be reduced accordingly. For sites with replicate samples (Chesapeake Bay Benthic Monitoring Program fixed stations), an index value is first calculated for each sample and then averaged over the samples.

The Chesapeake Bay Benthic Monitoring Program classifies benthic community condition into four levels: “meets goals”, “marginally degraded”, “degraded”, and “severely degraded”. B-IBI values of 3.0 are the breakpoint between degraded and non-degraded conditions. Table 11 shows the four condition levels and the B-IBI ranges.

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Table 1. Currently omitted Chesapeake Bay organisms*. List based on taxa identified in Maryland and Virginia Benthic Monitoring Program data files, 1984-2000.

| Taxon | Taxon |
|---|---|
| Benthic algae | Mollusca: Bivalvia: |
| Hydrozoa | *Anomia simplex* |
| Scyphozoa | *Crassostrea virginica* |
| Anthozoa: | Mytilidae |
| *Diadumene leucolena* | *Mytilopsis leucophaeata* |
| Turbellaria | Arthropoda: Merostomata: |
| Nematoda | *Limulus polyphemus* |
| Polychaeta: | Arthropoda: Pycnogonida |
| *Harmathoe* spp. | Arthropoda: Branchiura |
| *Lepidonotus* spp. | Arthropoda: Cirripedia |
| *Polydora websteri* | Arthropoda: Mysidacea |
| Polynoidae[1] | Arthropoda: Isopoda: |
| *Proceraea* spp. | *Caecidotea communis* |
| Sabellariidae | *Cassidinidea* spp. |
| Serpulidae | Cymothoidae |
| Spirorbidae | *Edotea* spp. |
| Hirudinea | *Erichsonella* spp. |
| Mollusca: Gastropoda[1]: | Idoteidae[2] |
| Calyptraeidae | *Paracerceis caudata* |
| Cerithiidae | *Sphaeroma quadridentatum* |
| Columbellidae | Arthropoda: Amphipoda: |
| Cylichnidae | Ampithoidae |
| Epitoniidae | *Batea catharinensis* |
| *Ferrissia* spp. | Caprellidae |
| *Goniobasis virginica* | Corophiidae |
| *Gyraulus* spp. | Gammaridae |
| *Helisoma* spp. | *Incisocalliope aestuarius* |
| Hydrobiidae | Isaeidae |
| *Littorina* spp. | Ischyroceridae |
| *Menetus* spp. | Melitidae |
| Muricidae | *Parathemisto compressa* |
| Nudibranchia | Pleustidae |
| *Physa* spp. | Stenothoidae |
| *Physella* spp. | Arthropoda: Decapoda[1]: |
| Pleuroceridae | *Callinectes sapidus* |
| Pyramidellidae | *Crangon septemspinosa* |
| *Skeneopsis planorbis* | Majidae |
| Turridae | Paguridae |
| Vitrinellidae | Palaemonidae |

*All species of taxa listed at the generic, familial, and higher taxonomic levels are omitted.
[1]Omitted when identified only to this higher taxonomic level. [2]Omitted except species of *Chiridotea* spp.

Table 1. (continued).

| Taxon | Taxon |
|---|---|
| Arthropoda: Decapoda[1]: | Arthropoda: Plecoptera: |
| *Pinnotheres ostreum* | *Allocapnia* spp. |
| Xanthidae | Arthropoda: Coleoptera |
| Arthropoda: Ephemeroptera: | Arthropoda: Trichoptera |
| *Caenis* spp. | Bryozoa |
| *Eurylophella* spp. | Chordata: Ascidiacea |
| *Paraleptophlebia* spp. | Chordata: Vertebrata |
| *Stenacron* spp. | |
| *Tricorythodes* spp. | |
| Arthropoda: Odonata[1]: | |
| *Aeshna* spp. | |
| *Ischnura* spp. | |

*All species of taxa listed at the generic, familial, and higher taxonomic levels are omitted.
[1]Omitted when identified only to this higher taxonomic level.

Table 2. Habitat classification.

| Habitat Class | Bottom Salinity (ppt) | Silt-clay (<62 μ) content by Weight (%) |
|---|---|---|
| Tidal freshwater (TF) | 0 - 0.5 | N/A |
| Oligohaline (OH) | ≥0.5 - 5.0 | N/A |
| Low mesohaline (LM) | ≥5.0 - 12.0 | N/A |
| High mesohaline (HM) sand | ≥12.0 - 18.0 | 0 - 40 |
| High mesohaline (HM) mud | ≥12.0 - 18.0 | >40 |
| Polyhaline (PO) sand | ≥18.0 | 0 - 40 |
| Polyhaline (PO) mud | ≥18.0 | >40 |

Table 3.  Metric usage by habitat.

| Metric | Habitat Class | | | | | | |
|---|---|---|---|---|---|---|---|
| | TF | OL | LM | HM sand | HM mud | PO sand | PO mud |
| Shannon-Wiener species diversity index | | | X | X | X | X | X |
| Total species abundance | X | X | X | X | X | X | X |
| Total species biomass | | | X | X | X | X | X |
| Percent abundance of pollution-indicative taxa | X | X | X | X | | | |
| Percent abundance of pollution-sensitive taxa | | X | | X | | X | |
| Percent biomass of pollution-indicative taxa* | | | | | X | X | X |
| Percent biomass of pollution-sensitive taxa* | | | X | | X | | X |
| Percent abundance of carnivore & omnivores | | X | | X | X | | X |
| Percent abundance of deep-deposit feeders | X | | | | | X | |
| Tolerance Score | X | X | | | | | |
| Tanypodini to Chironomidae percent abundance ratio | | X | | | | | |
| Percent biomass >5 cm below the sediment-water interface | | | X | | X | | |
| Percent number of taxa >5 cm below the sed-iment-water interface | | | | | | | X |

*Whenever species-specific biomass is unavailable, the abundance-based metric is used in the B-IBI calculations.

Table 4. Pollution-indicative taxa for Chesapeake Bay.

A. Tidal freshwater pollution-indicative taxa. After Alden et al. (2002).

| |
|---|
| Oligochaeta: |
| *Limnodrilus hoffmeisteri* |
| Tubificidae without capilliform chaetae |

B. Oligohaline pollution-indicative taxa*. After Alden et al. (2002).

| | |
|---|---|
| Polychaeta: | Oligochaeta: |
| *Heteromastus filiformis* | *Limnodrilus udekemianus* |
| *Leitoscoloplos* spp. | *Quistadrilus multisetosus* |
| *Mediomastus ambiseta* | *Telmatodrilus vejdoskyi* |
| *Neanthes succinea* | Tubificidae without capiliform chaetae |
| *Polydora cornuta* | Tubificidae with capiliform chaetae |
| *Streblospio benedicti* | *Tubificoides* spp. |
| Oligochaeta[1]: | Bivalvia: |
| *Aulodrilus limnobius* | *Corbicula fluminea* |
| *Aulodrilus paucichaeta* | Arthropoda: Amphipoda: |
| *Aulodrilus pigueti* | *Leptocheirus plumulosus* |
| *Aulodrilus pluriseta* | Arthropoda: Chironomidae: |
| *Branchiura sowerbyi* | *Chironomus* spp. |
| *Haber* cf. *speciosus* | *Cladotanytarsus* spp. |
| *Ilyodrilus templetoni* | *Coelotanypus* spp. |
| *Isochaetides freyi* | *Glyptotendipes* spp. |
| *Limnodrilus cervix* | *Polypedilum spp.* |
| *Limnodrilus claparedianus* | *Procladius* spp. |
| *Limnodrilus hoffmeisteri* | *Tanypus* spp. |

*All species of taxa listed at the generic level are classified as pollution-indicative.
[1] Oligochaetes are identified to the lowest possible taxonomic level, but unidentifiable specimens are classified as pollution-indicative.

C.  Low mesohaline through polyhaline pollution-indicative taxa*.
Modified from Weisberg et al. (1997).

| | |
|---|---|
| Polychaeta: | Arthropoda: Chironomidae: |
| *Eteone heteropoda* | *Chironomus* spp. |
| *Leitoscoloplos fragilis* | *Cladotanytarsus* spp. |
| *Paraprionospio pinnata* | *Coelotanypus* spp. |
| *Streblospio benedicti* | *Glyptotendipes* spp. |
| Oligochaeta: | *Polypedilum spp.* |
| Tubificidae without capiliform chaetae | *Procladius* spp. |
| *Limnodrilus hoffmeisteri* | *Tanypus* spp. |
| Bivalvia: | |
| *Mulinia lateralis* | |

*All species of taxa listed at the generic level are classified as pollution-indicative.

Table 5.  Pollution-sensitive taxa for Chesapeake Bay.

A. Oligohaline pollution-sensitive taxa.  After
Alden et al. (2002).

| |
|---|
| Polychaeta: |
| *Marenzelleria viridis* |
| Arthropoda: Isopoda: |
| *Chiridotea almyra* |

B. Low mesohaline through polyhaline pollution-sensitive taxa. Modified from Weisberg et al. (1997).

| | |
|---|---|
| Anthozoa: | Bivalvia: |
| *Ceriantheopsis americanus* | *Anadara ovalis* |
| Polychaeta: | *Anadara transversa* |
| *Bhawania heteroseta* | *Ensis directus* |
| *Chaetopterus variopedatus* | *Macoma balthica* |
| *Clymenella torquata* | *Mercenaria mercenaria* |
| *Diopatra cuprea* | *Mya arenaria* |
| *Glycera americana* | *Rangia cuneata* |
| *Glycinde solitaria* | *Spisula solidissima* |
| *Loimia medusa* | *Tagelus divisus* |
| *Macroclymene zonalis* | *Tagelus plebeius* |
| *Marenzelleria viridis* | *Tellina agilis* |
| *Mediomastus ambiseta* | Arthropoda: Isopoda: |
| *Nephtys picta* | *Cyathura polita* |
| *Sabaco elongatus* | Arthropoda: Amphipoda: |
| *Spiochaetopterus costarum* | *Listriella clymenellae* |
| *Spiophanes bombyx* | Phoronida: |
| Gastropoda: | *Phoronis* spp. |
| *Acteocina canaliculata* | Echinodermata: |
| | *Microphiopholis atra* |

Table 6. Species classified as carnivores-omnivores*. List based on taxa identified in Maryland and Virginia Benthic Monitoring Program data files, 1984-2000.

| | |
|---|---|
| Anthozoa[1] | Gastropoda: |
| Nemertina | *Natica pusilla* |
| Polychaeta: | *Polinices duplicata* |
| Amphinomidae | *Rictaxis punctostriatus* |
| Arabellidae | Arthropoda: Stomatopoda: |
| Chrysopetallidae | *Squilla empusa* |
| Dorvilleidae | Arthropoda: Isopoda: |
| Eunicidae | Anthuridae |
| Glyceridae | *Chiridotea* spp. |
| Goniadidae | Arthropoda: Decapoda: |
| Hesionidae | Alpheidae |
| *Lepidametria commensalis* | Callianassidae |
| Lumbrineridae | *Ogyrides alphaerostris* |
| *Malmgreniella* spp. | *Pinnixa* spp. |
| Nephtyidae | Porcellanidae |
| Nereididae | Thalassinidea |
| Onuphidae | *Upogebia affinis* |
| Phyllodocidae | Arthropoda: Ephemeroptera: |
| Pilargidae | *Ephoron* spp. |
| Sigalionidae[2] | *Hexagenia* spp. |
| Syllidae[3] | *Potamanthus* spp. |
| Gastropoda: | Arthropoda: Odonata: |
| *Aceteocina canaliculata* | *Dromogomphus* spp. |
| *Busycon canaliculatum* | *Gomphus* spp. |
| *Busycum* spp. | Arthropoda: Diptera |
| Caecidae | Arthropoda: Chironomidae |
| *Haminoea solitaria* | Equinodermata: |
| *Ilyanassa obsoleta* | Echinoidea[4] |
| *Nassarius trivittatus* | *Mellita quinquiesperforata* |
| *Nassarius vibex* | |

*All species of taxa listed at the generic, familial, and higher taxonomic levels are classified as carnivore-omnivore.

[1]All species except the epifaunal *Diadumene leucolena*.

[2]All species except the epifaunal *Pholoe minuta*.

[3]All species except the epifaunal *Odontosyllis* spp. and *Proceraea* spp.

[4]Unidentifiable specimens are classified as carnivore-ommnivores.

Table 7. Species classified as deep-deposit feeders*. List based on taxa identified in Maryland and Virginia Benthic Monitoring Program data files, 1984-2000.

| | |
|---|---|
| Polychaeta: | Bivalvia: |
| Capitellidae | *Nucula proxima* |
| Maldanidae | *Nuculana messanensis* |
| Opheliidae | *Solemya velum* |
| Orbiniidae | *Yoldia limatula* |
| Pectinariidae | Hemichordata[1]: |
| Oligochaeta | *Balanoglossus aurantiacus* |

*All species of taxa listed at the familial (polychaetes) or higher taxonomic level (oligochaetes) are classified as deep-deposit feeders.
[1]Unidentifiable specimens are classified as deep-deposit feeders.

Table 8. List of taxa and tolerance values. List based on taxa identified in Maryland and Virginia Benthic Monitoring Program data files, 1984-2000.

| Taxon | Value | Taxon | Value |
|---|---|---|---|
| Oligochaeta: | | Arthropoda: Chironomidae: | |
| *Aulodrilus limnobius* | 5.2 | *Chironomus* spp. | 9.8 |
| *Aulodrilus pigueti* | 4.7 | *Cladopelma* spp. | 2.5 |
| *Aulodrilus* spp. | 4.7 | *Cladotanytarsus* spp. | 3.7 |
| *Branchiura sowerbyi* | 8.4 | *Clinotanypus* spp. | 9.1 |
| *Dero digitata* | 10.0 | *Coelotanypus* spp. | 6.2 |
| Enchytraeidae | 10.0 | *Cricotopus sylvestris* | 10.0 |
| *Haber cf. speciosus* | 2.8 | *Cryptochironomus* spp. | 7.3 |
| *Ilyodrilus templetoni* | 9.4 | *Cryptotendipes* spp. | 6.1 |
| *Isochaetides freyi* | 7.6 | *Dicrotendipes neomodestus* | 8.3 |
| *Limnodrilus cervix* | 10.0 | *Dicrotendipes* spp. | 7.9 |
| *Limnodrilus hoffmeisteri* | 9.8 | *Endochironomus* spp. | 7.5 |
| *Limnodrilus udekemianus* | 9.7 | *Glyptotendipes* spp. | 8.5 |
| Lumbriculidae | 7.3 | *Harnischia* spp. | 7.5 |
| *Slavina appendiculata* | 7.1 | *Nanocladius* spp. | 7.2 |
| *Stylaria lacustris* | 8.5 | *Palpomyia* spp. | 6.9 |
| Tubificidae with capiliform chaetae | 9.4 | *Parachironomus* spp. | 9.2 |
| Tubificidae without capiliform chaetae | 9.8 | *Paracladopelma* spp. | 6.4 |
| Bivalvia: | | *Paralauterborniella* spp. | 4.8 |
| *Corbicula fluminea* | 6.3 | *Phaenopsectra* spp. | 6.8 |
| *Elliptio complanata* | 5.4 | *Polypedilum* spp. | 6.7 |
| Sphaeridae | 7.7 | *Procladius* spp. | 9.3 |
| Unionidae | 3.6 | *Pseudochironomus* spp. | 4.2 |
| Arthropoda: Ephemeroptera: | | *Rheotanytarsus* spp. | 6.4 |
| *Hexagenia limbata* | 4.7 | *Stictochironomus caffarius* | 6.7 |
| *Hexagenia* spp. | 4.7 | *Stictochironomus* spp. group | 6.7 |
| Arthropoda: Diptera: | | *Tanypus neopunctipennis* | 9.6 |
| *Chaoborus punctipennis* | 8.5 | *Tanypus* spp. | 9.6 |
| Arthropoda: Chironomidae: | | *Tanypus stellatus* | 9.6 |
| *Ablabesmyia parajanta* | 7.1 | *Tanytarsus* spp. | 6.7 |

Table 9. Thresholds used to score each metric of the Chesapeake Bay B-IBI. Updated for the tidal freshwater and oligohaline habitats, and corrected from Weisberg et al. (1997) for the high mesohaline mud and polyhaline sand habitats.

| | Scoring Criteria | | |
|---|---|---|---|
| | **5** | **3** | **1** |
| Tidal Freshwater | | | |
| Abundance (#/$m^2$) | ≥1050-4000 | 800-1050 or ≥4000-5500 | <800 or ≥5500 |
| Abundance of pollution-indicative taxa (%) | ≤39 | 39-87 | >87 |
| Abundance of deep-deposit feeders (%) | ≤70 | 70-95 | >95 |
| Tolerance Score | ≤8 | 8-9.35 | >9.35 |
| Oligohaline | | | |
| Abundance (#/$m^2$) | ≥450-3350 | 180-450 or ≥3350-4050 | <180 or ≥4050 |
| Abundance of pollution-indicative taxa (%) | ≤27 | 27-95 | >95 |
| Abundance of pollution-sensitive taxa (%) | ≥26 | 0.2-26 | <0.2 |
| Abundance of carnivores and omnivores (%) | ≥35 | 15-35 | <15 |
| Tolerance Score | ≤6 | 6-9.05 | >9.05 |
| Tanypodini to Chironomidae abundance ratio (%) | ≤17 | 17-64 | >64 |
| Low Mesohaline | | | |
| Shannon-Wiener | ≥2.5 | 1.7-2.5 | <1.7 |
| Abundance (#/$m^2$) | ≥1500-2500 | 500-1500 or ≥2500-6000 | <500 or ≥6000 |
| Biomass (g/$m^2$) | ≥5-10 | 1-5 or ≥10-30 | <1 or ≥30 |
| Abundance of pollution-indicative taxa (%) | ≤10 | 10-20 | >20 |
| Biomass of pollution-sensitive taxa (%) | ≥80 | 40-80 | <40 |
| Biomass deeper than 5 cm (%) | ≥80 | 10-80 | <10 |

Table 9. Continued.

| | Scoring Criteria | | |
|---|---|---|---|
| | **5** | **3** | **1** |
| High Mesohaline Sand | | | |
| Shannon-Wiener | ≥3.2 | 2.5-3.2 | <2.5 |
| Abundance (#/$m^2$) | ≥1500-3000 | 1000-1500 or ≥3000-5000 | <1000 or ≥5000 |
| Biomass (g/$m^2$) | ≥3-15 | 1-3 or ≥15-50 | <1 or ≥50 |
| Abundance of pollution-indicative taxa (%) | ≤10 | 10-25 | >25 |
| Abundance of pollution-sensitive taxa (%) | ≥40 | 10-40 | <10 |
| Abundance of carnivores and omnivores (%) | ≥35 | 20-35 | <20 |
| High Mesohaline Mud | | | |
| Shannon-Wiener | ≥3.0 | 2.0-3.0 | <2.0 |
| Abundance (#/$m^2$) | ≥1500-2500 | 1000-1500 or ≥2500-5000 | <1000 or ≥5000 |
| Biomass (g/$m^2$) | ≥2-10 | 0.5-2 or ≥10-50 | <0.5 or ≥50 |
| Biomass of pollution-indicative taxa (%) | ≤5 | 5-30 | >30 |
| Biomass of pollution-sensitive taxa (%) | ≥60 | 30-60 | <30 |
| Abundance of carnivores and omnivores (%) | ≥25 | 10-25 | <10 |
| Biomass deeper than 5 cm (%) | ≥60 | 10-60 | <10 |
| Polyhaline Sand | | | |
| Shannon-Wiener | ≥3.5 | 2.7-3.5 | <2.7 |
| Abundance (#/$m^2$) | ≥3000-5000 | 1500-3000 or ≥5000-8000 | <1500 or ≥8000 |
| Biomass (g/$m^2$) | ≥5-20 | 1-5 or ≥20-50 | <1 or ≥50 |
| Biomass of pollution-indicative taxa (%) | ≤5 | 5-15 | >15 |
| Abundance of pollution-sensitive taxa (%) | ≥50 | 25-50 | <25 |
| Abundance of deep-deposit feeders (%) | ≥25 | 10-25 | <10 |

Table 9. Continued.

| | Scoring Criteria | | |
|---|---|---|---|
| | **5** | **3** | **1** |
| Polyhaline Mud | | | |
| Shannon-Wiener | ≥3.3 | 2.4-3.3 | <2.4 |
| Abundance (#/$m^2$) | ≥1500-3000 | 1000-1500 or ≥3000-8000 | <1000 or ≥8000 |
| Biomass (g/$m^2$) | ≥3-10 | 0.5-3 or ≥10-30 | <0.5 or ≥30 |
| Biomass of pollution-indicative taxa (%) | ≤5 | 5-20 | >20 |
| Biomass of pollution-sensitive taxa (%) | ≥60 | 30-60 | <30 |
| Abundance of carnivores and omnivores | ≥40 | 25-40 | <25 |
| Number of taxa >5 cm below the sediment-water interface (%) | ≥40 | 10-40 | <10 |

Table 10. Abundance-based thresholds that may be substituted for biomass-based thresholds. Corrected from Weisberg et al. (1997).

| | Scoring Criteria | | |
|---|---|---|---|
| | **5** | **3** | **1** |
| Low Mesohaline | | | |
| Abundance of pollution-sensitive taxa (%) | ≥25 | 5-25 | <5 |
| High Mesohaline Mud | | | |
| Abundance of pollution-indicative taxa (%) | ≤20 | 20-50 | >50 |
| Abundance of pollution-sensitive taxa (%) | ≥30 | 10-30 | <10 |
| Polyhaline Sand | | | |
| Abundance of pollution-indicative taxa (%) | ≤10 | 10-40 | >40 |
| Polyhaline Mud | | | |
| Abundance of pollution-indicative taxa (%) | ≤15 | 15-50 | >50 |
| Abundance of pollution-sensitive taxa (%) | ≥40 | 25-40 | <25 |

Table 11.  B-IBI ranges and benthic community condition used by the Chesapeake Bay Benthic Monitoring Program.

| B-IBI | Benthic Community Condition |
|---|---|
| $\geq 3.0$ | Meets restoration goals |
| 2.7-2.9 | Marginal |
| 2.1-2.6 | Degraded |
| $\leq 2.0$ | Severely degraded |

# Appendix E

# Results

# Appendix E-1

## Sediment Core Profiling

# CORE PROCESSING SUMMARY

## QUANTICO
## 2-MONTH MONITORING EVENT
## SEPTEMBER 2014

RAMBOLL ENVIRON

# 2-Month Sediment Core Profiling

## Station 1

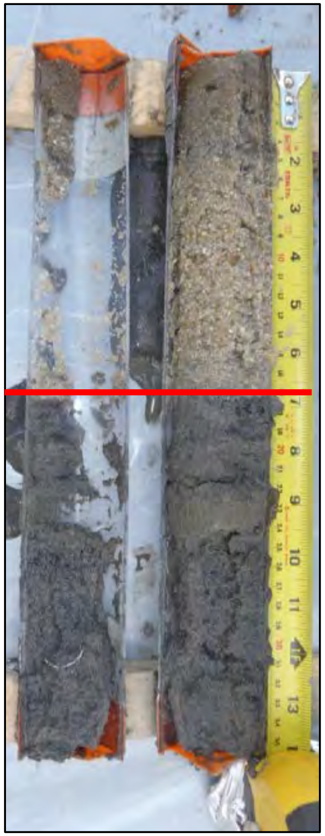
Red line indicates cap-sediment interface

QT2-1-1-CORE

QT2-1-2-CORE

QT2-1-3-CORE

QT2-1-4-CORE



QT2-1-5-CORE

# 2-Month Sediment Core Profiling

## Station 2

Red line indicates cap-sediment interface

QT2-2-1-CORE

QT2-2-2-CORE

QT2-2-3-CORE

QT2-2-4-CORE

QT2-2-5-CORE

# 2-Month Sediment Core Profiling
## Station 3

Red line indicates cap-sediment interface

QT2-3-1-CORE

QT2-3-2-CORE

QT2-3-3-CORE

QT2-3-4-CORE

QT2-3-5-CORE

# 2-Month Sediment Core Profiling

## Station 4

Red line indicates cap-sediment interface

QT2-4-1-CORE

QT2-4-2-CORE

QT2-4-3-CORE

QT2-4-4-CORE

QT2-4-5-CORE

# 2-Month Sediment Core Profiling

## Station 5

Red line indicates cap-sediment interface

QT2-5-1-CORE

QT2-5-2-CORE

QT2-5-3-CORE

QT2-5-4-CORE

QT2-5-5-CORE

# 2-Month Sediment Core Profiling

## Station 5-Duplicate

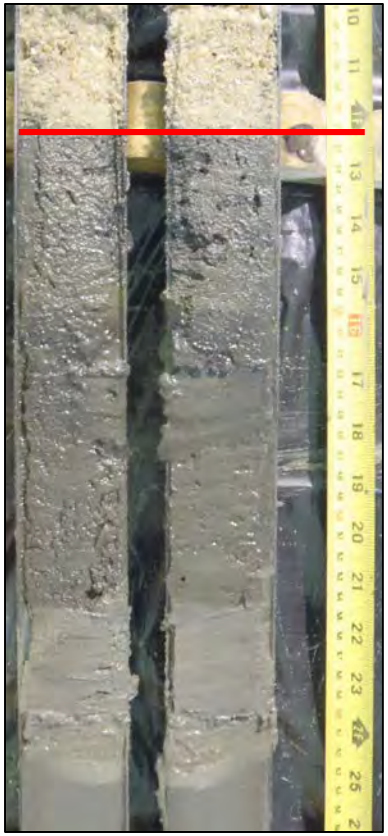
Red line indicates cap-sediment interface

QT2-5DUP-1-CORE

QT2-5DUP-2-CORE

QT2-5DUP-3-CORE

QT2-5DUP-4-CORE



QT2-5DUP-5-CORE

**Table 1: Core Processing Log for 2-Month Event**
Quantico Marine Corps Base
Quantico, Virginia

| Sample ID | Processing Date | Start Depth of Interval (cm) | End Depth of Interval (cm) | Sediment Texture | Orientation to Cap Interface with Native Sediment | Notes |
|---|---|---|---|---|---|---|
| QT2-1-1-CORE | 9/23/2014 | 0 | 12 | Coarse sand | Above | |
| QT2-1-1-CORE | 9/23/2014 | 12 | 16 | Very coarse sand with gravel | Above | |
| QT2-1-1-CORE | 9/23/2014 | 16 | 31 | Silty sand | Below | |
| QT2-1-1-CORE | 9/23/2014 | 31 | 58 | Silty clay | Below | |
| QT2-1-2-CORE | 9/23/2014 | 0 | 18 | Coarse sand | Above | |
| QT2-1-2-CORE | 9/23/2014 | 18 | 39 | Silty sand | Below | Oligochaetes at depths of 30 to 38 cm |
| QT2-1-2-CORE | 9/23/2014 | 39 | 62 | Silty clay | Below | |
| QT2-1-3-CORE | 9/23/2014 | 0 | 6 | Coarse sand | Above | |
| QT2-1-3-CORE | 9/23/2014 | 6 | 18 | Coarse sand with gravel | Above | |
| QT2-1-3-CORE | 9/23/2014 | 18 | 37 | Silty sand | Below | |
| QT2-1-3-CORE | 9/23/2014 | 37 | 72 | Silty clay | Below | |
| QT2-1-4-CORE | 9/23/2014 | 0 | 6 | Coarse sand | Above | |
| QT2-1-4-CORE | 9/23/2014 | 6 | 16 | Coarse sand with gravel | Above | |
| QT2-1-4-CORE | 9/23/2014 | 16 | 18 | Coarse sand | Above | |
| QT2-1-4-CORE | 9/23/2014 | 18 | 35 | Silty sand | Below | |
| QT2-1-5-CORE | 9/23/2014 | 0 | 3 | Coarse sand | Above | |
| QT2-1-5-CORE | 9/23/2014 | 3 | 16.5 | Coarse sand with gravel | Above | |
| QT2-1-5-CORE | 9/23/2014 | 16.5 | 18 | Coarse sand | Above | |
| QT2-1-5-CORE | 9/23/2014 | 18 | 37 | Silty sand | Below | |
| QT2-1-5-CORE | 9/23/2014 | 37 | 71 | Silty clay | Below | |
| QT2-2-1-CORE | 9/24/2014 | 0 | 18 | Coarse sand with gravel | Above | |
| QT2-2-1-CORE | 9/24/2014 | 18 | 33 | Coarse sand | Above | |
| QT2-2-1-CORE | 9/24/2014 | 33 | 39 | Coarse sand with gravel | Above | |
| QT2-2-1-CORE | 9/24/2014 | 39 | 47.5 | Coarse sand | Above | |
| QT2-2-1-CORE | 9/24/2014 | 47.5 | 58 | Silty sand | Below | |
| QT2-2-1-CORE | 9/24/2014 | 58 | 67 | Silty clay | Below | |
| QT2-2-1-CORE | 9/24/2014 | 67 | 74 | Clayey sand | Below | Organic matter |
| QT2-2-2-CORE | 9/24/2014 | 0 | 19 | Coarse sand with gravel | Above | |
| QT2-2-2-CORE | 9/24/2014 | 19 | 28 | Coarse sand | Above | |
| QT2-2-2-CORE | 9/24/2014 | 28 | 36 | Coarse sand with silt | Above | |
| QT2-2-2-CORE | 9/24/2014 | 36 | 45 | Silty sand | Below | |
| QT2-2-2-CORE | 9/24/2014 | 45 | 48 | Silty sand with coarse gravel | Below | Shell |
| QT2-2-2-CORE | 9/24/2014 | 48 | 52 | Silty clay | Below | |
| QT2-2-3-CORE | 9/24/2014 | 0 | 14 | Coarse sand with gravel | Above | |
| QT2-2-3-CORE | 9/24/2014 | 14 | 27 | Coarse sand | Above | |
| QT2-2-3-CORE | 9/24/2014 | 27 | 35.5 | Coarse sand with silt | Above | |
| QT2-2-3-CORE | 9/24/2014 | 35.5 | 48 | Silty sand | Below | Plant roots |

**Table 1: Core Processing Log for 2-Month Event**
Quantico Marine Corps Base
Quantico, Virginia

| Sample ID | Processing Date | Start Depth of Interval (cm) | End Depth of Interval (cm) | Sediment Texture | Orientation to Cap Interface with Native Sediment | Notes |
|---|---|---|---|---|---|---|
| QT2-2-3-CORE | 9/24/2014 | 48 | 67 | Silty clay | Below | |
| QT2-2-3-CORE | 9/24/2014 | 67 | 71 | Silty clay with sand | Below | |
| QT2-2-3-CORE | 9/24/2014 | 71 | 75 | Silty clay | Below | |
| QT2-2-4-CORE | 9/24/2014 | 0 | 7 | Coarse sand with gravel | Above | |
| QT2-2-4-CORE | 9/24/2014 | 7 | 10 | Silty clay with gravel | Above | |
| QT2-2-4-CORE | 9/24/2014 | 10 | 18 | Coarse sand | Above | |
| QT2-2-4-CORE | 9/24/2014 | 18 | 43 | Coarse sand with gravel | Above | |
| QT2-2-4-CORE | 9/24/2014 | 43 | 54 | Silty clay | Below | |
| QT2-2-4-CORE | 9/24/2014 | 54 | 56 | Silty sand | Below | |
| QT2-2-4-CORE | 9/24/2014 | 56 | 60 | Silty sand | Below | Plant roots at depths of 56 to 57 cm |
| QT2-2-5-CORE | 9/24/2014 | 0 | 1 | Silty sand | Above | |
| QT2-2-5-CORE | 9/24/2014 | 1 | 5 | Coarse sand with gravel | Above | |
| QT2-2-5-CORE | 9/24/2014 | 5 | 30 | Coarse sand | Above | |
| QT2-2-5-CORE | 9/24/2014 | 30 | 47 | Silty sand | Above | Plant roots at depths of 37 to 47 cm |
| QT2-2-5-CORE | 9/24/2014 | 47 | 58 | Silty clay | Below | |
| QT2-2-5-CORE | 9/24/2014 | 58 | 67.5 | Silty clay with sand | Below | |
| QT2-3-1-CORE | 9/24/2014 | 0 | 12 | Coarse sand | Above | |
| QT2-3-1-CORE | 9/24/2014 | 12 | 26 | Coarse sand with gravel | Above | |
| QT2-3-1-CORE | 9/24/2014 | 26 | 83 | Silty sand | Below | Plant roots at depths of 30 to 40 cm |
| QT2-3-1-CORE | 9/24/2014 | 83 | 89 | Silty clay | Below | |
| QT2-3-2-CORE | 9/24/2014 | 0 | 8 | Coarse sand with gravel | Above | |
| QT2-3-2-CORE | 9/24/2014 | 8 | 16 | Coarse sand with silty clay | Above | |
| QT2-3-2-CORE | 9/24/2014 | 16 | 32 | Coarse sand with gravel | Above | |
| QT2-3-2-CORE | 9/24/2014 | 32 | 104 | Silty sand | Below | Plant roots at depths of 36 to 49; Red gravel at depths of 54 to 56 cm |
| QT2-3-2-CORE | 9/24/2014 | 104 | 109 | Silty clay | Below | |
| QT2-3-3-CORE | 9/24/2014 | 0 | 14 | Coarse sand | Above | |
| QT2-3-3-CORE | 9/24/2014 | 14 | 15 | Silty clay with sand | Above | |
| QT2-3-3-CORE | 9/24/2014 | 15 | 21 | Coarse sand | Above | |
| QT2-3-3-CORE | 9/24/2014 | 21 | 30 | Coarse sand with gravel | Above | |
| QT2-3-3-CORE | 9/24/2014 | 30 | 33.5 | Silty sand | Below | Shell |
| QT2-3-3-CORE | 9/24/2014 | 33.5 | 34.5 | Silty clay | Below | Plant roots |
| QT2-3-3-CORE | 9/24/2014 | 34.5 | 66 | Silty sand | Below | Plant roots at depths of 34.5 to 44 cm |
| QT2-3-3-CORE | 9/24/2014 | 66 | 82.5 | Silty sand with clay | Below | |
| QT2-3-3-CORE | 9/24/2014 | 82.5 | 83.5 | Clay with silt | Below | |
| QT2-3-4-CORE | 9/24/2014 | 0 | 3 | Coarse sand | Above | |
| QT2-3-4-CORE | 9/24/2014 | 3 | 11 | Coarse sand with gravel and silt | Above | |
| QT2-3-4-CORE | 9/24/2014 | 11 | 28.5 | Coarse sand with gravel | Above | |

**Table 1: Core Processing Log for 2-Month Event**
Quantico Marine Corps Base
Quantico, Virginia

| Sample ID | Processing Date | Start Depth of Interval (cm) | End Depth of Interval (cm) | Sediment Texture | Orientation to Cap Interface with Native Sediment | Notes |
|---|---|---|---|---|---|---|
| QT2-3-4-CORE | 9/24/2014 | 28.5 | 90 | Silty sand | Below | Plant roots at depths of 32 to 38 cm |
| QT2-3-5-CORE | 9/24/2014 | 0 | 5 | Coarse sand | Above | |
| QT2-3-5-CORE | 9/24/2014 | 5 | 22 | Coarse sand with gravel | Above | |
| QT2-3-5-CORE | 9/24/2014 | 22 | 44 | Silty sand | Below | |
| QT2-3-5-CORE | 9/24/2014 | 44 | 48 | Clay | Below | |
| QT2-3-5-CORE | 9/24/2014 | 48 | 69.5 | Clayey sand | Below | Band of organic matter (woody debris) at depths of 65 to 68 cm |
| QT2-3-5-CORE | 9/24/2014 | 69.5 | 75 | Silty sand | Below | |
| QT2-4-1-CORE | 9/24/2014 | 0 | 2 | Sandy silt | Above | |
| QT2-4-1-CORE | 9/24/2014 | 2 | 14 | Silty sand with gravel | Above | |
| QT2-4-1-CORE | 9/24/2014 | 14 | 22 | Coarse sand with gravel | Above | |
| QT2-4-1-CORE | 9/24/2014 | 22 | 25 | Silty sand with gravel | Above | |
| QT2-4-1-CORE | 9/24/2014 | 25 | 32 | Coarse sand with gravel | Above | |
| QT2-4-1-CORE | 9/24/2014 | 32 | 40 | Silty clay with sand | Below | |
| QT2-4-1-CORE | 9/24/2014 | 40 | 64 | Silty clay | Below | |
| QT2-4-2-CORE | 9/24/2014 | 0 | 2 | Sandy silt | Above | |
| QT2-4-2-CORE | 9/24/2014 | 2 | 5 | Coarse sand with gravel | Above | |
| QT2-4-2-CORE | 9/24/2014 | 5 | 14 | Coarse sand with silt | Above | |
| QT2-4-2-CORE | 9/24/2014 | 14 | 23 | Coarse sand with gravel | Above | |
| QT2-4-2-CORE | 9/24/2014 | 23 | 26 | Silty clay with sand | Above | Plant roots at depths of 24 to 25 cm |
| QT2-4-2-CORE | 9/24/2014 | 26 | 32 | Coarse sand with gravel | Above | |
| QT2-4-2-CORE | 9/24/2014 | 32 | 51 | Silty clay with sand | Below | Plant roots at depths of 35.5 to 39 cm |
| QT2-4-2-CORE | 9/24/2014 | 51 | 58 | Silty clay | Below | |
| QT2-4-3-CORE | 9/24/2014 | 0 | 5 | Silty coarse sand with gravel | Above | |
| QT2-4-3-CORE | 9/24/2014 | 5 | 6 | Silty sand | Above | |
| QT2-4-3-CORE | 9/24/2014 | 6 | 12 | Silty coarse sand with gravel | Above | |
| QT2-4-3-CORE | 9/24/2014 | 12 | 20 | Coarse sand with gravel | Above | |
| QT2-4-3-CORE | 9/24/2014 | 20 | 22 | Clayey sand with silt | Above | |
| QT2-4-3-CORE | 9/24/2014 | 22 | 31.5 | Coarse sand with gravel | Above | |
| QT2-4-3-CORE | 9/24/2014 | 31.5 | 53 | Silty clay with sand | Below | Plant roots at depths of 33 to 43 cm |
| QT2-4-3-CORE | 9/24/2014 | 53 | 67.5 | Silty clay | Below | |
| QT2-4-4-CORE | 9/24/2014 | 0 | 15 | Coarse sand with silt and gravel | Above | |
| QT2-4-4-CORE | 9/24/2014 | 15 | 23 | Coarse sand with gravel | Above | |
| QT2-4-4-CORE | 9/24/2014 | 23 | 26.5 | Silty sand | Above | |
| QT2-4-4-CORE | 9/24/2014 | 26.5 | 32 | Coarse sand with gravel | Above | |
| QT2-4-4-CORE | 9/24/2014 | 32 | 50 | Silty clay with sand | Below | Plant roots at depths of 32 to 39 cm |
| QT2-4-4-CORE | 9/24/2014 | 50 | 71.5 | Silty clay | Below | |
| QT2-4-5-CORE | 9/24/2014 | 0 | 7 | Coarse sand | Above | |

**Table 1: Core Processing Log for 2-Month Event**
Quantico Marine Corps Base
Quantico, Virginia

| Sample ID | Processing Date | Start Depth of Interval (cm) | End Depth of Interval (cm) | Sediment Texture | Orientation to Cap Interface with Native Sediment | Notes |
|---|---|---|---|---|---|---|
| QT2-4-5-CORE | 9/24/2014 | 7 | 15 | Silty sand with gravel | Above | |
| QT2-4-5-CORE | 9/24/2014 | 15 | 23 | Coarse sand with gravel | Above | |
| QT2-4-5-CORE | 9/24/2014 | 23 | 25 | Silt with sand | Above | Plant roots |
| QT2-4-5-CORE | 9/24/2014 | 25 | 34 | Coarse sand | Above | Clam |
| QT2-4-5-CORE | 9/24/2014 | 34 | 39.5 | Silty sand | Below | |
| QT2-4-5-CORE | 9/24/2014 | 39.5 | 61 | Silty clay | Below | Woody debris at depths of 40 to 41 cm |
| QT2-5-1-CORE | 9/24/2014 | 0 | 2.5 | Sand with silt | Above | |
| QT2-5-1-CORE | 9/24/2014 | 2.5 | 3.5 | Silt with sand | Above | |
| QT2-5-1-CORE | 9/24/2014 | 3.5 | 10 | Coarse sand with gravel | Above | Worm at depth of 10 cm |
| QT2-5-1-CORE | 9/24/2014 | 10 | 12 | Silt with sand | Above | |
| QT2-5-1-CORE | 9/24/2014 | 12 | 31 | Coarse sand with gravel | Above | |
| QT2-5-1-CORE | 9/24/2014 | 31 | 46 | Silty sand | Below | |
| QT2-5-1-CORE | 9/24/2014 | 46 | 85.5 | Clay with silt | Below | |
| QT2-5-2-CORE | 9/24/2014 | 0 | 8.5 | Silt with sand and gravel | Above | |
| QT2-5-2-CORE | 9/24/2014 | 8.5 | 12.5 | Coarse sand with gravel | Above | |
| QT2-5-2-CORE | 9/24/2014 | 12.5 | 14 | Silt with sand | Above | |
| QT2-5-2-CORE | 9/24/2014 | 14 | 31 | Coarse sand with gravel | Above | |
| QT2-5-2-CORE | 9/24/2014 | 31 | 50 | Silt with sand | Below | |
| QT2-5-2-CORE | 9/24/2014 | 50 | 83 | Silty clay | Below | |
| QT2-5-3-CORE | 9/24/2014 | 0 | 6 | Coarse sand with gravel | Above | |
| QT2-5-3-CORE | 9/24/2014 | 6 | 10 | Silt with sand | Above | |
| QT2-5-3-CORE | 9/24/2014 | 10 | 14 | Coarse sand with gravel | Above | |
| QT2-5-3-CORE | 9/24/2014 | 14 | 16 | Silt with sand | Above | |
| QT2-5-3-CORE | 9/24/2014 | 16 | 35.5 | Coarse sand with gravel | Above | |
| QT2-5-3-CORE | 9/24/2014 | 35.5 | 55 | Silty clay with sand | Below | |
| QT2-5-3-CORE | 9/24/2014 | 55 | 76 | Silty clay | Below | |
| QT2-5-4-CORE | 9/24/2014 | 0 | 5 | Coarse sand with silt | Above | |
| QT2-5-4-CORE | 9/24/2014 | 5 | 12 | Silt with sand | Above | Plant roots at depths of 7 to 10 cm |
| QT2-5-4-CORE | 9/24/2014 | 12 | 34 | Coarse sand with gravel | Above | |
| QT2-5-4-CORE | 9/24/2014 | 34 | 63 | Silty sand with clay | Below | |
| QT2-5-4-CORE | 9/24/2014 | 63 | 80 | Silty clay | Below | |
| QT2-5-5-CORE | 9/24/2014 | 0 | 9 | Silt with sand | Above | |
| QT2-5-5-CORE | 9/24/2014 | 9 | 33 | Coarse sand with gravel | Above | |
| QT2-5-5-CORE | 9/24/2014 | 33 | 53 | Silty sand with clay | Below | |
| QT2-5-5-CORE | 9/24/2014 | 53 | 72 | Silty clay | Below | |
| QT2-5DUP-1-CORE | 9/25/2014 | 0 | 9 | Silty sand | Above | |
| QT2-5DUP-1-CORE | 9/25/2014 | 9 | 30.5 | Coarse sand with gravel | Above | |

**Table 1: Core Processing Log for 2-Month Event**
Quantico Marine Corps Base
Quantico, Virginia

| Sample ID | Processing Date | Start Depth of Interval (cm) | End Depth of Interval (cm) | Sediment Texture | Orientation to Cap Interface with Native Sediment | Notes |
|---|---|---|---|---|---|---|
| QT2-5DUP-1-CORE | 9/25/2014 | 30.5 | 54.5 | Silty sand | Below | Minor plant roots at depths of 30.5 to 35 cm |
| QT2-5DUP-1-CORE | 9/25/2014 | 54.5 | 74.5 | Silty clay | Below | |
| QT2-5DUP-2-CORE | 9/25/2014 | 0 | 9.5 | Silty sand | Above | |
| QT2-5DUP-2-CORE | 9/25/2014 | 9.5 | 17 | Coarse sand with silt | Above | |
| QT2-5DUP-2-CORE | 9/25/2014 | 17 | 20.5 | Coarse sand with gravel | Above | |
| QT2-5DUP-2-CORE | 9/25/2014 | 20.5 | 33 | Coarse sand with minor silt | Above | |
| QT2-5DUP-2-CORE | 9/25/2014 | 33 | 52 | Silty sand | Below | |
| QT2-5DUP-2-CORE | 9/25/2014 | 52 | 84 | Silty clay | Below | |
| QT2-5DUP-3-CORE | 9/25/2014 | 0 | 6 | Silty sand | Above | |
| QT2-5DUP-3-CORE | 9/25/2014 | 6 | 13.5 | Silt with sand | Above | Minor plant roots |
| QT2-5DUP-3-CORE | 9/25/2014 | 13.5 | 15.5 | Coarse sand | Above | |
| QT2-5DUP-3-CORE | 9/25/2014 | 15.5 | 17 | Silt with sand | Above | Minor plant roots |
| QT2-5DUP-3-CORE | 9/25/2014 | 17 | 33 | Coarse sand with gravel | Above | |
| QT2-5DUP-3-CORE | 9/25/2014 | 33 | 54.5 | Silty sand | Below | |
| QT2-5DUP-3-CORE | 9/25/2014 | 54.5 | 81 | Silty clay | Below | |
| QT2-5DUP-4-CORE | 9/25/2014 | 0 | 15 | Silty sand | Above | Cap/water interface slightly askew and water released when core opened |
| QT2-5DUP-4-CORE | 9/25/2014 | 15 | 23.5 | Coarse sand | Above | |
| QT2-5DUP-4-CORE | 9/25/2014 | 23.5 | 33 | Coarse sand with gravel | Above | |
| QT2-5DUP-4-CORE | 9/25/2014 | 33 | 54 | Silty sand | Below | |
| QT2-5DUP-4-CORE | 9/25/2014 | 54 | 90 | Silty clay | Below | Shell at 88 cm |
| QT2-5DUP-5-CORE | 9/25/2014 | 0 | 4 | Sand with silt | Above | |
| QT2-5DUP-5-CORE | 9/25/2014 | 4 | 8 | Silt with minor sand | Above | |
| QT2-5DUP-5-CORE | 9/25/2014 | 8 | 11 | Coarse sand with gravel | Above | |
| QT2-5DUP-5-CORE | 9/25/2014 | 11 | 15 | Silty sand | Above | |
| QT2-5DUP-5-CORE | 9/25/2014 | 15 | 34 | Coarse sand with gravel | Above | |
| QT2-5DUP-5-CORE | 9/25/2014 | 34 | 50 | Silty sand | Below | |
| QT2-5DUP-5-CORE | 9/25/2014 | 50 | 77.5 | Silty clay | Below | |

**Notes:**
1.) Intervals less than 1 cm were not logged.
2.) Plant roots were likely Hydrilla.
3.) Abbreviations:
cm: centimeters

**Table 2: Summary of Cap-Native Sediment Interface for 2-Month Event**
Quantico Marine Corps Base
Quantico, Virginia

| Table 2.A. Summary by Core | |
|---|---|
| Core | Depth of Cap-Native Sediment Interface (centimeters below water-cap interface) |
| QT2-1-1-CORE | 16 |
| QT2-1-2-CORE | 18 |
| QT2-1-3-CORE | 18 |
| QT2-1-4-CORE | 18 |
| QT2-1-5-CORE | 18 |
| QT2-2-1-CORE | 47.5 |
| QT2-2-2-CORE | 36 |
| QT2-2-3-CORE | 35.5 |
| QT2-2-4-CORE | 43 |
| QT2-2-5-CORE | 37 |
| QT2-3-1-CORE | 26 |
| QT2-3-2-CORE | 32 |
| QT2-3-3-CORE | 30 |
| QT2-3-4-CORE | 28.5 |
| QT2-3-5-CORE | 22 |
| QT2-4-1-CORE | 32 |
| QT2-4-2-CORE | 32 |
| QT2-4-3-CORE | 31.5 |
| QT2-4-4-CORE | 32 |
| QT2-4-5-CORE | 34 |
| QT2-5-1-CORE | 31 |
| QT2-5-2-CORE | 31 |
| QT2-5-3-CORE | 35.5 |
| QT2-5-4-CORE | 34 |
| QT2-5-5-CORE | 33 |
| QT2-5DUP-1-CORE | 30.5 |
| QT2-5DUP-2-CORE | 33 |
| QT2-5DUP-3-CORE | 33 |
| QT2-5DUP-4-CORE | 33 |
| QT2-5DUP-5-CORE | 34 |

| Table 2.B. Summary by Statistics | |
|---|---|
| Station | Depth of Cap-Native Sediment Interface (centimeters below water-cap interface) [Average ± Standard Deviation (Minimum - Maximum)] |
| QT2-1 | 18 ± 1 (16 - 18) |
| QT2-2 | 40 ± 5 (35.5 - 47.5) |
| QT2-3 | 28 ± 4 (22 - 32) |
| QT2-4 | 32 ± 1 (31.5 - 34) |
| QT2-5 | 33 ± 2 (31 - 35.5) |
| QT2-5DUP | 33 ± 1 (30.5 - 34) |

Photo 1: QT2-1-BENTHIC

Photo 2: QT2-2-BENTHIC

Photo 3: QT2-3-BENTHIC

Photo 4: QT2-4-BENTHIC

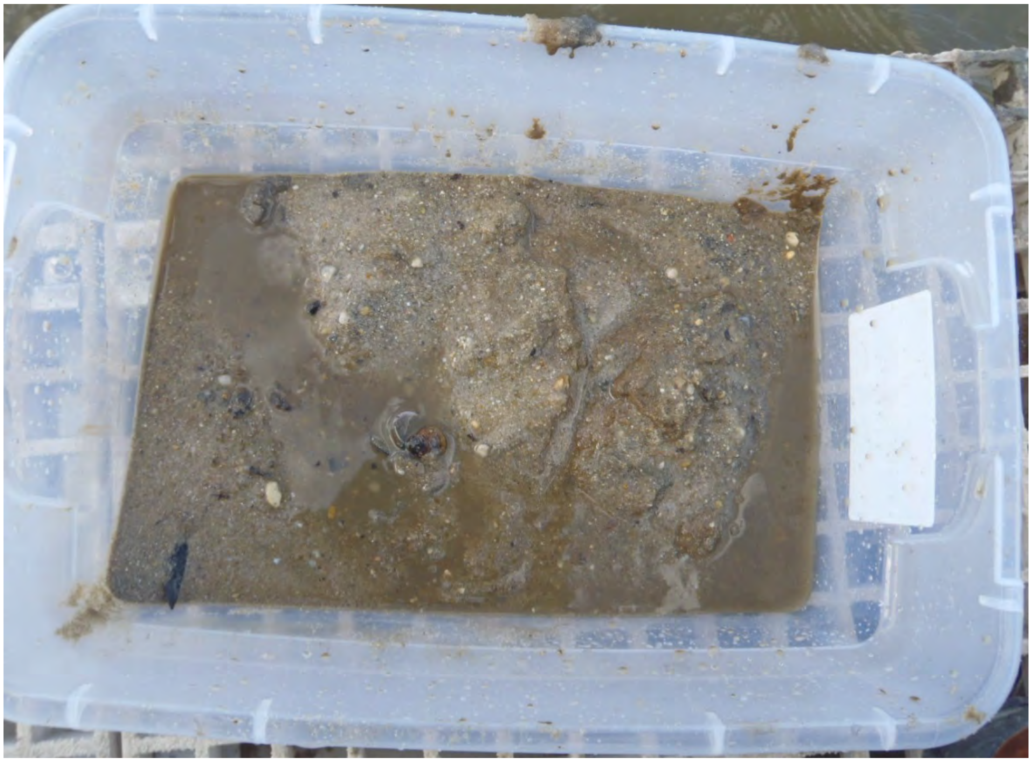


Photo 5: QT2-5-BENTHIC

Photo 6: QT2-7-GRAB

Photo 7: QT2-7-BENTHIC

Photo 8: QT2-6-GRAB

Photo 9: QT2-1 Five cores

Photo 10: QT2-1-1-CORE, QT2-1-2-CORE, QT2-1-3-CORE, QT2-1-4-CORE, and QT2-1-5-CORE (listed bottom to top)

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**Site Photographs**
2-Month Post Cap Placement
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September 2014

Photo 11: QT2-1-1-CORE, QT2-1-2-CORE, and QT2-1-3-CORE (listed bottom to top)

Photo 12: QT2-1-4-CORE and QT2-1-5-CORE (listed bottom to top)

Photo 13: QT2-1-1-CORE

Photo 14: QT2-1-2-CORE

Photo 15: QT2-1-2-CORE

Photo 16: QT2-1-3-CORE

Photo 17: QT2-1-3-CORE

Photo 18: QT2-1-4-CORE

Photo 19: QT2-1-5-CORE

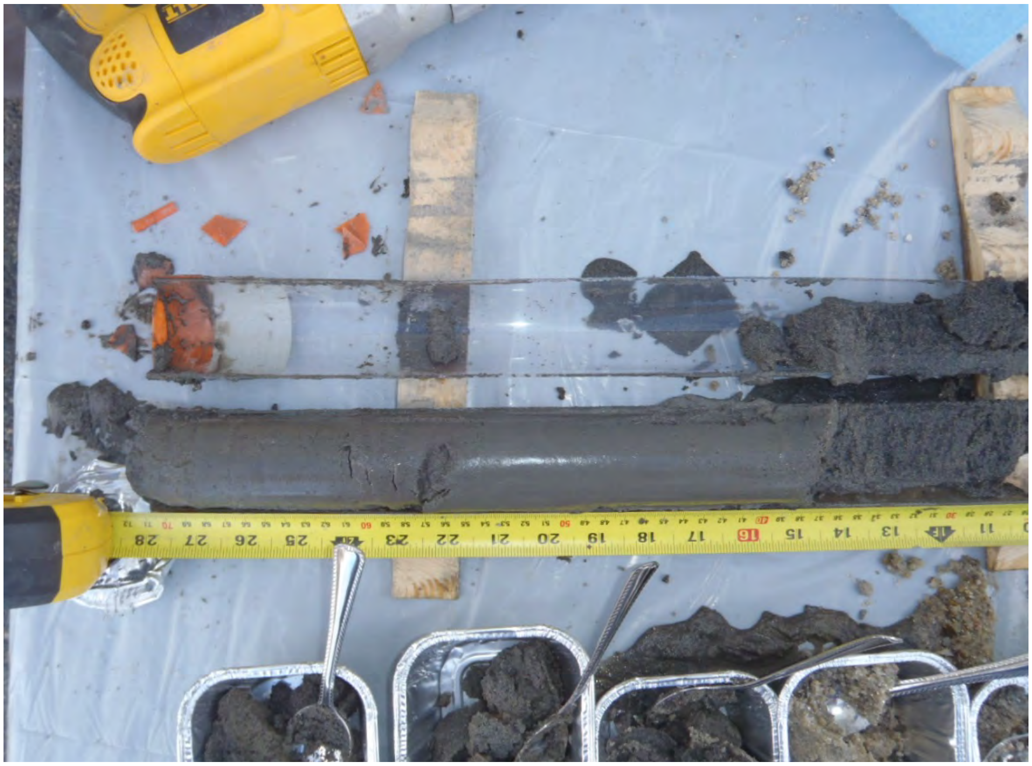

Photo 20: QT2-1-5-CORE

| | |
|---|---|
| RAMBOLL ENVIRON | **Site Photographs**<br>2-Month Post Cap Placement<br>Quantico, VA<br>September 2014 |

Photo 21: QT2-2 Five cores

Photo 22: QT2-2-1-CORE, QT2-2-2-CORE, QT2-2-3-CORE, QT2-2-4-CORE, and QT2-2-5-CORE (listed bottom to top)

Photo 23: QT2-2-1-CORE, QT2-2-2-CORE, QT2-2-3-CORE, QT2-2-4-CORE, and QT2-2-5-CORE (listed bottom to top)

Photo 24: QT2-2-1-CORE

Photo 25: QT2-2-1-CORE

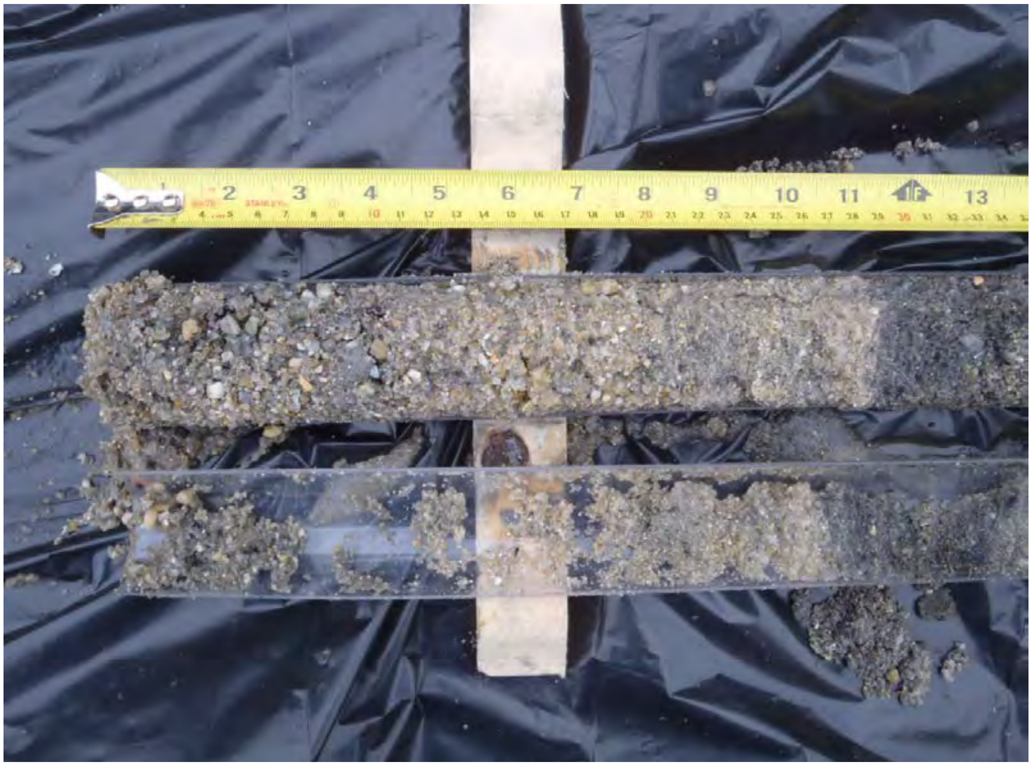

Photo 26: QT2-2-2-CORE

Site Photographs
2-Month Post Cap Placement
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Photo 27: QT2-2-2-CORE

Photo 28: QT2-2-3-CORE

Photo 29: QT2-2-3-CORE

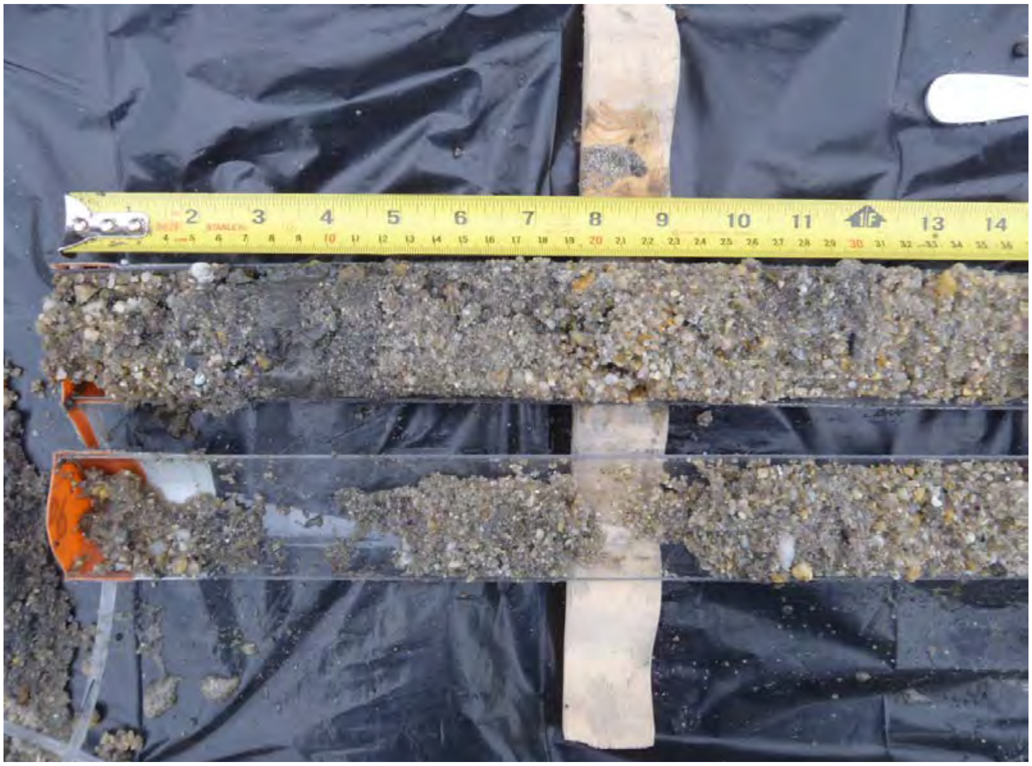

Photo 30: QT2-2-4-CORE

Photo 31: QT2-2-4-CORE

Photo 32: QT2-2-4-CORE

Photo 33: QT2-2-5-CORE

Photo 34: QT2-2-5-CORE

Photo 35: QT2-3 Five cores

Photo 36: QT2-3-1-CORE, QT2-3-2-CORE, QT2-3-3-CORE, QT2-3-4-CORE, and QT2-3-5-CORE (listed bottom to top)

Photo 37: QT2-3-1-CORE, QT2-3-2-CORE, QT2-3-3-CORE, QT2-3-4-CORE, and QT2-3-5-CORE (listed bottom to top)

Photo 38: QT2-3-1-CORE, QT2-3-2-CORE, QT2-3-3-CORE, QT2-3-4-CORE, and QT2-3-5-CORE (listed bottom to top)

Photo 39: QT2-3-1-CORE

Photo 40: QT2-3-1-CORE

Photo 41: QT2-3-1-CORE

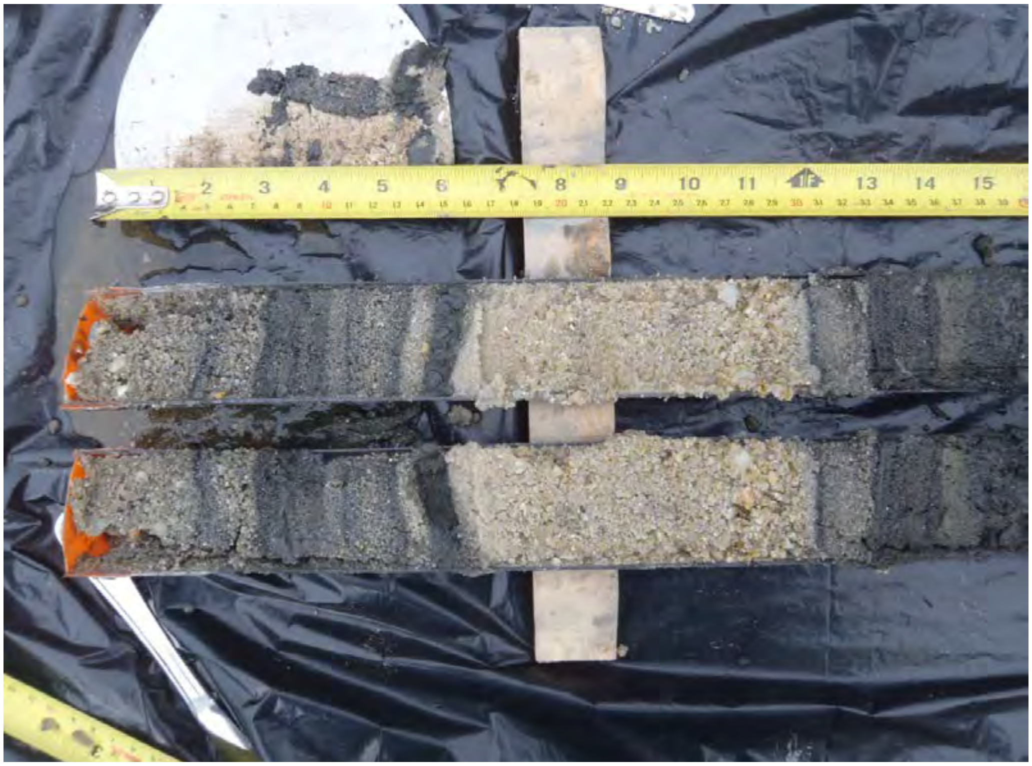

Photo 42: QT2-3-2-CORE

| | |
|---|---|
| RAMBOLL ENVIRON | **Site Photographs**<br>2-Month Post Cap Placement<br>Quantico, VA<br>September 2014 |

Photo 43: QT2-3-2-CORE

Photo 44: QT2-3-2-CORE

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**Site Photographs**
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Photo 45: QT2-3-2-CORE

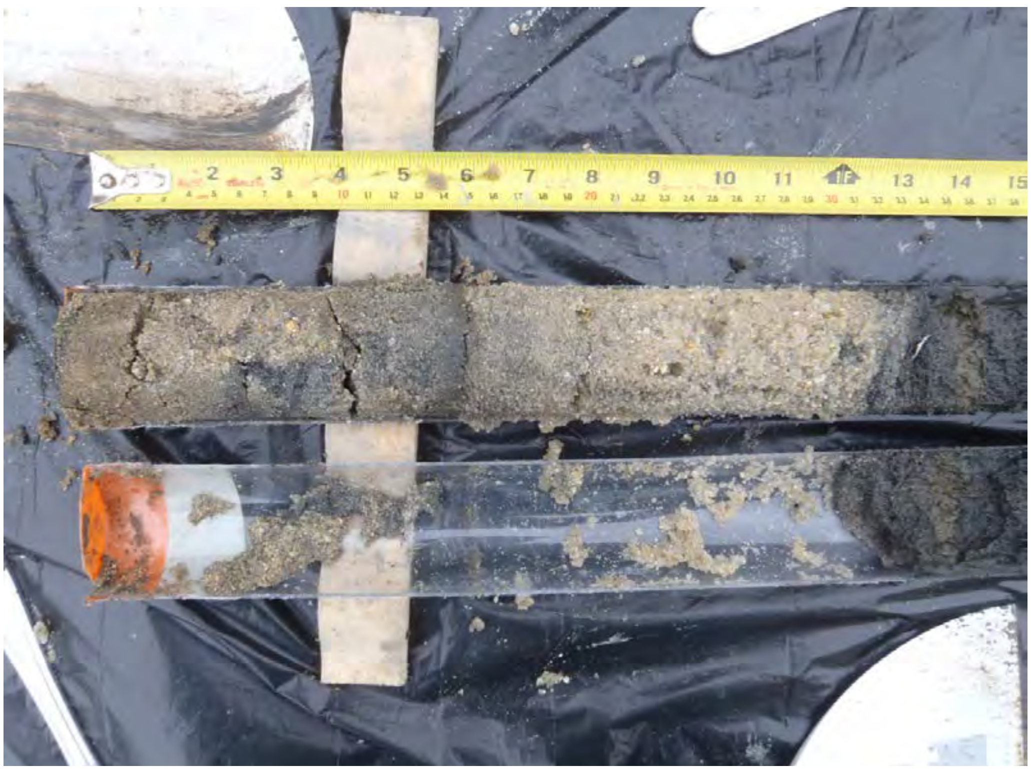

Photo 46: QT2-3-3-CORE

Photo 47: QT2-3-3-CORE

Photo 48: QT2-3-3-CORE

Photo 49:    QT2-3-4-CORE

Photo 50:    QT2-3-4-CORE

Photo 51: QT2-3-4-CORE

Photo 52: QT2-3-5-CORE

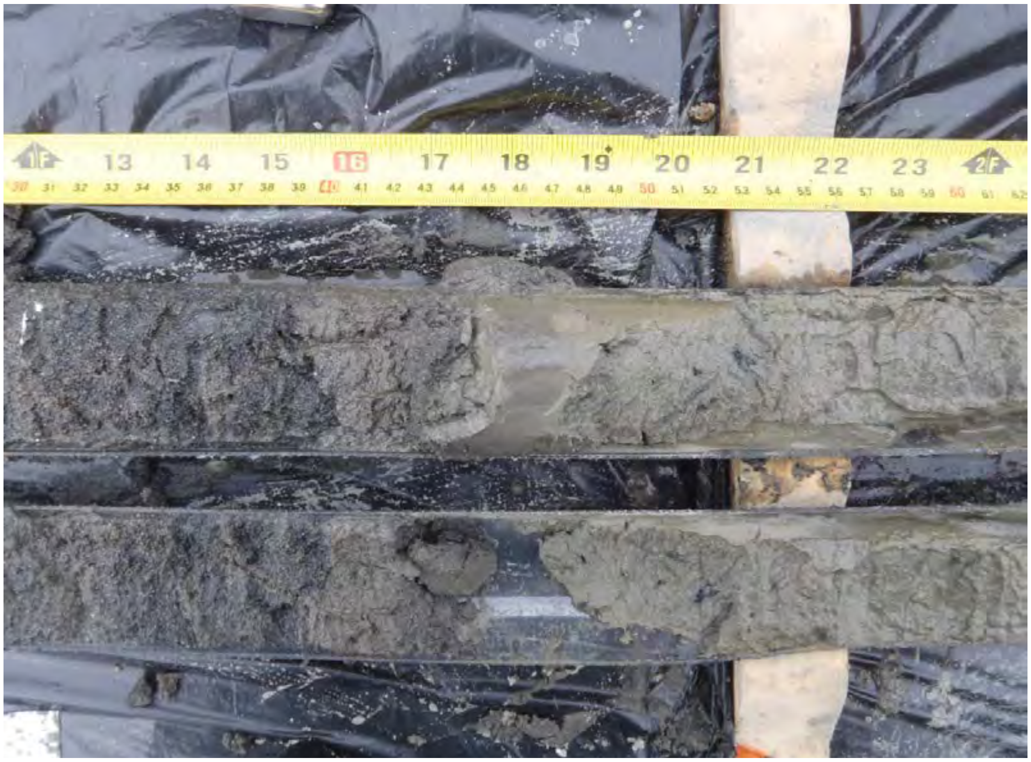

Photo 53:	QT2-3-5-CORE

Photo 54:	QT2-3-5-CORE


Photo 55: QT2-4 Five cores

Photo 56: QT2-4-1-CORE, QT2-4-2-CORE, QT2-4-3-CORE, QT2-4-4-CORE, and QT2-4-5-CORE (listed bottom to top)

Photo 57: QT2-4-1-CORE, QT2-4-2-CORE, QT2-4-3-CORE, QT2-4-4-CORE, and QT2-4-5-CORE (listed bottom to top)

Photo 58: QT2-4-1-CORE

Photo 59: QT2-4-1-CORE

Photo 60: QT2-4-2-CORE

Photo 61: QT2-4-2-CORE

Photo 62: QT2-4-3-CORE

Photo 63: QT2-4-3-CORE

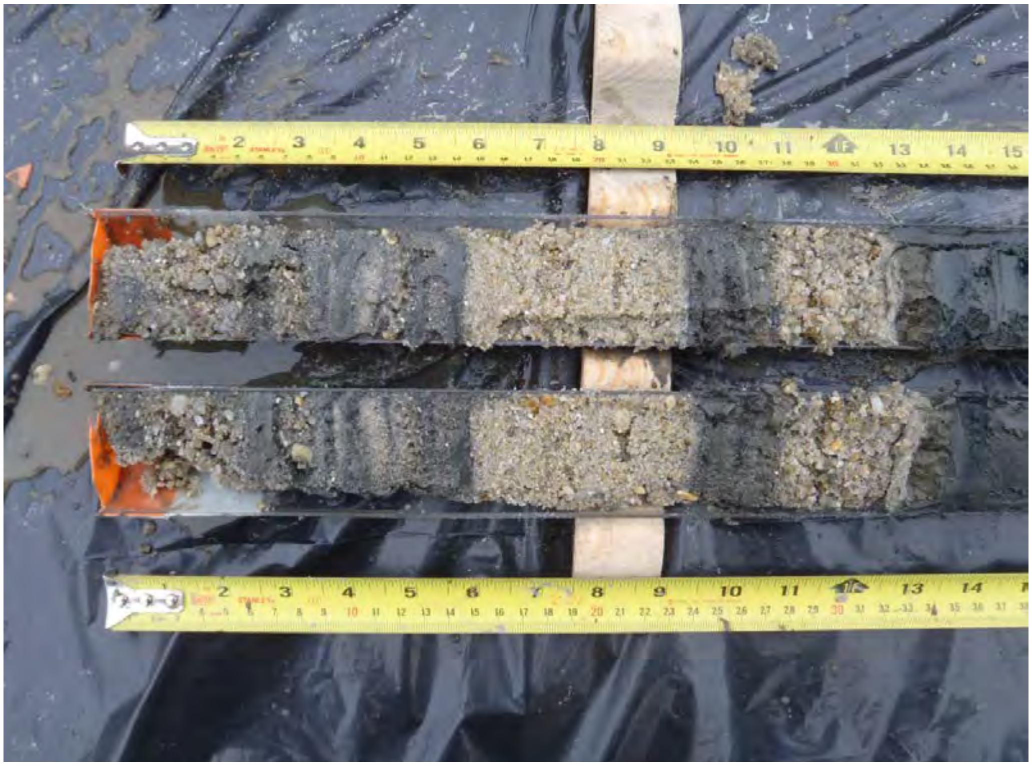

Photo 64: QT2-4-4-CORE

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**Site Photographs**

2-Month Post Cap Placement

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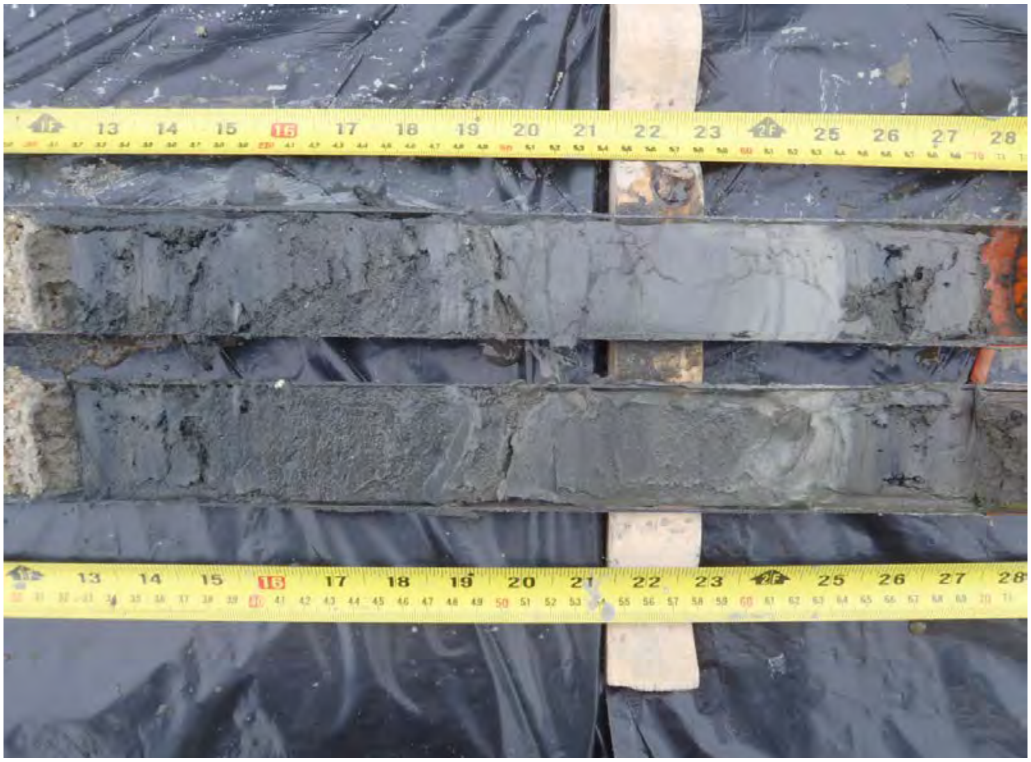

Photo 65: QT2-4-4-CORE

Photo 66: QT2-4-5-CORE

Photo 67: QT2-4-5-CORE


Photo 68: QT2-5 Five cores

Photo 69: QT2-5-1-CORE, QT2-5-2-CORE, QT2-5-3-CORE, QT2-5-4-CORE, and QT2-5-5-CORE (listed bottom to top)

Photo 70: QT2-5-1-CORE, QT2-5-2-CORE, QT2-5-3-CORE, QT2-5-4-CORE, and QT2-5-5-CORE (listed bottom to top)

Photo 71: QT2-5-1-CORE

Photo 72: QT2-5-1-CORE

Photo 73: QT2-5-1-CORE

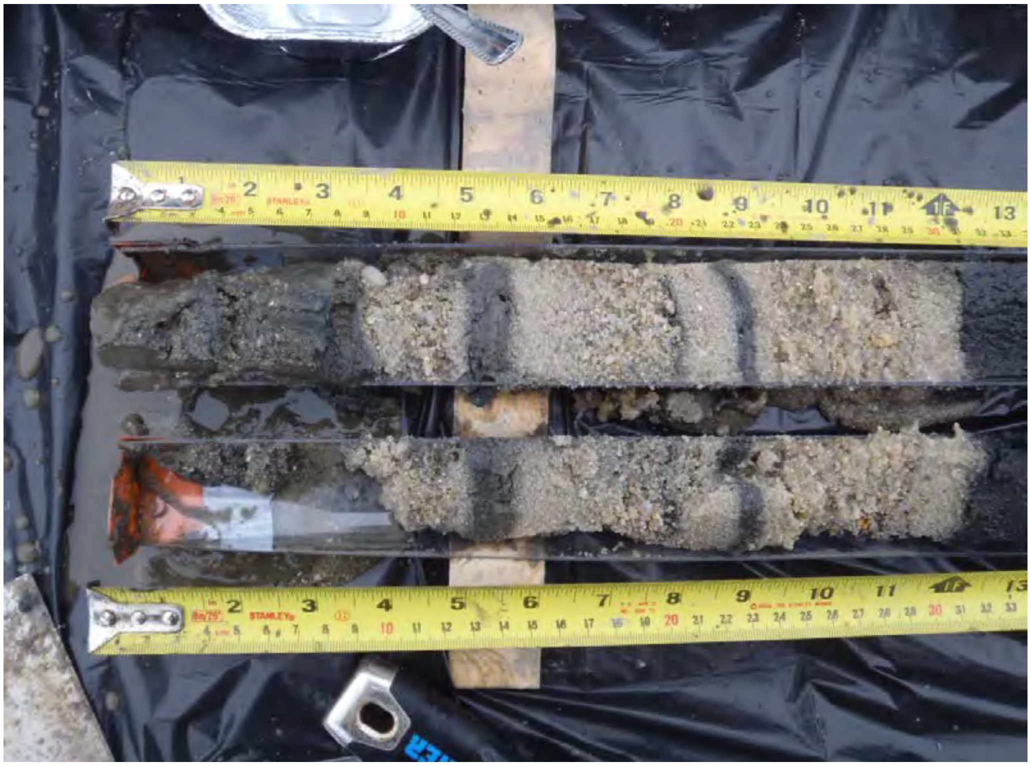

Photo 74: QT2-5-2-CORE

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**Site Photographs**
2-Month Post Cap Placement
Quantico, VA
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Photo 75: QT2-5-2-CORE

Photo 76: QT2-5-2-CORE

Photo 77: QT2-5-3-CORE

Photo 78: QT2-5-3-CORE

Photo 79: QT2-5-3-CORE

Photo 80: QT2-5-4-CORE

Photo 81: QT2-5-4-CORE

Photo 82: QT2-5-4-CORE

Photo 83: QT2-5-5-CORE

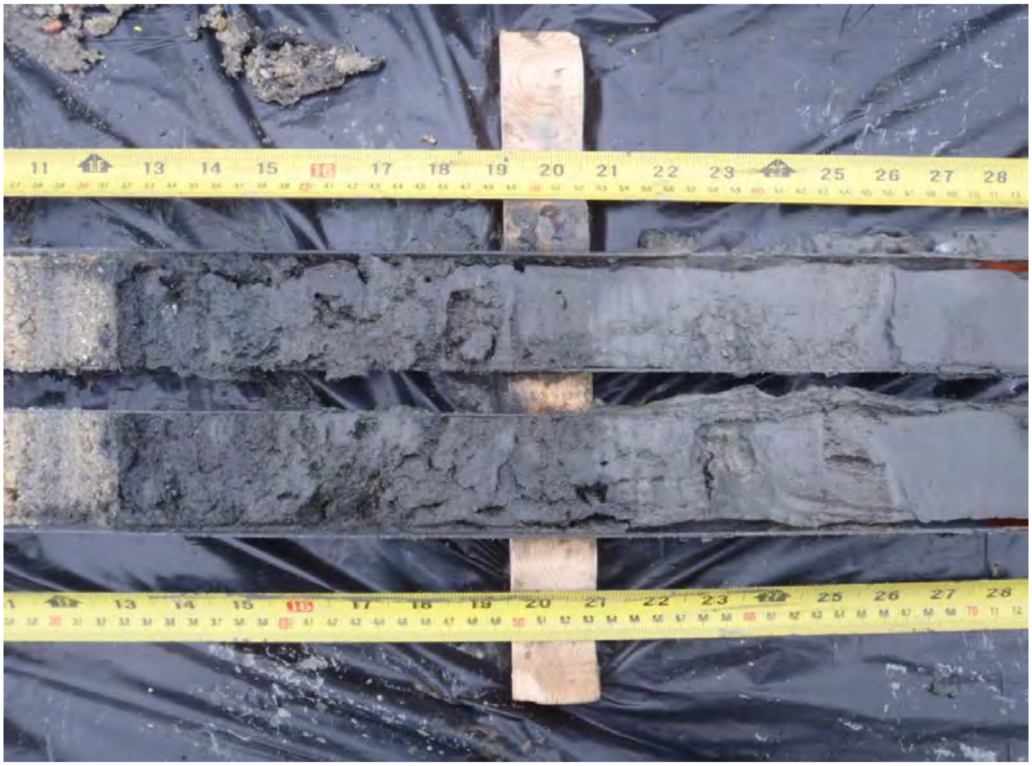

Photo 84: QT2-5-5-CORE

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**Site Photographs**
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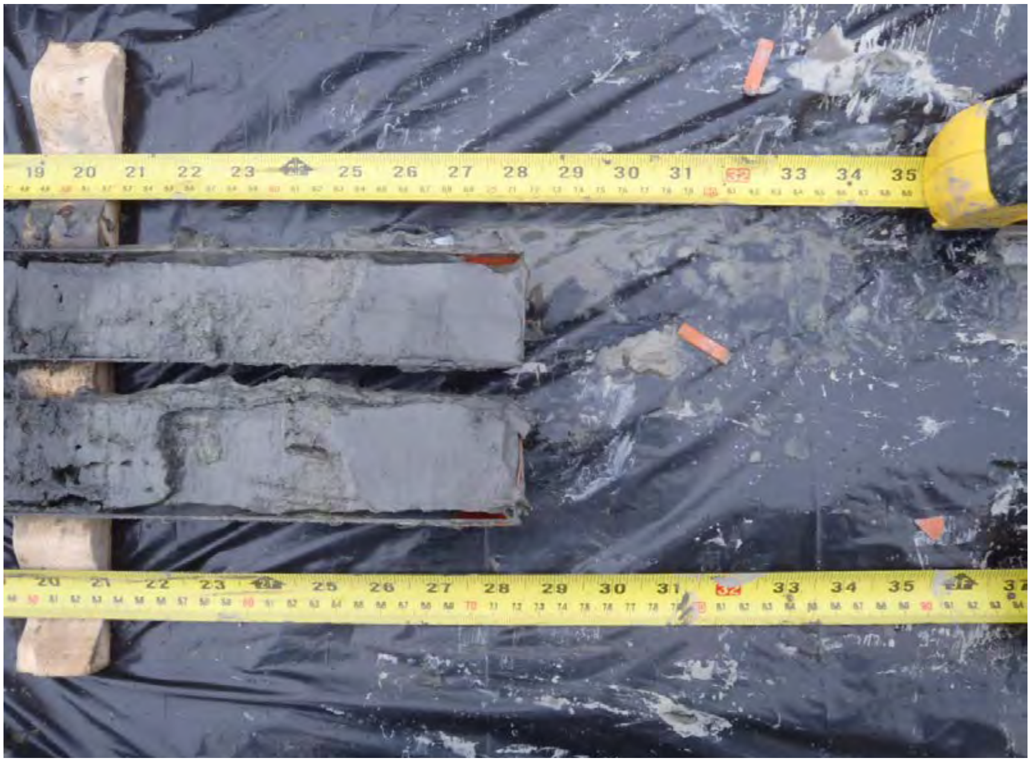

Photo 85: QT2-5-5-CORE

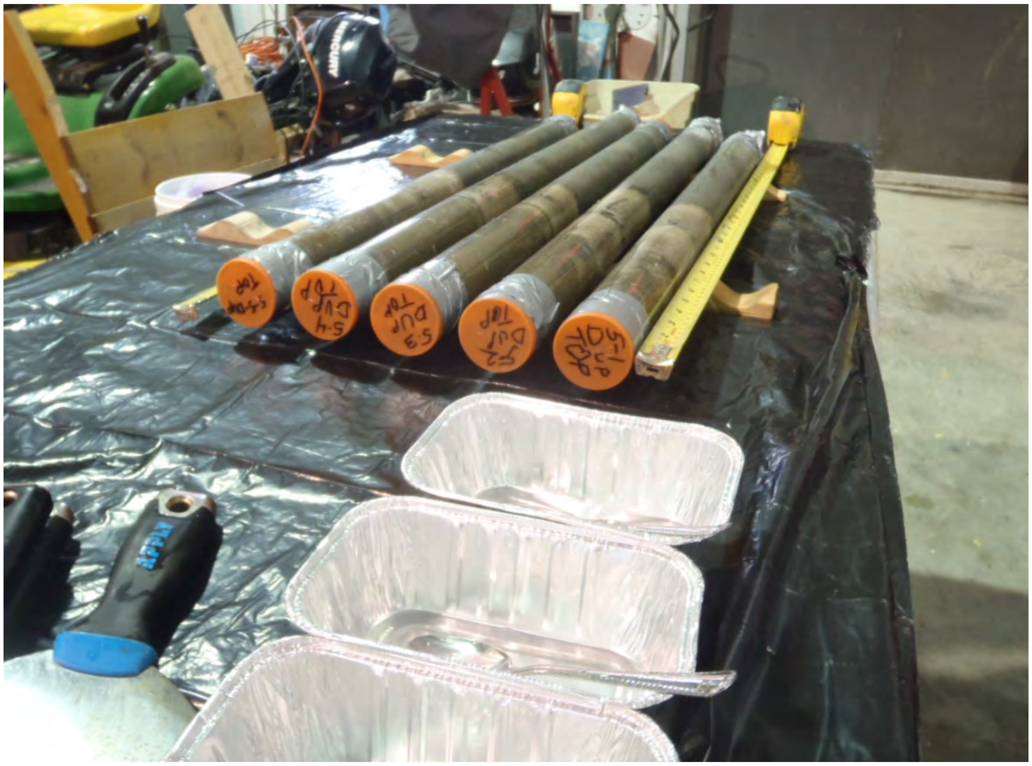

Photo 86: QT2-5DUP Five cores

Photo 87: QT2-5DUP-1-CORE, QT2-5DUP-2-CORE, QT2-5DUP-3-CORE, QT2-5DUP-4-CORE, and QT2-5DUP-5-CORE (listed bottom to top)

Photo 88: QT2-5DUP-1-CORE, QT2-5DUP-2-CORE, QT2-5DUP-3-CORE, QT2-5DUP-4-CORE, and QT2-5DUP-5-CORE (listed bottom to top)

Photo 89: QT2-5DUP-1-CORE

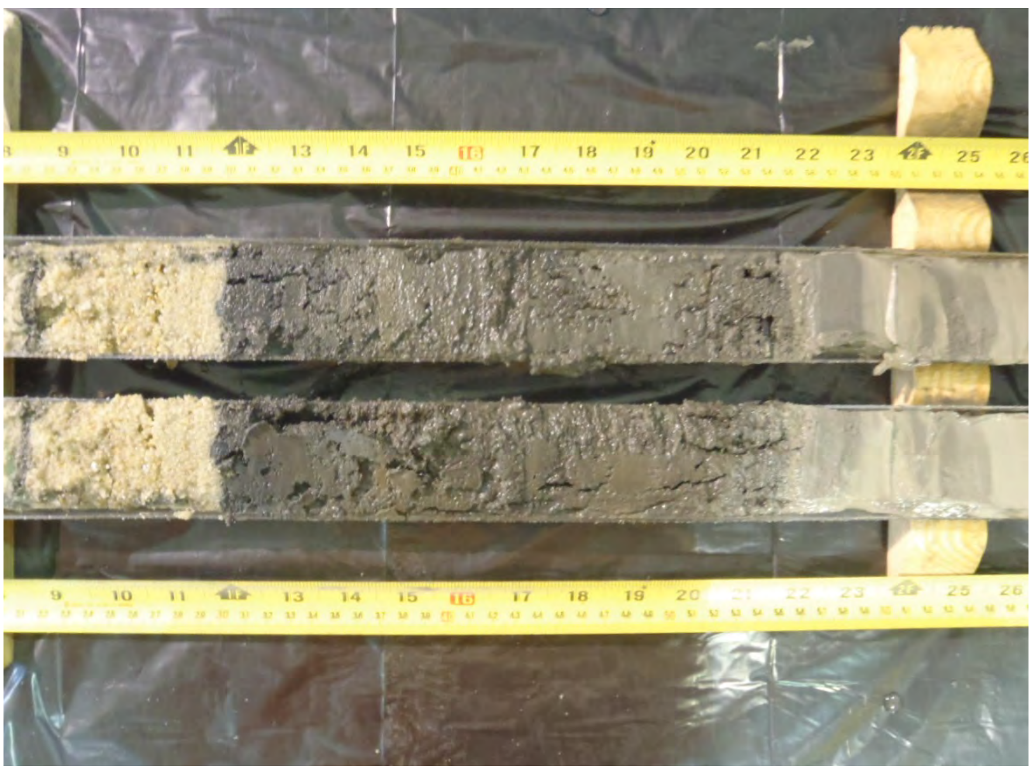

Photo 90: QT2-5DUP-1-CORE

Photo 91: QT2-5DUP-1-CORE

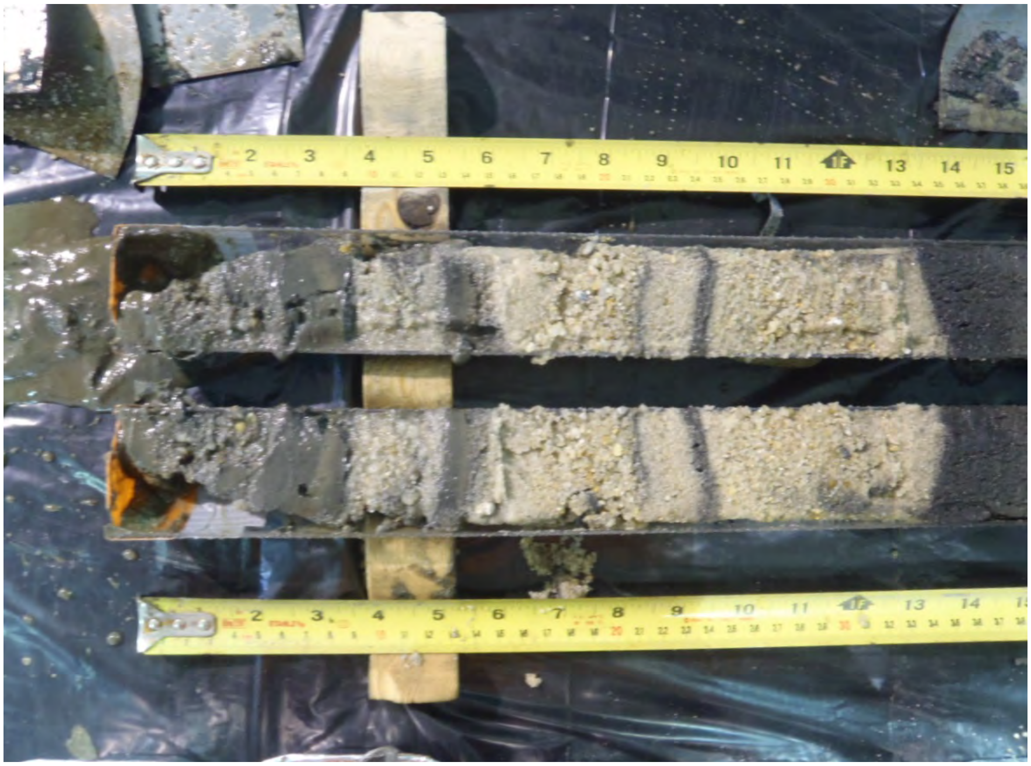

Photo 92: QT2-5DUP-2-CORE

Photo 93: QT2-5DUP-2-CORE

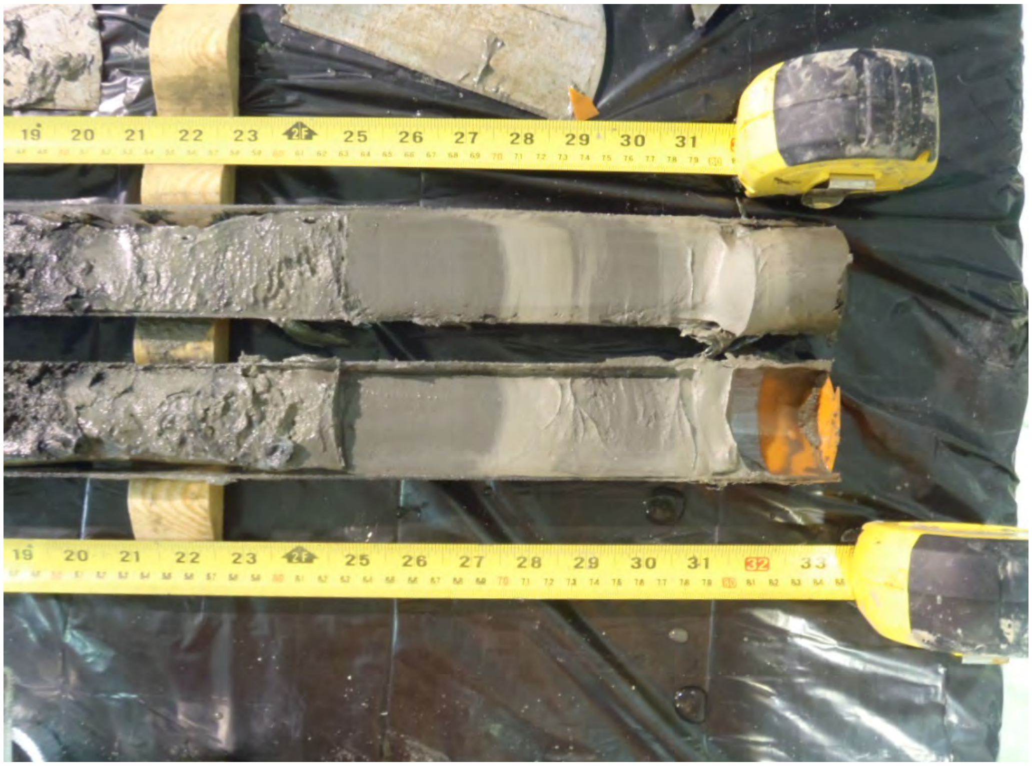

Photo 94: QT2-5DUP-2-CORE

Photo 95: QT2-5DUP-3-CORE

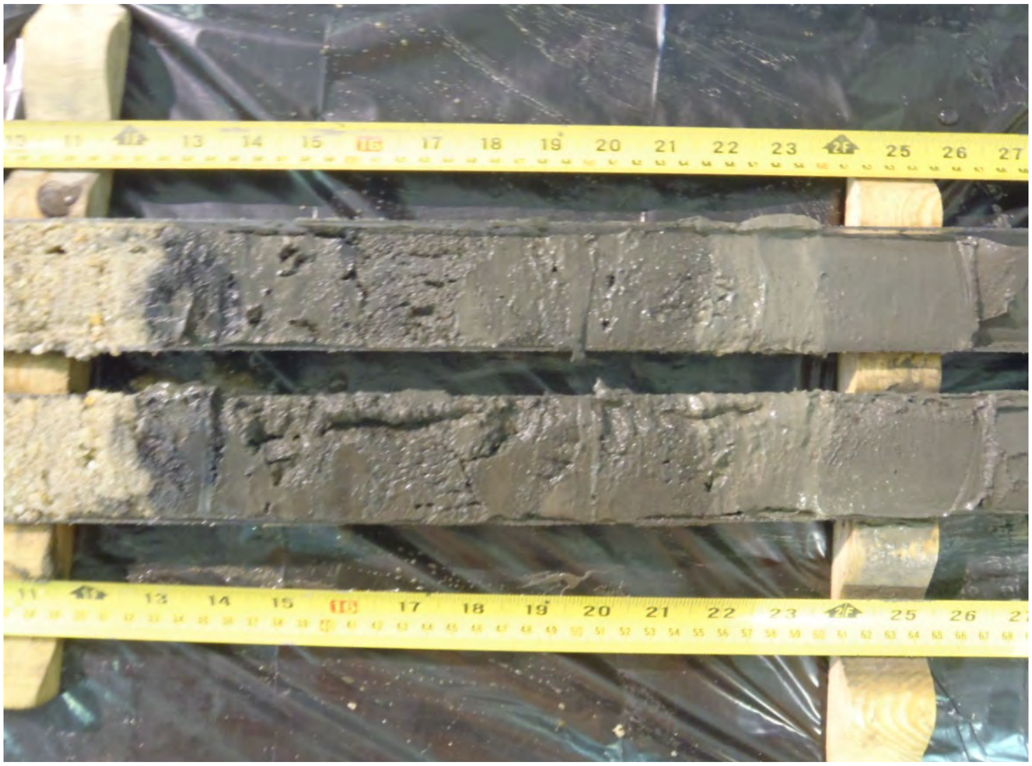

Photo 96: QT2-5DUP-3-CORE

Photo 97: QT2-5DUP-3-CORE

Photo 98: QT2-5DUP-4-CORE

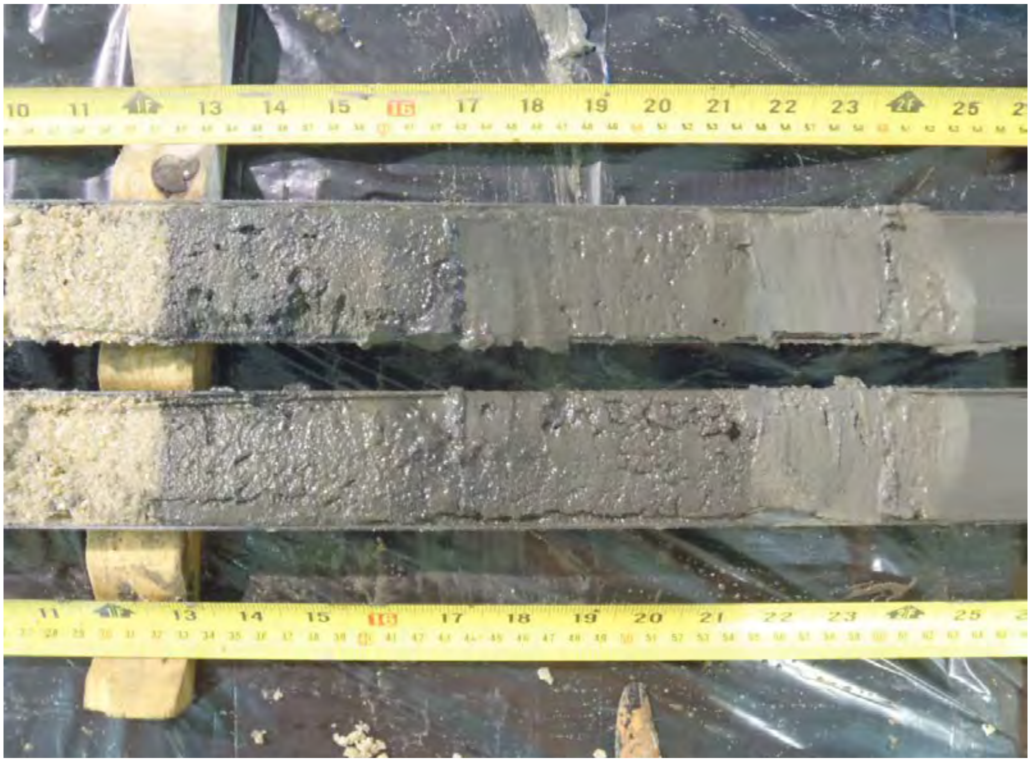

Photo 99: QT2-5DUP-4-CORE

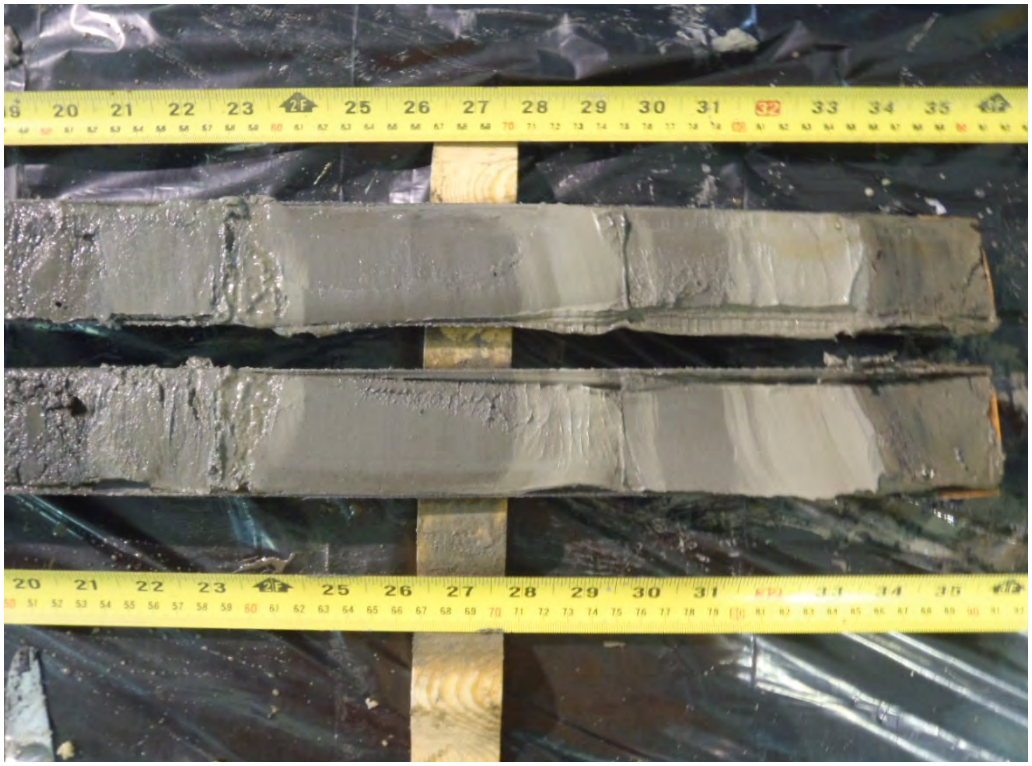

Photo 100: QT2-5DUP-4-CORE

Photo 101: QT2-5DUP-5-CORE

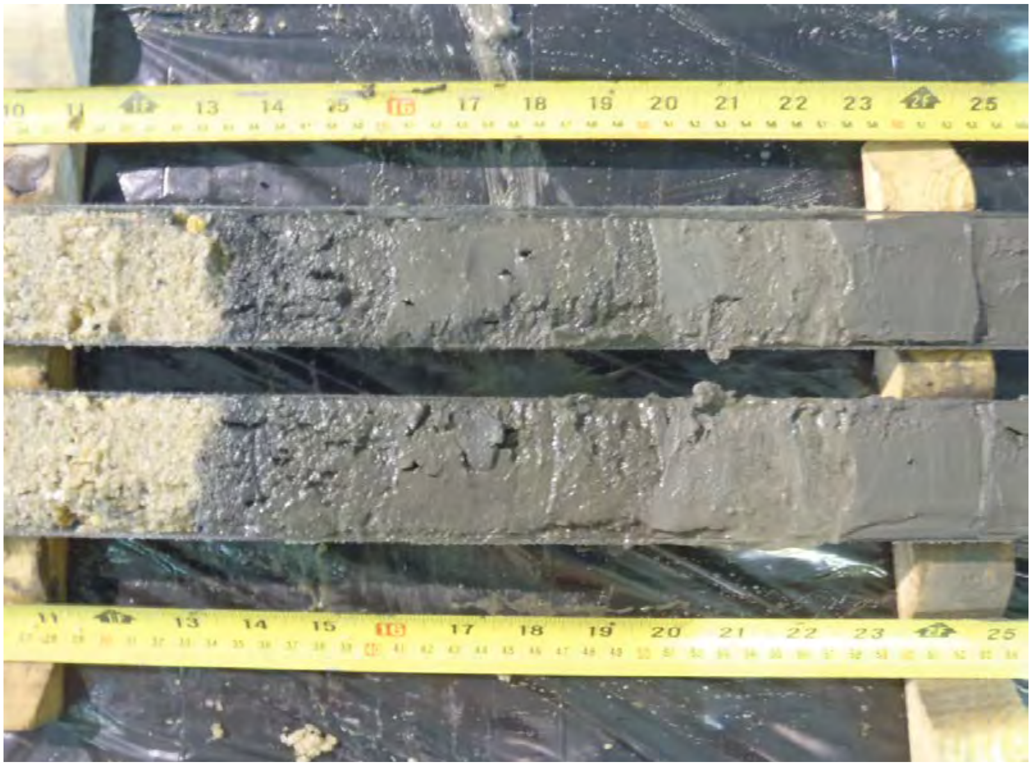

Photo 102: QT2-5DUP-5-CORE


Photo 103: QT2-5DUP-5-CORE

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# CORE PROCESSING SUMMARY

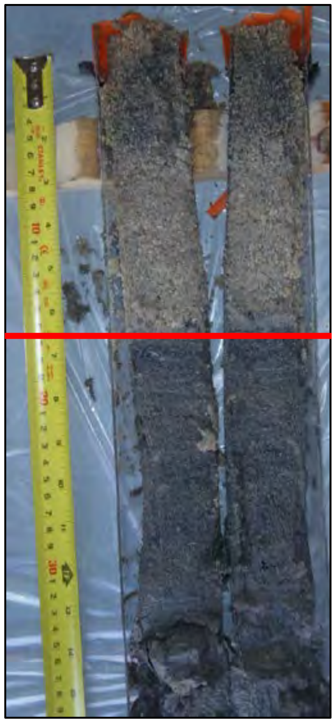
## QUANTICO
## 14-MONTH MONITORING EVENT
## SEPTEMBER 2015

RAMBOLL ENVIRON

Red line indicates cap-sediment interface

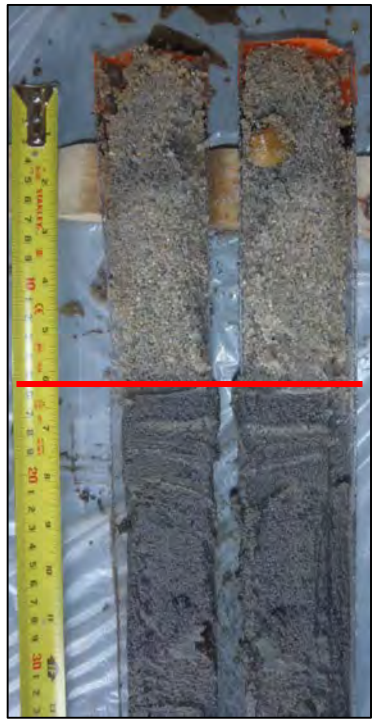
# STATION 1

QT14-1-1-CORE



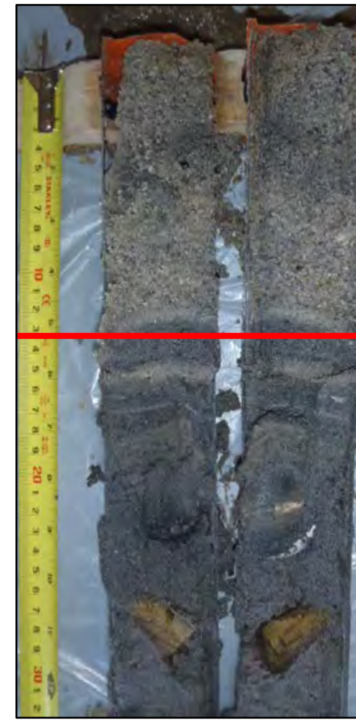
QT14-1-2-CORE

QT14-1-3-CORE



QT14-1-4-CORE

QT14-1-5-CORE



Red line indicates cap-sediment interface

# STATION 2

QT14-2-1-CORE

QT14-2-2-CORE

QT14-2-3-CORE

QT14-2-4-CORE

QT14-2-5-CORE

Red line indicates cap-sediment interface

# STATION 3

QT14-3-1-CORE

QT14-3-2-CORE

QT14-3-3-CORE

QT14-3-4-CORE

QT14-3-5-CORE

RAMBOLL ENVIRON

Red line indicates cap-sediment interface

# STATION 4

QT14-4-1-CORE

QT14-4-2-CORE

QT14-4-3-CORE

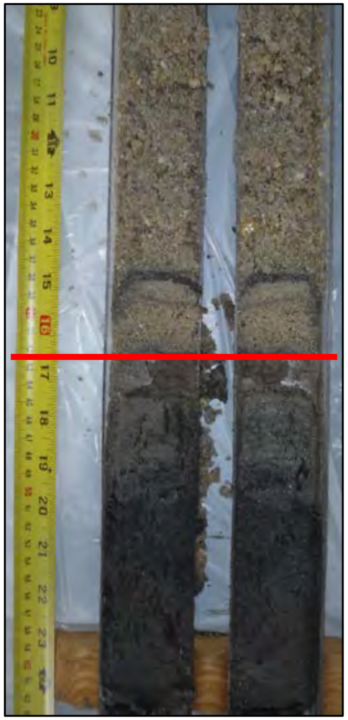
QT14-4-4-CORE

QT14-4-5-CORE

Red line indicates cap-sediment interface

# STATION 5

QT14-5-1-CORE



QT14-5-2-CORE

QT14-5-3-CORE

QT14-5-4-CORE

QT14-5-5-CORE

RAMBOLL ENVIRON

Red line indicates cap-sediment interface

# STATION 5 FIELD DUPLICATE

QT14-5DUP-1-CORE

QT14-5DUP-2-CORE

QT14-5DUP-3-CORE

QT14-5DUP-4-CORE

QT14-5DUP-5-CORE

**Table 1: Summary of Cap-Native Sediment Interface in the 14-Month Monitoring Event**
Quantico Marine Corps Base
Quantico, Virginia

**Table 1.A. Summary by Core**

| Station | Core | Depth of Cap-Native Sediment Interface (centimeters below water-cap interface) |
|---|---|---|
| 1 | 1 | 16 |
| 1 | 2 | 16 |
| 1 | 3 | 15 |
| 1 | 4 | 15 |
| 1 | 5 | 13 |
| 2 | 1 | 16 |
| 2 | 2 | 19 |
| 2 | 3 | 15 |
| 2 | 4 | 19 |
| 2 | 5 | 18 |
| 3 | 1 | 21 |
| 3 | 2 | 24 |
| 3 | 3 | 24 |
| 3 | 4 | 24 |
| 3 | 5 | 24 |
| 4 | 1 | 38 |
| 4 | 2 | 38 |
| 4 | 3 | 40 |
| 4 | 4 | 38 |
| 4 | 5 | 38.5 |
| 5 | 1 | 42 |
| 5 | 2 | 40.5 |
| 5 | 3 | 40 |
| 5 | 4 | 39 |
| 5 | 5 | 45 |
| 5DUP | 1 | 41 |
| 5DUP | 2 | 42 |
| 5DUP | 3 | 43 |
| 5DUP | 4 | 41 |
| 5DUP | 5 | 44 |

**Table 1.B. Summary by Statistics**

| Station | Depth of Cap-Native Sediment Interface (centimeters below water-cap interface) [Average ± Standard Deviation (Minimum - Maximum)] |
|---|---|
| 1 | 15 ± 1.2 (13 - 16) |
| 2 | 17 ± 1.8 (15 - 19) |
| 3 | 23 ± 1.3 (21 - 24) |
| 4 | 39 ± 0.9 (38 - 40) |
| 5 | 41 ± 2.3 (39 - 45) |
| 5DUP | 42 ± 1.3 (41 - 44) |

**Table 2: Comparison of Cap-Native Sediment Interface for 2- and 14-Month Monitoring Events**
Quantico Marine Corps Base
Quantico, Virginia

| Station | 2-Month<br>September 2014<br>**Depth of Cap-Native Sediment Interface**<br>(centimeters below water-cap interface)<br>[Average ± Standard Deviation (Minimum - Maximum)] | 14-Month<br>September 2015<br>**Depth of Cap-Native Sediment Interface**<br>(centimeters below water-cap interface)<br>[Average ± Standard Deviation (Minimum - Maximum)] | Change in Cap Thickness (cm) |
|---|---|---|---|
| 1 | 18 ± 1 (16 - 18) | 15 ± 1.2 (13 - 16) | -3 |
| 2 | 40 ± 5 (35.5 - 47.5) | 17 ± 1.8 (15 - 19) | -23 |
| 3 | 28 ± 4 (22 - 32) | 23 ± 1.3 (21 - 24) | -5 |
| 4 | 32 ± 1 (31.5 - 34) | 39 ± 0.9 (38 - 40) | 7 |
| 5 | 33 ± 2 (31 - 35.5) | 41 ± 2.3 (39 - 45) | 8 |
| 5DUP | 33 ± 1 (30.5 - 34) | 42 ± 1.3 (41 - 44) | 9 |

**Table 3: Core Processing Log for the 14-Month Monitoring Event**
Quantico Marine Corps Base
Quantico, Virginia

| Station | Core | Processing Date | Start Depth of Interval (cm) | End Depth of Interval (cm) | Sediment Texture | Orientation to Cap Interface with Native Sediment | Notes |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 9/9/2015 | 0 | 6 | Coarse sand with silt | Above | |
| 1 | 1 | | 6 | 16 | Coarse sand | Above | |
| 1 | 1 | | 16 | 31 | Silty sand | Below | |
| 1 | 1 | | 31 | 51 | Silt with clay | Below | |
| 1 | 1 | | 51 | 87 | Clay with silt | Below | |
| 1 | 2 | 9/9/2015 | 0 | 4 | Coarse sand with silt | Above | |
| 1 | 2 | | 4 | 16 | Coarse sand | Above | |
| 1 | 2 | | 16 | 29 | Silty sand | Below | |
| 1 | 2 | | 29 | 56 | Silt with clay | Below | |
| 1 | 2 | | 56 | 84 | Clay with silt | Below | |
| 1 | 3 | 9/9/2015 | 0 | 6 | Coarse sand with minor silt | Above | Clam 4-5 cm |
| 1 | 3 | | 6 | 15 | Coarse sand | Above | |
| 1 | 3 | | 15 | 32 | Silty sand | Below | |
| 1 | 3 | | 32 | 53 | Silt with clay | Below | |
| 1 | 3 | | 53 | 98 | Clay with silt | Below | |
| 1 | 4 | 9/9/2015 | 0 | 4 | Coarse sand with silt | Above | |
| 1 | 4 | | 4 | 15 | Coarse sand | Above | |
| 1 | 4 | | 15 | 35 | Silty sand | Below | |
| 1 | 4 | | 35 | 69 | Silt with clay | Below | |
| 1 | 4 | | 69 | 97 | Clay with silt | Below | |
| 1 | 5 | 9/9/2015 | 0 | 7 | Coarse sand with silt | Above | |
| 1 | 5 | | 7 | 13 | Coarse sand | Above | |
| 1 | 5 | | 13 | 28 | Silty sand | Below | Clam 20-23 cm. Wood fragment 26-30 cm. |
| 1 | 5 | | 28 | 47 | Silt with clay | Below | |
| 1 | 5 | | 47 | 76 | Clay with silt | Below | |
| 2 | 1 | 9/9/2015 | 0 | 9 | Coarse sand with silt | Above | |
| 2 | 1 | | 9 | 16 | Coarse sand | Above | |
| 2 | 1 | | 16 | 32 | Silty sand | Below | Clam 31-33 cm. |
| 2 | 1 | | 32 | 50 | Silty clay | Below | |
| 2 | 1 | | 50 | 79 | Sandy clay with silt | Below | |
| 2 | 2 | 9/9/2015 | 0 | 7 | Coarse sand with silt | Above | |
| 2 | 2 | | 7 | 19 | Coarse sand | Above | |
| 2 | 2 | | 19 | 37 | Silty sand | Below | |
| 2 | 2 | | 37 | 51 | Silty clay | Below | |
| 2 | 2 | | 51 | 64 | Sandy clay with silt | Below | |
| 2 | 2 | | 64 | 76 | Silty sand with clay | Below | |
| 2 | 2 | | 76 | 82 | Silty clay with sand | Below | |
| 2 | 3 | 9/9/2015 | 0 | 2 | Coarse sand with silt | Above | |
| 2 | 3 | | 2 | 15 | Coarse sand | Above | |
| 2 | 3 | | 15 | 32 | Silty sand | Below | Clam 31-32 cm. |
| 2 | 3 | | 32 | 49 | Silty clay with sand | Below | |
| 2 | 3 | | 49 | 63 | Sandy clay with silt | Below | |
| 2 | 3 | | 63 | 72 | Sand with silt | Below | |
| 2 | 3 | | 72 | 81 | Silty sand with clay | Below | |
| 2 | 4 | 9/9/2015 | 0 | 8 | Coarse sand with silt | Above | |
| 2 | 4 | | 8 | 19 | Coarse sand | Above | |
| 2 | 4 | | 19 | 39 | Silty sand | Below | |
| 2 | 4 | | 39 | 48 | Clay with silt | Below | |
| 2 | 4 | | 48 | 62 | Sandy clay with silt | Below | |
| 2 | 4 | | 62 | 72 | Silty sand with clay | Below | |
| 2 | 4 | | 72 | 80 | Clayey sand with silt | Below | |

**Table 3: Core Processing Log for the 14-Month Monitoring Event**
Quantico Marine Corps Base
Quantico, Virginia

| Station | Core | Processing Date | Start Depth of Interval (cm) | End Depth of Interval (cm) | Sediment Texture | Orientation to Cap Interface with Native Sediment | Notes |
|---|---|---|---|---|---|---|---|
| 2 | 5 | 9/9/2015 | 0 | 6 | Coarse sand with silt | Above | |
| 2 | 5 | | 6 | 18 | Coarse sand | Above | |
| 2 | 5 | | 18 | 36 | Silty sand | Below | |
| 2 | 5 | | 36 | 49 | Silty clay with sand | Below | |
| 2 | 5 | | 49 | 61 | Clayey sand with silt | Below | |
| 2 | 5 | | 61 | 73 | Silty sand | Below | |
| 2 | 5 | | 73 | 77 | Compact black silty clay with small wood bits | Below | |
| 2 | 5 | | 77 | 89 | Silty clay with sand | Below | |
| 3 | 1 | 9/9/2015 | 0 | 9 | Coarse sand with silt | Above | |
| 3 | 1 | | 9 | 21 | Coarse sand | Above | |
| 3 | 1 | | 21 | 54 | Silty sand | Below | Wood debris 52-54 cm. |
| 3 | 1 | | 54 | 63 | Silty sand with clay | Below | |
| 3 | 1 | | 63 | 87 | Silty clay | Below | |
| 3 | 2 | 9/9/2015 | 0 | 15 | Coarse sand with silt | Above | |
| 3 | 2 | | 15 | 24 | Coarse sand | Above | |
| 3 | 2 | | 24 | 49 | Silty sand | Below | |
| 3 | 2 | | 49 | 68 | Clayey sand with silt | Below | |
| 3 | 2 | | 68 | 89 | Silty clay | Below | |
| 3 | 3 | 9/9/2015 | 0 | 17 | Coarse sand with silt | Above | |
| 3 | 3 | | 17 | 24 | Coarse sand | Above | |
| 3 | 3 | | 24 | 30 | Silty sand | Below | |
| 3 | 3 | | 30 | 48 | Sandy silt | Below | *Hydrilla* roots 32-36 cm. Clam shell 40-41 cm. |
| 3 | 3 | | 48 | 68 | Clayey sand with silt | Below | |
| 3 | 3 | | 68 | 90 | Clay with silt | Below | Wood debris 82-85 cm. |
| 3 | 4 | 9/9/2015 | 0 | 16 | Coarse sand with silt | Above | |
| 3 | 4 | | 16 | 24 | Coarse sand | Above | |
| 3 | 4 | | 24 | 69 | Silty sand | Below | |
| 3 | 4 | | 69 | 90 | Silty clay | Below | |
| 3 | 5 | 9/9/2015 | 0 | 13 | Coarse sand with silt | Above | |
| 3 | 5 | | 13 | 24 | Coarse sand | Above | |
| 3 | 5 | | 24 | 67 | Silty sand | Below | |
| 3 | 5 | | 67 | 81 | Silty clay | Below | |
| 4 | 1 | 9/10/2015 | 0 | 9 | Coarse sand with silt | Above | |
| 4 | 1 | | 9 | 11 | Silt with sand | Above | |
| 4 | 1 | | 11 | 17 | Coarse sand with silt | Above | |
| 4 | 1 | | 17 | 19 | Silt with sand | Above | |
| 4 | 1 | | 19 | 28 | Coarse sand | Above | |
| 4 | 1 | | 28 | 30 | Silt with sand | Above | |
| 4 | 1 | | 30 | 38 | Coarse sand | Above | |
| 4 | 1 | | 38 | 50 | Clayey silt with sand | Below | Plant roots 41-45 cm. |
| 4 | 1 | | 50 | 89 | Silty clay | Below | |
| 4 | 2 | 9/10/2015 | 0 | 11 | Coarse sand with silt | Above | |
| 4 | 2 | | 11 | 12 | Silty with sand | Above | |
| 4 | 2 | | 12 | 25 | Coarse sand | Above | Stratified with silt from 15-17 cm |
| 4 | 2 | | 25 | 26 | Silt with sand | Above | |
| 4 | 2 | | 26 | 38 | Coarse sand | Above | |
| 4 | 2 | | 38 | 44 | Clayey silt with sand | Below | Plant roots. |
| 4 | 2 | | 44 | 51 | Silty clay | Below | |

**Table 3: Core Processing Log for the 14-Month Monitoring Event**
Quantico Marine Corps Base
Quantico, Virginia

| Station | Core | Processing Date | Start Depth of Interval (cm) | End Depth of Interval (cm) | Sediment Texture | Orientation to Cap Interface with Native Sediment | Notes |
|---|---|---|---|---|---|---|---|
| 4 | 3 | 9/10/2015 | 0 | 11 | Coarse sand with silt | Above | |
| 4 | 3 | 9/10/2015 | 11 | 13 | Silt with sand | Above | |
| 4 | 3 | 9/10/2015 | 13 | 18 | Coarse sand | Above | |
| 4 | 3 | 9/10/2015 | 18 | 19 | Silt with sand | Above | |
| 4 | 3 | 9/10/2015 | 19 | 27 | Coarse sand with pebbles | Above | |
| 4 | 3 | 9/10/2015 | 27 | 29 | Silt with sand | Above | |
| 4 | 3 | 9/10/2015 | 29 | 40 | Coarse sand | Above | |
| 4 | 3 | 9/10/2015 | 40 | 57 | Clayey silt with sand | Below | Plant roots 40-45 cm. |
| 4 | 3 | 9/10/2015 | 57 | 84 | Silty clay | Below | |
| 4 | 4 | 9/10/2015 | 0 | 11 | Coarse sand with silt | Above | Clam shell 6 cm. |
| 4 | 4 | 9/10/2015 | 11 | 13 | Silt with sand | Above | |
| 4 | 4 | 9/10/2015 | 13 | 21 | Coarse sand with silt | Above | Stratified silt with sand from 17-21 cm |
| 4 | 4 | 9/10/2015 | 21 | 27 | Coarse sand | Above | |
| 4 | 4 | 9/10/2015 | 27 | 29 | Silt with sand | Above | |
| 4 | 4 | 9/10/2015 | 29 | 38 | Coarse sand | Above | |
| 4 | 4 | 9/10/2015 | 38 | 50 | Clayey silt with sand | Below | Plant roots 38-41 cm. |
| 4 | 4 | 9/10/2015 | 50 | 80 | Silty clay | Below | |
| 4 | 5 | 9/10/2015 | 0 | 9 | Coarse sand with silt | Above | |
| 4 | 5 | 9/10/2015 | 9 | 12 | Silt with sand | Above | |
| 4 | 5 | 9/10/2015 | 12 | 26 | Coarse sand | Above | Stratified with silt from 15-19 cm |
| 4 | 5 | 9/10/2015 | 26 | 27 | Silt with sand | Above | |
| 4 | 5 | 9/10/2015 | 27 | 38.5 | Coarse sand | Above | |
| 4 | 5 | 9/10/2015 | 38.5 | 56 | Clayey silt with sand | Below | Clam shell 52-56 cm. |
| 4 | 5 | 9/10/2015 | 56 | 73.5 | Silty clay | Below | |
| 5 | 1 | 9/10/2015 | 0 | 20 | Coarse sand with silt | Above | Stratified silt with sand from 10-11 cm. |
| 5 | 1 | 9/10/2015 | 20 | 42 | Coarse sand | Above | Layer of silt with sand at 39 cm. |
| 5 | 1 | 9/10/2015 | 42 | 60.5 | Silty sand with clay | Below | |
| 5 | 1 | 9/10/2015 | 60.5 | 91 | Silty clay | Below | |
| 5 | 2 | 9/10/2015 | 0 | 17 | Coarse sand with silt | Above | Layer of silt with sand from 16-17 cm |
| 5 | 2 | 9/10/2015 | 17 | 40.5 | Coarse sand | Above | |
| 5 | 2 | 9/10/2015 | 40.5 | 59 | Silty sand with clay | Below | Clam shell 54-56 cm. |
| 5 | 2 | 9/10/2015 | 59 | 77.5 | Silty clay | Below | |
| 5 | 3 | 9/10/2015 | 0 | 17 | Coarse sand with silt | Above | Silt layer with sand from 11-12 cm |
| 5 | 3 | 9/10/2015 | 17 | 37 | Coarse sand | Above | Silt with sand from 37-38 cm |
| 5 | 3 | 9/10/2015 | 37 | 40 | Coarse sand | Above | |
| 5 | 3 | 9/10/2015 | 40 | 56 | Silty sand with clay | Below | |
| 5 | 3 | 9/10/2015 | 56 | 85 | Silty clay | Below | |
| 5 | 4 | 9/10/2015 | 0 | 12 | Coarse sand with silt | Above | |
| 5 | 4 | 9/10/2015 | 12 | 39 | Coarse sand | Above | Silt with sand from 35.5-36 cm. |
| 5 | 4 | 9/10/2015 | 39 | 58 | Silty sand with clay | Below | |
| 5 | 4 | 9/10/2015 | 59 | 87 | Silty clay | Below | Clam shell 60-63 cm and 65-67 cm. |
| 5 | 5 | 9/10/2015 | 0 | 17 | Coarse sand with silt | Above | |
| 5 | 5 | 9/10/2015 | 17 | 41 | Coarse sand | Above | |
| 5 | 5 | 9/10/2015 | 41 | 42 | Silt with sand | Above | |
| 5 | 5 | 9/10/2015 | 42 | 45 | Coarse sand | Above | |
| 5 | 5 | 9/10/2015 | 45 | 74 | Silty sand with clay | Below | |
| 5 | 5 | 9/10/2015 | 74 | 89 | Silty clay | Below | |
| 5DUP | 1 | 9/10/2015 | 0 | 14.5 | Coarse sand with silt | Above | Silt with sand from 8-9 cm. |
| 5DUP | 1 | 9/10/2015 | 14.5 | 41 | Coarse sand | Above | Silty sand from 37-37.5 cm. |
| 5DUP | 1 | 9/10/2015 | 41 | 56 | Silty sand with clay | Below | |
| 5DUP | 1 | 9/10/2015 | 56 | 83.5 | Silty clay | Below | Clam shell 64-67 cm. |
| 5DUP | 2 | 9/10/2015 | 0 | 21 | Coarse sand with silt | Above | Layers of silt with sand from 13-16 cm. |
| 5DUP | 2 | 9/10/2015 | 21 | 42 | Coarse sand | Above | Silt with sand from 38-38.5 cm. |
| 5DUP | 2 | 9/10/2015 | 42 | 66 | Silty sand with clay | Below | Clam 58-61 cm. |

**Table 3: Core Processing Log for the 14-Month Monitoring Event**
Quantico Marine Corps Base
Quantico, Virginia

| Station | Core | Processing Date | Start Depth of Interval (cm) | End Depth of Interval (cm) | Sediment Texture | Orientation to Cap Interface with Native Sediment | Notes |
|---|---|---|---|---|---|---|---|
| 5DUP | 3 | 9/10/2015 | 0 | 19 | Coarse sand with silt | Above | Layer of silt with sand from 13-14 cm. |
| 5DUP | 3 | | 19 | 43 | Coarse sand | Above | Silt with sand from 39-39.5 cm. |
| 5DUP | 3 | | 43 | 59 | Silty sand with clay | Below | Clam shell 56-57 cm. |
| 5DUP | 3 | | 59 | 61 | Silty clay with sand | Below | |
| 5DUP | 4 | 9/10/2015 | 0 | 7 | Coarse sand with silt | Above | |
| 5DUP | 4 | | 7 | 13 | Coarse sand | Above | |
| 5DUP | 4 | | 13 | 15 | Silty sand | Above | |
| 5DUP | 4 | | 15 | 41 | Coarse sand | Above | Silt with sand from 37-37.5 cm. |
| 5DUP | 4 | | 41 | 64 | Silty sand with clay | Below | |
| 5DUP | 4 | | 64 | 83 | Silty clay | Below | |
| 5DUP | 5 | 9/10/2015 | 0 | 13 | Coarse sand with silt | Above | |
| 5DUP | 5 | | 13 | 15 | Silt with sand | Above | |
| 5DUP | 5 | | 15 | 44 | Coarse sand | Above | Silty sand from 40-40.5 cm. |
| 5DUP | 5 | | 44 | 62 | Silty sand with clay | Below | Plant roots 46-49 cm. |
| 5DUP | 5 | | 62 | 100 | Silty clay | Below | |

**Notes:**
1.) Intervals less than 1 cm were not logged.
2.) Plant roots were likely Hydrilla.
**Abbreviations:**
cm = centimeter
DUP = field duplicate

Photo 1: Station 1, All Cores, 0-60cm

Photo 2: Station 1, All Cores, 59cm-100cm

| | |
|---|---|
| RAMBOLL ENVIRON | **Site Photographs**<br>Quantico 14-Month Monitoring Event<br>Quantico, VA<br>September 2015 |

Photo 3: Station 1, Core 1, 0-1 feet

Photo 4: Station 1, Core 1, 1-2 feet

Photo 5: Station 1, Core 1, 2-3 feet

Photo 6: Station 1, Core 2, 0-1 feet

Photo 7: Station 1, Core 2, 1-2 feet

Photo 8: Station 1, Core 2, 2-3 feet

Photo 9: Station 1, Core 3, 0-1 feet

Photo 10: Station 1, Core 3, 1-2 feet


Photo 11: Station 1, Core 3, 2-3 feet


Photo 12: Station 1, Core 3, 3-4 feet

Photo 13:  Station 1, Core 4, 0-1 feet

Photo 14:  Station 1, Core 4, 1-2 feet

Photo 15:  Station 1, Core 4, 2-3 feet

Photo 16:  Station 1, Core 4, 3-4 feet

Photo 17: Station 1, Core 5, 0-1 feet

Photo 18: Station 1, Core 5, 1-2 feet

| | |
|---|---|
| RAMBOLL ENVIRON | **Site Photographs**<br>Quantico 14-Month Monitoring Event<br>Quantico, VA<br>September 2015 |

Photo 19: Station 1, Core 5, 2-3 feet

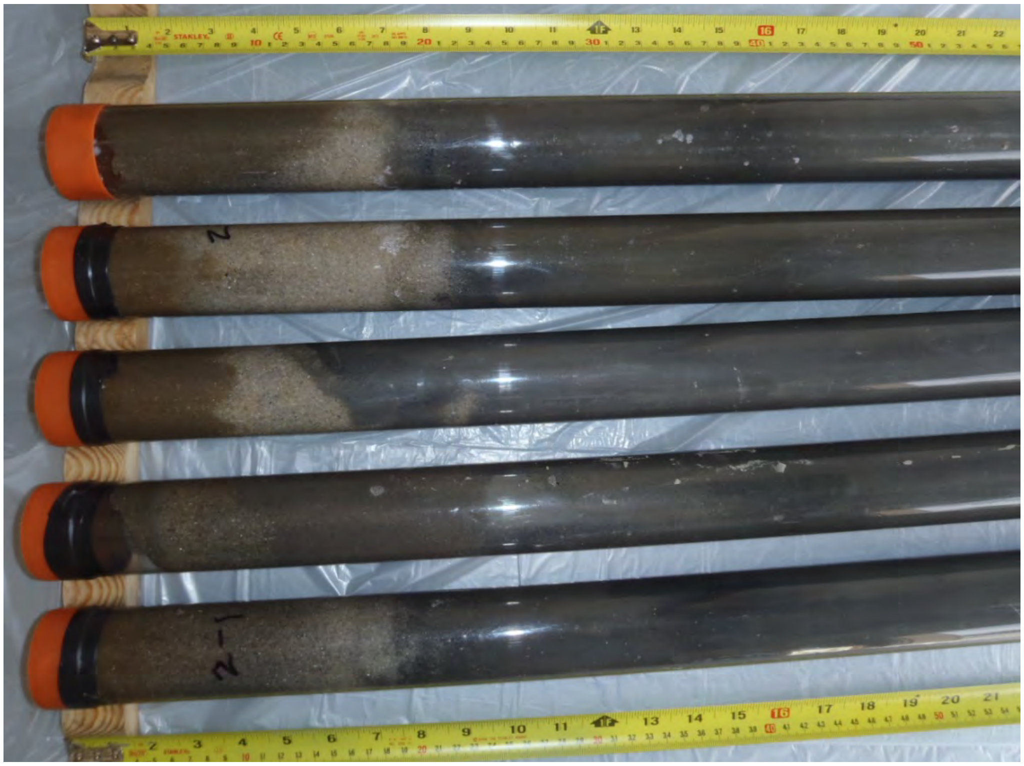


Photo 20: Station 2, All Cores, 0-54 cm

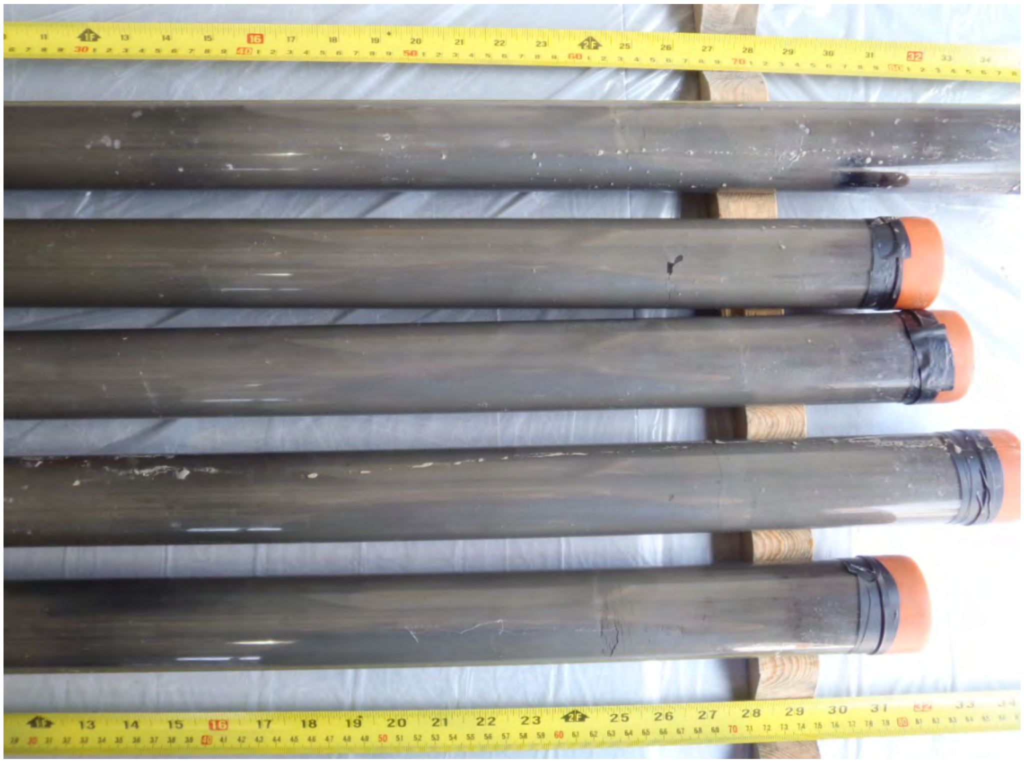


Photo 21: Station 2, All Cores, 28-88 cm

Photo 22: Station 2, All Cores, 57-100 cm

Photo 23:  Station 2, Core 1, 0-1 feet

Photo 24:  Station 2, Core 1, 1-2 feet

Photo 25:  Station 2, Core 1, 2-3 feet

Photo 26:  Station 2, Core 2, 0-1 feet

Photo 27: Station 2, Core 2, 1-2 feet

Photo 28: Station 2, Core 2, 2-3 feet

Photo 29:  Station 2, Core 3, 0-1 feet

Photo 30:  Station 2, Core 3, 1-2 feet

Photo 31: Station 2, Core 3, 2-3 feet

Photo 32: Station 2, Core 4, 0-1 feet

Photo 33: Station 2, Core 4, 1-2 feet

Photo 34: Station 2, Core 4, 2-3 feet

Photo 35: Station 2, Core 5, 0-1 feet

Photo 36: Station 2, Core 5, 1-2 feet

Photo 37: Station 2, Core 5, 2-3 feet

Photo 38: Station 3, All Cores, 0-60 cm

Photo 39:  Station 3, All Cores, 25-90 cm

Photo 40:  Station 3, All Cores, 45-90 cm

Photo 41:  Station 3, Core 1, 0-1 feet

Photo 42:  Station 3, Core 1, 1-2 feet

Photo 43:  Station 3, Core 1, 2-3 feet

Photo 44:  Station 3, Core 2, 0-1 feet

Photo 45: Station 3, Core 2, 1-2 feet

Photo 46: Station 3, Core 2, 2-3 feet

Photo 47: Station 3, Core 3, 0-1 feet

Photo 48: Station 3, Core 3, 1-2 feet


Photo 49: Station 3, Core 3, 2-3 feet


Photo 50: Station 3, Core 4, 0-1 feet

Photo 51: Station 3, Core 4, 1-2 feet

Photo 52: Station 3, Core 4, 2-3 feet

Photo 53: Station 3, Core 5, 0-1 feet

Photo 54: Station 3, Core 5, 1-2 feet

Photo 55:  Station 3, Core 5, 2-3 feet

Photo 56:  Station 4, All Cores,  0-30 cm

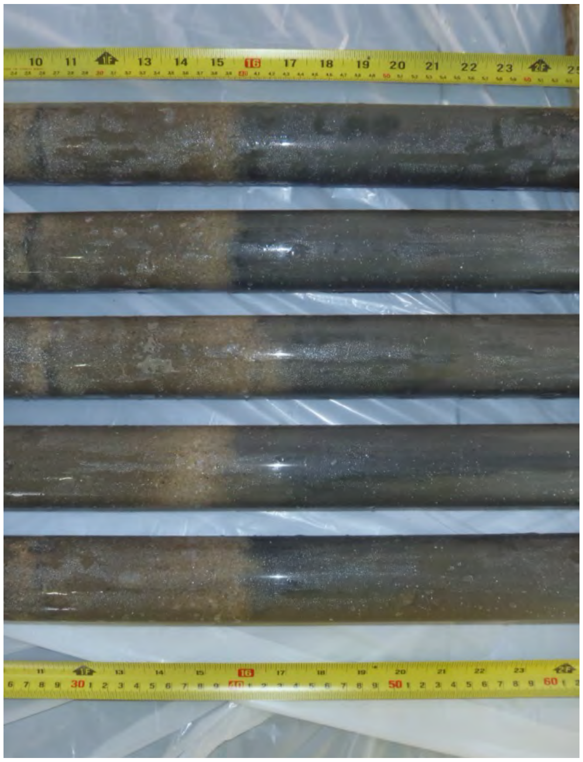


Photo 57:  Station 4, All Cores, 30-60 cm

Photo 58:  Station 4, All Cores, 60-90 cm

Photo 59: Station 4, Core 1, 0-1 feet

Photo 60: Station 4, Core 1, 1-2 feet

Photo 61:  Station 4, Core 1, 2-2.5 feet

Photo 62:  Station 4, Core 1, 2.5-3 feet

Photo 63: Station 4, Core 2, 0-1 feet

Photo 64: Station 4, Core 2, 1-2 feet

Photo 65: Station 4, Core 2, 2-3 feet

Photo 66: Station 4, Core 3, 0-1 feet

Photo 67: Station 4, Core 3, 1-2 feet

Photo 68: Station 4, Core 3, 2-3 feet

Photo 69: Station 4, Core 4, 0-1 feet

Photo 70: Station 4, Core 4, 1-2 feet

Photo 71: Station 4, Core 4, 2-3 feet

Photo 72: Station 4, Core 5, 0-1 feet

Photo 73: Station 4, Core 5, 1-2 feet

Photo 74: Station 4, Core 5, 2-3 feet


Photo 75: Station 5, All Cores, 0-55 cm

Photo 76: Station 5, All Cores, 55-80 cm

RAMBØLL ENVIRON

**Site Photographs**
Quantico 14-Month Monitoring Event
Quantico, VA
September 2015

Photo 77: Station 5, All Cores, 60-100 cm

Photo 78: Station 5, Core 1, 0-1 feet

Photo 79: Station 5, Core 1, 1-2 feet

Photo 80: Station 5, Core 1, 2-3 feet

Photo 81: Station 5, Core 2, 0-1 feet

Photo 82: Station 5, Core 2, 1-2 feet

Photo 83:  Station 5, Core 2, 2-3 feet

Photo 84:  Station 5, Core 3, 0-1 feet

| | |
|---|---|
| RAMBOLL ENVIRON | **Site Photographs**<br>Quantico 14-Month Monitoring Event<br>Quantico, VA<br>September 2015 |

Photo 85: Station 5, Core 3, 1-2 feet

Photo 86: Station 5, Core 3, 2-3 feet

Photo 87: Station 5, Core 4, 0-1 feet

Photo 88: Station 5, Core 4, 1-2 feet

Photo 89:  Station 5, Core 4, 2-3 feet

Photo 90:  Station 5, Core 5, 0-1 feet

Photo 91: Station 5, Core 5, 1-2 feet

Photo 92: Station 5, Core 5, 2-3 feet

Photo 93:  Station 5 Duplicate, All Cores, 0-55 cm

Photo 94:  Station 5 Duplicate, All Cores, 30-80 cm

Photo 95: Station 5 Duplicate, All Cores, 60-100 cm

Photo 96: Station 5 Duplicate, Core 1, 0-1 feet

| | |
|---|---|
| RAMBOLL ENVIRON | **Site Photographs**<br>Quantico 14-Month Monitoring Event<br>Quantico, VA<br>September 2015 |

Photo 97:  Station 5 Duplicate, Core 1, 1-2 feet

Photo 98:  Station 5 Duplicate, Core 1, 2-3 feet

Photo 99: Station 5 Duplicate, Core 2, 0-1 feet

Photo 100: Station 5 Duplicate, Core 2, 1-2 feet

Photo 101: Station 5 Duplicate, Core 2, 2-3 feet

Photo 102: Station 5 Duplicate, Core 3, 0-1 feet

Photo 103: Station 5 Duplicate, Core 3, 1-2 feet

Photo 104: Station 5 Duplicate, Core 4, 0-1 feet

Photo 105: Station 5 Duplicate, Core 4, 1-2 feet

Photo 106: Station 5 Duplicate, Core 4, 2-3 feet

Photo 107: Station 5 Duplicate, Core 5, 0-1 feet

Photo 108: Station 5 Duplicate, Core 5, 1-2 feet

Photo 109: Station 5 Duplicate, Core 5, 2-3 feet

Photo 110: Station 5 Duplicate, Core 5, 2.5-3.5 feet

# CORE PROCESSING SUMMARY

## QUANTICO
## 25-MONTH MONITORING EVENT
## AUGUST 2016

Red line indicates cap-sediment interface

# STATION 1

QT25-1-1-CORE

QT25-1-2-CORE

QT25-1-3-CORE

No clear distinction but minor coarse sand observed

QT25-1-4-CORE

No clear distinction but minor coarse sand observed

QT25-1-5-CORE

Red line indicates cap-sediment interface

# STATION 2

QT25-2-1-CORE

QT25-2-2-CORE

QT25-2-3-CORE

QT25-2-4-CORE

QT25-2-5-CORE

Red line indicates cap-sediment interface

# STATION 3

QT25-3-1-CORE

Core was collected, but photo not taken

QT25-3-2-CORE

QT25-3-3-CORE

QT25-3-4-CORE

No clear distinction but minor coarse sand observed

QT25-3-5-CORE

Red line indicates cap-sediment interface

# STATION 4

QT25-4-1-CORE

QT25-4-2-CORE

QT25-4-3-CORE

QT25-4-4-CORE

QT25-4-5-CORE

Red line indicates cap-sediment interface

# STATION 5

QT25-5-1-CORE

QT25-5-3-CORE

QT25-5-5-CORE

QT25-5-7-CORE

QT25-5-9-CORE

# STATION 5 FIELD DUPLICATE

QT25-5DUP-2-CORE

QT25-5DUP-4-CORE

QT25-5DUP-6-CORE

QT25-5DUP-8-CORE

QT25-5DUP-10-CORE

**Table 1: Summary of Cap-Native Sediment Interface in the 25-Month Monitoring Event**
Quantico Marine Corps Base
Quantico, Virginia

**Table 1.A. Summary by Core**

| Station | Core | **Depth of Cap-Native Sediment Interface** (centimeters below water-cap interface) |
|---|---|---|
| 1 | 1 | 20 |
| 1 | 2 | 26 |
| 1 | 3 | 10 |
| 1 | 4 | 4 |
| 1 | 5 | 14 |
| 2 | 1 | 18 |
| 2 | 2 | 18 |
| 2 | 3 | 16 |
| 2 | 4 | 16 |
| 2 | 5 | 15 |
| 3 | 1 | 22 |
| 3 | 2 | 21 |
| 3 | 3 | 22 |
| 3 | 4 | 40 |
| 3 | 5 | 22 |
| 4 | 1 | 22 |
| 4 | 2 | 18 |
| 4 | 3 | 28 |
| 4 | 4 | 25 |
| 4 | 5 | 26 |
| 5 | 1 | 43 |
| 5 | 3 | 46 |
| 5 | 5 | 43 |
| 5 | 7 | 42 |
| 5 | 9 | 43 |
| 5DUP | 2 | 47 |
| 5DUP | 4 | 48 |
| 5DUP | 6 | 47 |
| 5DUP | 8 | 44 |
| 5DUP | 10 | 46 |

**Table 1.B. Summary by Statistics**

| Station | **Depth of Cap-Native Sediment Interface** (centimeters below water-cap interface) [Average ± Standard Deviation (Minimum - Maximum)] |
|---|---|
| 1 | 15 ± 8.6 (4 - 26) |
| 2 | 17 ± 1.3 (15 - 18) |
| 3 | 25 ± 8.2 (21 - 40) |
| 4 | 24 ± 3.9 (18 - 28) |
| 5 | 43 ± 1.5 (42 - 46) |
| 5DUP | 46 ± 1.5 (44 - 48) |

**Table 2: Comparison of Cap-Native Sediment Interface for 2, 14, and 25-Month Monitoring Events**
Quantico Marine Corps Base
Quantico, Virginia

| Station | 2-Month<br>September 2014<br>**Depth of Cap-Native Sediment Interface**<br>(centimeters below water-cap interface)<br>[Average ± Standard Deviation (Minimum - Maximum)] | 14-Month<br>September 2015<br>**Depth of Cap-Native Sediment Interface**<br>(centimeters below water-cap interface)<br>[Average ± Standard Deviation (Minimum - Maximum)] | Change in Cap Thickness from 2-Month (cm) | 25-Month<br>August 2016<br>**Depth of Cap-Native Sediment Interface**<br>(centimeters below water-cap interface)<br>[Average ± Standard Deviation (Minimum - Maximum)] | Change in Cap Thickness from 2-Month (cm) |
|---|---|---|---|---|---|
| 1 | 18 ± 1 (16 - 18) | 15 ± 1.2 (13 - 16) | -3 | 15 ± 8.6 (4 - 26) | -3 |
| 2 | 40 ± 5 (35.5 - 47.5) | 17 ± 1.8 (15 - 19) | -23 | 17 ± 1.3 (15 - 18) | -23 |
| 3 | 28 ± 4 (22 - 32) | 23 ± 1.3 (21 - 24) | -5 | 25 ± 8.2 (21 - 40) | -3 |
| 4 | 32 ± 1 (31.5 - 34) | 39 ± 0.9 (38 - 40) | 7 | 24 ± 3.9 (18 - 28) | -8 |
| 5 | 33 ± 2 (31 - 35.5) | 41 ± 2.3 (39 - 45) | 8 | 43 ± 1.5 (42 - 46) | 10 |
| 5DUP | 33 ± 1 (30.5 - 34) | 42 ± 1.3 (41 - 44) | 9 | 46 ± 1.5 (44 - 48) | 13 |

**Table 3: Core Processing Log for the 25-Month Monitoring Event**
Quantico Marine Corps Base
Quantico, Virginia

| Station | Core | Processing Date | Start Depth of Interval (cm) | End Depth of Interval (cm) | Sediment Texture | Orientation to Cap Interface with Native Sediment | Notes |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 8/24/2016 | 0 | 15 | Silty sand | Above | |
| 1 | 1 | | 15 | 20 | Coarse sand | Above | |
| 1 | 1 | | 20 | 26 | Sandy silt | Below | Clam shell at 25 cm |
| 1 | 1 | | 26 | 75 | Clay with silt | Below | |
| 1 | 2 | 8/24/2016 | 0 | 10 | Silt with sand | Above | |
| 1 | 2 | | 10 | 15 | Sand with silt | Above | |
| 1 | 2 | | 15 | 19 | Silt with sand | Above | |
| 1 | 2 | | 19 | 26 | Coarse sand | Above | |
| 1 | 2 | | 26 | 39 | Silty sand | Below | Clam shell at 28 cm |
| 1 | 2 | | 39 | 66 | Clay (dry and stiffening) | Below | |
| 1 | 3 | 8/24/2016 | 0 | 10 | Silty sand | Above | No clear distinction but minor coarse sand observed |
| 1 | 3 | | 10 | 18 | Silty sand with clay | Below | Clam shell at 13 cm |
| 1 | 3 | | 18 | 72 | Clay with silt | Below | |
| 1 | 4 | 8/24/2016 | 0 | 4 | Coarse sand with silt | Above | No clear distinction but minor coarse sand observed |
| 1 | 4 | | 4 | 13 | Sandy silt | Below | |
| 1 | 4 | | 13 | 48 | Silty clay | Below | Snail shell at 48 cm |
| 1 | 4 | | 48 | 66 | Clay (dry and stiffening) | Below | |
| 1 | 5 | 8/24/2016 | 0 | 2 | Silt with sand | Above | |
| 1 | 5 | | 2 | 8 | Coarse sand with silt | Above | |
| 1 | 5 | | 8 | 12 | Silt with sand | Above | |
| 1 | 5 | | 12 | 14 | Coarse sand | Above | |
| 1 | 5 | | 14 | 17 | Sandy silt | Below | |
| 1 | 5 | | 17 | 62 | Clay (dry and stiffening) | Below | |
| 2 | 1 | 8/24/2016 | 0 | 18 | Coarse sand | Above | |
| 2 | 1 | | 18 | 32 | Silty sand | Below | |
| 2 | 1 | | 32 | 52 | Silty clay | Below | |
| 2 | 1 | | 52 | 72 | Clay (dry and stiffening) | Below | |
| 2 | 2 | 8/24/2016 | 0 | 3 | Silty fine sand | Above | |
| 2 | 2 | | 3 | 14 | Coarse sand | Above | |
| 2 | 2 | | 14 | 16 | Silt fine sand | Above | |
| 2 | 2 | | 16 | 18 | Coarse sand | Above | |
| 2 | 2 | | 18 | 30 | Silty clay with sand | Below | |
| 2 | 2 | | 30 | 76 | Clay (dry and stiffening) | Below | |
| 2 | 3 | 8/24/2016 | 0 | 4 | Silty fine sand | Above | |
| 2 | 3 | | 4 | 10 | Coarse sand | Above | |
| 2 | 3 | | 10 | 13 | Silty fine sand | Above | |
| 2 | 3 | | 13 | 16 | Coarse sand | Above | |
| 2 | 3 | | 16 | 24 | Sandy silt with clay | Below | Clam shells at 21-24 cm |
| 2 | 3 | | 24 | 45 | Clay | Below | Clam shells at 24-29 cm |
| 2 | 3 | | 45 | 61 | Clay (dry and stiffening) | Below | |
| 2 | 4 | 8/24/2016 | 0 | 16 | Coarse sand | Above | |
| 2 | 4 | | 16 | 32 | Sandy silt | Below | Small (~0.5" dia) red aggregate/debris |
| 2 | 4 | | 32 | 44 | Clay | Below | |
| 2 | 4 | | 44 | 58 | Clay (dry and stiffening) | Below | |
| 2 | 5 | 8/24/2016 | 0 | 10 | Coarse sand | Above | |
| 2 | 5 | | 10 | 12 | Sand with silt | Above | |
| 2 | 5 | | 12 | 15 | Coarse sand | Above | |
| 2 | 5 | | 15 | 26 | Sandy silt with clay | Below | Refuse/plastic food wrapper at 26 cm |
| 2 | 5 | | 26 | 57 | Clay | Below | |
| 2 | 5 | | 57 | 70 | Clay (dry and stiffening) | Below | |
| 3 | 1 | 8/24/2016 | 0 | 19 | Coarse sand with silt | Above | |
| 3 | 1 | | 19 | 22 | Coarse sand | Above | |
| 3 | 1 | | 22 | 30 | Silty fine sand | Below | Small (~0.5" dia) red aggregate/debris (potentially brick) |
| 3 | 1 | | 30 | 38 | Silt with sand | Below | |
| 3 | 1 | | 38 | 69 | Clay with silt | Below | |
| 3 | 2 | 8/24/2016 | 0 | 11 | Sandy silt | Above | |
| 3 | 2 | | 11 | 21 | Coarse sand | Above | |
| 3 | 2 | | 21 | 31 | Sandy silt | Below | |
| 3 | 2 | | 31 | 59 | Clay | Below | |

**Table 3: Core Processing Log for the 25-Month Monitoring Event**
Quantico Marine Corps Base
Quantico, Virginia

| Station | Core | Processing Date | Start Depth of Interval (cm) | End Depth of Interval (cm) | Sediment Texture | Orientation to Cap Interface with Native Sediment | Notes |
|---|---|---|---|---|---|---|---|
| 3 | 3 | 8/24/2016 | 0 | 16 | Silt with minor sand | Above | |
| 3 | 3 | 8/24/2016 | 16 | 22 | Coarse sand | Above | |
| 3 | 3 | 8/24/2016 | 22 | 36 | Sandy silt | Below | Clam shell at 34 cm |
| 3 | 3 | 8/24/2016 | 36 | 66 | Clay | Below | |
| 3 | 4 | 8/24/2016 | 0 | 22 | Silt with minor sand | Above | Organic debris (leaf matter) at 13-19 cm |
| 3 | 4 | 8/24/2016 | 22 | 40 | Silty coarse sand | Above | Clam shell at 26-32 cm. Small (~0.5" dia) red aggregate/debris (potentially brick) at 30 cm. |
| 3 | 4 | 8/24/2016 | 40 | 70 | Clay with silt | Below | |
| 3 | 5 | 8/24/2016 | 0 | 17 | Sandy silt | Above | |
| 3 | 5 | 8/24/2016 | 17 | 22 | Coarse sand | Above | |
| 3 | 5 | 8/24/2016 | 22 | 32 | Sandy silt | Below | |
| 3 | 5 | 8/24/2016 | 32 | 51 | Clay with silt | Below | |
| 4 | 1 | 8/25/2016 | 0 | 18 | Sandy silt | Above | |
| 4 | 1 | 8/25/2016 | 18 | 22 | Coarse sand | Above | |
| 4 | 1 | 8/25/2016 | 22 | 38 | Clayey silt with sand | Below | Organic matter at 25 cm (roots) |
| 4 | 1 | 8/25/2016 | 38 | 62 | Clay with silt | Below | |
| 4 | 2 | 8/25/2016 | 0 | 14 | Silty sand | Above | |
| 4 | 2 | 8/25/2016 | 14 | 18 | Coarse sand | Above | |
| 4 | 2 | 8/25/2016 | 18 | 20 | Clayey silt | Below | Clam shell |
| 4 | 2 | 8/25/2016 | 20 | 47 | Clay with silt | Below | |
| 4 | 3 | 8/25/2016 | 0 | 18 | Silty sand | Above | |
| 4 | 3 | 8/25/2016 | 18 | 28 | Coarse sand | Above | |
| 4 | 3 | 8/25/2016 | 28 | 45 | Silty clay | Below | Organic matter at 30-38 cm (roots) |
| 4 | 3 | 8/25/2016 | 45 | 52 | Clay | Below | |
| 4 | 4 | 8/25/2016 | 0 | 16 | Silty sand | Above | |
| 4 | 4 | 8/25/2016 | 16 | 25 | Coarse sand | Above | |
| 4 | 4 | 8/25/2016 | 25 | 40 | Silty clay | Below | Organic matter at 30- 36 cm (roots) |
| 4 | 4 | 8/25/2016 | 40 | 60 | Clay with silt | Below | |
| 4 | 5 | 8/25/2016 | 0 | 16 | Silty sand | Above | |
| 4 | 5 | 8/25/2016 | 16 | 26 | Coarse sand | Above | |
| 4 | 5 | 8/25/2016 | 26 | 42 | Silty clay | Below | Organic matter at 28 - 32 cm (roots) |
| 4 | 5 | 8/25/2016 | 42 | 67 | Clay with silt | Below | |
| 5 | 1 | 8/25/2016 | 0 | 32 | Silty sand | Above | |
| 5 | 1 | 8/25/2016 | 32 | 43 | Coarse sand | Above | |
| 5 | 1 | 8/25/2016 | 43 | 48.0 | Sandy silt | Below | |
| 5 | 1 | 8/25/2016 | 48 | 63 | Silty clay | Below | |
| 5 | 3 | 8/25/2016 | 0 | 36 | Silty sand | Above | |
| 5 | 3 | 8/25/2016 | 36 | 46 | Coarse sand | Above | |
| 5 | 3 | 8/25/2016 | 46 | 50 | Sandy silt | Below | |
| 5 | 3 | 8/25/2016 | 50 | 60 | Silty clay | Below | Clam shell at 53 cm |
| 5 | 3 | 8/25/2016 | 60 | 72 | Clay | Below | |
| 5 | 5 | 8/25/2016 | 0 | 24 | Silty sand | Above | |
| 5 | 5 | 8/25/2016 | 24 | 43 | Coarse sand | Above | |
| 5 | 5 | 8/25/2016 | 43 | 52 | Sandy silt | Below | |
| 5 | 5 | 8/25/2016 | 52 | 68 | Clay with silt | Below | |
| 5 | 5 | 8/25/2016 | 68 | 84 | Clay | Below | |
| 5 | 7 | 8/25/2016 | 0 | 13 | Silty sand | Above | |
| 5 | 7 | 8/25/2016 | 13 | 42 | Coarse sand | Above | |
| 5 | 7 | 8/25/2016 | 42 | 55 | Silty clay | Below | |
| 5 | 7 | 8/25/2016 | 55 | 63 | Clay | Below | Organic matter at 59 cm (wood debris) |
| 5 | 9 | 8/25/2016 | 0 | 24 | Silty sand | Above | |
| 5 | 9 | 8/25/2016 | 24 | 43 | Coarse sand | Above | |
| 5 | 9 | 8/25/2016 | 43 | 49 | Sandy silt | Below | |
| 5 | 9 | 8/25/2016 | 49 | 64 | Clay with silt | Below | |
| 5DUP | 2 | 8/25/2016 | 0 | 36 | Silty sand | Above | |
| 5DUP | 2 | 8/25/2016 | 36 | 47 | Coarse sand | Above | |
| 5DUP | 2 | 8/25/2016 | 47 | 56 | Sandy silt | Below | |

**Table 3: Core Processing Log for the 25-Month Monitoring Event**
Quantico Marine Corps Base
Quantico, Virginia

| Station | Core | Processing Date | Start Depth of Interval (cm) | End Depth of Interval (cm) | Sediment Texture | Orientation to Cap Interface with Native Sediment | Notes |
|---|---|---|---|---|---|---|---|
| 5DUP | 4 | 8/25/2016 | 0 | 35 | Silty sand | Above | |
| 5DUP | 4 | | 35 | 48 | Coarse sand | Above | |
| 5DUP | 4 | | 48 | 54 | Sandy silt | Below | |
| 5DUP | 4 | | 54 | 73 | Silty clay | Below | |
| 5DUP | 6 | 8/25/2016 | 0 | 33 | Silty sand | Above | |
| 5DUP | 6 | | 33 | 47 | Coarse sand | Above | |
| 5DUP | 6 | | 47 | 53 | Sandy silt with clay | Below | |
| 5DUP | 6 | | 53 | 83 | Clay with silt | Below | |
| 5DUP | 8 | 8/25/2016 | 0 | 28 | Silty sand | Above | |
| 5DUP | 8 | | 28 | 44 | Coarse sand | Above | |
| 5DUP | 8 | | 44 | 46 | Sandy silt with clay | Below | |
| 5DUP | 8 | | 46 | 57 | Silty clay | Below | |
| 5DUP | 10 | 8/25/2016 | 0 | 24 | Silty sand | Above | |
| 5DUP | 10 | | 24 | 46 | Coarse sand | Above | |
| 5DUP | 10 | | 46 | 54 | Sandy silt with clay | Below | |

**Notes:**
1.) Intervals less than 1 cm were not logged.
2.) Plant roots were likely Hydrilla.

**Abbreviations:**
cm = centimeter
DUP = field duplicate

Photo 1: Station 1, All Cores, 0-80cm

Photo 2: Station 1, Core 1, 0-1 feet

**Site Photographs**
Quantico 25-Month Monitoring Event
Quantico, VA
August 2016

Photo 3: Station 1, Core 1, 1-2 feet

Photo 4: Station 1, Core 1, 2-3 feet

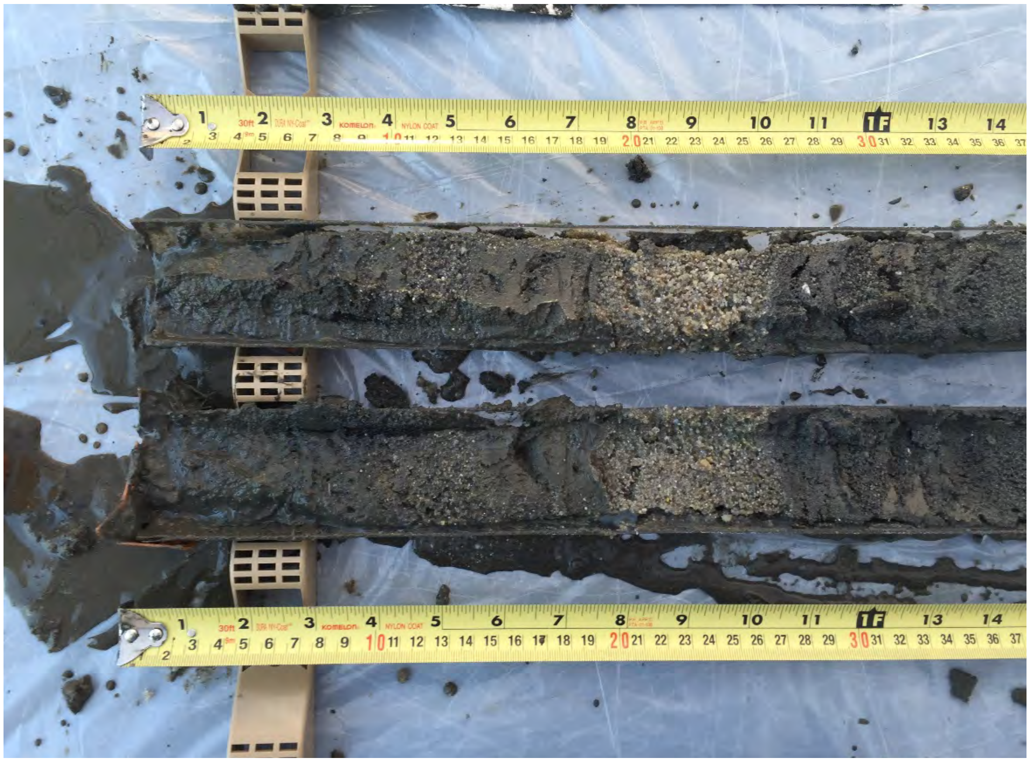


Photo 5: Station 1, Core 2, 0-1 feet

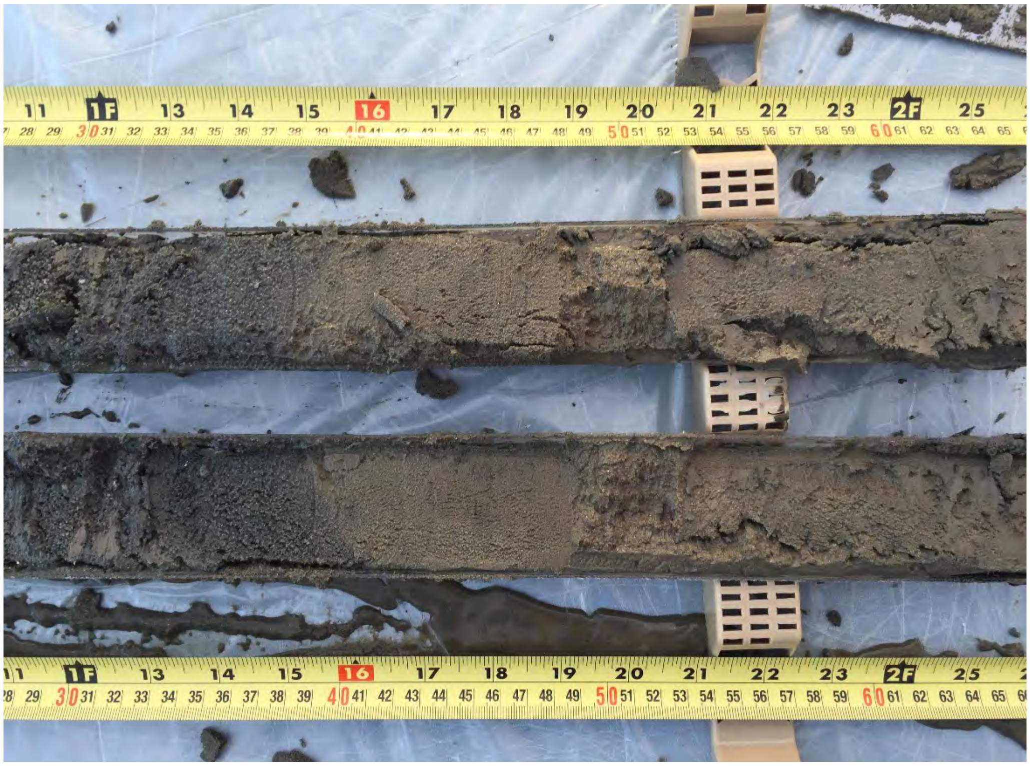


Photo 6: Station 1, Core 2, 1-2 feet

Photo 7: Station 1, Core 2, 2-3 feet

Photo 8: Station 1, Core 3, 0-1 feet

Photo 9: Station 1, Core 3, 1-2 feet


Photo 10: Station 1, Core 3, 2-3 feet

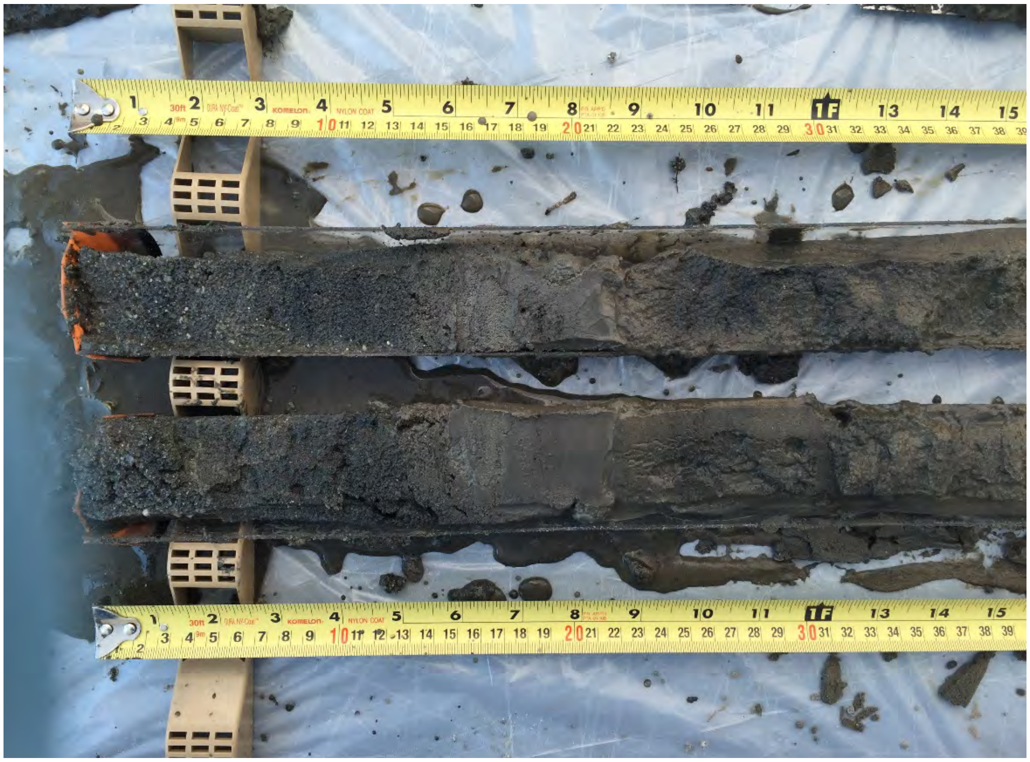


Photo 11:  Station 1, Core 4, 0-1 feet

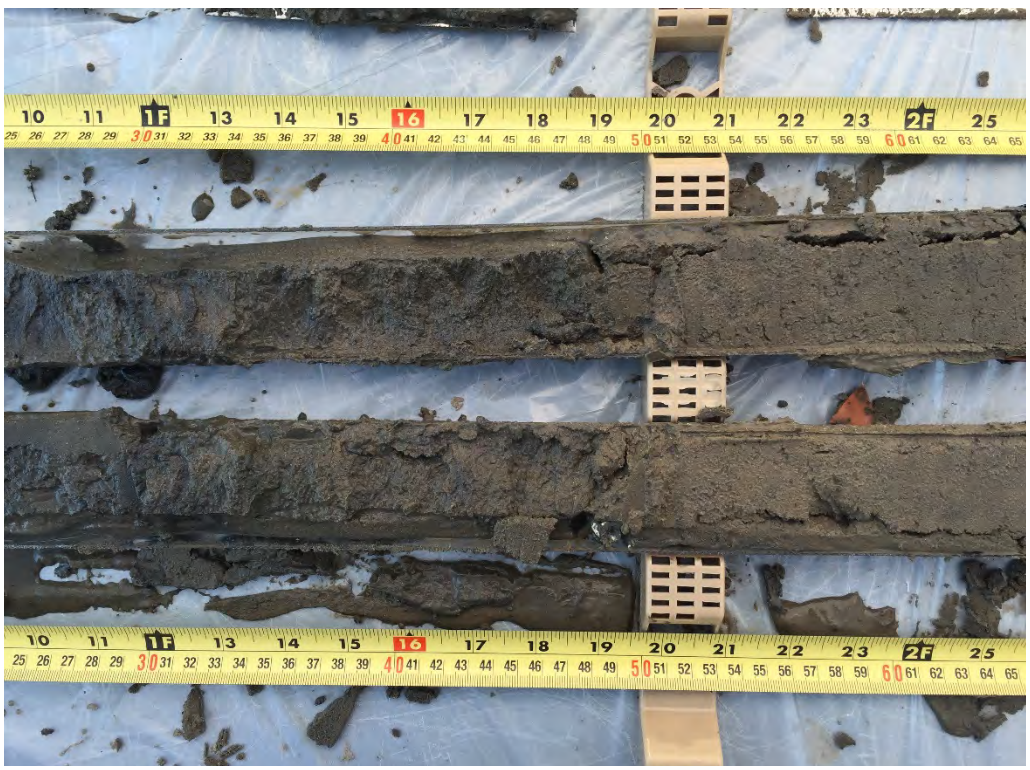


Photo 12:  Station 1, Core 4, 1-2 feet

Photo 13: Station 1, Core 4, 2-3 feet

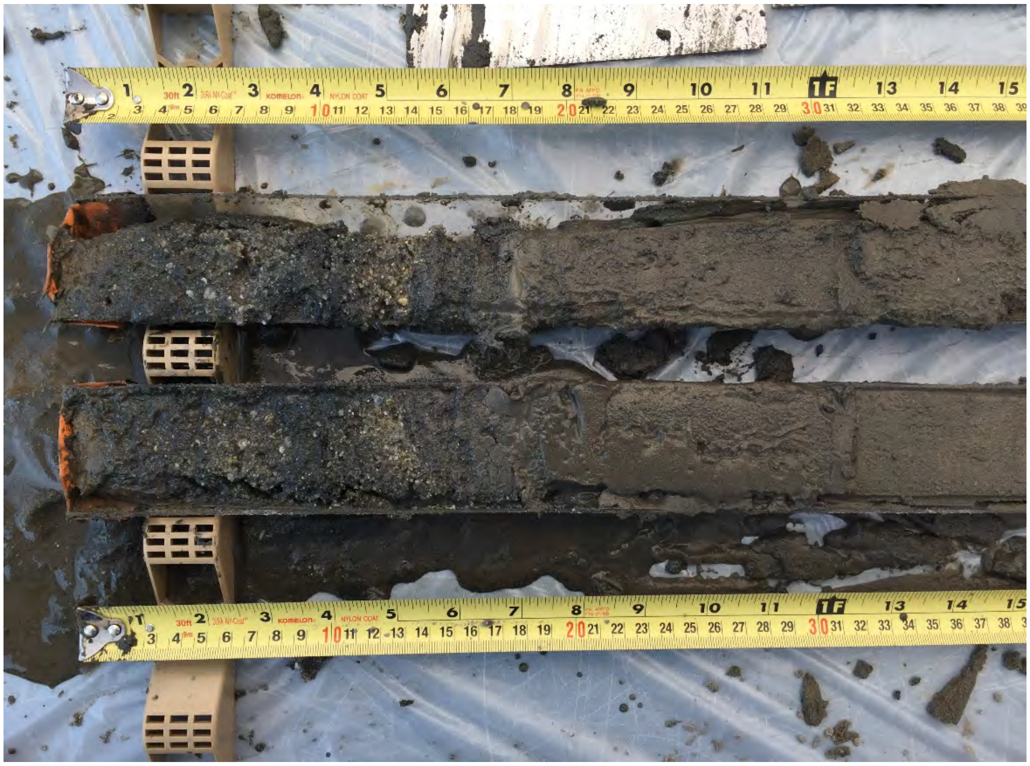


Photo 14: Station 1, Core 5, 0-1 feet

Photo 15: Station 1, Core 5, 1-2 feet

Photo 16: Station 1, Core 5, 2-3 feet

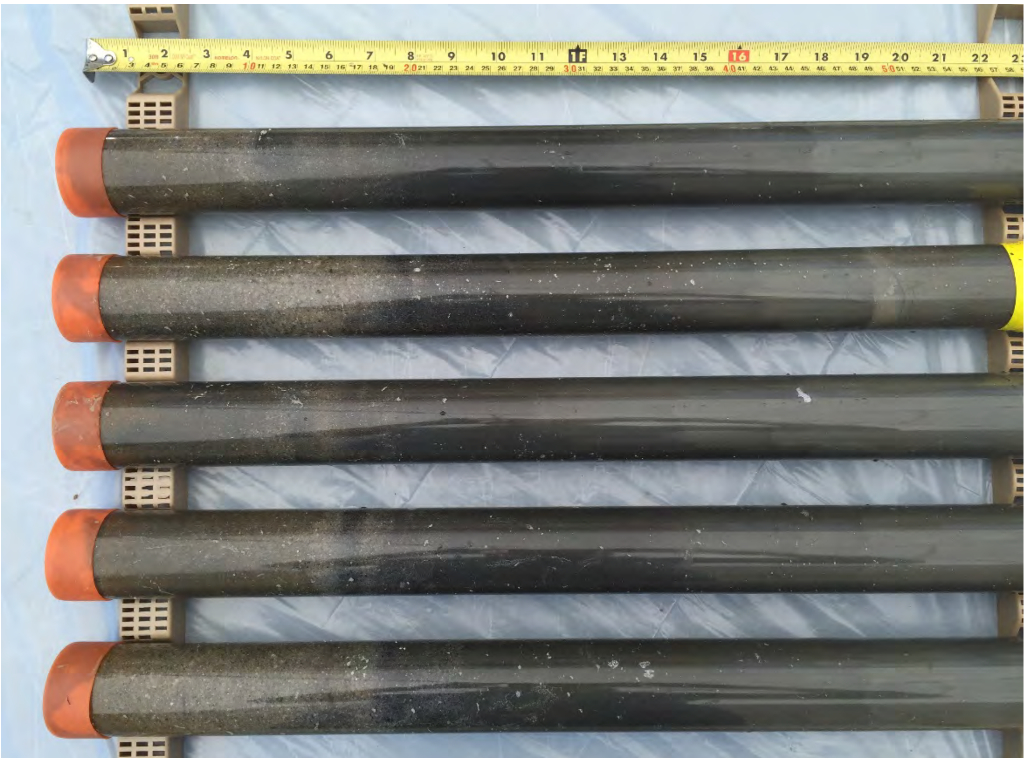


Photo 17: Station 2, All Cores, 0-58 cm

Photo 18: Station 2, All Cores, 28-80 cm

Photo 19: Station 2, Core 1, 0-1 feet

Photo 20: Station 2, Core 1, 1-2 feet

Photo 21: Station 2, Core 1, 2-3 feet

Photo 22: Station 2, Core 2, 0-1 feet

Photo 23: Station 2, Core 2, 1-2 feet

Photo 24: Station 2, Core 2, 2-3 feet

Photo 25: Station 2, Core 3, 0-1 feet

Photo 26: Station 2, Core 3, 1-2 feet

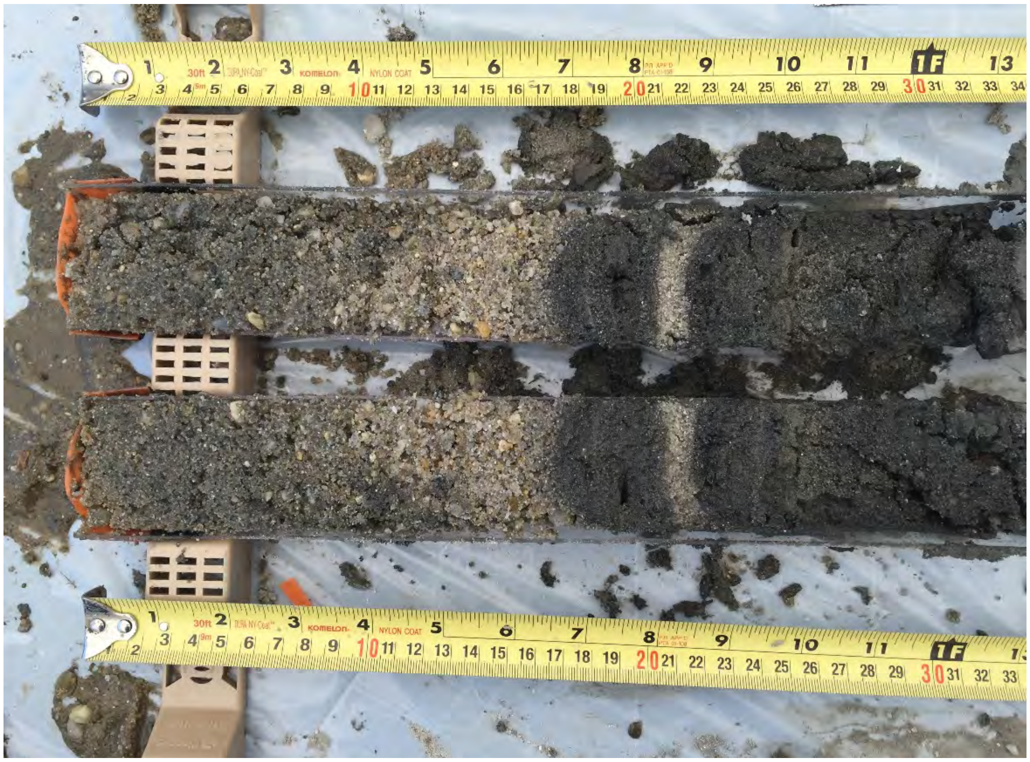


Photo 27: Station 2, Core 4, 0-1 feet

Photo 28: Station 2, Core 4, 1-2 feet

Photo 29: Station 2, Core 5, 0-1 feet

Photo 30: Station 2, Core 5, 1-2 feet

Photo 31: Station 2, Core 5, 2-3 feet

Photo 32: Station 3, All Cores, 0-64 cm

Photo 33: Station 3, All Cores, 26-72 cm

Photo 34: Station 3, Core 2, 0-1 feet

Photo 35: Station 3, Core 2, 1-2 feet

Photo 36: Station 3, Core 3, 0-1 feet

Photo 37: Station 3, Core 3, 1-2 feet

Photo 38: Station 3, Core 4, 0-1 feet

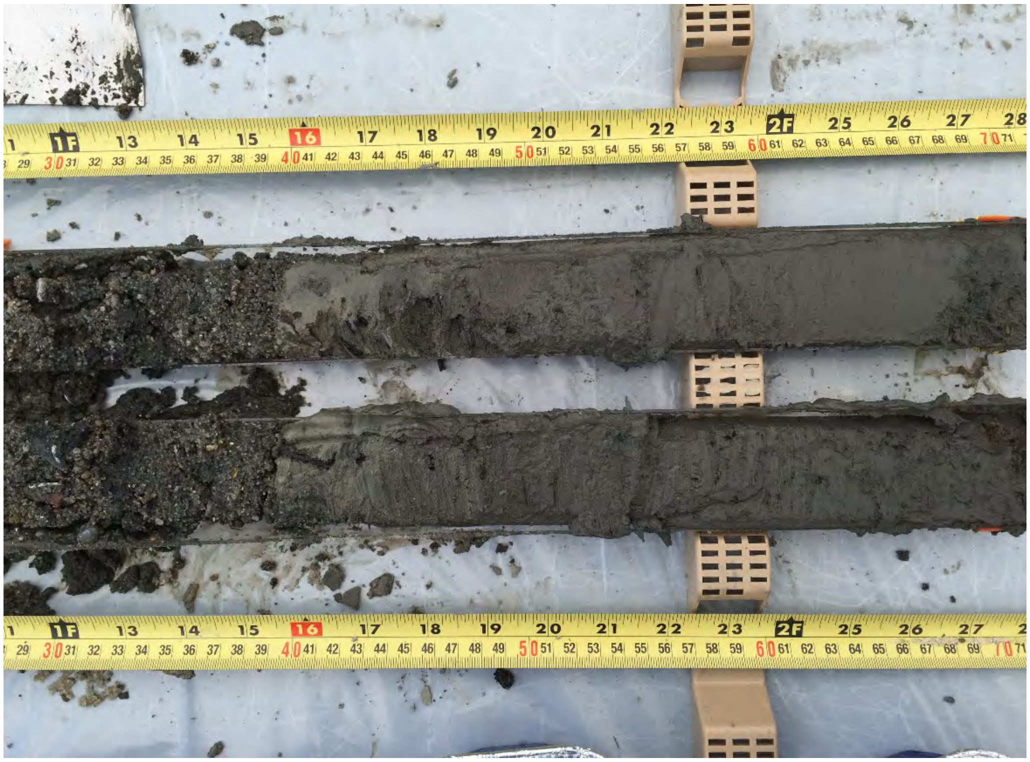


Photo 39: Station 3, Core 4, 1-2 feet

Photo 40: Station 3, Core 4, 2-3 feet

Photo 41: Station 3, Core 5, 0-1 feet

Photo 42: Station 3, Core 5, 1-2 feet

RAMBOLL ENVIRON

**Site Photographs**
Quantico 25-Month Monitoring Event
Quantico, VA
August 2016

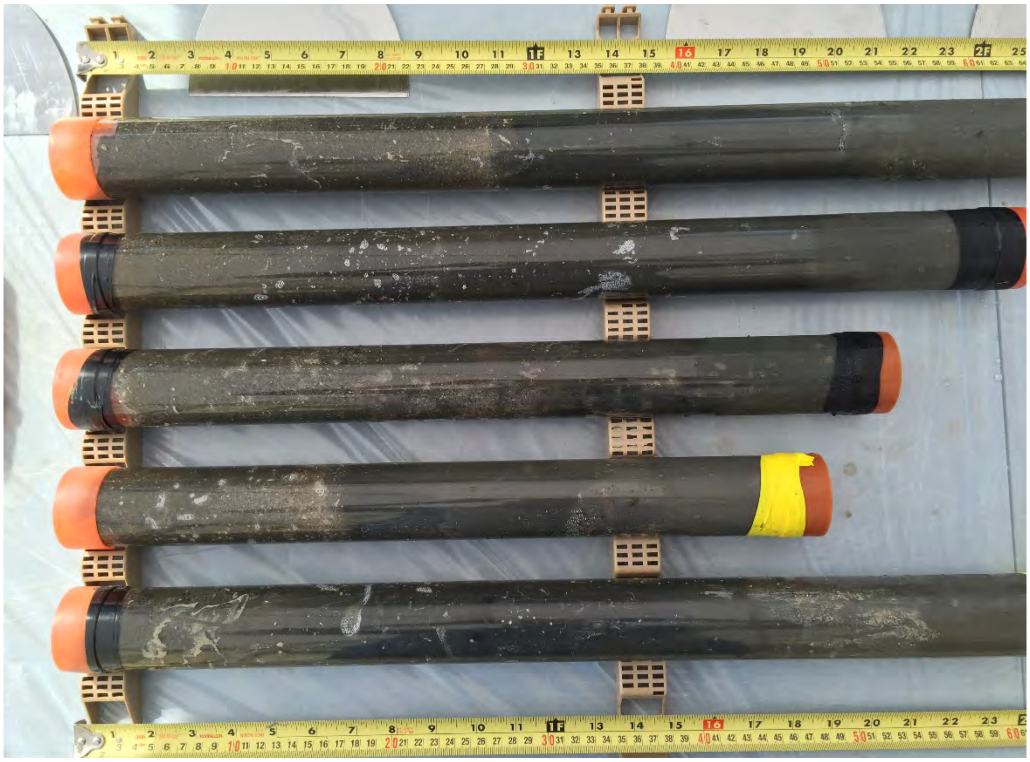


Photo 43: Station 4, All Cores, 0-60 cm

Photo 44: Station 4, All Cores, 26-68 cm

Photo 45: Station 4, Core 1, 0-1 feet

Photo 46: Station 4, Core 1, 1-2 feet

Photo 47: Station 4, Core 2, 0-1 feet

Photo 48: Station 4, Core 2, 1-2 feet

Photo 49: Station 4, Core 3, 0-1 feet

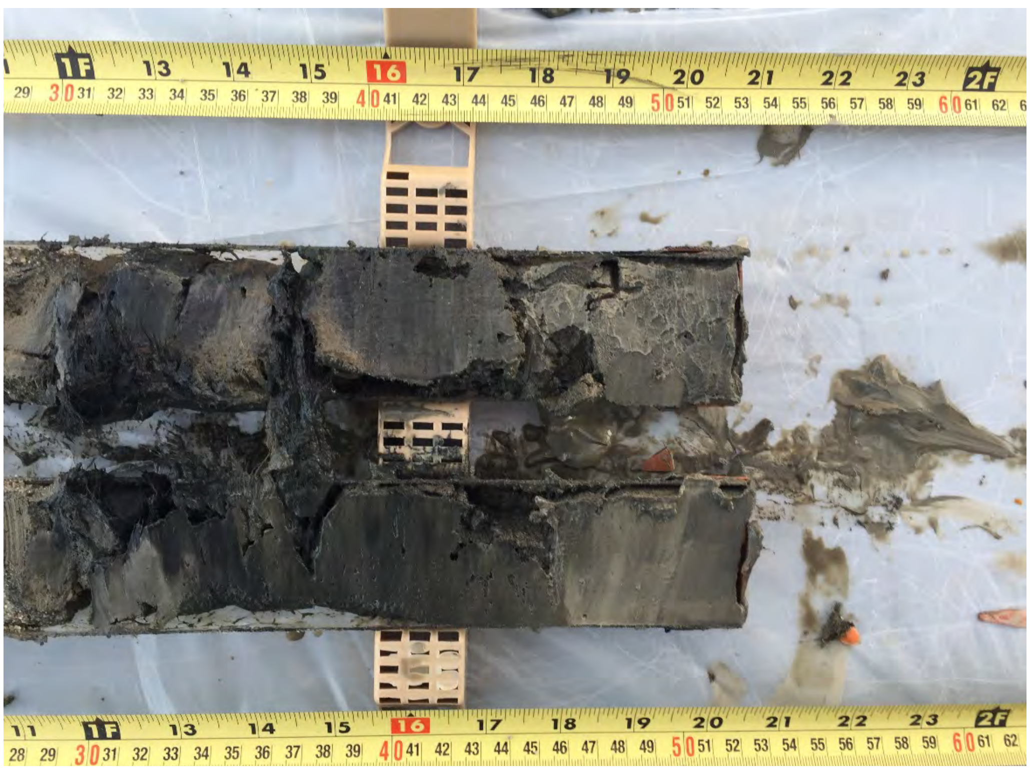


Photo 50: Station 4, Core 3, 1-2 feet

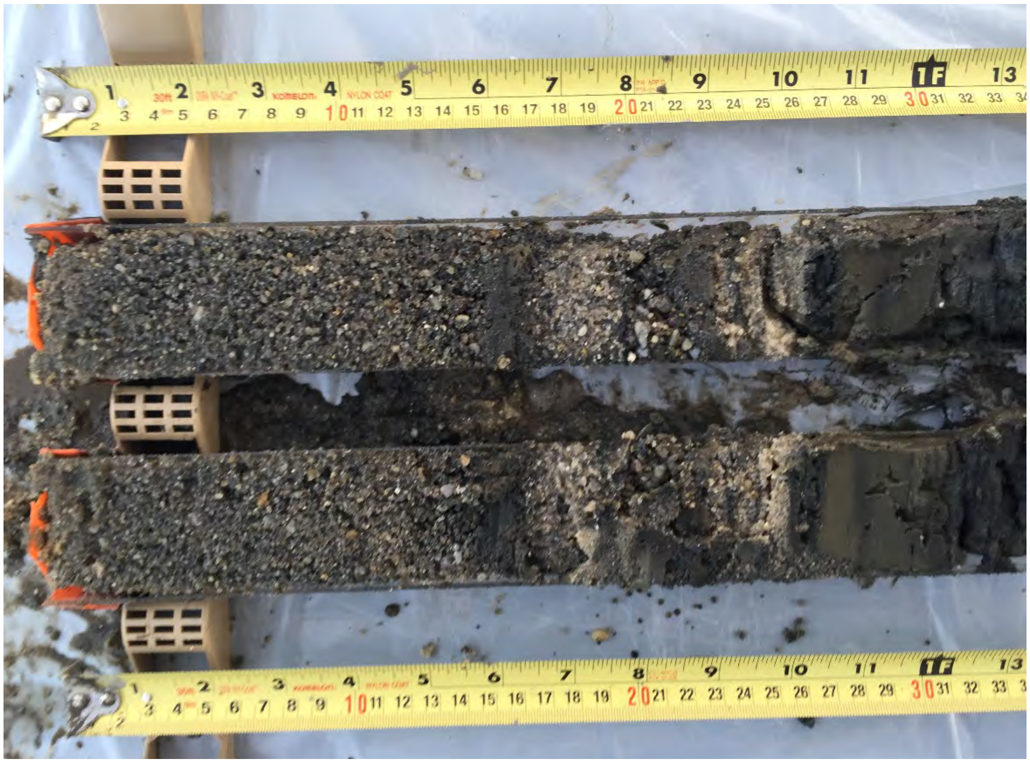


Photo 51: Station 4, Core 4, 0-1 feet

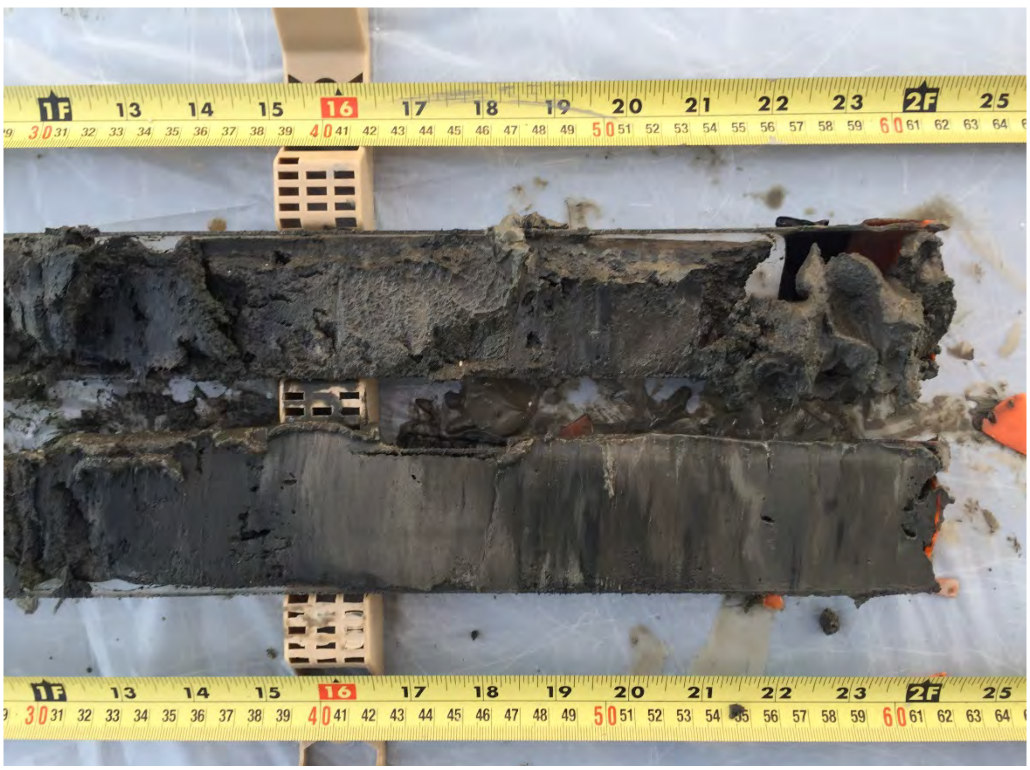


Photo 52: Station 4, Core 4, 1-2 feet

Photo 53: Station 4, Core 5, 0-1 feet

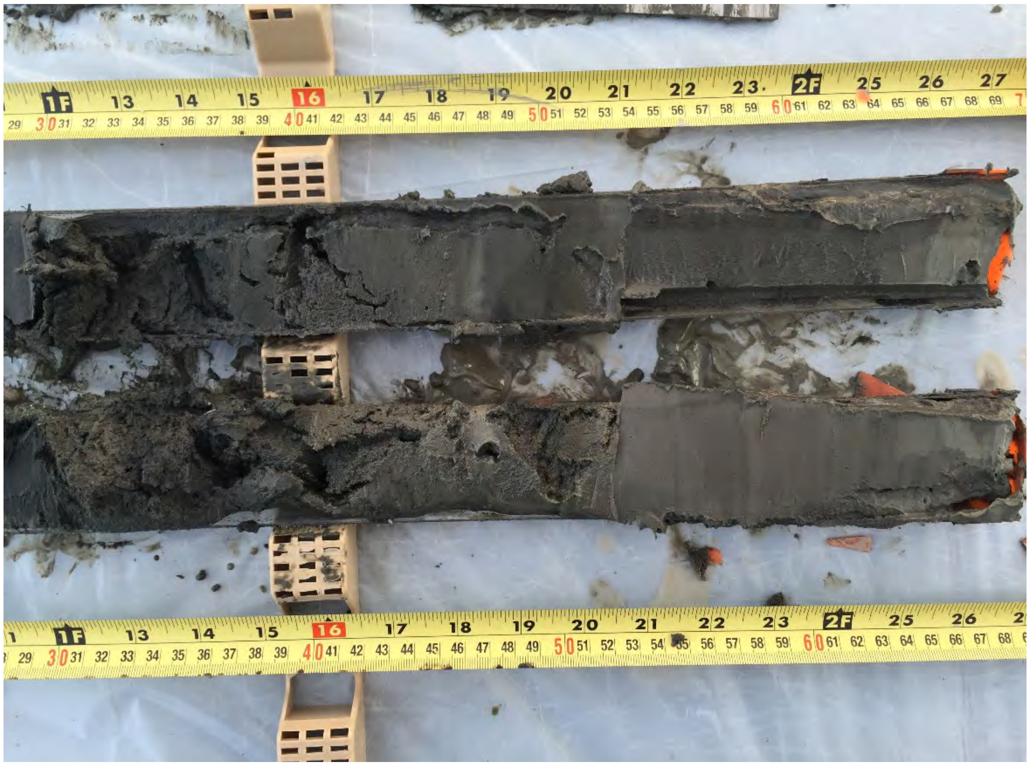


Photo 54: Station 4, Core 5, 1-2 feet

Photo 55: Station 5, All Cores, 0-60 cm

Photo 56: Station 5, All Cores, 24-84 cm

Photo 57: Station 5, Core 1, 0-1 feet

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Photo 59: Station 5, Core 2, 0-1 feet

Photo 60: Station 5, Core 2, 1-2 feet

Photo 61: Station 5, Core 2, 2-3 feet

Photo 62: Station 5, Core 3, 0-1 feet

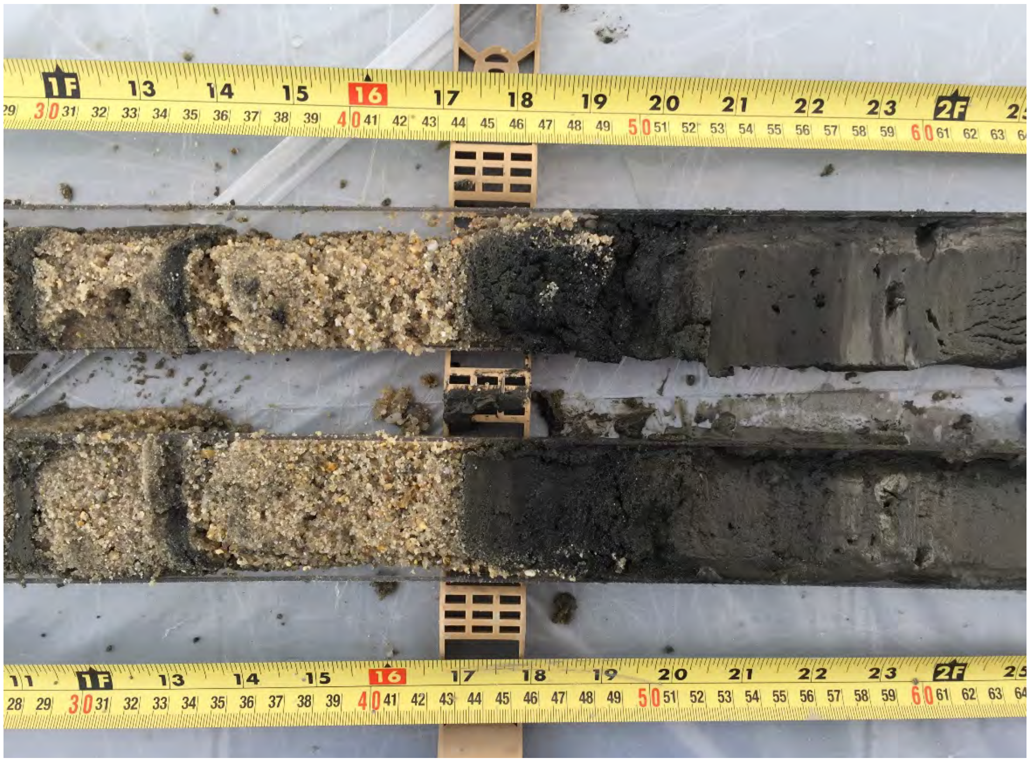

Photo 63: Station 5, Core 3, 1-2 feet

Photo 64: Station 5, Core 3, 2-3 feet

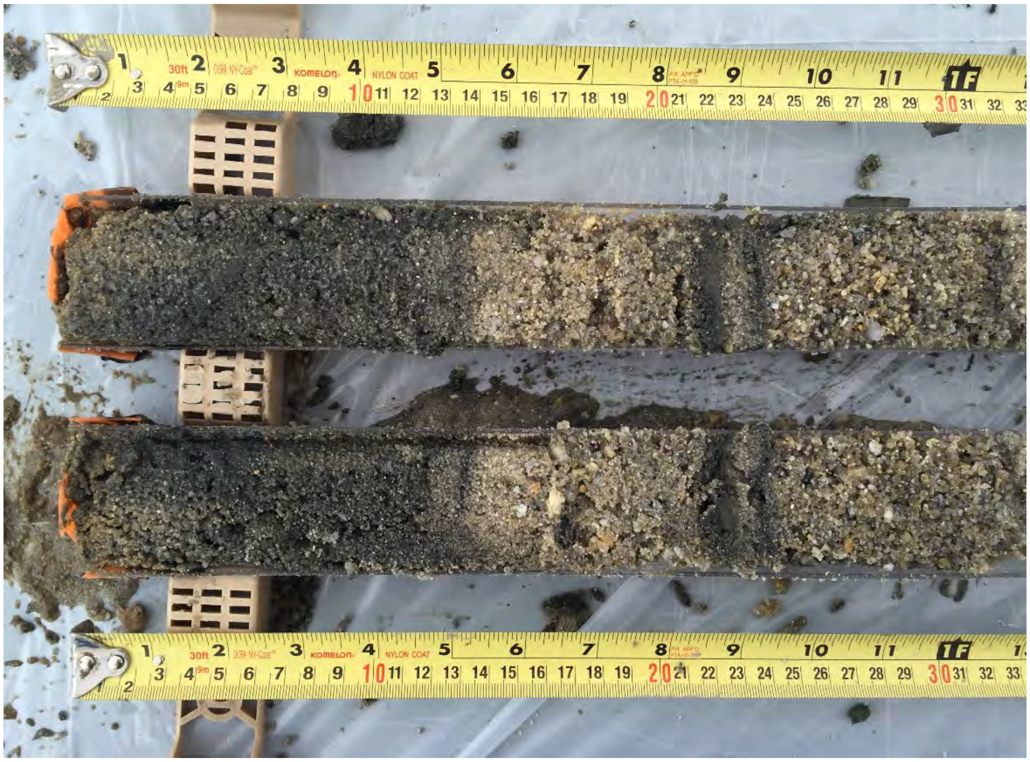


Photo 65: Station 5, Core 4, 0-1 feet

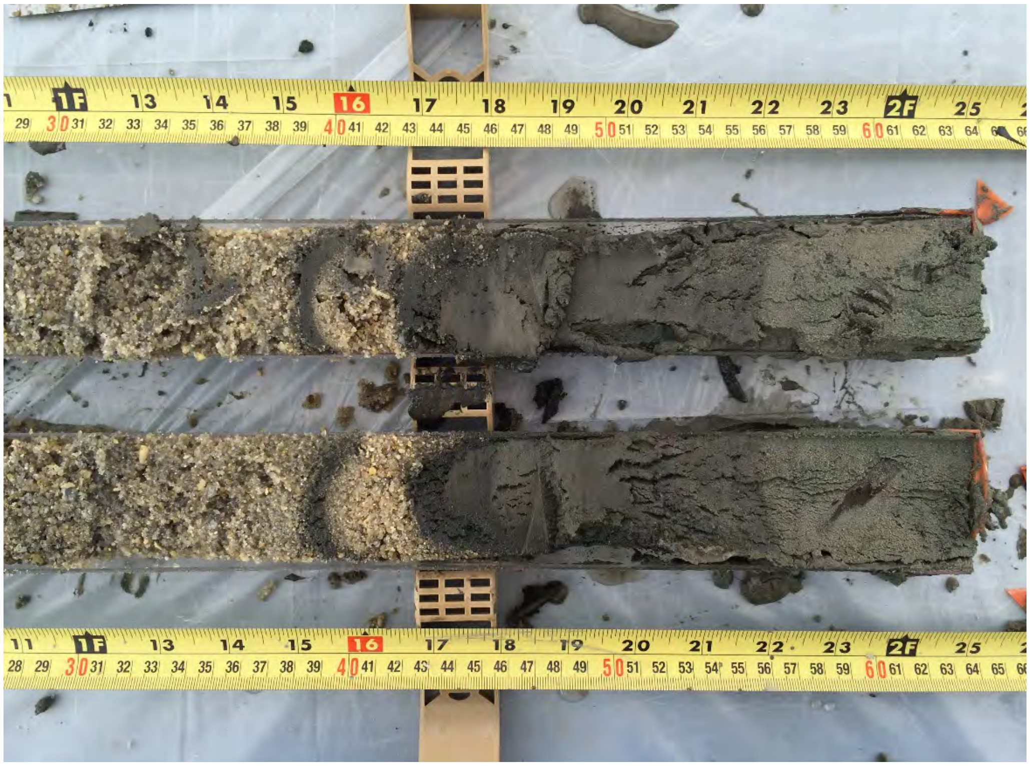


Photo 66: Station 5, Core 4, 1-2 feet

Photo 67:  Station 5, Core 5, 0-1 feet

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RAMBOLL ENVIRON

**Site Photographs**
Quantico 25-Month Monitoring Event
Quantico, VA
August 2016

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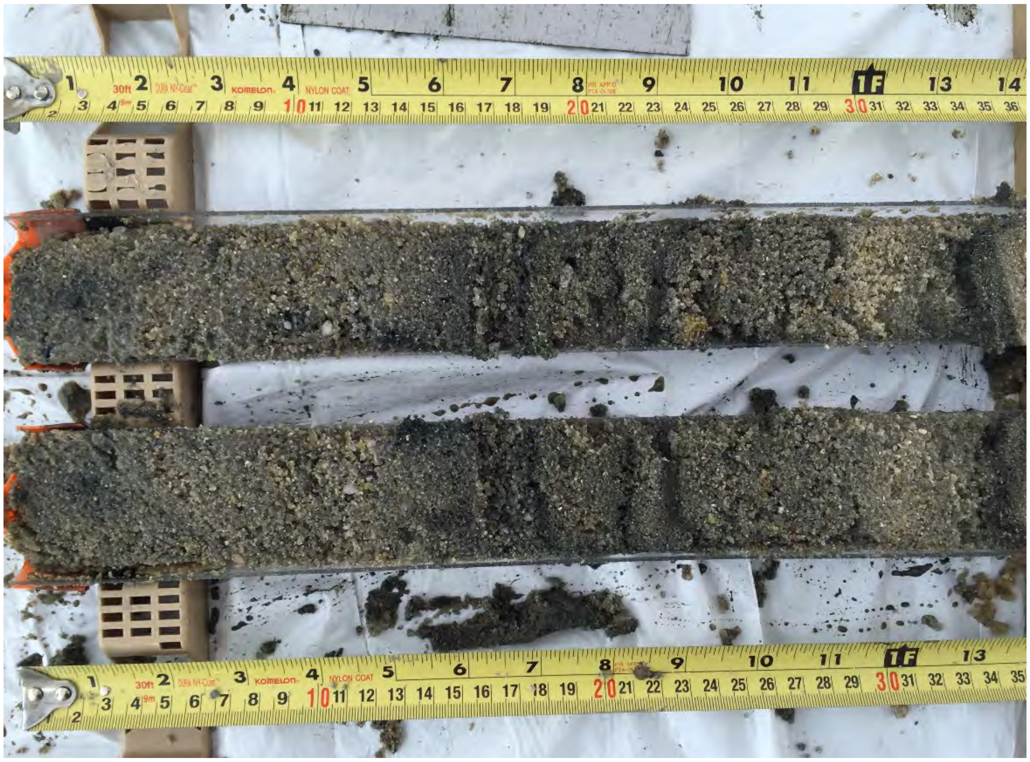


Photo 81: Station 5 Duplicate, Core 5, 0-1 feet

Photo 82: Station 5 Duplicate, Core 5, 1-2 feet

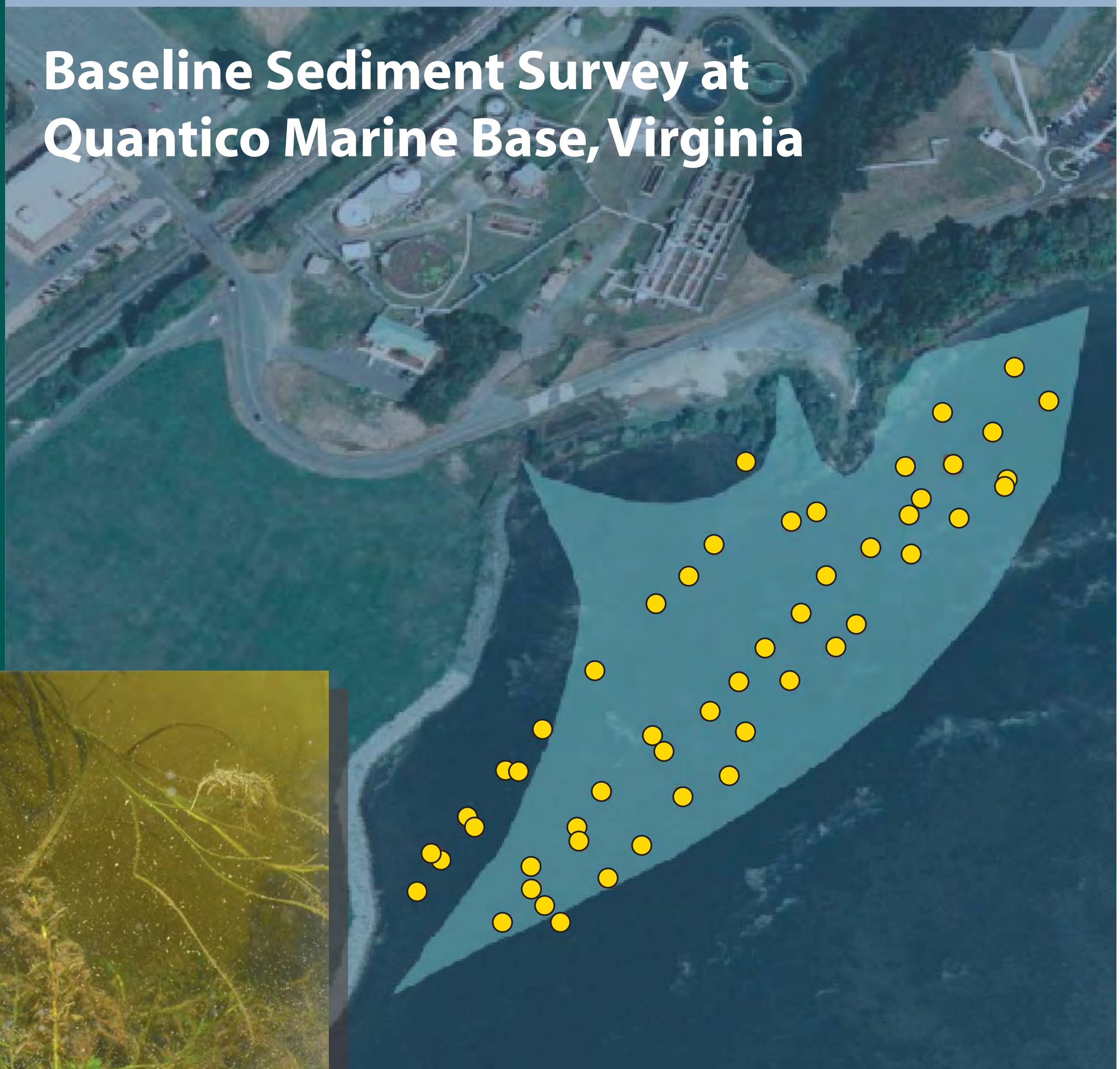
# Appendix E-2

# Sediment Profile Imagery

February 2010

## *Sediment Profile Imaging Report*

# Baseline Sediment Survey at Quantico Marine Base, Virginia



**Prepared for:**

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18100 Von Karman Avenue
Suite 600
Irvine, CA 92612

Subcontract Number S6280048

**Prepared by:**

**Germano & Associates, Inc.**
12100 SE 46th Place
Bellevue, WA 98006

# Sediment Profile Imaging Report

# BASELINE SEDIMENT SURVEY AT QUANTICO MARINE BASE, VIRGINIA

**Prepared for**

**ENVIRON International Corporation**
18100 Von Karman Avenue
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12100 SE 46th Place
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**February, 2010**

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# 1.0
# INTRODUCTION

As part of a multidisciplinary research effort being lead by the US Navy (SPAWAR Systems Center San Diego) to demonstrate and validate the performance and cost-effectiveness of Enhanced Monitored Natural Recovery (EMNR) at various Department of Defense contaminated sediment sites, Germano & Associates, Inc. (G&A) performed a Sediment Profile Imaging (SPI) survey at the Quantico Embayment (Site 99, MCB Quantico, Quantico, VA). The purpose of the SPI survey was to document baseline benthic community status and sediment characteristics prior to placement of the demonstration thin-layer cap. Following the capping operation, SPI technology will be used once more to document the spatial extent and thickness of the cap as well as the extent of surface sediment benthic mixing and change from baseline sediment conditions.

# 2.0 MATERIALS AND METHODS

On September 23, 2009, scientists from G&A (J. Germano) and the US Navy (B. Davidson) conducted an SPI survey from the *R/V Potomac Princess*, a 12-ft aluminum rowboat. The vessel was barely adequate to complete the survey; the combined weight of the two passengers and equipment were almost at the weight limit capacity for the vessel, and the field crew capsized the vessel after the first 19 stations had been sampled. In spite of the difficulties encountered conducting the field survey, the field crew was still able to collect sediment profile images at 51 stations by the end of the day (Figure 1). An Ocean Imaging Systems Model 3731-D sediment profile camera was used for this survey; a grand total of 79 sediment profile images were collected for analysis during the course of the one-day field operation.

SPI was developed almost two decades ago as a rapid reconnaissance tool for characterizing physical, chemical, and biological seafloor processes and has been used in numerous seafloor surveys throughout North America, Asia, Europe, and Africa (Rhoads and Germano 1982, 1986, 1990; Revelas et al. 1987; Diaz and Schaffner, 1988; Valente et al. 1992). The sediment profile camera works like an inverted periscope. A Nikon D200 10-megapixel SLR camera with an 8-gigabyte compact flash card is mounted horizontally inside a watertight aluminum housing on top of a wedge-shaped prism. The prism has a Plexiglas® faceplate at the front with a mirror placed at a 45° angle at the back. The camera lens looks down at the mirror, which is reflecting the image from the faceplate. The prism has an internal strobe mounted inside at the back of the wedge to provide illumination for the image; this chamber is filled with distilled water, so the camera always has an optically clear path between the image sensor and the sediments against the faceplate. This wedge assembly can be lowered by hand through shallow water to the sediment surface by either two handles (Figure 2A) or from a small boat by a lifting fork assembly (Figure 2B and 2C). The knife-sharp edge of the prism transects the sediment, and the prism penetrates the bottom. Once the prism is inserted into the sediment, the operator can push a button on the handle to fire the strobe and take a picture of the upper 20 cm of the sediment column. The resulting images give the viewer the same perspective as looking through the side of an aquarium half-filled with sediment. The strobe recharges within 5 seconds, and the camera is ready to be lowered again for a replicate image. Surveys can be accomplished rapidly by “pogo-sticking” the camera across an area of seafloor while recording positional fixes on the surface vessel.

The only adjustments to the hand-held SPI system made in the field were electronic software adjustments to the Nikon D200 to control camera settings. Camera settings (f-stop, shutter speed, ISO equivalents, digital file format, color balance, etc.) are selectable through a water-tight USB port on the camera housing and Nikon Control Pro2® software. At the beginning of the survey, the time on the sediment profile camera's internal data logger was synchronized with the internal clock on the computerized navigation system to local time. Details of the camera settings for each digital image are available in the associated parameters file embedded in the electronic image file; for this survey, the ISO-equivalent was set at 640. The additional camera settings used were as follows: shutter speed was 1/250, f8, white balance set to flash, color mode to Adobe RGB, sharpening to none, noise reduction off, and storage in compressed raw Nikon Electronic Format (NEF) files (approximately 9 MB each). Electronic files were converted to high-resolution jpeg (8-bit) format files (2592 x 3872 pixels) using Nikon Capture NX2® software (Version 2.2.4).

Either single or duplicate images were taken at each station; each SPI image was identified by the time recorded on the digital image file in the camera and in memory with vessel position on the navigation computer. The unique time stamp on the digital image was then cross-checked with the time stamp in the navigational system's data file. Digital image files were re-named with the appropriate station name immediately after completion of the field operation.

Test exposures of the Kodak® Color Separation Guide (Publication No. Q-13) were made on deck at the beginning of the survey to verify that all internal electronic systems were working to design specifications and to provide a color standard against which final images could be checked for proper color balance. A spare camera and charged battery were carried in the field at all times to insure uninterrupted sample acquisition. After deployment of the camera at each station, the frame counter was checked to make sure that the station had been adequately sampled.

Following completion of the field operations, the raw NEF image files were converted to high-resolution Joint Photographic Experts Group (jpeg) format files using the minimal amount of image file compression. Once converted to jpeg format, the intensity histogram (RGB channel) for each image was adjusted in Adobe Photoshop® to maximize contrast without distortion. The jpeg images were then analyzed using Bersoft Image Measurement© software version 3.06 (Bersoft, Inc.). Calibration information was determined by measuring 1-cm gradations from the Kodak® Color Separation Guide. This calibration information was applied to all SPI images analyzed. Linear and area measurements were recorded as number of pixels and converted to scientific units using the calibration information.

Measured parameters were recorded on a Microsoft Excel© spreadsheet. G&A's senior scientist (Dr. J. Germano) subsequently checked all these data as an independent quality assurance/quality control review of the measurements before final interpretation was performed.

## 2.1 MEASURING, INTERPRETING, AND MAPPING SPI PARAMETERS

### 2.1.1 Sediment Type

The sediment grain-size major mode and range were visually estimated from the color images by overlaying a grain-size comparator that was at the same scale. This comparator was prepared by photographing a series of Udden-Wentworth size classes (equal to or less than coarse silt up to granule and larger sizes) with the SPI camera. Seven grain-size classes were on this comparator: >4 $\phi$ (silt-clay), 4 ˜3 $\phi$ (very fine sand), 3-2 $\phi$ (fine sand), 2 ˜1 $\phi$ (medium sand), 1-0 $\phi$ (coarse sand), 0 ˜ . (-)1 $\phi$ (very coarse sand), < -1 $\phi$ (granule and larger). The lower limit of optical resolution of the photographic system was about 62 microns, allowing recognition of grain sizes equal to or greater than coarse silt ($\geq$ 4 $\phi$). The accuracy of this method has been documented by comparing SPI estimates with grain-size statistics determined from laboratory sieve analyses.

The comparison of the SPI images with Udden-Wentworth sediment standards photographed through the SPI optical system was also used to map near-surface stratigraphy such as sand-over-mud and mud-over-sand. When mapped on a local scale, this stratigraphy can provide information on relative transport magnitude and frequency.

### 2.1.2 Prism Penetration Depth

The SPI prism penetration depth was measured from the bottom of the image to the sediment-water interface. The area of the entire cross-sectional sedimentary portion of the image was digitized, and this number was divided by the calibrated linear width of the image to determine the average penetration depth. Linear maximum and minimum depths of penetration were also measured. All three measurements (maximum, minimum, and average penetration depths) were recorded in the data file.

Prism penetration can be a noteworthy parameter when using the standard Model 3731 camera with a deployment frame; if the number of weights used in the camera is held constant throughout a survey, the camera functions as a static-load penetrometer. However, the force applied to the hand-held Model 3731 is variable, depending on operator strength and sediment resistance. Comparative penetration values from sites of similar grain size can give an indication of the relative water content of the sediment. Highly bioturbated sediments and rapidly accumulating sediments tend to have the highest water contents and greatest prism penetration depths.

The depth of penetration also reflects the bearing capacity and shear strength of the sediments. Overconsolidated or relic sediments and shell-bearing sands resist camera penetration. Highly bioturbated, sulfitic, or methanogenic muds are the least consolidated, and deep penetration is typical. Seasonal changes in camera prism penetration have been observed at the same station in other studies and are related to the control of sediment geotechnical properties by bioturbation (Rhoads and Boyer 1982). The effect of water temperature on bioturbation rates appears to be important in controlling both biogenic surface relief and prism penetration depth (Rhoads and Germano 1982).

### 2.1.3 Small-Scale Surface Boundary Roughness

Surface boundary roughness was determined by measuring the vertical distance between the highest and lowest points of the sediment-water interface. The surface boundary roughness (sediment surface relief) measured over the width of sediment profile images typically ranges from 0.02 to 3.8 cm, and may be related to either physical structures (ripples, rip-up structures, mud clasts) or biogenic features (burrow openings, fecal mounds, foraging depressions). Biogenic roughness typically changes seasonally and is related to the interaction of bottom turbulence and bioturbational activities.

The camera must be level in order to take accurate boundary roughness measurements. In sandy sediments, boundary roughness can be a measure of sand wave height. On silt-clay bottoms, boundary roughness values often reflect biogenic features such as fecal mounds or surface burrows. The size and scale of boundary roughness values can have dramatic effects on both sediment erodibility and localized oxygen penetration into the bottom (Huettel et al., 1996).

### 2.1.4 Thickness of Depositional Layers

Because of the camera's unique design, SPI can be used to detect the thickness of natural depositional or dredged material layers. SPI is effective in measuring layers ranging in thickness from 1 mm to 20 cm (the height of the SPI optical window). During image analysis, the thickness of the newly deposited sedimentary layers can be determined by measuring the distance between the pre- and post-disposal sediment-water interface. Recently deposited material is usually evident because of its unique optical reflectance and/or color relative to the underlying material representing the pre-disposal surface. Also, in most cases, the point of contact between the two layers is clearly visible as a textural change in sediment composition, facilitating measurement of the thickness of the newly deposited layer.

### 2.1.5 Apparent Redox Potential Discontinuity Depth

Aerobic near-surface freshwater sediments typically have higher reflectance relative to underlying hypoxic or anoxic sediments. Surface sands washed free of mud also have higher optical reflectance than underlying muddy sands. These differences in optical reflectance are readily apparent in SPI images; the oxidized surface sediment contains particles coated with ferric hydroxide (an olive or tan color when associated with particles), while reduced and muddy sediments below this oxygenated layer are darker, generally gray to black. The boundary between the colored ferric hydroxide surface sediment and underlying gray to black sediment is called the apparent redox potential discontinuity (RPD).

The depth of the apparent RPD in the sediment column is an important time-integrator of dissolved oxygen conditions within sediment porewaters. In quiescent freshwater systems such as lakes, the absence of bioturbating organisms will limit the depth of this high reflectance layer in fine-grained silt/clays to a thickness of 2 mm below the sediment-water interface (Rhoads 1974). This depth is related to the supply rate of molecular oxygen by diffusion into the bottom and the consumption of that oxygen by the sediment and associated microflora. In sediments that have very high sediment oxygen demand (SOD), the sediment may lack a high reflectance layer even when the overlying water column is aerobic.

This vertical zonation of redox stratification results from the oxidation of organic matter by a series of increasingly less energetically-favorable terminal electron acceptors, e.g., $O_2$, $NO_3$, Mn(IV), Fe (III), and $SO_4^{-2}$ (Froelich et al., 1979). Typically, zones of Mn and Fe oxide (FMO) enrichment are present just below the oxic surface layers of sediment; Mn(IV) and Fe(III) form sparingly soluble oxides, which reductively dissolve to produce much more soluble Mn(II) and Fe(II). Therefore, accumulation of FMO just below the oxic zone is caused by Mn(II) and Fe(II) diffusing upwards from deeper, more reduced sediment zones and reacting with oxygen or nitrate diffusing downward from overlying oxic lake or porewaters (Koretsky et al., 2006). Redox zonation is influenced by many things besides this transport via diffusion of dissolved solutes, including macrophyte activity and transport of solutes and particles via bioirrigation and bioturbation. The relative sizes of these redox zones are affected by the interaction of numerous factors, including temperature, hydrology, lake turnover, mixing by river currents, and macrophytes and macrofaunal activity, all of which can vary on a seasonal basis and influence the balance between organic matter and terminal electron acceptor availability (Davison, 1993; Sherman et al., 1994; Urban et al, 1997).

The relationship between the thickness of this high reflectance layer and the presence or absence of free molecular oxygen in the associated porewaters must be considered with caution. The actual RPD is the boundary or horizon that separates the positive Eh region of the sediment column from the underlying negative Eh region. The exact location of this Eh = 0 boundary can be determined accurately only with microelectrodes; hence, the relationship between the change in optical reflectance, as imaged with the SPI camera, and the actual RPD can be determined only by making the appropriate *in situ* Eh measurements. For this reason, the optical reflectance boundary, as imaged, was described in this study as the “apparent” RPD (aRPD) and it was mapped as a mean value. In general, the depth of the actual Eh = 0 horizon will be either equal to or slightly shallower than the depth of the optical reflectance boundary (Rosenberg et al., 2001).

This is because bioturbating organisms can mix ferric hydroxide-coated particles downward into the bottom below the Eh = 0 horizon.  Depending on hydrodynamics, the apparent mean RPD depth can be used either as an estimate of the depth of porewater exchange, usually through porewater irrigation from hydraulic flow or bioirrigation, or an indication of sediment accumulation from rapid deposition of resuspended, oxidized particles in fluvial systems.

Measurable changes in the aRPD depth using the SPI optical technique can be used effectively to document changes (or gradients) that develop over a seasonal or yearly cycle in river or lake systems related to changes in flow regime (rivers), water stratification/mixing (lakes), temperature effects on bioturbation rates, seasonal hypoxia, SOD, and infaunal recruitment.  Time-series aRPD measurements following a disturbance can be a critical diagnostic element in monitoring the degree of recolonization in an area by the ambient benthos (Rhoads and Germano 1986).

The apparent mean RPD depth also can be affected by local erosion; scouring around curves in rivers can wash away fines and form shell or gravel lag deposits, resulting in very thin surface oxidized layer.  Storm energy or heavy winds in shallow areas of lakes or rivers can cause erosion of the oxidized surface layers, effectively removing any evidence of an aRPD.

Another important characteristic of the aRPD is the contrast in reflectance at this boundary.  This contrast is related to the interactions among the degree of organic loading, the physical or biological mixing depth the sediment, the concentrations of bottom-water dissolved oxygen in an area, and localized sediment geochemistry.  High inputs of labile organic material increase SOD and, subsequently, sulfate reduction rates and the associated abundance of sulfide end products.  This results in more highly reduced, lower-reflectance sediments at depth and higher aRPD contrasts.  In a region of generally low aRPD contrasts, images with high aRPD contrasts indicate localized sites of relatively large inputs of organic-rich material such as phytoplankton, other naturally-occurring organic detritus, or anthropogenic impacts (industrial or sewage run-off or discharge).

Because the determination of the aRPD requires discrimination of optical contrast between oxidized and reduced particles, it is difficult, if not impossible, to determine the depth of the aRPD in well-sorted sands of any size that have little to no silt or organic matter in them (Painter et al, 2007).  When using SPI technology on sand bottoms, little information other than grain-size, prism penetration depth, and boundary roughness values can be measured; while oxygen has no doubt penetrated the sand beneath the sediment-water interface just due to physical forcing factors acting on surface roughness elements (Ziebis et al., 1996; Huettel et al., 1998), estimates of the mean aRPD depths in these types of sediments are indeterminate with conventional white light photography.

### 2.1.6 Sedimentary Methane

Free gases in sediments (typically hydrogen sulfide or methane, and sometimes carbon dioxide or traces of nitrogen or ammonia) are formed from either diagenetic bacterial reactions or migration of thermally-derived gases from greater depths. All of these gases are formed by microbial communities metabolizing organic substrates; therefore, presence of gas is an indicator of organic-rich sediments. If oxygen is available in the overlying waters and porewaters, an aerobic bacterial community dominates and carbon dioxide is the end product of their metabolism; generally, carbon dioxide will diffuse upward into the water column and rarely reaches concentrations high enough for a free gas phase to develop (Middleton, 2003). If organic loading is extremely high and porewater sulfate is depleted, then methanogenesis will occur. Two competing bacterial reactions generate free methane gas in sediments, one for anaerobic acetate (or similar) fermentation ($CH_3COOH \rightarrow CH_4 + CO_2$) and the other from carbon dioxide reduction ($CO_2 + 4H_2 \rightarrow CH_4 + 2H_2O$). In general, $CO_2$ reduction is dominant in marine sediments while fermentation reactions are the dominant ones in freshwater environments, although in all cases both reactions operate to some extent (Clayton, 1995).

The process of methanogenesis is indicated by the appearance of methane bubbles in the sediment column. These gas-filled voids are readily discernable in SPI images because of their irregular, generally circular aspect and glassy texture (due to the reflection of the strobe off the gas bubble).

### 2.1.7 Infaunal Successional Stage

The mapping of infaunal successional stages is readily accomplished in marine environments with SPI technology (Rhoads and Germano, 1982, 1986). While there are relatively few applications of SPI technology in freshwater environments (Boyer and Hedrick 1989; Boyer and Shen, 1988; Boyer and Whitlatch 1989) as compared with those in marine (Solan et al. 2003), there have been sufficient studies on benthic recolonization in freshwater (Tevesz, 1985; Soster and McCall, 1990a, b) to provide a basis for biological community interpretation of sediment profile images in freshwater systems.

While an early study by Moon (1935) in Lake Windemere (UK) was not focused specifically on recolonization patterns, he did show that the fauna collected in trays of what initially was defaunated sediment were similar to those found on the natural bottom after 4 weeks time. Soster and McCall (1990a) performed a series of tray recolonization experiments in western Lake Erie during different seasons of two successive years to examine recolonization patterns in freshwater benthos following a mortality-producing disturbance. Benthic communities in the trays remained different from the surrounding bottom anywhere from 2-14 months after the start of the experiment; recovery in the first year happened much quicker than in the second year of the experiment, in part due to differences in a high abundance of the oligochaete *Vejdovskyella intermedia* on the natural bottom the first year and its lack of abundance the second year of the experiment. Three species of opportunists (*Physocrypia globula* [an ostracod], *V. intermedia* [a tubificid oligochaete], and a *Chironomus plumosus* [chironomid larvae]) colonized sediments quite rapidly and in disproportionately high numbers, but then suffered population declines later in the year. A second group of chironomids (*Procladius* sp. and *Coelotanypus* sp.) and naidid oligochaetes (*Specaria josinae, Dero digitata, Arcteonais lomondi,* and *Pristina acuminata*) colonized the tray sediments in approximate proportion to their abundances on the natural bottom. This group was followed by the late successional group of species consisting of pisidiid bivalves and the tubificid oligochaetes *Limnodrilus* spp., *Ilyodrilus templetoni*, and to some extent, *Aulodrilus piqueti*; this group gradually increased in abundance during the experiments and eventually dominated the tray communities.

The general pattern that emerged showed a characteristic response of the benthic community following a major disturbance on the lakefloor during the spring or summer (Figure 3). The disturbed area is colonized by many of the same species present in undisturbed habitats on the natural bottom, but only one or a few species dominate the first few months; even though the taxonomic composition varied annually and seasonally, the opportunistic species mentioned earlier (*P. globula, V. intermedia,* and *C. plumosus*) were characteristic of this early assemblage. Over time, the assemblage gradually changed as slower colonizers increase in abundance and early colonizers decline. Some naidid oligochaetes, predatory chrinomids, and pididiid bivalves were also present in these late successional assemblages. Similar to recolonization patterns found in soft-bottom marine environments responding to disturbance (McCall, 1977; Rhoads et al., 1978; Pearson and Rosenberg, 1978), the life history characteristics of the early opportunists include small, mobile surface deposit feeders or suspension feeders that live at or near the sediment-water interface; their reproductive rate is high, and each species is capable of producing several generations a year, either because of short generation time (*P. globula*) or rapid asexual reproduction (*V. intermedia*). Late successional species were relatively deep infaunal dwellers that either deposit feed (tubificid oligochaetes) or filter feed (pisidiid bivalves) which grow slowly, mature later in life, and have generation times of at least one year (Soster and McCall, 1990a). Their adult body size is generally several times larger than that of early colonizers, they have infaunal life positions, and most of them reproduce sexually. The differences between these early and late successional assemblages are visible in sediment profile images.

While it may be that the response to disturbance by Lake Erie benthic communities is typical of sublittoral lacustrine benthos, there are relatively few additional studies with which to compare these results. Reviews of freshwater successional literature by Tevesz (1985) and Lopez (1988) describe similar characteristics of early and late successional stages during colonization of new lakes. Early successional stages are characterized by small, rapidly growing, suspension and surface deposit feeding taxa (*Chironomus*, naidid oligochaetes, and amphipods), and late successional stages are characterized by longerlived, subsurface deposit-feeding tubificid oligochaetes. So, despite profound taxonomic differences between freshwater and marine benthos (freshwater muddy bottoms are dominated by chironomid insect larvae, amphipods, tubificid oligochaetes, and bivalves [McCall and Tevesz 1982] whereas marine muddy bottoms are dominated by polychaetes, amphipods, and different families of bivalves [Sanders 1968; Rhoads, 1974]), the successional patterns are functionally similar.

While the successional dynamics of invertebrate communities in freshwater fine-grained sediments have been documented, the successional dynamics of invertebrate communities in sand and coarser sediments are not well-known. Subsequently, the insights gained from sediment profile imaging technology regarding biological community structure and dynamics in sandy and coarse-grained bottoms are fairly limited.

## 2.2 USING SPI DATA TO ASSESS BENTHIC QUALITY & HABITAT CONDITIONS

While various measurements of water quality such as dissolved oxygen, contaminants, or nutrients are often used to assess regional ecological quality, interpretation is difficult because of the transient nature of water-column phenomena. Measurement of a particular value of any water-column variable represents an instantaneous "snapshot" that can change within minutes after the measurement is taken. By the time an adverse signal in the water column such as a low dissolved oxygen concentration is persistent, the system may have degraded to the point where resource managers can do little but map the spatial extent of the phenomenon while gaining a minimal understanding of factors contributing to the overall degradation.

The sediment column, on the other hand, is a long-term time integrator of sediment and overlying water quality; values for any variable measured are the result of physical, chemical, and biological interactions on time scales much longer than those present in a rapidly moving fluid. Sediments are therefore an excellent indicator of environmental quality, both in terms of historical impacts and of future trends for any particular variable.

Physical measurements made with the SPI system from profile images provide background information about gradients in physical disturbance (caused by dredging, disposal, oil platform cuttings and drilling muds discharge, ship propwash in channels or in berthing areas, trawling, or storm resuspension and transport) in the form of maps of sediment grain size, boundary roughness, sediment textural fabrics, and structures. The concentration of organic matter and the SOD can be inferred from the optical reflectance of the sediment column and the apparent RPD depth. Organic matter is an important indicator of the relative value of the sediment as a carbon source for both bacteria and infaunal deposit feeders. SOD is an important measure of ecological quality; oxygen can be depleted quickly in sediment by the accumulation of organic matter and by bacterial respiration, both of which place an oxygen demand on the porewater and compete with animals for a potentially limited oxygen resource (Kennish 1986).

The apparent RPD depth is useful in assessing the quality of a habitat for epifauna and infauna from both physical and biological points of view. The apparent RPD depth in profile images has been shown to be directly correlated to the quality of the benthic habitat in polyhaline and mesohaline estuarine zones (Rhoads and Germano 1986; Revelas et al. 1987; Valente et al. 1992). Controlling for differences in sediment type and physical disturbance factors, apparent RPD depths < 1 cm can indicate chronic benthic environmental stress or recent catastrophic disturbance.

Soster and McCall (1990b) found that the spatial and temporal distributions of many of the infaunal macrobenthos in western Lake Erie were correlated with disturbance levels; species that were abundant late in the colonization sequence were more evenly distributed in the area surveyed, while early colonizers were usually more abundant in the more severely disturbed parts of the basin. These small, shallow-dwelling opportunists appeared to have suffered a higher mortality than larger, deeper-dwelling, late colonizers during unusually windy/high stress periods, but they are quick to recolonize the area after the disturbance abates. While comparing the fauna of mud bottom lakes created by water supply dams on the Sangamon River and its tributaries in Illinois, Gersbacher (1937) found that the taxa identified as early successional stages in the Soster and McCall (1990a) study were more frequently found in disturbed parts of the river, while the more stable areas contained faunas resembling those from older pools. Studies done in Lake George (Ganf and Viner 1973) found that chironomids and ostracods recovered most rapidly from disturbances; they were most abundant in the top 5 cm of disturbed sediment, while tubificids were more abundant in the 5-35 cm layer than in the 0-5 cm layer. If early and late successional assemblages are recognizable in freshwater sediment profile images, then inferences can be made about disturbance patterns affecting different regions of the area surveyed.

SPI has been shown to be a powerful reconnaissance tool that can efficiently map gradients in sediment type, biological communities, or disturbances from physical forces or organic enrichment. The conclusions reached at the end of this report are about dynamic processes that have been deduced from imaged structures; as such, they should be considered hypotheses available for further testing/confirmation. By employing Occam's Razor, we feel reasonably assured that the most parsimonious explanation is usually the one borne out by subsequent data confirmation.

# 3.0 RESULTS

A complete set of all the summary data measured from each image is presented in Appendix A. Water depths over the entire sampling area ranged between 1-2 meters.

## 3.1 GRAIN SIZE

The sediments at most of the stations in the north-northeast half of the site and closer to shore were primarily silty fine to very fine sand; as one moved away from landand into the the southwest quadrant of the sampling area, the river bed graded into softer silt-clay sediments (Figure 4). Some of the nearshore stations, e.g., Station 357, 359, 372, showed evidence of distinct depositional intervals that were most likely due to land runoff following heavy rainfall (Figure 5).

## 3.2 SURFACE BOUNDARY ROUGHNESS

Surface boundary roughness ranged from 0.6 to 4.2 cm with an overall site average of 1.7 cm, principally due to surface irregularities from river currents or wind energy that was transferred to the sediment bed (Figure 6). With the exception of two images collected at Stations 344 and 365 (see Appendix A), all of the small-scale topographic roughness measured in the sediment bed was due to physical forcing factors and not from infaunal burrowing or feeding activities.

## 3.3 PRISM PENETRATION DEPTH

The average station camera prism penetration depth ranged from 0 (no penetration) to 21.6 cm (overpenetration), with an overall site average penetration depth of 12.8 cm (Figure 7). Unlike surveys performed with the standard Model 3731 profile camera where the force used to drive the camera prism into the sediment is uniform (dependent on the number of lead weights in the chassis holders), the force applied to the hand-held camera prism is highly variable, dependent upon the response of the sediment bed to the operator's initial push on the handle and the length of time the operator has been operating the unit (less force is applied as time goes on with physical exhaustion becoming an increasingly important variable). Also, given the restrictions in this particular survey as far as available deck space and weight capacity of the sampling platform, it was not possible to download the images during sampling operations to check if images were compromised due to prism over-penetration. Therefore, the variation in prism penetration depth seen in Figure 7 is more an indication of sediment grain-size major mode; at those locations with a notable percentage (>20%) of particles in the sand-sized range (0.125 mm or larger), prism penetration ranged between 2-15 cm (Figure 8). In the southwest quadrant of the site where methanogenic silt-clay sediments with a high water content were found, compromised images were collected at 12 stations where the camera prism over-penetrated the bottom (Figure 9).

## 3.4 APPARENT REDOX POTENTIAL DISCONTINUITY DEPTH

The distribution of mean apparent RPD depths ranged from 0 to 3.7 cm, with an overall site average aRPD depth of 1.6 cm (Figure 10). None of the images in the southwest could be analyzed for aRPD depth because of the camera prism overpenetration, so data are missing from about one-quarter of the total number of stations sampled. The shallowest aRPD depths were found in a cluster of stations in the middle of the sampling area and extending to the southwest closest to shore (Figure 10); aRPD depths in the northeast section of the site (in the sandier, less-organically loaded areas) were generally higher.

## 3.5 SEDIMENTARY METHANE AND MACROPHYTE PRESENCE

Subsurface methane was quite common throughout the area and found at 40 of the 51 stations sampled (Figure 10); in addition to the sedimentary organic carbon, the other major source of organic input to the sediments was the high inventory of macrophytes. Two main types of aquatic vegetation were evident in the profile images, both a flat-bladed grass and a branched milfoil (it appears to be the invasive Eurasian milfoil *Myriophillum*; Figure 11). Submerged aquatic vegetation (SAV) was found at virtually every station sampled (Figure 4).

## 3.6 INFAUNAL SUCCESSIONAL STAGE

The freshwater successional model developed for lake bottoms was not a particularly useful paradigm for characterizing infauna in rivers. Biogenic subsurface structures (burrows, feeding pits, subsurface feeding voids) can be quickly destroyed in an extremely shallow area like this site by either river currents or wind-driven energy (affecting the bottom in the sandier areas), or deposition of additional sedimentary layers from land-based runoff at the nearshore stations. Apparent faunal densities were low, with only chironomids and oligochaetes visible as the dominant taxonomic groups, although one freshwater bivalve was seen at Station 381 (Figure 12). While the more mature successional assemblages were found in the northern half of the sampling area where aRPD depths were greatest, a somewhat incomplete picture of the infaunal community exists because successional stage could not be determined for over one-third of the images collected (Figure 13).

# 4.0
# DISCUSSION

Even though the baseline characterization of the site is somewhat incomplete because of the number of locations where the camera prism overpenetrated the sediments, the images from future monitoring surveys will not be compromised if a better sampling platform is available for future work.  There are three main conclusions to be drawn from the SPI results from this baseline survey at the Quantico Embayment site:

1. SAV was the dominant biomass at the site, and the normal annual cycle of plant growth and decay will most likely keep this as the primary source of organic carbon loading to the sediments (Figure 14).  Organic enrichment through decaying plants appears to be the biggest source of both food and stress to the resident infaunal community.
2. While subsurface methane is quite prevalent and a potential disruptor to any thin-layer cap placed on the bottom, the act of placing a layer of sediment on the existing river bed will trap all of the surface plant biomass and accelerate plant death and decay. This will create a layer of decomposing organic material beneath the cap and undoubtedly generate more methane, which could add to cap disruption.
3. Land runoff will continue to occur and most likely add additional (organic-rich) material to the cap; if the land-based sediments are <u>not</u> a source of contamination, this should not be a problem. If, however, the contaminants of concern detected in the submerged sediments are also present along the shoreline, then the cap will be largely ineffective in isolating any future biological receptors from contaminants of concern.

# 5.0
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# FIGURES

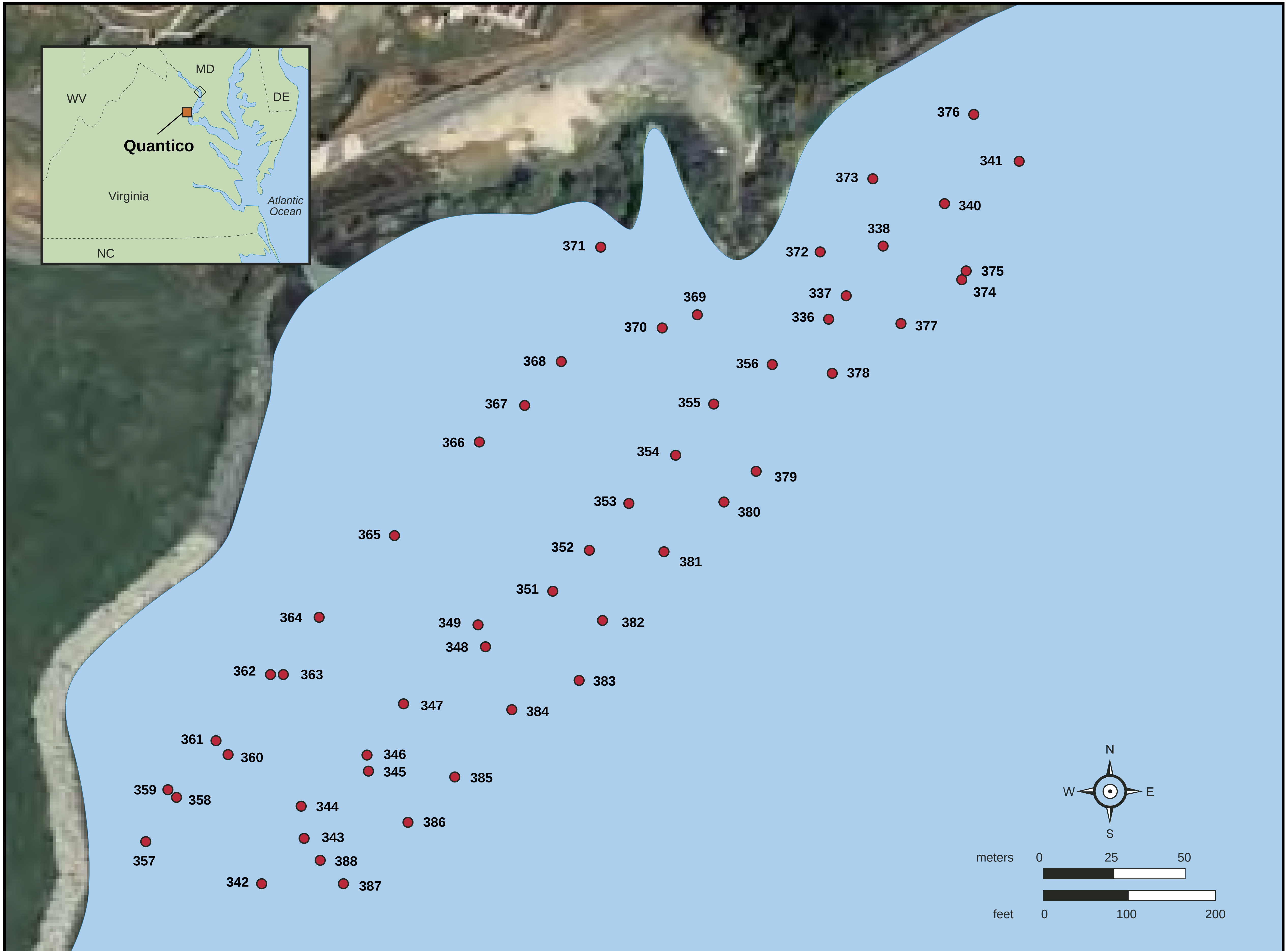



Figure 1. Location of sampling stations for the baseline SPI survey in the Quantico Embayment, September, 2009.


**A.** Hand held version for shallow stream and inter-tidal work, deployed by walking. Weight is approximately 40 lbs.

**B.** Extended handle for small boat deployment in very shallow water.

**C.** Longer handle for hand deployment in small boat in water depths to 6 feet.

Figure 2. Configuration of the hand-held aluminum Ocean Imaging Systems Model 3731-D Sediment Profile Camera.

## *Infaunal Successional Model for Freshwater Systems*

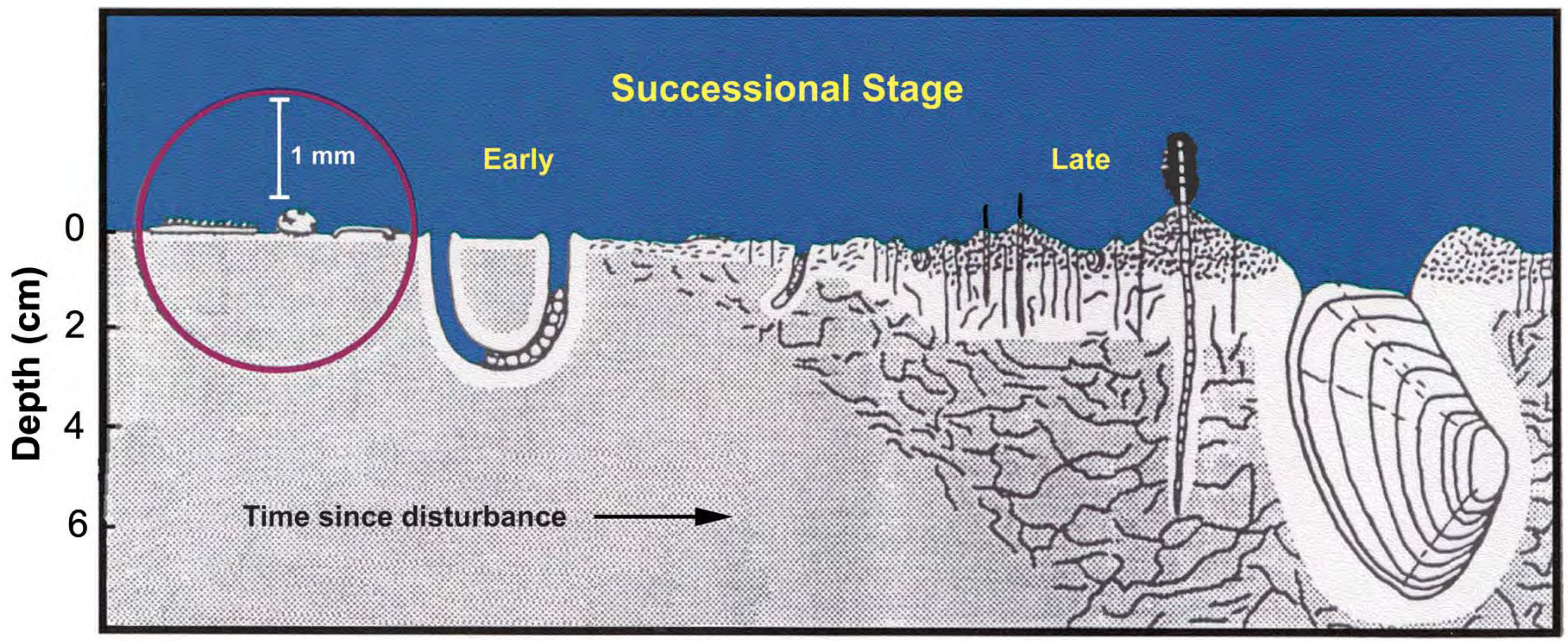



Figure 3. Freshwater muddy bottom successional model for western Lake Erie macrobenthos following a disturbance of the lakefloor which eliminates the ambient fauna (from Soster and McCall, 1990a). Area enclosed by the circle is magnified 20X; life positions of infauna from McCall and Tevesz (1982). From left to right in the circle: *Vejdovskyella intermedia*, *Physocrypia globula*, and first instar of *Chironomus plumosus*. A fourth instar of *Chironomus plumosus* is shown in the U-shaped tube under the label "Early", and moving to the right, we see naidid oligochaetes, pisidiid bivalves, larger tubificid oligochaetes, and then to the right of the label, "Late", the larger tubificid *Branchiura sowerbyi* and the buried large unionid bivalve.

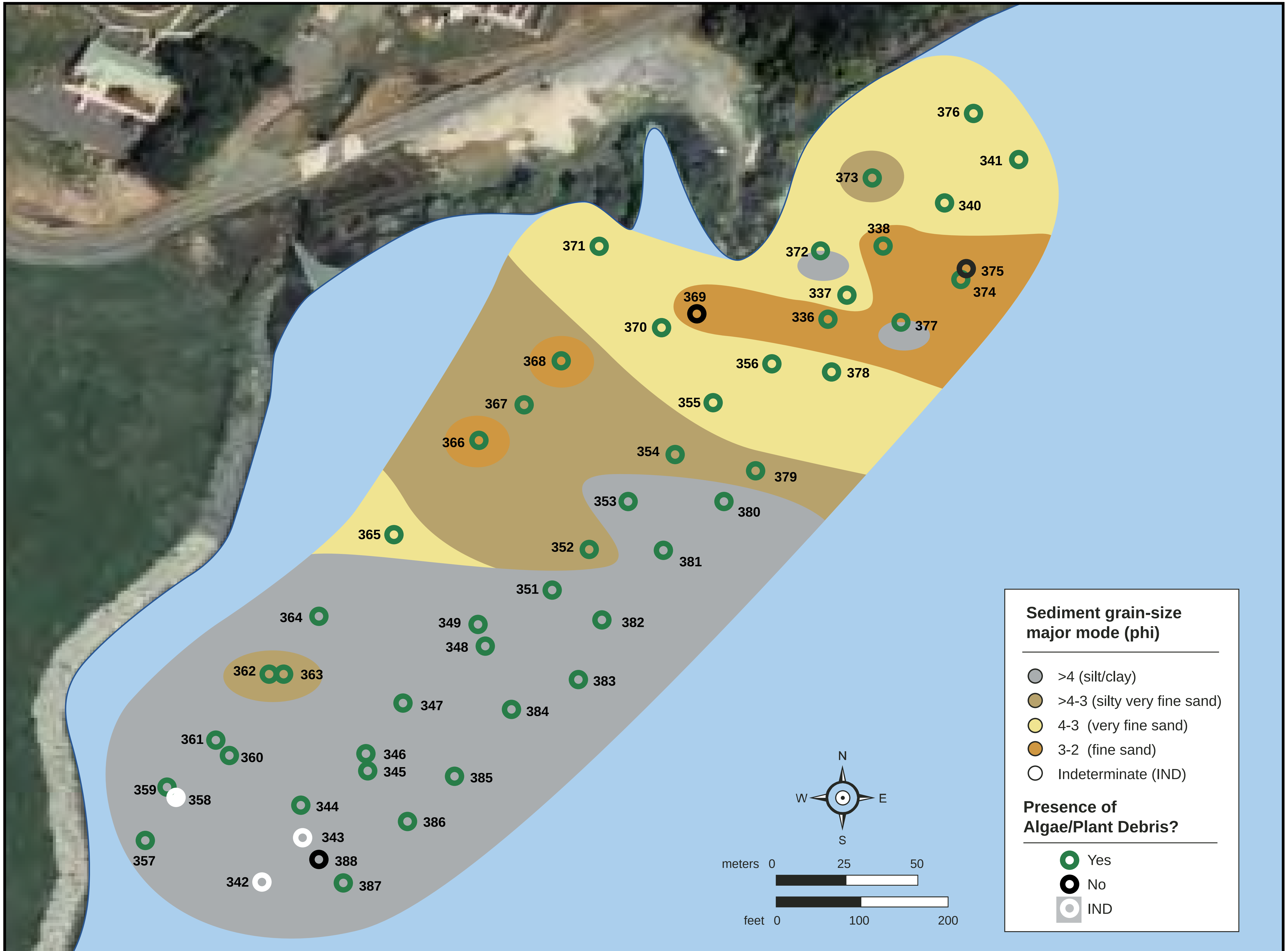



Figure 4. Spatial distribution of sediment grain-size major mode (phi units) at the Quantico Embayment in September, 2009.

**Station 357** **Station 372**

Figure 5. Evidence of recently deposited sedimentary intervals was detected at some of the nearshore stations as seen in these profile images from Station 357 (left) and Station 372 (right); the arrows in each image show the buried contact boundary that was the former sediment-water interface. Scale: width of each image = 14.5 cm.

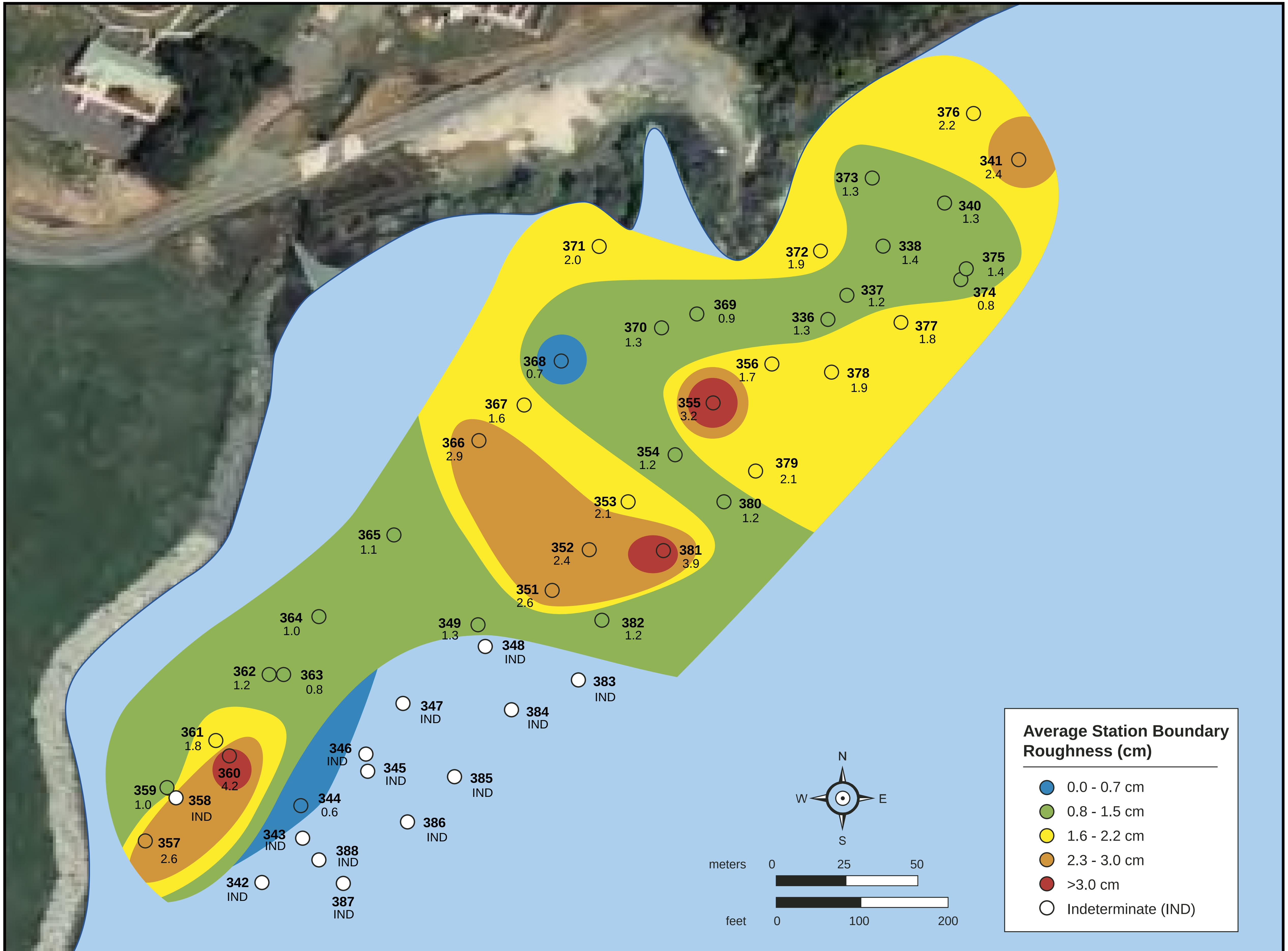


Figure 6. Spatial distribution of average station small-scale surface boundary roughness (cm) at the Quantico Embayment in September, 2009.

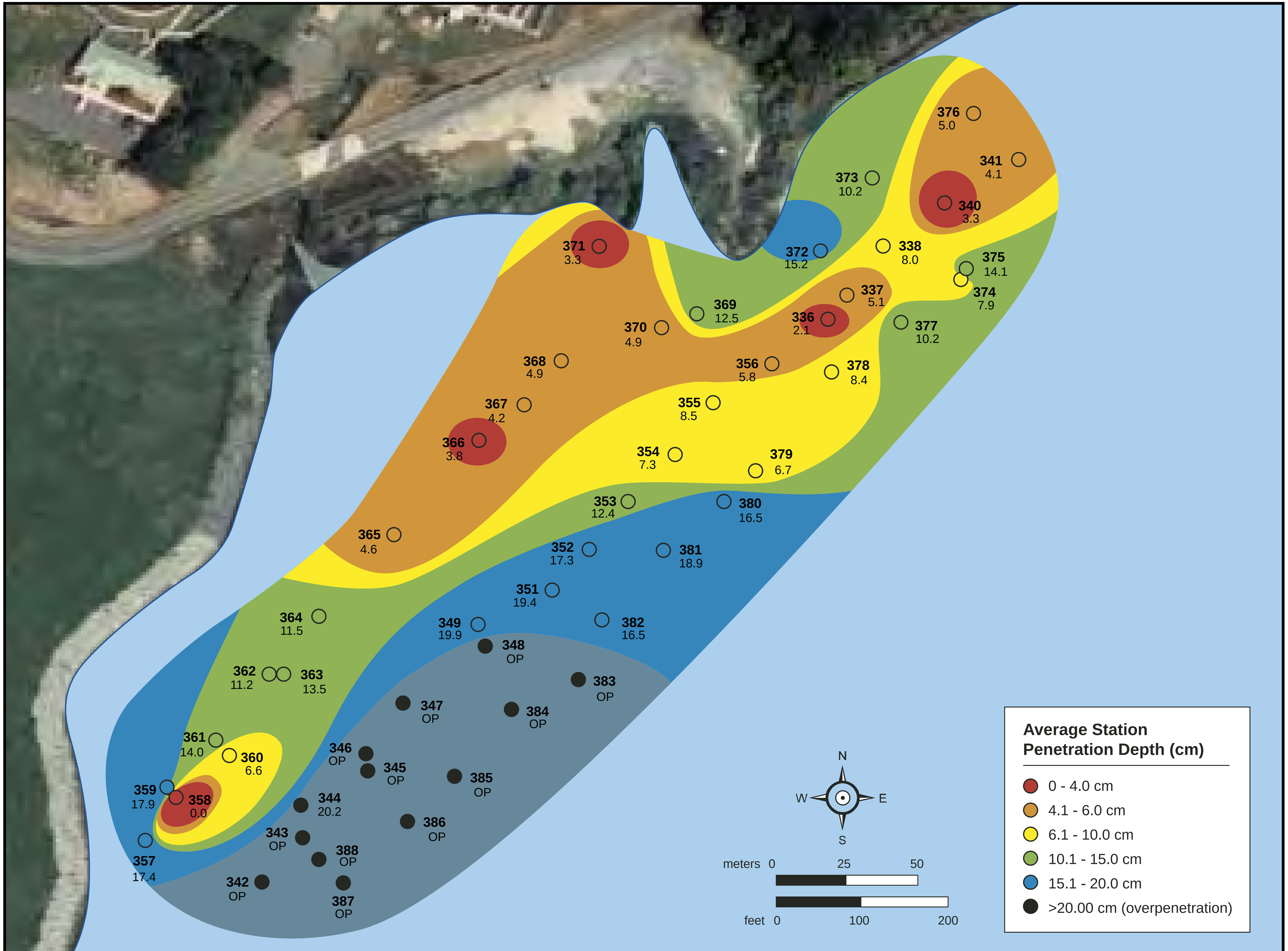
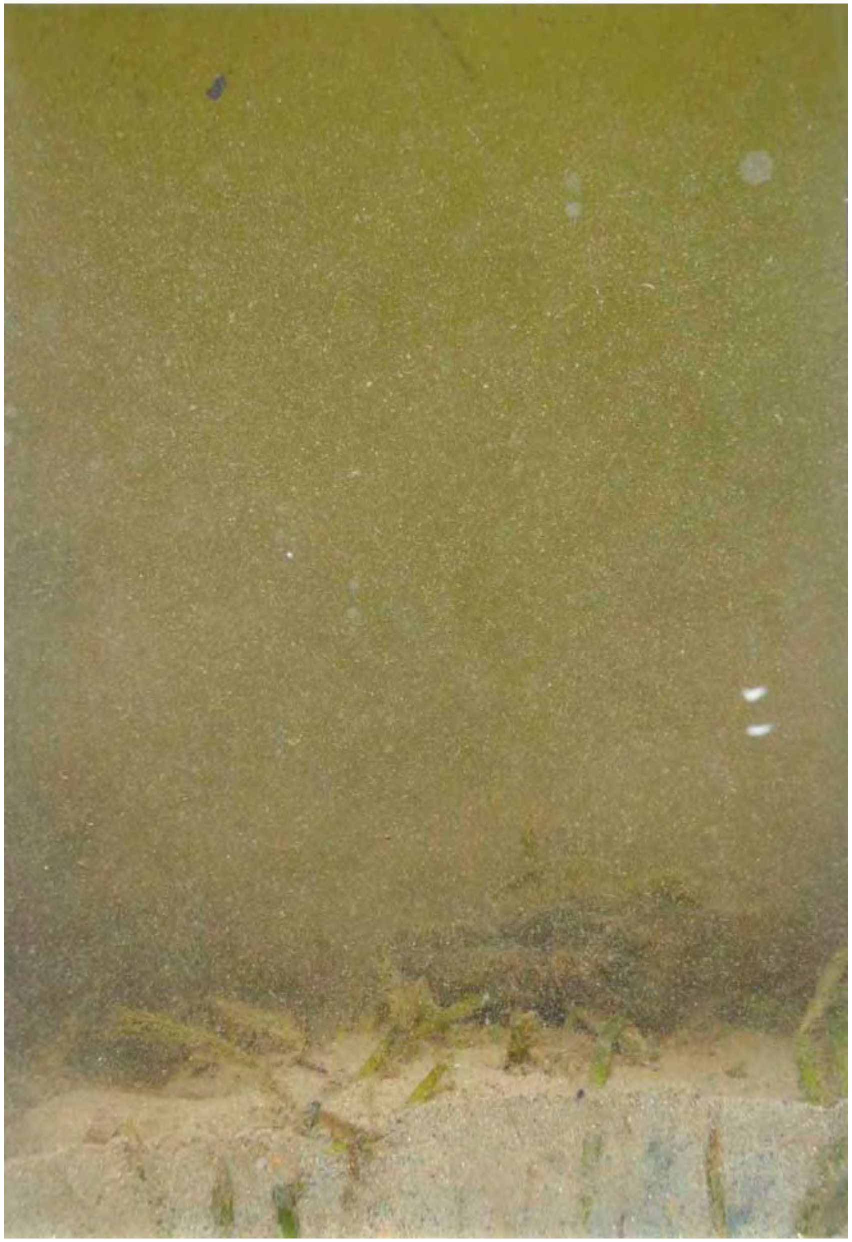



Figure 7. Spatial distribution of average station camera prism penetration depth (cm) at the Quantico Embayment in September, 2009.



**Station 336**

**Station 369**

Figure 8. These profile images from Station 336 (left) and 369 (right) both have a sediment grain-size major mode of fine sand but show a notable difference in penetration depth, mainly due to the presence of subsurface methane at Station 369 which reduces sediment shear strength.  Scale: width of each image = 14.5 cm.

**Station 345** **Station 387**

Figure 9. These profile images from Station 345 (left) and 387 (right) both show low shear-strength, highly fluid silt-clays with subsurface methane that could not support the weight of the camera prism. Scale: width of each image = 14.5 cm.

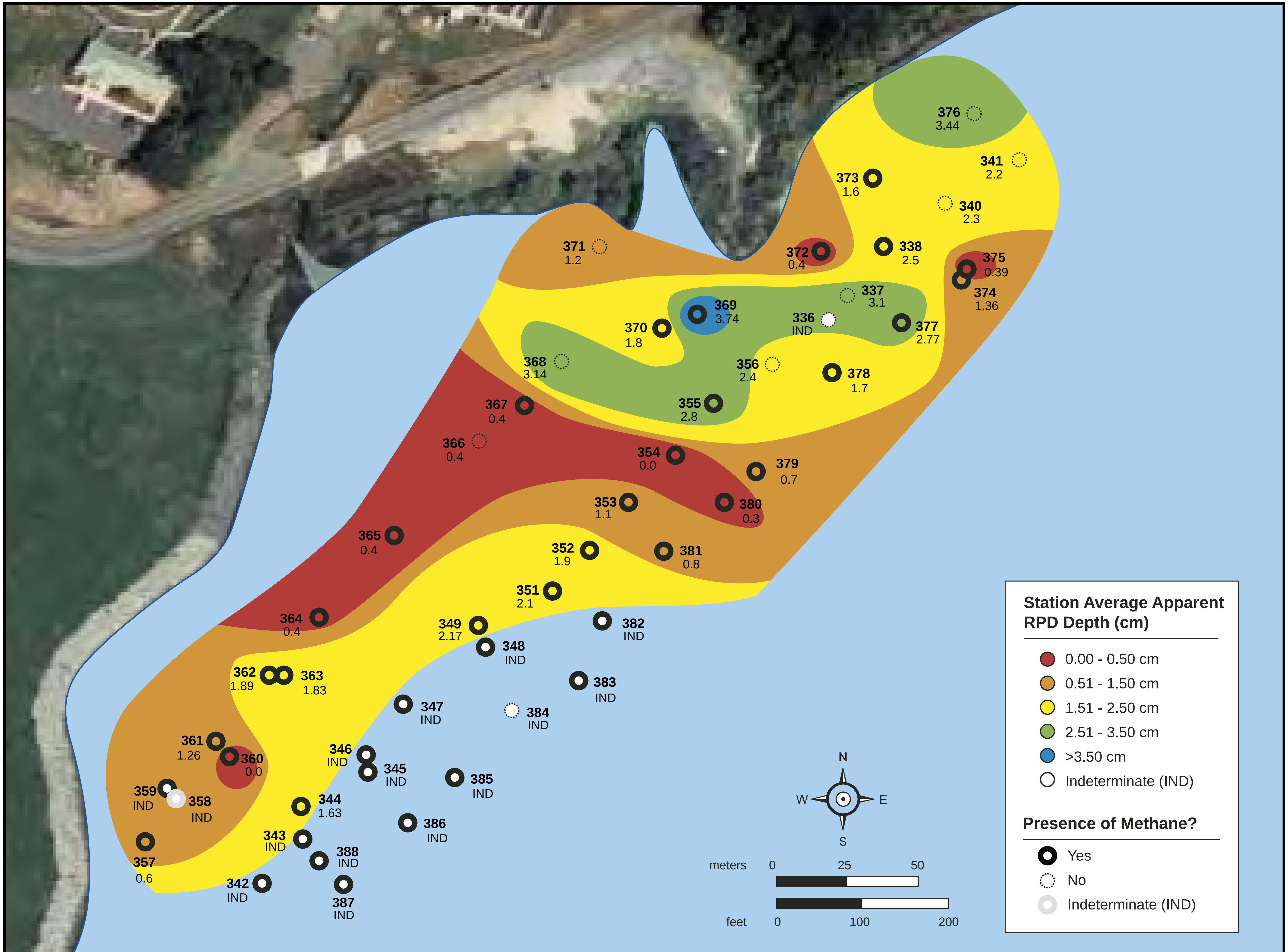



Figure 10. Spatial distribution of average station mean apparent RPD depth (cm) at the Quantico Embayment in September, 2009.

Figure 11. This profile image from Station 356 shows both types of the dominant submerged aquatic vegetation found at the site, both branched milfoil prominently displayed in the left part of the image and the single-frond grasses seen in the right half of the image. Scale: width of image = 14.5 cm.

**Station 344** **Station 381**

Figure 12. The profile image from Station 344 (left) shows oligochaetes projecting above the sediment-water interface in the right half of the image (arrows), while the profile image from Station 381 (right) shows the only freshwater bivalve found in all the images collected at the site. Scale: width of each image = 14.5 cm.

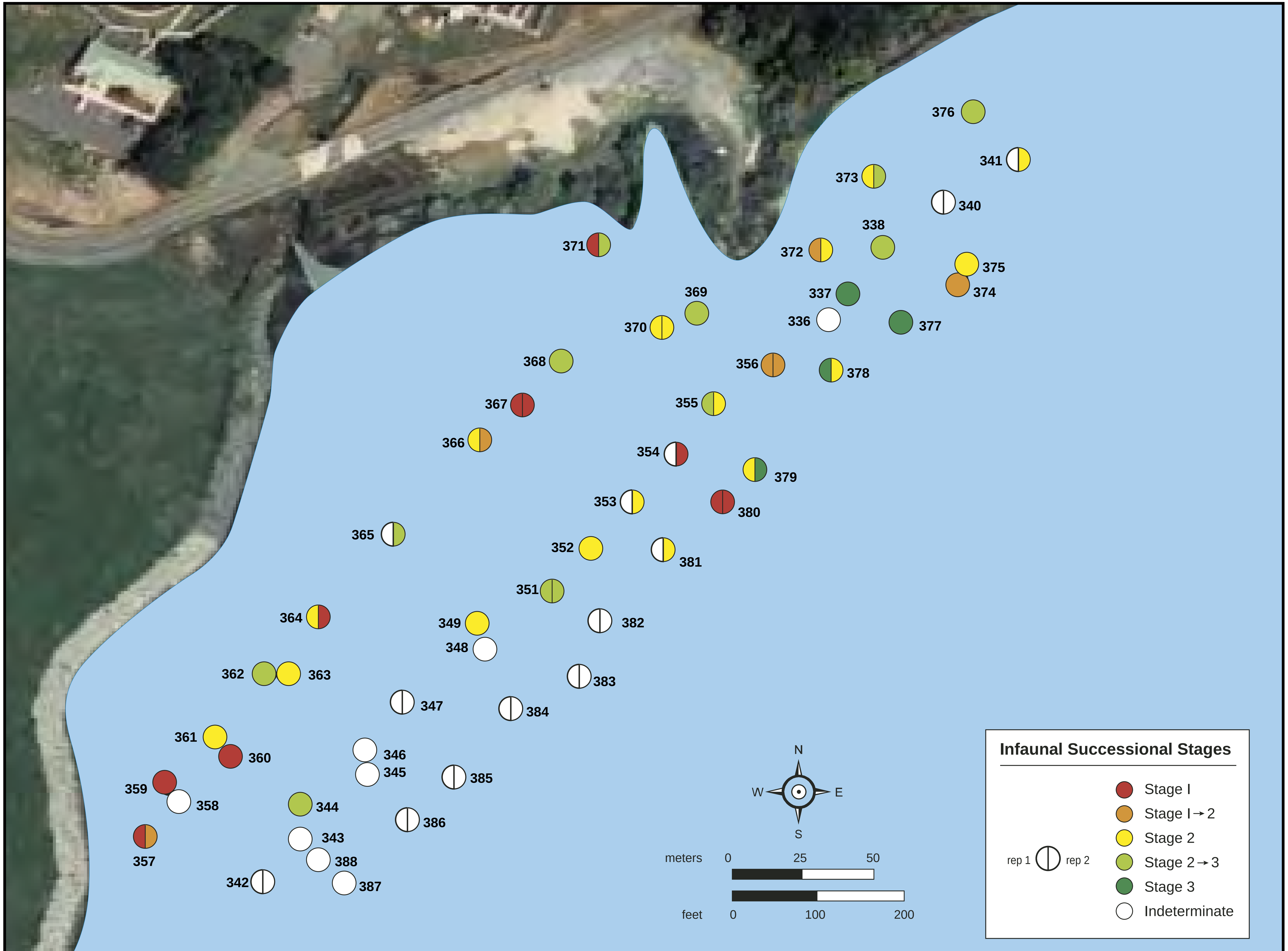



Figure 13. Spatial distribution of infaunal successional stages at the Quantico Embayment in September, 2009.

Figure 14. The decaying SAV seen at the sediment surface in this profile image from Station 340 illustrates what a major source this plant biomass is to sediment organic enrichment. Scale: width of image = 14.5 cm.

# APPENDIX A

## Sediment Profile Image Analysis Results

| Station | DATE | TIME | Calibration Constant | Grain Size Major Mode (phi) | Grain Size Maximum (phi) | Grain Size Minimum (phi) | GrnSize RANGE | Penetration Area (sq.cm) | Penetration Mean (cm) | Penetration Minimum (cm) | Penetration Maximum (cm) | Boundary Roughness (cm) | Boundary Roughness Type | RPD Area (sq.cm) | Mean RPD (cm) | METHANE | Minimum methane depth (cm) | Maximum methane depth (cm) | Methane Vesicle Diameter (cm) | Low DO? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 336 | 9/23/2009 | 9:44:49 | 14.5 | 3 to 2 | 1 | >4 | >4 - 1 | 30.6 | 2.1 | 1.3 | 2.6 | 1.3 | Physical | ind | Indeterminate | No | | | | No |
| 337 | 9/23/2009 | 9:46:42 | 14.5 | 4 to 3 | 2 | >4 | >4 - 2 | 73.4 | 5.1 | 4.4 | 5.6 | 1.2 | Physical | 45.2 | 3.12 | No | | | | No |
| 338 | 9/23/2009 | 9:48:49 | 14.5 | 3 to 2 | 1 | >4 | >4 - 1 | 115.5 | 8.0 | 7.2 | 8.6 | 1.4 | Physical | 35.7 | 2.46 | 8 | 1.2 | 7.3 | 0.2 | No |
| 340 A | 9/23/2009 | 9:51:23 | 14.5 | 4 to 3 | 2 | >4 | >4 - 2 | 43.9 | 3.0 | 2.3 | 3.6 | 1.3 | Physical | 31.5 | 2.17 | No | | | | No |
| 340 B | 9/23/2009 | 9:51:34 | 14.5 | 4 to 3 | 2 | >4 | >4 - 2 | 50.9 | 3.5 | 2.5 | 3.8 | 1.3 | Physical | 35.3 | 2.43 | No | | | | No |
| 341 A | 9/23/2009 | 9:54:00 | 14.5 | 4 to 3 | 2 | >4 | >4 - 2 | 55.7 | 3.8 | 3 | 4.5 | 1.5 | Physical | 35.7 | 2.46 | No | | | | No |
| 341 B | 9/23/2009 | 9:54:11 | 14.5 | 4 to 3 | 1 | >4 | >4 - 1 | 64.4 | 4.4 | 3.4 | 6.7 | 3.3 | Physical | 28.9 | 1.99 | No | | | | No |
| 342 A | 9/23/2009 | 10:06:18 | 14.5 | >4 | 2 | >4 | >4 - 2 | 312.6 | 21.6 | 21.6 | 21.6 | Ind | ind | ind | Indeterminate | >50 | 0.8 | 21.4 | 0.9 | No |
| 342 B | 9/23/2009 | 10:06:34 | 14.5 | >4 | 2 | >4 | >4 - 2 | 312.6 | 21.6 | 21.6 | 21.6 | Ind | ind | ind | Indeterminate | >50 | 0.5 | 21.4 | 1.5 | No |
| 343 | 9/23/2009 | 10:09:23 | 14.5 | >4 | 2 | >4 | >4 - 2 | 312.6 | 21.6 | 21.6 | 21.6 | Ind | ind | ind | Indeterminate | >50 | 0.3 | 21.4 | 1.5 | No |
| 344 | 9/23/2009 | 10:10:33 | 14.5 | >4 | 2 | >4 | >4 - 2 | 293.5 | 20.2 | 19.8 | 20.4 | 0.6 | Biological | 23.6 | 1.63 | 40 | 2.8 | 20.1 | 2.7 | No |
| 345 | 9/23/2009 | 10:12:35 | 14.5 | >4 | 2 | >4 | >4 - 2 | 312.6 | 21.6 | >21.4 | >21.4 | Ind | ind | ind | Indeterminate | >50 | 0.6 | 21.4 | 3.3 | No |
| 346 | 9/23/2009 | 10:13:33 | 14.5 | >4 | 2 | >4 | >4 - 2 | 312.6 | 21.6 | >21.4 | >21.4 | Ind | ind | ind | Indeterminate | 35 | 2.4 | 21.4 | 0.6 | No |
| 347 A | 9/23/2009 | 10:16:05 | 14.5 | >4 | 2 | >4 | >4 - 2 | 312.6 | 21.6 | >21.4 | >21.4 | Ind | ind | ind | Indeterminate | 3 | 0.7 | 6.8 | 0.3 | No |
| 347 B | 9/23/2009 | 10:16:26 | 14.5 | >4 | 2 | >4 | >4 - 2 | 312.6 | 21.6 | >21.4 | >21.4 | Ind | ind | ind | Indeterminate | >60 | 2.7 | 21.3 | 0.6 | No |
| 348 | 9/23/2009 | 10:19:04 | 14.5 | >4 | 2 | >4 | >4 - 2 | 312.6 | 21.6 | >21.4 | >21.4 | Ind | ind | ind | Indeterminate | >50 | 0.4 | 21.3 | 1.1 | No |
| 349 | 9/23/2009 | 10:20:00 | 14.5 | >4 | 2 | >4 | >4 - 2 | 288.6 | 19.9 | 19 | 20.3 | 1.3 | Physical | 31.5 | 2.17 | >50 | 5.3 | 20 | 2.2 | No |
| 351 A | 9/23/2009 | 10:22:13 | 14.5 | >4 | 1 | >4 | >4 - 1 | 256.6 | 17.7 | 16.5 | 19.1 | 2.6 | Physical | 27 | 1.86 | 33 | 2 | 16.8 | 0.7 | No |
| 351 B | 9/23/2009 | 10:22:28 | 14.5 | >4 | 1 | >4 | >4 - 1 | 305.8 | 21.1 | 20.1 | >21.4 | Ind | Physical | ind | 2.43 | >50 | 8.3 | 20.7 | 0.7 | No |
| 352 A | 9/23/2009 | 10:24:29 | 14.5 | >4 to 3 | 1 | >4 | >4 - 1 | 250.8 | 17.3 | 16.2 | 17.8 | 1.6 | Physical | 24.6 | 1.70 | No | | | | No |
| 352 B | 9/23/2009 | 10:24:46 | 14.5 | >4 to 3 | 1 | >4 | >4 - 1 | 182.7 | 12.6 | 10.2 | 13.3 | 3.1 | Physical | 29.3 | 2.02 | 20 | 4.1 | 10.1 | 0.3 | No |

| Station | DATE | TIME | Calibration Constant | Grain Size Major Mode (phi) | Grain Size Maximum (phi) | Grain Size Minimum (phi) | GrnSize RANGE | Penetration Area (sq.cm) | Penetration Mean (cm) | Penetration Minimum (cm) | Penetration Maximum (cm) | Boundary Roughness (cm) | Boundary Roughness Type | RPD Area (sq.cm) | Mean RPD (cm) | METHANE | Minimum methane depth (cm) | Maximum methane depth (cm) | Methane Vesicle Diameter (cm) | Low DO? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 353 A | 9/23/2009 | 10:26:34 | 14.5 | >4 to 3 | 1 | >4 | >4 - 1 | 205.6 | 14.2 | 12.9 | 15.2 | 2.3 | Physical | 19.7 | 1.36 | 3 | 3.4 | 17.1 | 0.4 | No |
| 353 B | 9/23/2009 | 10:26:52 | 14.5 | >4 | 1 | >4 | >4 - 1 | 154.4 | 10.6 | 9.7 | 11.6 | 1.9 | Physical | 11.2 | 0.77 | 20 | 5.4 | 10 | 0.3 | No |
| 354 A | 9/23/2009 | 10:28:58 | 14.5 | >4 | 2 | >4 | >4 - 2 | 109.7 | 7.6 | 6.9 | 8.2 | 1.3 | Physical | ind | Indeterminate | No | | | | No |
| 354 B | 9/23/2009 | 10:29:09 | 14.5 | >4 to 3 | 1 | >4 | >4 - 1 | 102.3 | 7.1 | 6.6 | 7.6 | 1 | Physical | 0 | 0.00 | Yes | 4.8 | 6.4 | 1.1 | No |
| 355 A | 9/23/2009 | 10:30:44 | 14.5 | 4 to 3 | 1 | >4 | >4 - 1 | 127.3 | 8.8 | 7.2 | 10 | 2.8 | Physical | 37.5 | 2.59 | 14 | 3.5 | 9.1 | 0.5 | No |
| 355 B | 9/23/2009 | 10:31:01 | 14.5 | 4 to 3 | 1 | >4 | >4 - 1 | 120.2 | 8.3 | 6 | 9.5 | 3.5 | Physical | 45.1 | 3.11 | 35 | 2.8 | 5.8 | 3.2 | No |
| 356 A | 9/23/2009 | 10:32:48 | 14.5 | 4 to 3 | 1 | >4 | >4 - 1 | 63.2 | 4.4 | 3.1 | 4.8 | 1.7 | Physical | 34.1 | 2.35 | No | | | | No |
| 356 B | 9/23/2009 | 10:32:57 | 14.5 | 4 to 3 | 1 | >4 | >4 - 1 | 105 | 7.2 | 7.2 | 8.8 | 1.6 | Physical | ind | Indeterminate | No | | | | No |
| 357 A | 9/23/2009 | 13:41:05 | 14.5 | >4 | 2 | >4 | >4 - 2 | 229.8 | 15.8 | 14.8 | 17.4 | 2.6 | Physical | 0 | 0.00 | 44 | 0.7 | 14.2 | 0.8 | No |
| 357 B | 9/23/2009 | 13:41:23 | 14.5 | >4 | 2 | >4 | >4 - 2 | 275.9 | 19.0 | 17.7 | 20.2 | 2.5 | Physical | 16.6 | 1.14 | 40 | 1.8 | 18 | 2 | No |
| 358 | 9/23/2009 | 13:43:20 | 14.6 | ind | ind | ind | Ind | 0 | 0.0 | 0 | 0 | Ind | ind | ind | Indeterminate | ind | | | | No |
| 359 | 9/23/2009 | 13:44:02 | 14.5 | >4 | 2 | >4 | >4 - 2 | 260.1 | 17.9 | 17.3 | 18.3 | 1 | Physical | ind | Indeterminate | 50 | 2.3 | 14.5 | 1.2 | No |
| 360 | 9/23/2009 | 13:46:13 | 14.5 | >4 | 1 | >4 | >4 - 1 | 95.8 | 6.6 | 3.8 | 8 | 4.2 | Physical | 0 | 0.00 | 30 | 1.4 | 6.9 | 0.2 | No |
| 361 | 9/23/2009 | 13:46:38 | 14.5 | >4 | 1 | >4 | >4 - 1 | 202.4 | 14.0 | 13 | 14.8 | 1.8 | Physical | 18.2 | 1.26 | 24 | 2.6 | 11.1 | 1.2 | No |
| 362 | 9/23/2009 | 13:49:11 | 14.5 | >4 to 3 | 1 | >4 | >4 - 1 | 161.7 | 11.2 | 10.7 | 11.9 | 1.2 | Physical | 27.4 | 1.89 | 25 | 1.1 | 8.1 | 0.9 | No |
| 363 | 9/23/2009 | 13:49:38 | 14.6 | >4 to 3 | 1 | >4 | >4 - 1 | 197 | 13.5 | 13.1 | 13.9 | 0.8 | Physical | 26.7 | 1.83 | 10 | 1.4 | 13.4 | 0.1 | No |
| 364 A | 9/23/2009 | 13:52:09 | 14.6 | 4 to 3 | 1 | >4 | >4 - 1 | 204.3 | 14.0 | 13.2 | 14.5 | 1.3 | Physical | 8.2 | 0.56 | 20 | 2.7 | 10.6 | 0.6 | No |
| 364 B | 9/23/2009 | 13:52:35 | 14.5 | >4 | 2 | >4 | >4 - 2 | 131.8 | 9.1 | 8.8 | 9.5 | 0.7 | Physical | 3.1 | 0.21 | 20 | 1.7 | 8.6 | 0.9 | No |
| 365 A | 9/23/2009 | 13:55:24 | 14.6 | Ind | Ind | >4 | >4 - Ind | 7.1 | 0.5 | 0 | 1.1 | 1.1 | Physical | ind | Indeterminate | ind | | | | No |
| 365 B | 9/23/2009 | 13:55:45 | 14.5 | 4 to 3 | 0 | >4 | >4 - 0 | 126.7 | 8.7 | 8.2 | 9.2 | 1 | Biological | 5.5 | 0.38 | 40 | 4.4 | 8.7 | 0.5 | No |
| 366 A | 9/23/2009 | 13:59:04 | 14.6 | 3 to 2 | 0 | >4 | >4 - 0 | 55.8 | 3.8 | 1.9 | 5.2 | 3.3 | Physical | 7 | 0.48 | No | | | | No |

| Station | DATE | TIME | Calibration Constant | Grain Size Major Mode (phi) | Grain Size Maximum (phi) | Grain Size Minimum (phi) | GrnSize RANGE | Penetration Area (sq.cm) | Penetration Mean (cm) | Penetration Minimum (cm) | Penetration Maximum (cm) | Boundary Roughness (cm) | Boundary Roughness Type | RPD Area (sq.cm) | Mean RPD (cm) | METHANE | Minimum methane depth (cm) | Maximum methane depth (cm) | Methane Vesicle Diameter (cm) | Low DO? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 366 B | 9/23/2009 | 13:59:24 | 14.5 | 3 to 2 | -1 | >4 | >4 - -1 | 55.7 | 3.8 | 2.8 | 5.3 | 2.5 | Physical | 3.2 | 0.22 | No | | | | No |
| 367 A | 9/23/2009 | 14:13:37 | 14.5 | 3 to 2 | -1 | >4 | >4 - -1 | 54.3 | 3.7 | 2.8 | 5.2 | 2.4 | Physical | 3.1 | 0.21 | 10 | 0.8 | 2.9 | 0.5 | No |
| 367 B | 9/23/2009 | 14:14:11 | 14.6 | >4 to 3 | 1 | >4 | >4 - 1 | 66.8 | 4.6 | 4.1 | 4.9 | 0.8 | Physical | 7.4 | 0.51 | No | | | | No |
| 368 | 9/23/2009 | 14:16:48 | 14.5 | 3 to 2 | -1 | >4 | >4 - -1 | 71.7 | 4.9 | 4.5 | 5.2 | 0.7 | Physical | 45.6 | 3.14 | No | | | | No |
| 369 | 9/23/2009 | 14:17:45 | 14.5 | 3 to 2 | -1 | >4 | >4 - -1 | 181.3 | 12.5 | 12 | 12.9 | 0.9 | Physical | 54.3 | 3.74 | 40 | 1.9 | 12.2 | 0.4 | No |
| 370 A | 9/23/2009 | 14:20:30 | 14.5 | 4 to 3 | 0 | >4 | >4 - 0 | 76 | 5.2 | 5.1 | 5.3 | 0.2 | Physical | 19.3 | 1.33 | No | | | | No |
| 370 B | 9/23/2009 | 14:20:59 | 14.5 | 4 to 3 | 0 | >4 | >4 - 0 | 67 | 4.6 | 3.7 | 6.1 | 2.4 | Physical | 32.7 | 2.26 | 7 | 2 | 3.7 | 0.2 | No |
| 371 A | 9/23/2009 | 14:23:10 | 14.5 | 4 to 3 | 0 | >4 | >4 - 0 | 32.4 | 2.2 | 1.4 | 3.2 | 1.8 | Physical | 18.2 | 1.26 | No | | | | No |
| 371 B | 9/23/2009 | 14:23:34 | 14.5 | 4 to 3 | 0 | >4 | >4 - 0 | 62.2 | 4.3 | 2.7 | 4.9 | 2.2 | Physical | 17.5 | 1.21 | No | | | | No |
| 372 A | 9/23/2009 | 14:26:17 | 14.5 | 4 to 3/>4 | 0 | >4 | >4 - 0 | 255.4 | 17.6 | 15.4 | 18.6 | 3.2 | Physical | 3.7 | 0.26 | >40 | 3.2 | 14.9 | 1.3 | No |
| 372 B | 9/23/2009 | 14:26:43 | 14.5 | 4 to 3/>4 | 0 | >4 | >4 - 0 | 184.9 | 12.8 | 12.4 | 13 | 0.6 | Physical | 8.3 | 0.57 | >40 | 3.1 | 12.6 | 1.2 | No |
| 373 A | 9/23/2009 | 14:28:41 | 14.5 | >4 to 3 | 1 | >4 | >4 - 1 | 89.5 | 6.2 | 5.4 | 6.5 | 1.1 | Physical | 22.6 | 1.56 | No | | | | No |
| 373 B | 9/23/2009 | 14:29:15 | 14.5 | >4 to 3/>4 | 1 | >4 | >4 - 1 | 206.9 | 14.3 | 13.5 | 14.9 | 1.4 | Physical | 24.3 | 1.68 | 10 | 2.2 | 11.6 | 0.1 | No |
| 374 | 9/23/2009 | 14:39:41 | 14.5 | 3 to 2 | 1 | >4 | >4 - 1 | 114.1 | 7.9 | 7.4 | 8.2 | 0.8 | Physical | 19.7 | 1.36 | 15 | 2.3 | 7.5 | 1.8 | No |
| 375 | 9/23/2009 | 14:40:25 | 14.5 | 3 to 2 | 1 | >4 | >4 - 1 | 204.6 | 14.1 | 13.4 | 14.8 | 1.4 | Physical | 5.7 | 0.39 | 5 | 5.1 | 13.4 | 0.4 | No |
| 376 | 9/23/2009 | 14:43:15 | 14.5 | 4 to 3 | 1 | >4 | >4 - 1 | 72 | 5.0 | 4 | 6.2 | 2.2 | Physical | 49.9 | 3.44 | No | | | | No |
| 377 | 9/23/2009 | 14:43:50 | 14.5 | 3 to 2/>4 | 0 | >4 | >4 - 0 | 147.4 | 10.2 | 9.2 | 11 | 1.8 | Physical | 40.1 | 2.77 | 2 | 2.5 | 3.1 | 0.1 | No |
| 378 A | 9/23/2009 | 14:46:06 | 14.5 | 4 to 3 | 0 | >4 | >4 - 0 | 131.5 | 9.1 | 8.5 | 9.4 | 0.9 | Physical | 20.3 | 1.40 | 4 | 3.7 | 5.9 | 0.5 | No |
| 378 B | 9/23/2009 | 14:46:30 | 14.5 | 4 to 3 | 0 | >4 | >4 - 0 | 111.7 | 7.7 | 6.3 | 9.1 | 2.8 | Physical | 29.5 | 2.03 | No | | | | No |
| 379 A | 9/23/2009 | 14:49:09 | 14.6 | 4 to 3 | 0 | >4 | >4 - 0 | 65.1 | 4.5 | 3.1 | 5.3 | 2.2 | Physical | 11.3 | 0.77 | No | | | | No |
| 379 B | 9/23/2009 | 14:49:33 | 14.5 | >4 to 3 | 1 | >4 | >4 - 1 | 129.2 | 8.9 | 7.5 | 9.5 | 2 | Physical | 10 | 0.69 | 20 | 2.3 | 4.5 | 0.2 | No |
| 380 A | 9/23/2009 | 14:51:25 | 14.5 | >4 | 2 | >4 | >4 - 2 | 232.6 | 16.0 | 15.4 | 16.6 | 1.2 | Physical | 5.4 | 0.37 | 25 | 6.7 | 15.1 | 0.1 | No |
| 380 B | 9/23/2009 | 14:51:59 | 14.5 | >4 | 1 | >4 | >4 - 1 | 246 | 17.0 | 16.1 | 17.3 | 1.2 | Physical | 4.6 | 0.32 | 25 | 3.2 | 12.7 | 0.4 | No |

| Station | DATE | TIME | Calibration Constant | Grain Size Major Mode (phi) | Grain Size Maximum (phi) | Grain Size Minimum (phi) | GrnSize RANGE | Penetration Area (sq.cm) | Penetration Mean (cm) | Penetration Minimum (cm) | Penetration Maximum (cm) | Boundary Roughness (cm) | Boundary Roughness Type | RPD Area (sq.cm) | Mean RPD (cm) | METHANE | Minimum methane depth (cm) | Maximum methane depth (cm) | Methane Vesicle Diameter (cm) | Low DO? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 381 A | 9/23/2009 | 14:54:13 | 14.5 | >4 | 2 | >4 | >4 - 2 | 312.6 | 21.6 | >21.4 | >21.4 | Ind | ind | ind | Indeterminate | 10 | 5.5 | 13.2 | 0.7 | No |
| 381 B | 9/23/2009 | 14:54:37 | 14.5 | >4 | 2 | >4 | >4 - 2 | 273.5 | 18.9 | 16.3 | 20.2 | 3.9 | Physical | 11.2 | 0.77 | 10 | 2.2 | 12.6 | 0.4 | No |
| 382 A | 9/23/2009 | 14:57:37 | 14.5 | >4 | 2 | >4 | >4 - 2 | 312.6 | 21.6 | 21 | >21.4 | Ind | ind | ind | Indeterminate | 25 | 2.9 | 18.1 | 0.2 | No |
| 382 B | 9/23/2009 | 14:57:57 | 14.5 | >4 | 2 | >4 | >4 - 2 | 239.6 | 16.5 | 16 | 17.2 | 1.2 | ind | ind | Indeterminate | ind | | | | No |
| 383 A | 9/23/2009 | 15:01:22 | 14.5 | >4 | 2 | >4 | >4 - 2 | 312.6 | 21.6 | 21.2 | >21.4 | Ind | ind | ind | Indeterminate | 20 | 3.9 | 12 | 0.5 | No |
| 383 B | 9/23/2009 | 15:01:46 | 14.5 | >4 | 2 | >4 | >4 - 2 | 312.6 | 21.6 | >21.4 | >21.4 | Ind | ind | ind | Indeterminate | 5 | 4 | 10.9 | 0.5 | No |
| 384 A | 9/23/2009 | 15:05:51 | 14.5 | >4 | 2 | >4 | >4 - 2 | 312.6 | 21.6 | >21.4 | >21.4 | Ind | ind | ind | Indeterminate | No | | | | No |
| 384 B | 9/23/2009 | 15:06:08 | 14.5 | >4 | 2 | >4 | >4 - 2 | 312.6 | 21.6 | >21.4 | >21.4 | Ind | ind | ind | Indeterminate | No | | | | No |
| 385 A | 9/23/2009 | 15:09:01 | 14.5 | >4 | 2 | >4 | >4 - 2 | 312.6 | 21.6 | >21.4 | >21.4 | Ind | ind | ind | Indeterminate | y | 10 | 3.2 | 10.9 | No |
| 385 B | 9/23/2009 | 15:09:25 | 14.5 | >4 | 2 | >4 | >4 - 2 | 312.6 | 21.6 | >21.4 | >21.4 | Ind | ind | ind | Indeterminate | 6 | 3.7 | 7 | 0.1 | No |
| 386 A | 9/23/2009 | 15:12:04 | 14.5 | >4 | 2 | >4 | >4 - 2 | 289.3 | 20.0 | 19.3 | 20.8 | 1.5 | Physical | ind | Indeterminate | 5 | 2.3 | 10.2 | 0.8 | No |
| 386 B | 9/23/2009 | 15:12:32 | 14.5 | >4 | 2 | >4 | >4 - 2 | 312.6 | 21.6 | >21.4 | >21.4 | Ind | ind | ind | Indeterminate | 20 | 0.3 | 12.6 | 0.4 | No |
| 387 | 9/23/2009 | 15:15:48 | 14.5 | >4 | 2 | >4 | >4 - 2 | 312.6 | 21.6 | >21.4 | >21.4 | Ind | ind | ind | Indeterminate | 30 | 1.5 | 21.4 | 1.8 | No |
| 388 | 9/23/2009 | 15:16:46 | 14.5 | >4 | 2 | >4 | >4 - 2 | 312.6 | 21.6 | >21.4 | >21.4 | Ind | ind | ind | Indeterminate | 5 | 8.9 | 19 | 0.8 | No |

| Station | Wood debris? | Algae/Plant Debris? | Faunal Type | COMMENT | Layer 1 area | Layer 1 average thickness (cm) | Layer 1 minimum thickness (cm) | Layer 1 maximum thickness (cm) | Successional Stage |
|---|---|---|---|---|---|---|---|---|---|
| 336 | n | SAV=Milfoil and some eelgrass-like SAV | oligochaetes & chironomids | low pen=firm muddy fine to very fine sand>pen; SAV at sed surf; 2 orangish chironomids @depth; reduced patches but not consistent RPD contrast across image | | | | | Indeterminate |
| 337 | n | SAV=eelgrass-like grass | oligochaetes & chironomids | muddy fine to very fine sand; layering of brown oxy muddy v. fine sand over darker grey fine sand; subsurface oligochaetes visible | | | | | Stage 3 |
| 338 | n | SAV= dense Milfoil | oligochaetes & chironomids | light brown oxy muddy silt+very fine sand over darker grey muddy fine sand; 1-2 chironomids@depth; reduced patches@depth with moderate RPD contrast | | | | | Stage 2 -> 3 |
| 340 A | n | SAV=milfoil | ind | low penetration with firm, muddy fine to very fine sand; dragdown of SAV; reduced@depth=moderate RPD contrast; RPD is estimate due to algae dragdown | | | | | Indeterminate |
| 340 B | n | SAV=mix of living and decaying milfoil | ind | low pen=firm muddy fine sand>pen; dragdown of decaying milfoil; decaying macrophytes have potential to create high O2 demand | | | | | Indeterminate |
| 341 A | n | SAV=mix of milfoil and eelgrass-like grass | ind | low pen=firm muddy fine sand>pen; some dragdown of eelgrass-like SAV; dark/reduced patches@depth=moderate RPD contrast | | | | | Indeterminate |
| 341 B | n | SAV=mix of milfoil and eelgrass-like grass | Oligochaetes | low pen=firm muddy fine sand>pen; reduced patches@depth w/ moderate RPD contrast orange sediment patches@depth (detrital dragdown); difficult to see infauna due to SAV dragdown but some oligochaetes in upper right near SWI | | | | | Stage 2 |
| 342 A | ind | ind | oligochaetes | overpen=soft sulfidic mud>pen; light grey in upper layers over dark grey w/ black patches@depth+many methane vesicles; | | | | | Indeterminate |
| 342 B | ind | ind | oligochaetes | overpen=soft sulfidic mud>pen; medium grey w/ darker sulfidic patches+many gas vesicles; patches of brown oxidized sed@depth; many small and1 large oligochaete@depth | | | | | Indeterminate |
| 343 | ind | ind | oligochaetes | overpen=soft sulfidic mud>pen; medium grey w/ darker sulfidic patches+many gas vesicles; many small oligochaetes@depth | | | | | Indeterminate |
| 344 | n | y small pieces of SAV | oligochaetes | soft reduced mud w/ shallow RPD>pen; moderate RPD contrast; dense gas vesicles@depth; oligos@depth and at SWI | | | | | Stage 2 -> 3 |
| 345 | ind | y milfoil dragdown | oligochaetes | overpen=soft reduced mud w/ RPD>pen; light-colored oxy sed@left side of image; algae dragdown; several larger oligos+many short ones@depth; reduced sed@depth | | | | | Indeterminate |
| 346 | ind | y milfoil dragdown | oligochaetes | overpen=soft reduced mud>pen; light-colored sed@surf+dragged down=some RPD present; dark grey/reduced patches@depth; oligos@depth | | | | | Indeterminate |
| 347 A | ind | y dragdown of eelgrass-like algae | oligochaetes | overpen=soft mud>pen; significant dragdown of eelgrass+oxy brown sed; streak of oxy light brown sed+dark blackish reduced sed; oligos present | | | | | Indeterminate |
| 347 B | ind | y dragdown of milfoil | oligochaetes | overpen=soft sandy reduced mud>pen; dragdown of oxidized surf sed+milfoil; oligochaetes@depth; moderate RPD contrast; reduced patches@depth | | | | | Indeterminate |
| 348 | ind | y some dragdown of milfoil | oligochaetes | overpen=soft reduced mud>pen; some light-brown oxy sed near surface; many small gas vesicles; oligos@depth | | | | | Indeterminate |
| 349 | n | y; some at surface in upper left | oligochaetes | soft reduced slightly sandy mud>pen; camera disturbance of RPD=estimated measurement; many small gas vesicles@depth; some oligos@depth | | | | | Stage 2 |
| 351 A | n | y dragdown of filamentous algae | chironomid in upper right | soft sandy mud>pen; dragdown of oxy surf sediment+filamentous algae; moderate RPD contrast; small gas vesicles; a few oligos@depth | | | | | Stage 2 -> 3 |
| 351 B | n | y dragdown of filamentous algae | oligochaetes | partial overpenetration=soft slightly sandy mud>pen; surface oxy lyr=RPD linear measurement from right half of image; numerous small gas vesicles@depth; dragdown algae+oxy sed | | | | | Stage 2 -> 3 |
| 352 A | n | y dragdown of algae (milfoil?) | oligochaetes | muddy soft very fine sand/sandy mud>pen; patchy RPD w/ moderate to strong contrast=black/sulfidic patches@depth; algae dragdown; oligos present@depth | | | | | Stage 2 |
| 352 B | n | y dragdown of filamentous algae | oligochaetes & chironomids | muddy fine to very fine sand>pen; oxy surface sed over grey/reduced sed@depth; moderate RPD contrast; algae dragdown. | | | | | Stage 2 |

| Station | Wood debris? | Algae/Plant Debris? | Faunal Type | COMMENT | Layer 1 area | Layer 1 average thickness (cm) | Layer 1 minimum thickness (cm) | Layer 1 maximum thickness (cm) | Successional Stage |
|---|---|---|---|---|---|---|---|---|---|
| 353 A | n | y dragdown of filamentous algae+eelgrass | ind | somewhat soft sandy mud>pen; significant dragdown of oxy sed+filamentous algae; RF measured at right edge of image; no visible infauna even though oligochaetes most likely present | | | | | Indeterminate |
| 353 B | n | y dragdown of filamentous algae | oligochaetes & chironomids | somewhat soft sandy mud>pen; oxy surf layer w/ estimated RPD; significant dragdown filamentous algae covering most of profile; a few small gas vesicles | | | | | Stage 2 |
| 354 A | n | y dragdown of filamentous algae/milfoil | ind | slightly sandy mud>pen; significant dragdown of filamentous algae+oxy sed=indeterminate RPD and ss; mix of light brown (oxy) and grey sed (moderately reduced, most likely from decomposing macrophytes) | | | | | Indeterminate |
| 354 B | n | y dragdown of filamentuous algae | ind | moderately firm muddy fine sand>pen; grey color w/ dark sulfidic patches; only diffusior RPD; algae dragdown; no clear evidence of infauna; methane patch at left | | | | | Stage 1 |
| 355 A | n | y eelgrass-like grass and milfoil | oligochaetes & chironomids | somewhat firm sandy mud/muddy fine sand>pen; well-developed RPD w/ moderate contrast; minor algae dragdown; a few cryptic oligochaetes near center of image | | | | | Stage 2 -> 3 |
| 355 B | n | y eelgrass+milfoil | oligochaetes | muddy fine to very fine sand>pen; well-developed RPD w/ moderate contrast; darker/more sulfidic sed@depth; a few cryptic oligochaetes; minor algae dragdown | | | | | Stage 2 |
| 356 A | n | y eelgrass and milfoil | ind | muddy firm fine to very fine sand>pen; well-developed RPD w/ moderate contrast; dragdown of algae; little clear evidence of infauna | | | | | Stage 1 -> 2 |
| 356 B | n | y eelgrass+milfoil | oligochaetes+chironomids | somewhat firm muddy fine to very fine sand>pen; sandy mud/muddy sand; some dragdown of algae; RPD distorted by plant smear; black sulfidic patches@depth; oligos+1 chironomid in lower right corner | | | | | Stage 1 -> 2 |
| 357 A | n | y some green algae (milfoil?) | oligochaetes | soft reduced mud>pen; small patch of oxy sed but RPD is functionally zero=reduced gr sed; possible layering of silt over consolidated grey clay@depth; small oligochaetes | 210 | 14.5 | 12.3 | 17.3 | Stage 1 |
| 357 B | n | y dragdown of green milfoil/filamentous algae | oligochaetes | soft reduced mud>pen; thick surf layer of silt over consolidated grey clay@depth; RPD and algae dragdown; cryptic oligochaetes | 238.6 | 16.5 | 15.3 | 17.6 | Stage 1 -> 2 |
| 358 | ind | ind | ind | water shot=no pen and sed surf is disturbed by camera | | | | | Indeterminate |
| 359 | n | y minor amount of green SAV algae | oligochaetes | soft reduced mud>pen; possible smearing of RPD=ind; layering of soft silt over consolidated grey clay@depth; algae dragdown | 234.2 | 16.2 | 15.1 | 18 | Stage 1 |
| 360 | n | y green SAV | ind | moderately soft reduced sandy mud>pen; minor camera disturbance of swi+SAV dragdown; grey sed=reduced throughout (no RPD); many small gas vesicles@depth | > penetration | | | | Stage 1 |
| 361 | n | y SAV=milfoil | oligochaetes | soft mud>pen; moderate RPD contrast; dragdown of SAV (milfoil); cryptic oligos@depth | | | | | Stage 2 |
| 362 | n | y SAV (milfoil) | oligochaetes+chironomids | moderately soft sandy mud/muddy fine sand>pen; reduced@depth w/ black/sulfidic patch=moderate RPD contrast; 1 reddish chironomid+some cryptic oligos | | | | | Stage 2 -> 3 |
| 363 | n | y SAV (eelgrass/milfoil) | oligochaetes | sandy muddy/muddy fine sand>pen; mix of oxy and reduced sed; moderate RPD contrast; some dragdown of SAV+oxy surf sed; v. small gas vesicles; cryptic oligochaetes | | | | | Stage 2 |
| 364 A | n | y SAV (milfoil) | oligochaetes | muddy fine to very fine sand>pen; sand is mostly reduced (grey to dark grey) with thin RPD; minor algae dragdown; cryptic infauna | | | | | Stage 2 |
| 364 B | n | y SAV | oligochaetes | homogenous silt w/ some fine sand@depth; oxy veneer@swi but profile appears mostly reduced; small oligochaetes | | | | | Stage 1 |
| 365 A | n | y dense SAV, both eelgrass & milfoil | ind | minimal pen= looks like firm grey fine sand w/ dense SAV (milfoil and eelgrass-like grass) | | | | | Indeterminate |
| 365 B | n | y SAV (milfoil/eelgrass) | oligochaetes | muddy fine sand/sandy mud>pen; slight pull-away of upper 1-2 cm=sed surf appears oxy but profile mostly grey reduced sed; minor SAV dragdown; many small gas vesicles@depth; prominent red oligochaete visible in right half of image | | | | | Stage 2 -> 3 |
| 366 A | n | y SAV (milfoil/eelgrass) | oligochaetes | firm muddy fine to very fine sand>pen; thin RPD with moderate contrast; minor SAV dragdown | | | | | Stage 2 |

| Station | Wood debris? | Algae/Plant Debris? | Faunal Type | COMMENT | Layer 1 area | Layer 1 average thickness (cm) | Layer 1 minimum thickness (cm) | Layer 1 maximum thickness (cm) | Successional Stage |
|---|---|---|---|---|---|---|---|---|---|
| 366 B | n | y SAV (milfoil/eelgrass) | oligochaetes | firm muddy fine sand>pen; some medium sand; patches of oxy fine sed but sand appears mostly grey/reduced; small oligos, diffusional redox boundary | | | | | Stage 1 -> 2 |
| 367 A | n | y SAV (milfoil/eelgrass) | oligochaetes | firm muddy fine sand>pen; subtle layering fine sand over silt-clay; sand is grey (reduced?); small gas vesicles@left, diffusional RPD | | | | | Stage 1 |
| 367 B | n | y SAV (eelgrass) | oligochaetes | firm silt-clay with fine sand (muddy sand/sandy mud); minor SAV dragdown; low density of oligochaetes | | | | | Stage 1 |
| 368 | n | y (SAV in farfield) | oligochaetes | firm, silty fine to medium sand>pen; some organic debris@depth; oligochaetes present and thin filaments of new SAV growth projecting above SWI | | | | | Stage 2 -> 3 |
| 369 | n | n | oligochaetes | poorly sorted silty fine to medium sand>pen; very distinct RPD contrast (light over dark grey sand); sand appears "saturated" with gas vesicles@depth. | | | | | Stage 2 -> 3 |
| 370 A | n | y SAV in farfield | oligochaetes | silty fine to very fine sand>pen; thin RPD w/ weak to moderate contrast; reduced (black) patch@depth; small oligos@depth | | | | | Stage 2 |
| 370 B | n | y SAV in farfield (milfoil) | oligochaetes | silty firm fine to very fine sand>pen; minor SAV dragdown; 1-2 cryptic infaunal oligochaetes; extremely low albedo redox; gas vesicles in water column | | | | | Stage 2 |
| 371 A | n | y SAV | none visible | underpen=firm silty fine to very fine sand>pen; reduced@depth w/ moderate RPD contrast; gas bubbles in water column but no visible in sediment | | | | | Stage 1 |
| 371 B | n | y SAV | oligochaetes+chironomids | firm silty fine to very fine sand>pen; reduced patches@depth w/ moderate RPD contrast; minor algae dragdown; 1-2 infaunal orgs@left (chironomid) | | | | | Stage 2 -> 3 |
| 372 A | n | y SAV (milfoil) | oligochaetes+chironomids | distinct layering=silty reduced fine to very fine sand over grey homogenous cohesive clay; dragdown of algae; a few patches of light (oxy) sed but mostly reduced sed column; a fe large+many small gas vesicles | 176.3 | 12.2 | 9.6 | 16 | Stage 1 -> 2 |
| 372 B | n | y SAV (eelgrass/milfoil) | oligochaetes | silty reduced fine to very fine sand over grey homogenous cohesive clay; probably similar layering to previous rep but pen is insufficient to measure surf layer; thin RPD w/ moderate contrast; a few oligos@depth | present | | | | Stage 2 |
| 373 A | n | y SAV (eelgrass) | oligochaetes | silty/muddy very fine sand>pen; minor eelgrass dragdown; weak to moderate RPD contrast; a few oligos@depth | | | | | Stage 2 |
| 373 B | n | y SAV (eelgrass) | oligochaetes | distinct layering=silty fine to very fine sand over cohesive consolidated grey clay; oxy surface layer of reduced sed@depth=moderate to strong RPD contrast; minor algae dragdown; a few oligos; small gas vesicles | 189.8 | 13.1 | 12.2 | 14.3 | Stage 2 -> 3 |
| 374 | n | y SAV (milfoil) | oligochaetes | muddy/silty fine to very fine sand>pen; moderate RPD contrast; algae dragdown; gas vesicles; cryptic oligos | | | | | Stage 1 -> 2 |
| 375 | n | n | oligochaetes | muddy fine to medium sand>pen; reduced throughout w/ a few patches oxy sed; grey clay patches; appears to be same layering as 373 | | | | | Stage 2 |
| 376 | n | y SAV (milfoil/eelgrass) | oligochaetes+chironomids | firm muddy fine to very fine sand>pen; thick RPD over reduced patches@depth; algae dragdown; slight mud over sand layering | | | | | Stage 2 -> 3 |
| 377 | n | y SAV (milfoil) | oligochaetes | muddy fine to very fine sand>pen; subtle layering silt-over-sand-over-dark grey clay; moderate to strong RPD contrast=reduced@depth; subsurface oligochaetes; small gas vesicles; black patches@depth have thin strands=buried decayed milfoil | | | | | Stage 3 |
| 378 A | n | y SAV (sparse milfoil) | oligochaetes+chironomids | muddy fine to very fine sand>pen; gas vesicle far left edge; chironomid at depth | | | | | Stage 3 |
| 378 B | n | y sparse SAV in background | oligochaetes | muddy fine to very fine sand>pen; alternating grain-size depositional intervals | | | | | Stage 2 |
| 379 A | n | y SAV (milfoil) | oligochaetes | muddy fine to very fine sand>pen; midge at center SWI; minor algae dragdown | | | | | Stage 2 |
| 379 B | n | y SAV (milfoil) | oligochaetes | muddy fine to very fine sand>pen; muddy sand/sandy mud; small gas vesicles@right; larger-bodied oligochaete @depth; strong RPD contrast | | | | | Stage 3 |
| 380 A | n | y SAV (milfoil0 | ind | soft mud>pen; dragdown of algae+oxy sed; thin RPD w/ moderate to strong contrast; small gas vesicles. | | | | | Stage 1 |
| 380 B | n | y SAV (milfoil) | oligochaete | soft reduced mud>pen; thin RPD w/ moderate to strong contrast; very low density of oligochaetes; significant dragdown of drift algae | | | | | Stage 1 |

| Station | Wood debris? | Algae/Plant Debris? | Faunal Type | COMMENT | Layer 1 area | Layer 1 average thickness (cm) | Layer 1 minimum thickness (cm) | Layer 1 maximum thickness (cm) | Successional Stage |
|---|---|---|---|---|---|---|---|---|---|
| 381 A | n | y SAV (milfoil) | bivalve! | overpen=soft reduced mud>pen; significant algae dragdown; bivalve l@center of image; decayed milfoil@depth | | | | | Indeterminate |
| 381 B | n | y decayed milfoil@depth | oligochaetes | soft reduced mud>pen; a few patched oxy sed but RPD very patchy; decayed milfoil@depth=dragdown; a few v. small cryptic infaunal organisms | | | | | Stage 2 |
| 382 A | n | y decayed milfoil | ind | overpen=soft reduced mud>pen; some patches of oxy sed near surface; dragdown of dark (decayed) milfoil across 50% of image | | | | | Indeterminate |
| 382 B | n | y decayed milfoil | ind | soft reduced mud>pen; significant disturbance of profile from algae dragdown; some oxy sed; dragdown of a few leaves; algae is black=decayed | | | | | Indeterminate |
| 383 A | n | y decayed milfoil | ind | overpen= soft reduced mud>pen; patches of oxy sed near surface and dragged down; significant algae dragdown (decayed milfoil); 1 small oligochaete @center of image. | | | | | Indeterminate |
| 383 B | n | y decayed milfoil | ind | overpen=soft reduced mud>pen; some patches of oxy sed near surface+dragged down; dragdown of dark (decayed) milfoil across most of image | | | | | Indeterminate |
| 384 A | n | y decayed milfoil | ind | overpen=soft reduced mud>pen; some patches of oxy sed dragged down; dragdown of dark (decayed) milfoil across most of image | | | | | Indeterminate |
| 384 B | n | y decayed milfoil | ind | overpen=soft reduced mud>pen; some patches of oxy sed dragged down; dragdown of dark (decayed) milfoil across most of image | | | | | Indeterminate |
| 385 A | n | y decayed milfoil | ind | overpen=soft reduced mud>pen; some patches of oxy sed dragged down; dragdown of dark (decayed) milfoil across most of image | | | | | Indeterminate |
| 385 B | n | y decayed milfoil | ind | overpen=soft reduced mud>pen; some patches of oxy sed dragged down; dragdown of dark (decayed) milfoil across most of image | | | | | Indeterminate |
| 386 A | n | y decayed milfoil | oligochaetes | soft reduced mud>pen; significant dragdown of decayed algae+oxy surf sed; a few small oligochaetes visible, redox obscured by smear and algae dragdown | | | | | Indeterminate |
| 386 B | n | y decayed milfoil | ind | overpen=soft reduced mud>pen; some patches of oxy sed dragged down; dragdown of dark (decayed) milfoil across most of image | | | | | Indeterminate |
| 387 | n | y dragdown of greenish algae | oligochaetes+chironomids | overpen=soft reduced mud>pen; dragdown of some greenish algae; patches of oxy sed but mostly dark/sulfidic; deep gas vesicles | | | | | Indeterminate |
| 388 | n | n | oligochaetes | overpen=soft reduced mud>pen; some lighter-colored sed near surf but mostly grey w/ dark sulfidic patches; gas vesicles; small black organic particles in sed matrix | | | | | Indeterminate |

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# Post Cap Monitoring of Enhanced Monitored Natural Recovery at MCB Quantico, Site 99.

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**14. ABSTRACT**
Sediment profile imaging (SPI) was used at the Quantico Embayment Site 99 as part of the monitored natural recovery (MNR) of a thin-layer cap (TLC) placed over contaminated sediment is a shallow embayment. About 11 acres were covered with a thin sand layer cap that would reduce ecological risk to fish and benthos to chemical of concern.
This Enhanced Monitored Natural Recovery (EMNR) has the potential to accelerate and improve the effectiveness of MNR. About two-months after cap placement the sediment surface was primarily clean sands. Native sediments under cap material were observed at five stations along the outer perimeter of the cap (four on the southeast side of the capped site and one on the northwest side). Stations that were located 25 to 50 m away from the cap to the southeast appeared to be all native sediments with no cap sediment. This indicated that the cap material had not migrated far.

**15. SUBJECT TERMS**
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## 1. Introduction

For contaminated sediment sites, risk reduction and ecological recovery are achieved primarily by reducing chemical bioavailability in surface sediments, thereby mitigating contaminant exposure pathways. Currently, the primary remedial options for the Department of Defense (DoD) sites are dredging, isolation capping, and monitored natural recovery (MNR). Dredging is expensive, can have adverse short-term effects, severely impacts the benthic community, and can negatively impact surface water hydrology and aquatic habitat. Conventional isolation capping, though less expensive than dredging, also severely impacts the benthic community, and can disrupt surface water hydrology and aquatic and near shore habitat by changing bathymetric elevations. MNR is cost effective, but is difficult to ensure performance and can take decades to be effective.

MNR combined with thin-layer capping (TLC), referred to as Enhanced Monitored Natural Recovery (EMNR), has the potential to accelerate and improve the effectiveness of MNR. TLC augments natural recovery processes by placing a thin layer (e.g., 15-30 cm) of clean material over contaminated surface sediments. Initially, the TLC isolates sediment contaminants and creates a relatively clean surficial sediment layer. This layer provides an initial foothold for benthic biota that facilitates recovery, creating a positive chain reaction where surface sediment concentration reductions promote additional colonization and recovery. As the TLC mixes with underlying sediments, recovery extends to deeper layers and ultimately results in ecosystem recovery. Compared to dredging and capping, EMNR is potentially less disruptive of the benthic community, is potentially more stable than a thick-layer cap without additional armoring, and will generally isolate the bulk of the contaminants from the benthic community and the overlying water. Thus EMNR provides the potential for accelerated recovery with minimal negative environmental impacts and represents potentially substantial cost-savings (e.g., 60-90%) to the DoD.

For the Quantico Embayment, Site 99, about 11 acres were covered with a thin sand layer cap that would reduce ecological risk to fish and benthos to chemical of concern, mostly DDT and its degradation products (DDD and DDE). Sediment profile imaging (SPI) was proposed and used to assess cap integrity and benthic response through time as part of EMNR at Site 99 (Battelle and Neptune and Co., Inc., 2004, 2010).

SPI was initially developed to investigate processes occurring at the sediment-water interface. The technology of sediment profile photography has allowed the development of a better understanding of the complexity of sediment dynamics, from both a biological and physical point of view. This approach to evaluating the environment, and potential impacts, can be easily combined with classical approaches to habitat and impact assessment providing scientists and managers with a more holistic ecosystem view. SPI allows remote sensing of the bottom to quickly provide data for evaluation of existing conditions. The sediment profile camera was developed by Rhoads and Cande (1971) to investigate processes structuring the sediment-water interface and as a means of obtaining in situ data on benthic habitat conditions. The technology of SPI or remote ecological monitoring of the sea floor (REMOTS) has allowed for the development of a better understanding of the complexity of sediment dynamics, from both a biological and physical point of view (Solan et al. 2004, Germano et al. 2011).

The objective of this project is to demonstrate and validate EMNR at DoD contaminated sediment Site 99. The SPI is part of a larger investigation to assess EMNR at Site 99. The objective of this survey was to assess existing benthic habitat conditions at the Quantico

Embayment site two-months post cap placement.  Initial baseline surveys were conducted in 2009 and again in 2011 (SSC Pacific 2014).

**1.1 Site Description**

The Quantico Embayment at Site 99 is a semi-circular inlet of the Potomac River, approximately 190 acres in size.  A private 12-acre island, Chopawamsic Island, is situated in the middle of the embayment approximately 500 feet from the shoreline (Figure 1).  Water depths within the embayment are approximately 3 to 6 feet.  Benthic habitats in the embayment are primarily fine-grained silt and clay sediments (>55% silt and clay) characteristic of depositional areas and shallow, slow-moving water (Battelle and Neptune and Co., Inc. 2004).  Close to shore sediments are coarser-grained material due to slight scouring from wave action or runoff. Subsurface core samples collected in the Quantico Embayment (Battelle and Neptune and Co., Inc., 2004) consisted of fine-grained, unconsolidated silt and clay underlain by firmer, more consolidated clay.  The depth of the unconsolidated sediments ranged approximately 10 to 40 cm (Battelle and Neptune and Co. Inc., 2004).  Salinity varies seasonally, ranging from less than 0.5 psu in the spring to nearly 3 psi in the fall (U.S. Fish and Wildlife Service 1999).  The shallow waters and low salinity in the spring and summer months lead to colonization by a submerged aquatic vegetation (SAV) non-native plant *Hydrilla verticillata*, which is prolific in the summer months throughout the tidal freshwater Potomac River.

## 2. Methods

### 2.1. Field Sampling

On 24 September 2014 a SPI survey was conducted at the Quantico Embayment site. A total of 32 stations were sampled (Figure 2). At each station, a digital sediment profile camera system was deployed one to three times to obtain one usable image. Two replicates from Station 6 were analyzed because they were different. At all other stations, replicate images were similar so only one replicate was analyzed. The location of each station is in Table 1.

The profile camera used a Canon 7D single lens reflex camera and captured 18-megapixel images onto internal memory card using Canon's raw image format. The profile camera prism window was 15 cm wide and 20 cm tall. The profile camera was controlled from the surface vessel via a cable that supplied power and allowed monitoring of the Canon 7D operation and image capture in real-time. The camera was triggered from the surface about 1-sec after bottom contact and after the prism stopped penetrating the sediment. One hundred (100) pounds of lead was added to the camera frame to increase prism penetration. More detail on sediment profile camera operation can be found in Rhoads and Cande (1971) and Germano et al. (2011). As SPI images were being collected, they were downloaded onto a laptop computer, and transferred to CD-ROM at the end of fieldwork for more permanent storage.

### 2.2. Image Analysis

All SPI were evaluated visually with data of all features recorded in a pre-formatted spreadsheet file. One image from each of the three deployments per station was digitally processed using histogram equalization and 0.1 to 1% histogram clipping to enhance contrast and color for determination of the aRPD layer depth with Adobe PhotoShop®. Data from each image were sequentially saved to a spreadsheet file for later analysis. Details of how these data were obtained can be found in Diaz and Schaffner (1988) and Rhoads and Germano (1986). A description of each parameter measured and evaluated follows.

**2.2.1. Prism Penetration** - This parameter provided a geotechnical estimate of sediment compaction with the profile camera prism acting as a dead weight penetrometer. The further the prism entered into the sediment the less compact the sediment is. Penetration was measured as the distance the sediment moved up the 30 cm length of the prism faceplate. For all stations the weight was kept at 100 lbs.

**2.2.2. Surface Relief** - Surface relief or boundary roughness was measured as the difference between the maximum and minimum distance the prism penetrated. This parameter also estimated small-scale bed roughness, on the order of the prism faceplate width (15.5 cm), which is an important parameter for predicting sediment transport and in determining processes that dominate surface sediment (Rhoads et al. 1978). The origin of surface relief can be determined from visual analysis of SPI and surface video images. In physically dominated habitats, features such as bedforms and sediment granularity, cause bed roughness. In biologically dominated habitats, bed roughness is a result of biogenic activity such as tube structures, defecation mounds, or feeding pits.

**2.2.3. Sediment Oxidation State** - The oxidation state of the sediment is an important parameter for estimating benthic habitat conditions and relates directly to the quality of the habitat (Pearson and Rosenberg 1978, Rosenberg et al. 2001). Oxidation and reduction state in transitional marine to tidal freshwater sediments is related to a complex biogeochemistry that is controlled by a combination of factors ranging from sediment grain size, organic content, microbial communities, bioturbation, sediment sulfate concentration, and oxygen availability. The biogeochemistry reactions follow a consistent pattern with oxidants consumed in order of decreasing energy production per mole of organic carbon oxidized (Oxygen > manganese oxides and nitrate > iron oxides > sulfate) (Froelich et al. 1979). Fortunately, these three biogeochemical states are relatively colorful, oxic sediments being brown to reddish-brown, suboxic sediments being olive-brown to light-gray, and anoxic sediments being dark-gray to black. This is the basis for the well-known qualitative relationship between sediment color and redox state (Bull and Williamson 2001). It is assumed that given the complexities of manganese, iron, and sulfate oxidation-reduction chemistry the reddish-brown sediment color tones indicate sediments contain oxygen and are in an oxidative geochemical state, or at least are not intensely reducing (Fenchel 1969, Bull and Williamson 2001, Diaz and Trefry 2006).

The aRPD layer depth includes the oxic portion of the sediment and also the depth to which sediments appear to be suboxic. The term apparent is used in describing these parameters because no actual measurement was made of oxygen or redox potential. Color in SPI is also dependent on nonsedimentary factors such as ambient water column light, reflections, and shadows that can make parts of the image seem lighter or darker. Thus sediments visually assessed as oxic do not necessarily contain free oxygen, nor do visually anoxic sediments necessarily contain free sulfides (Wetzel 1995). The number of pixels in the user-defined aRPD layers was counted and converted to linear measurement by dividing by the width of the image used in the analysis.

**2.2.4. Sediment Grain Size** - Grain size is an important parameter for determining the nature of the physical forces acting on the bottom and is one of the major factors in determining benthic community composition (Rhoads 1974, Snelgrove and Butman 1994). The sediment type descriptors used for image analysis follow the Wentworth classification as described in Folk (1974) and represent the major modal class for each image. Maximum grain size was also estimated. Grain size was determined by comparison of collected images with a set of standard images for which mean grain size had been determined in the laboratory. The Phi scale sizes corresponding to sediment grain size descriptors derived from SPI is contained in Table 2.

**2.2.5. Surface Features and Bed Roughness** - These parameters include a wide variety of physical (such as bedforms) and biological features (such as biogenic mounds, shell, or tubes). The presence of certain surface features is indicative of the overall nature of the processes acting on surface sediment. For example, bedforms are associated with physically dominated habitats, whereas the presence of dense worm tubes or feeding pits would be indicative of a more biologically accommodating habitat (Rhoads and Germano 1986, Diaz and Schaffner 1988). Surface features were visually evaluated from each image and compiled by type and frequency of occurrence.

**2.2.6 Subsurface Features** - Subsurface features include a wide variety of structures (such as infaunal organisms, burrows, water or gas filled voids, and sediment layering) that reveal the importance of physical and biological processes influencing the bottom. For example, layered or homogeneous sediments are generally dominated by physical processes. Sediments with burrows, infaunal feeding voids, and/or visible infaunal organisms are generally dominated by biological processes (Rhoads and Germano 1986, Diaz and Schaffner 1988, Nilsson and Rosenberg 2000). Subsurface features were visually evaluated from each image and compiled by type and frequency of occurrence.

## 3. Results
Images from the 32 SPI stations were analyzed with all data in Appendix A and a summary in Table 3. A mosaic of all SPI images analyzed is in Figures 3, 4, and 5. High resolution SPI images are in Appendix B.

### 3.1. Sediments and Cap Characteristics
Modal sediment grain-size at the Quantico Embayment Site 99 ranged from fine-sand-silt-clay to medium-coarse-sand (Table 3). The coarsest sediments occurred at Station 03 being a mixture of medium-coarse-sand-gravel with some pebble sized grains. Stations 01, 06a, 08, 16 and 19 were all clean medium-coarse sand. About two-thirds of the stations (19 of 32 stations) were a mixture of fine-medium-coarse-sand some with siltly sediments. An additional seven stations were a mixture of fine-sand-silt-clay (Figures 3 and 4).

Sediment sampling prior to cap placement determined that native sediments were primarily silt-clay (Battelle and Neptune and Co., Inc., 2004). Based on this it was concluded that the presence of sediments that were medium-sand and coarser were all cap material. The cap was present at all stations except Stations 23, 24, 26, 27, and 28 that appeared to be native silt-clay (Figures 6 and 7). Cap thickness exceeded prism penetration depth at 23 of 28 stations with cap material (Figure 7). At Stations 02, 11, 25, 29, and 32 what appeared to be native siltly and clayey sediments were under or mixed in with the cap sediments (Figures 3, 4, and 5). Over the two-months since cap placement, it did not appear that native sediments from the surrounding bottom were transported very far from the edge of the capped site. All stations with significant amounts of fine sediments mixed with surface cap material were along the edge of the site (Figure 7).

### 3.2. Biology
The sediment surface at all stations appeared to be dominated by physical processes with little indication of biological processes, such as bioturbation, being important. What appeared to be small tubes (<1 mm in diameter) occurred in low densities (1 to 9 per image) at about half the stations (15 of 32 stations) with Station 04 having 10 to 24 tube per image (Table 3). These tubes could also have been small fecal pellets as there are not many tube building species in marine-freshwater transitional habitats (Dauer 1993). Tubes could be from newly settled *Marenzelleria viridis, Streblospio benedicti, or Boccardiella ligerica* three small tube building polychaete species common in fine-grained sediments from tidal freshwater to about salinities of 3 psu (Dauer 1993), which seasonally can occur at Site 99. The fecal pellets are likely from the bivalves *Rangia cuneata* or *Corbicula fluminea,* both of which were found at the Quantico Embayment Site 99 during fieldwork. They are also know to be common in the low salinity and tidal freshwater Potomac (Dauer 1993).

Oligochaetes, which are the dominant faunal group at low salinity and tidal freshwater, do not build tubes (Brinkhurst and Jamieson 1971) or ventilate their burrows (Fisher et al. 1980, McCall and Fisher 1980), which would oxidize the burrow walls and make them more visible in the SPI images. Oligochaetes were observed below the sediment surface at less then a third of all stations (9 of 32 stations) (Table 3). Infauna were all very small on the order 0.5 mm. There was no evidence of burrowing by any other infaunal species, such as Chironomid larvae that are common in tidal freshwater and low salinity habitats (Diaz 1989, Bonsdorff et al. 1996).

The dominance of surfical sediments by physical processes appeared to be the principal factor determining oxidation-reduction state of the sediments. There was no evidence of bioturbation by infauna or other benthic species at any of the Quantico Embayment stations. The shallowest depth of the aRPD occurred at Station 30 (0.5 cm) that was cap sand mixed with native silty sediment (Table 3). At native sediment stations, four of the five had aRPD layer depths >1 cm (Table 3). This indicated that resuspension-deposition events were likely responsible for the deeper aRPD layer at these four stations. In silt-clay sediments, physical diffusion limits oxygen penetration to <1 cm (Jørgensen and Revsbech 1985). At native sediment Station 27 the aRPD layer depth of 0.7 cm could have been due to physical diffusion. In sandy porous sediment, deep aRPD layers appeared primarily to be a function of porewater circulation driven by current or wave action that pumps oxygenated water in the sediment. This appeared to be the factor responsible for the deep aRPDs at many of the cap stations (Table 3, Figure 8).

The most obvious signs of biogenic activity were gas voids produced by anaerobic methanogenic microbes. When sediment sulphate is depleted, methanogenesis becomes the dominating diagenetic process producing methane and carbon dioxide (Fenchel 1987, Kristensen 2000). Gas voids occurred at half of stations (16 of 32 stations) with over 50 small gas voids in the images from Stations 01, 23, and 32 (Figure 3). Gas voids were primarily associated with silt-clay sediments but also occurred in what appeared to be clean cap sand, for example Stations 13 or 21 (Figure 4).

**4. Summary of Results and Conclusions**

The general muddy nature of native sediments facilitated the determination of cap material which were primarily medium- to coarse-sand (Table 3, Figures 3, 4, and 5). About two-months after cap placement the sediment surface at cap stations were primarily clean sands. Native sediments under cap material were observed at five of the Quantico Embayment Site 99 SPI stations along the outer perimeter of the cap (four on the southeast side of the capped site and one on the northwest side). Stations that were located 25 to 50 m away from the cap to the southeast appeared to be all native sediments with no cap sediment. This indicated that the cap material had not migrated far.

The cap appeared to completely cover the SPI stations located on the cap. Over the center of the capped area the cap was thicker then prism penetration and was at least about 10 to 20 cm thick (Figure 7). Cap sediments thinned to the southeast of the site and did not appear to be present 25 to 50 m away from the perimeter of the site.

Native sediments at the Quantico Embayment Site 99 appeared to be typical of other marine-freshwater transitional zone within the Potomac River and other Chesapeake Bay tributaries (Diaz 1989, 1994, Dauer 1993, Clarke et al. 2003). Native sediments in these tidal freshwater habitats are primarily silt-clays with sandy sediments being mostly fine-sand.

There was no evidence in the sediment profile images that biological processes were involved in sediment mixing at the Site 99. Bioturbation, which is a primary mixing process in marine sediments, is not an important factor in transitional or tidal freshwater benthic habitats (Diaz 1994).

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Table 1. SPI station locations at Quantico Embayment Site 99, September 24, 2014.

| Station | Cap Strata | Latitude | Longitude |
|---|---|---|---|
| **01** | On | 38.51236 | -77.29909 |
| **02** | On | 38.51268 | -77.29898 |
| **03** | On | 38.51273 | -77.29833 |
| **04** | On | 38.51303 | -77.29878 |
| **05** | On | 38.51304 | -77.29807 |
| **06a** | On | 38.51331 | -77.29840 |
| **06b** | On | 38.51336 | -77.29846 |
| **07** | On | 38.51332 | -77.29784 |
| **08** | On | 38.51332 | -77.29745 |
| **09** | On | 38.51372 | -77.29818 |
| **10** | On | 38.51368 | -77.29758 |
| **11** | On | 38.51363 | -77.29723 |
| **12** | On | 38.51393 | -77.29839 |
| **13** | On | 38.51389 | -77.29800 |
| **14** | On | 38.51390 | -77.29743 |
| **15** | On | 38.51388 | -77.29697 |
| **16** | On | 38.51417 | -77.29782 |
| **17** | On | 38.51419 | -77.29725 |
| **18** | On | 38.51417 | -77.29672 |
| **19** | On | 38.51450 | -77.29705 |
| **20** | On | 38.51452 | -77.29655 |
| **21** | On | 38.51485 | -77.29668 |
| **22** | Off | 38.51439 | -77.29628 |
| **23** | Off | 38.51432 | -77.29567 |
| **24** | Off | 38.51423 | -77.29506 |
| **25** | Off | 38.51257 | -77.29823 |
| **26** | Off | 38.51230 | -77.29787 |
| **27** | Off | 38.51203 | -77.29751 |
| **28** | Off | 38.51436 | -77.29596 |
| **29** | Off | 38.51380 | -77.29679 |
| **30** | Off | 38.51324 | -77.29726 |
| **31** | Off | 38.51294 | -77.29785 |
| **32** | Off | 38.51245 | -77.29832 |

Table 2. Comparison of Phi scale to SPI sediment grain size descriptors.

| Phi Scale | SPI Grain Size Descriptor | Sediment Grain Size Subclass | Upper Limit Size (mm) | Grains per cm of image |
|---|---|---|---|---|
| **-6 to -8** | CB | Cobble | 256.0 | <<1 |
| **-2 to -6** | PB | Pebble | 64.0 | <1 |
| **-1 to -2** | GR | Gravel | 4.0 | 2.5 |
| **1 to -1** | CS | Coarse-sand | 2.0 | 5 |
| **2 to 1** | MS | Medium-sand | 0.5 | 20 |
| **4 to 2** | FS | Fine-sand | 0.25 | 40 |
| **4 to 3** | VFS | Very-fine-sand | 0.12 | 80 |
| **5 to 4** | FSSI | Fine-sandy-silt | 0.06 | 160 |
| **5.5 to 4.5** | FSSICL | Fine-sandy-silt-clay | 0.06 | 160 |
| **6 to 5** | SIFS | Silty-fine-sand | 0.0039 | >320 |
| **7 to 5** | SI | Silt | <0.0039 | >320 |
| **8 to 6** | SICL | Silty-clay | <0.0039 | >320 |
| **>8 to 7** | CLSI | Clayey-silt | <0.0039 | >320 |
| **>8** | CL | Clay | <0.0005 | >2560 |

Table 3. Summary of SPI data for Quantico Embayment Site 99, September 24, 2014.

| Station | Penetration Mean (cm) | aRPD Mean (cm) | Grain Size Major Mode | Cap Layer (cm) | Sediment Comment | Surface Tubes | Infauna | Gas Voids |
|---|---|---|---|---|---|---|---|---|
| 01 | 15.9 | >15.9 | MSCS | >15.9 | Trace of silt | 1 to 9 | 0 | >50 |
| 02 | 6.5 | >6.5 | MSCS/FSSI | 2.2 | Floc layer on surface | 0 | 0 | 5 |
| 03 | 10.6 | >10.5 | MSCSGR | >10.6 | Clean sand | 0 | 0 | 0 |
| 04 | 19.9 | 1.7 | FSMSSI | >19.9 | Sand mixed with silt | 10 to 24 | 0 | 10 to 19 |
| 05 | 8.4 | >8.3 | FSMSSI | >8.4 | Sand mixed with silt. Floc layer on surface | 0 | 0 | 5 |
| 06a | 12.3 | >12.3 | MSCS | >12.3 | Clean sand with trace of silt | 0 | 0 | 0 |
| 06b | 18.4 | 2.3 | FSMSSI/MS/ FSMSSI | >18.4 | Sand mixed with silt over clean sand over sand mixed with silt | 1 to 9 | 0 | 30 to 39 |
| 07 | 13.7 | 3.1 | FSMSSI/MSCS | >13.7 | Sand mixed with silt over clean sand | 1 to 9 | 1 | 0 |
| 08 | 9.7 | >9.7 | MSCS | >9.7 | Trace of silt | 1 to 9 | 1 | 0 |
| 09 | 13.1 | 4.3 | FSMSCS | >13.1 | Clean gray sand | 1 to 9 | 0 | 0 |
| 10 | 18.3 | 7.4 | FSMSCS | >18.3 | Clean gray sand | 0 | 0 | 0 |
| 11 | 15.3 | 11.7 | FSMSSI/MSCS/FSSI | 12.0 | Sand mixed with silt over clean sand over native silty sediment | 1 to 9 | 0 | 40-49 |
| 12 | 8.7 | 0.8 | FSMS | >8.7 | Clean gray sand | 1 to 9 | 0 | 0 |
| 13 | 12.1 | 4.0 | FSMS | >12.1 | Clean gray sand | 0 | 0 | 30 to 39 |
| 14 | 8.6 | >8.6 | FSMSCS | >8.6 | Clean sand | 0 | 0 | 0 |
| 15 | 9.3 | 5.8 | FSMSSI/MSCS | >9.3 | Sand mixed with silt over clean sand. Floc layer on surface | 0 | 0 | 0 |
| 16 | 11.2 | >11.2 | MSCS | >11.2 | Clean sand | 0 | 0 | 0 |
| 17 | 11.6 | 4.3 | FSMSCS | >11.6 | Clean sand | 0 | 0 | 0 |
| 18 | 5.0 | >5.0 | FSMSCS | >5.0 | Clean sand with trace of silt, Floc layer on surface | 0 | 0 | 0 |
| 19 | 13.5 | >13.5 | MSCS | >13.5 | Clean sand | 0 | 0 | 0 |
| 20 | 13.1 | 2.9 | FSMSCS | >13.1 | Clean gray sand | 0 | 2 | 10 to 19 |
| 21 | 24.7 | 9.0 | FSMSCS | >24.7 | Clean sand | 1 to 9 | 1 | 10 to 19 |
| 22 | 13.4 | 2.1 | FSMS | >13.4 | Clean gray sand | 0 | 2 | 0 |
| 23 | 15.7 | 5.6 | FSSI | 0 | Native sandy silty bottom | 1 to 9 | 1 | >50 |
| 24 | 17.5 | 6.7 | FSSI | 0 | Native sandy silty bottom | 1 to 9 | 0 | 20 to 29 |
| 25 | 27.5 | 2.1 | FSMSSI/SICL | 6.9 | Sand mixed with silt over native silty sediment | 0 | 0 | 30 to 39 |
| 26 | 20.1 | 2.1 | FSSICL | 0 | Native silty bottom | 0 | 0 | 40-49 |
| 27 | 13.8 | 0.7 | FSSICL | 0 | Native silty bottom | 1 to 9 | 0 | 1 to 9 |
| 28 | 13.3 | 1.6 | FSSICL | 0 | Native silty bottom | 0 | 1 | 0 |
| 29 | 3.4 | 1.4 | FSMS/CL | 0.2? | Thin sandy silt layer over clay, Sand from cap?? | 1 to 9 | 0 | 0 |
| 30 | 15.7 | 0.5 | FSSI/FSMSSI | >15.7 | Sand mixed with silt over clean sand over sand mixed with silt | 1 to 9 | 1 | 20 to 29 |
| 31 | 12.8 | 1.9 | FSSI/MSCS | >12.8 | Sand mixed with silt over clean sand | 1 to 9 | 1 | 0 |
| 32 | 27.5 | 1.8 | FSMSSI/SICL | 7.5 | Sand mixed with silt over native silty sediment | 0 | 0 | >50 |

* Sediment descriptors:

CL = Clay GR = Gravel MS = Medium=Sand

CS = Coarse-Sand FS = Fine-Sand SI = Silt PB = Pebble

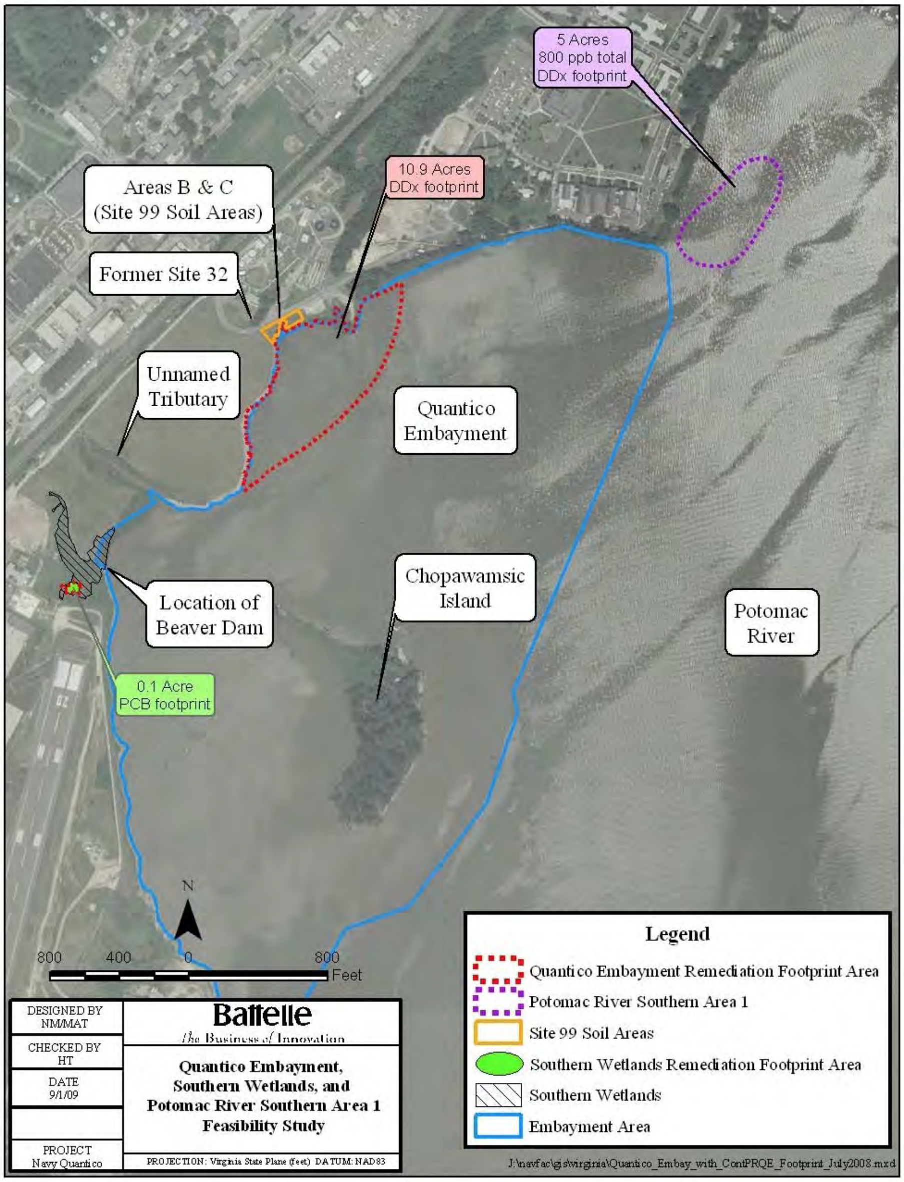



Figure1. Quantico Embayment remediation area (Battelle and Neptune and Co., Inc., 2010).

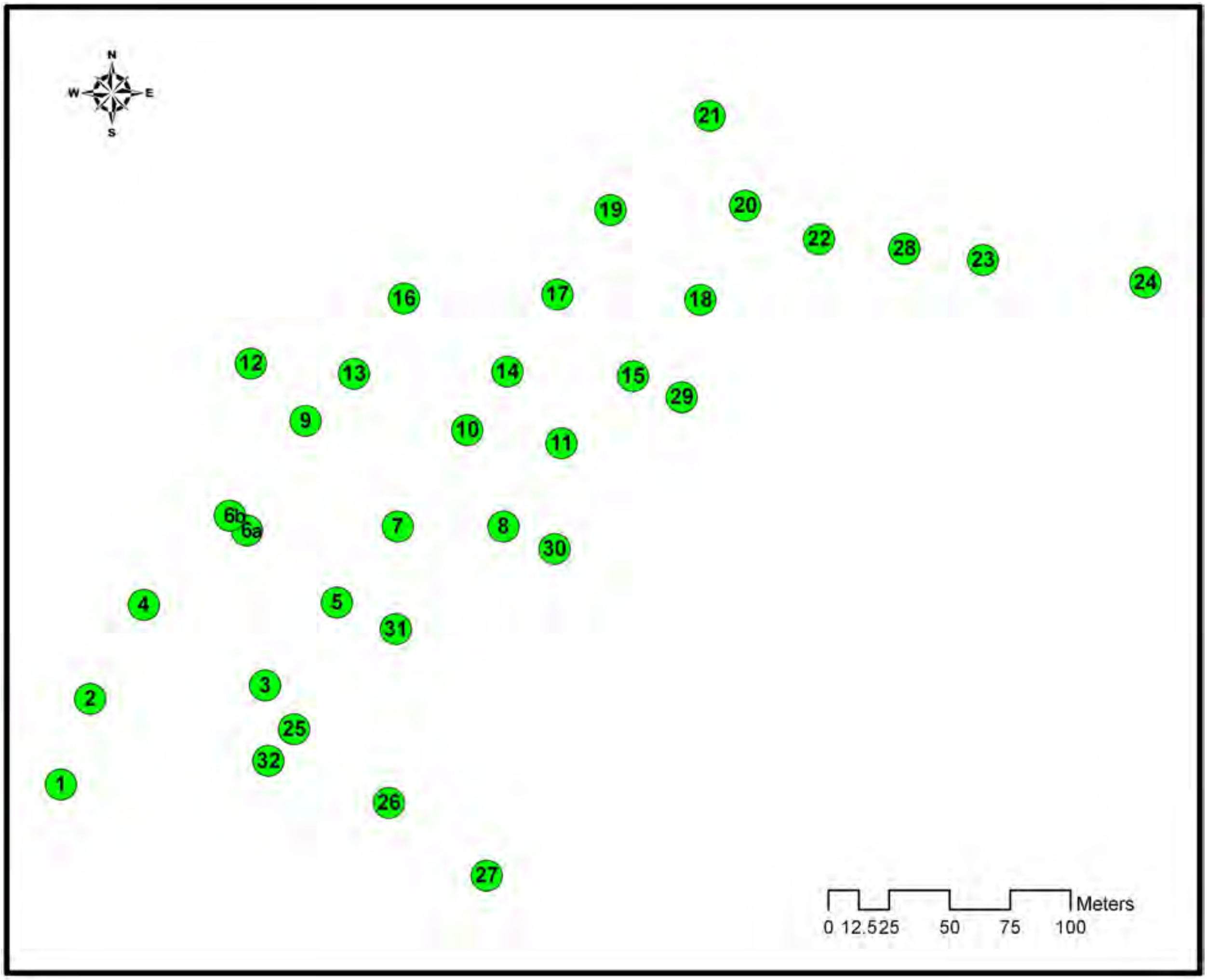



Figure 2. SPI station locations at Quantico Embayment Site 99 within the 10.9 acre DDx footprint, September 24, 2014.

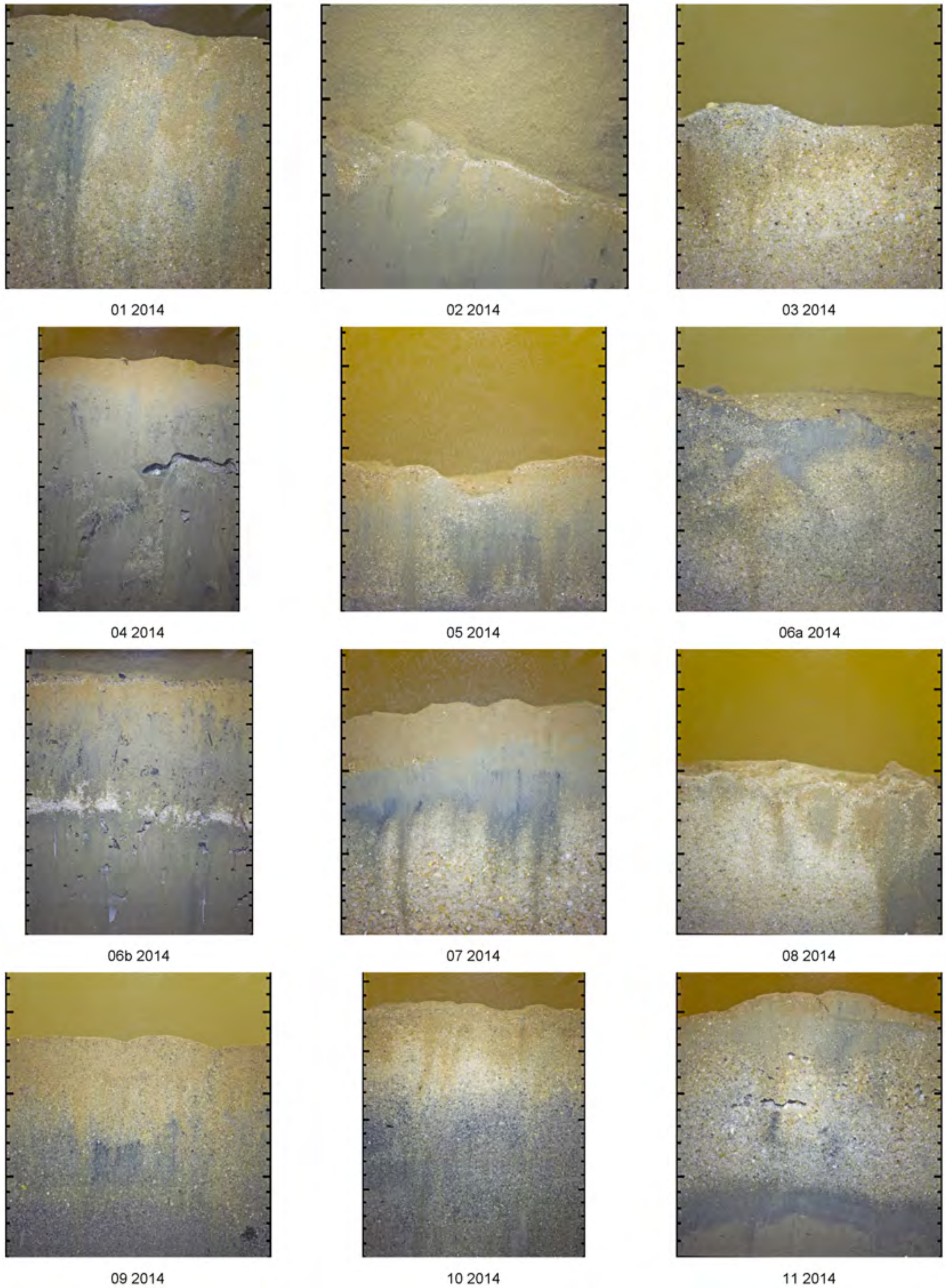



Figure 3. Mosaic of images from Quantico Embayment Site 99 stations 01 to 11 for two-month post-cap SPI survey September 24, 2014. Scale on side of images is in cm.

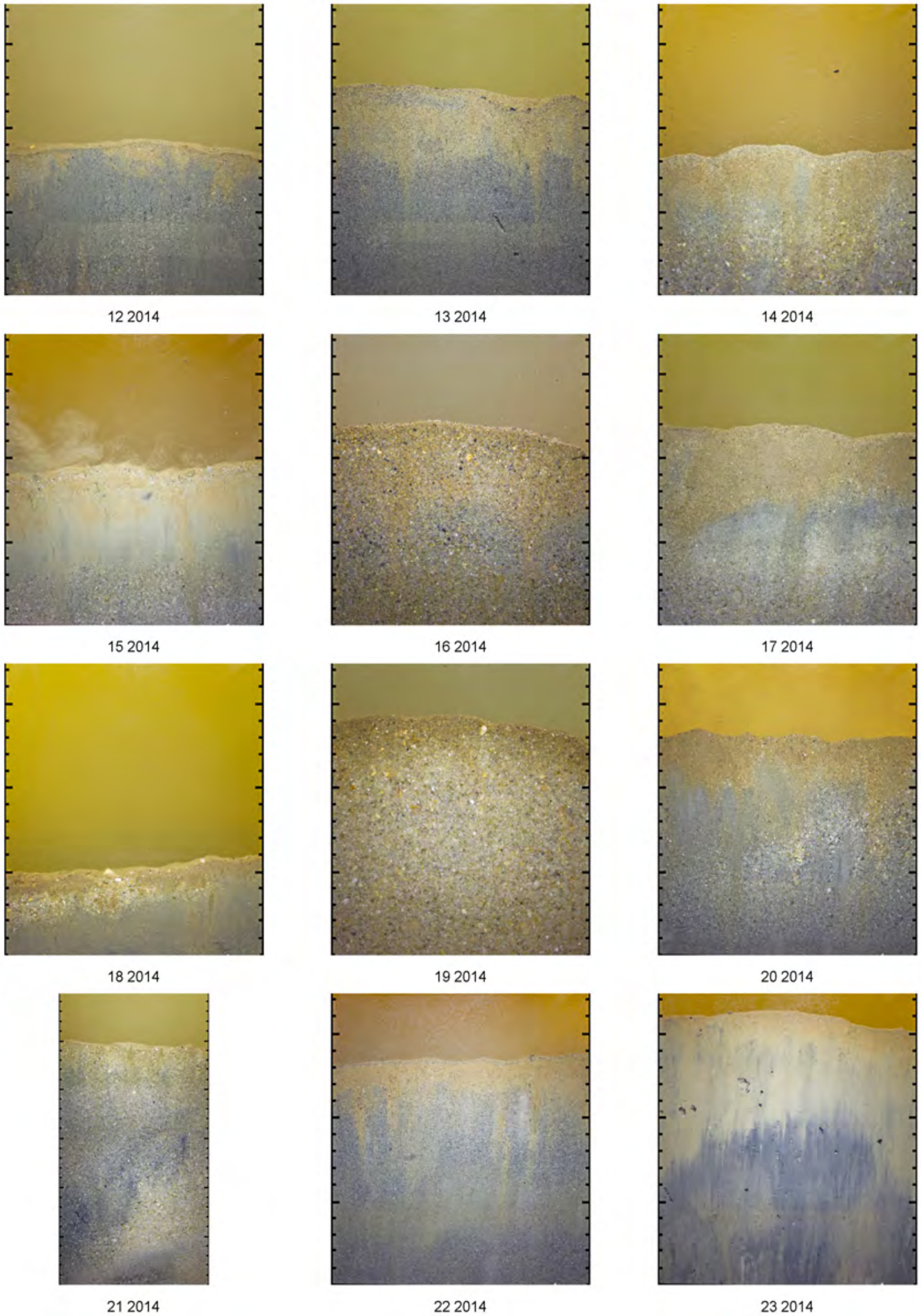



Figure 4. Mosaic of images from Quantico Embayment Site 99 stations 12 to 23 for two-month post-cap SPI survey September 24, 2014. Scale on side of images is in cm.

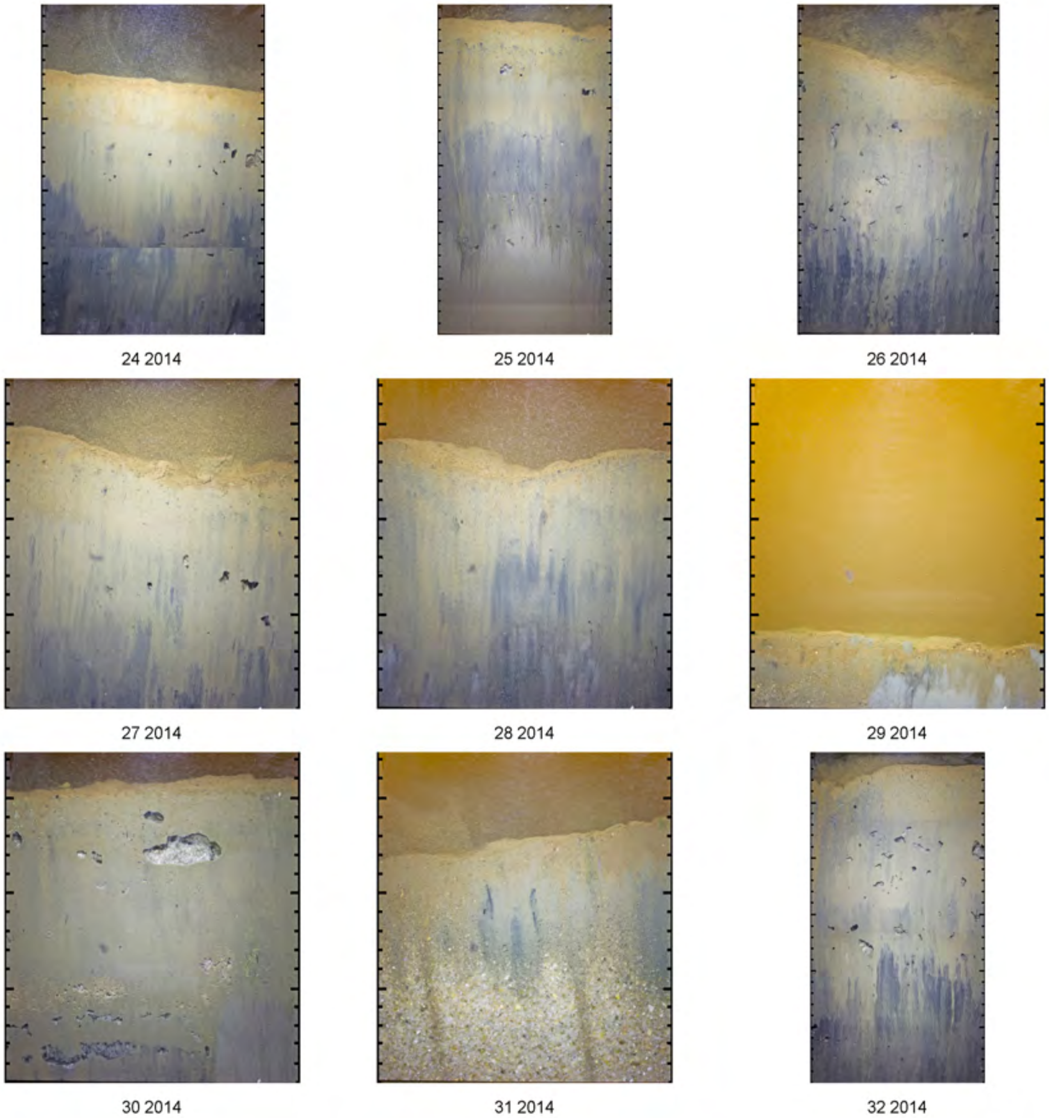



Figure 5. Mosaic of images from Quantico Embayment Site 99 stations 24 to 32 for two-month post-cap SPI survey September 24, 2014. Scale on side of images is in cm.

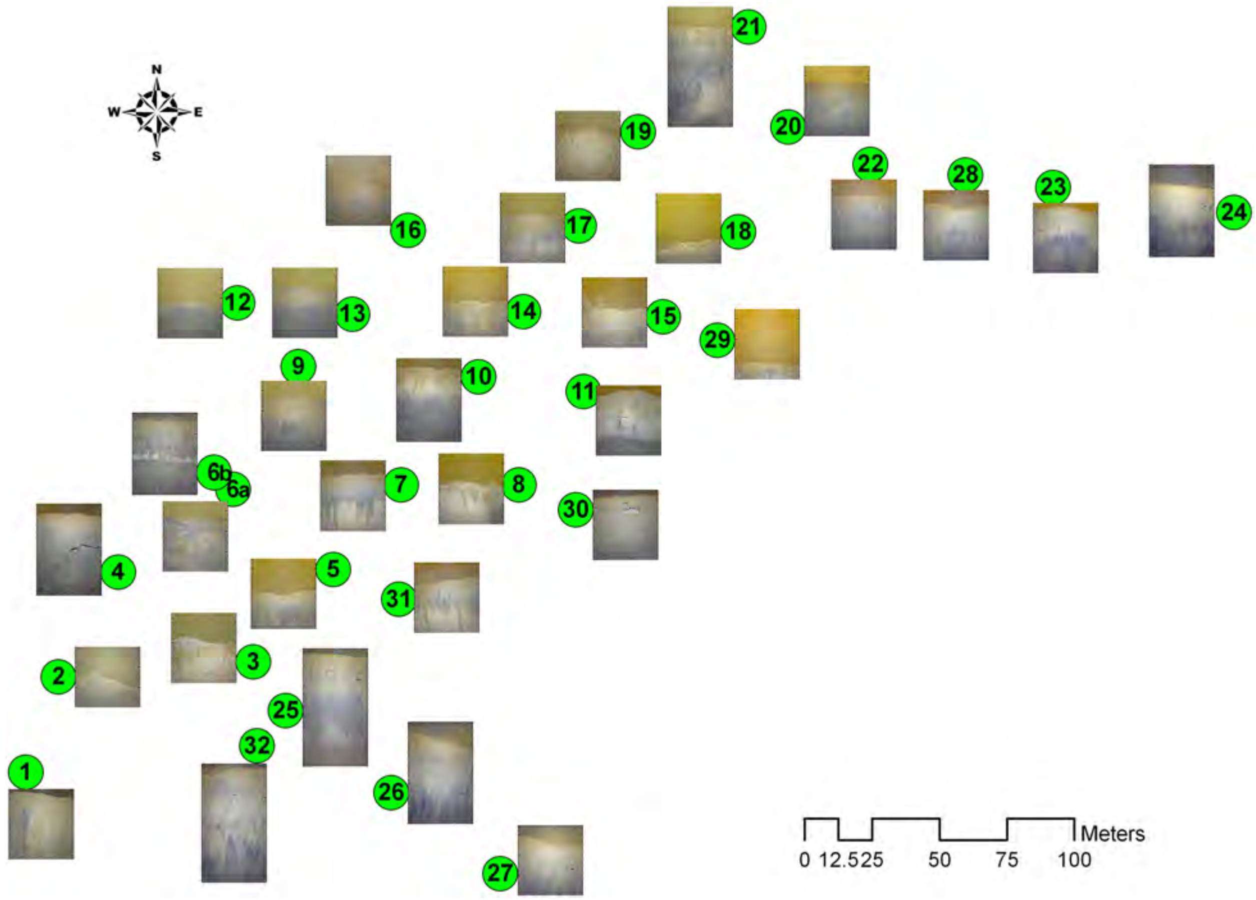



Figure 6. Spatial mosaic of images from Quantico Embayment Site 99 for two-month post-cap SPI survey September 24, 2014. Scale on side of images is in cm.

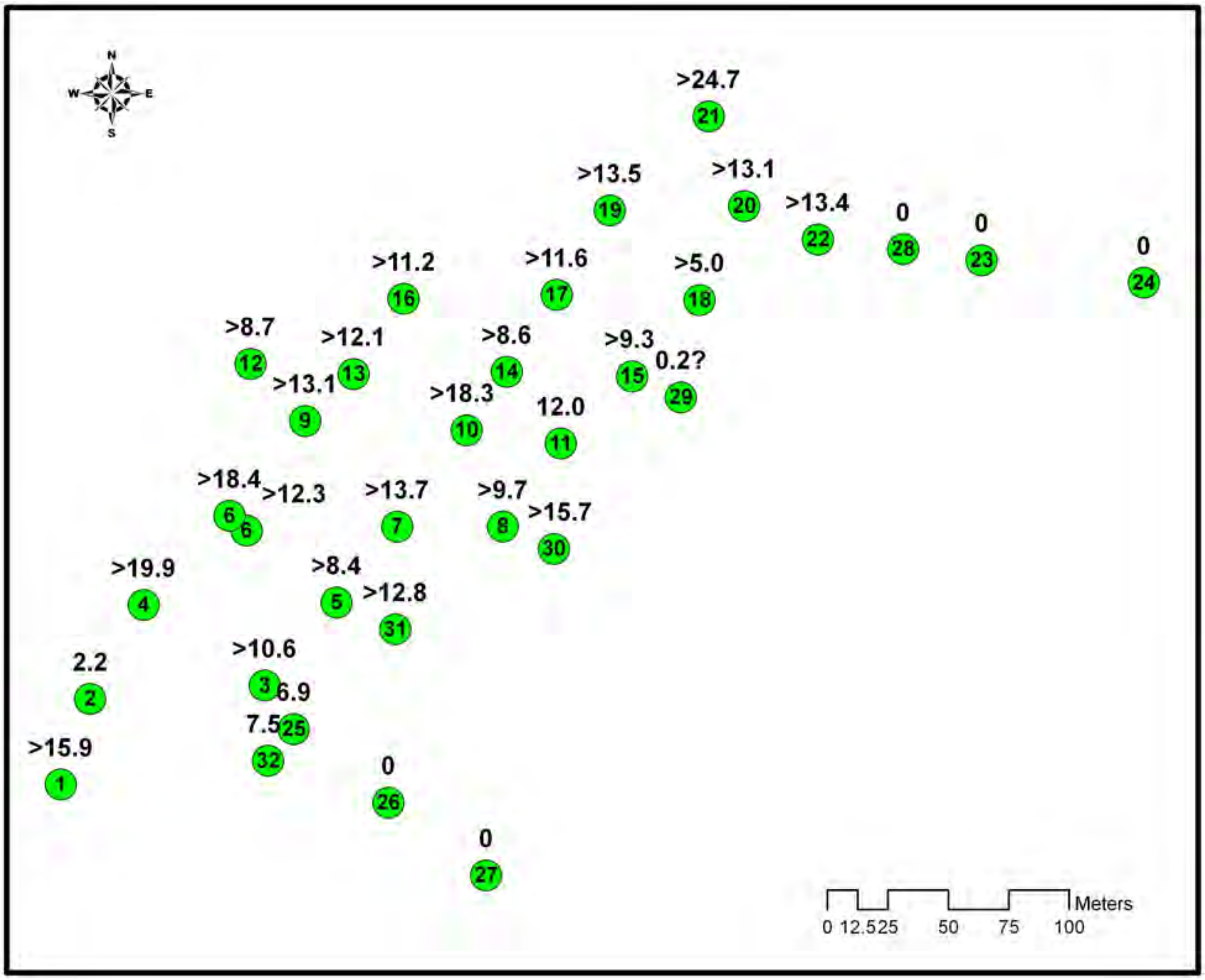



Figure 7. Cap thickness (cm) at Quantico Embayment Site 99 SPI stations two-month post-cap SPI survey September 24, 2014. The > symbol indicates that cap material was thicker than prism penetration.

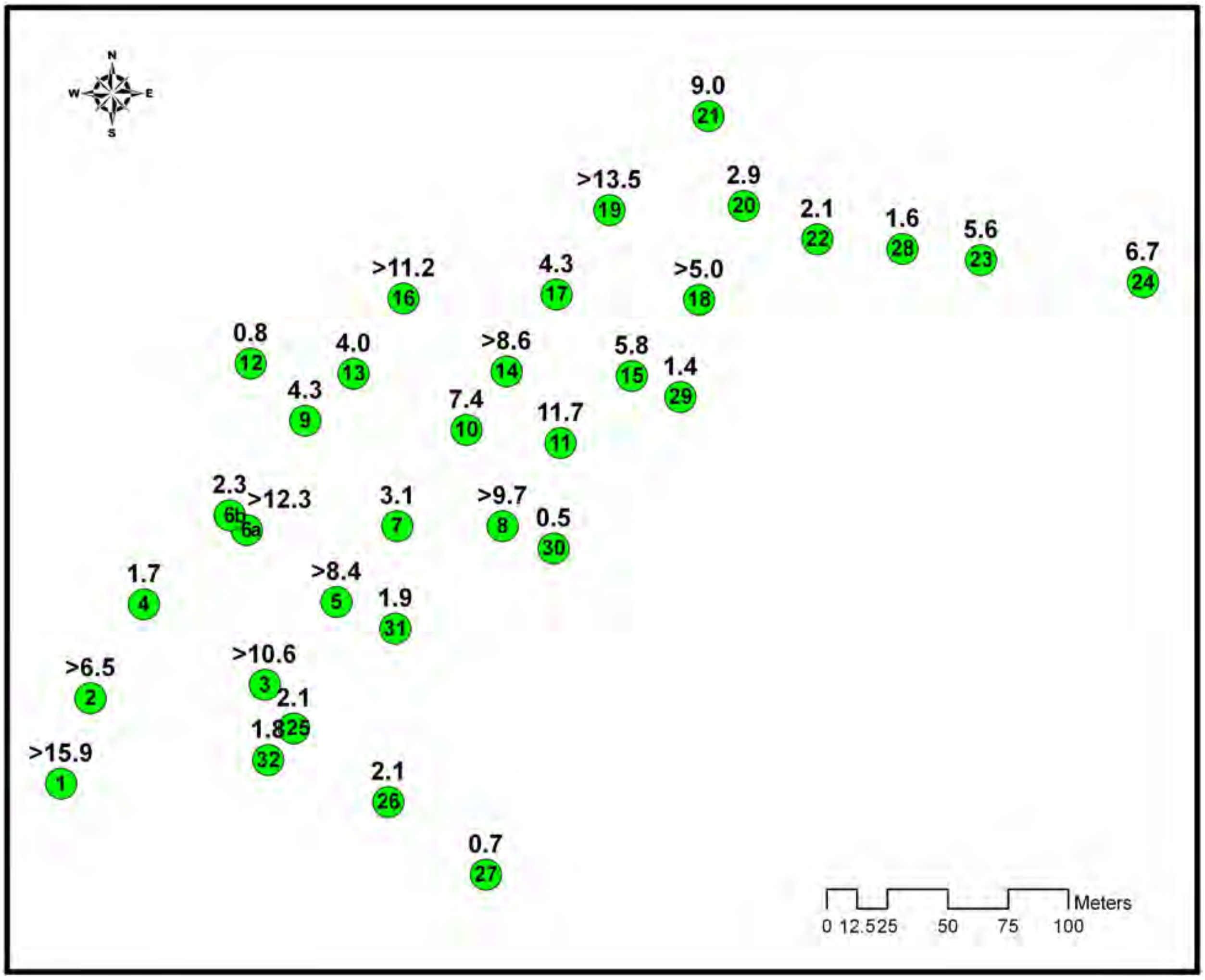
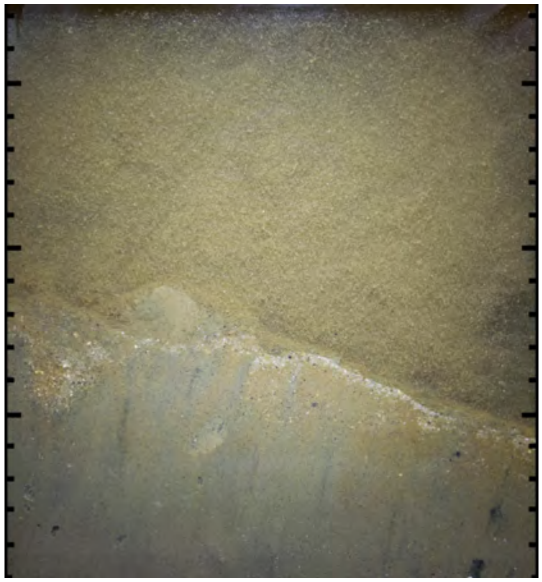
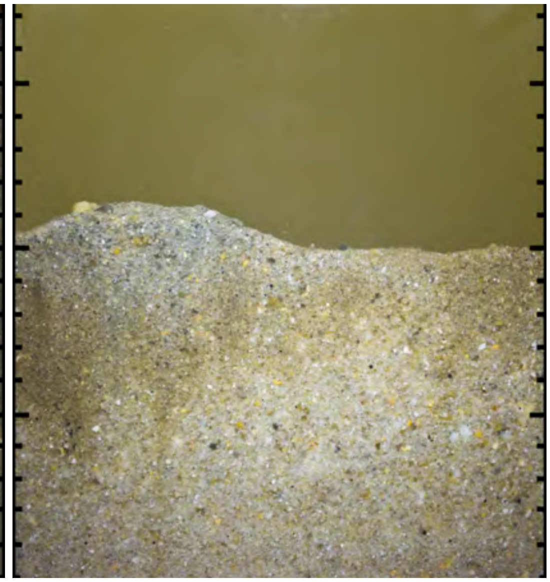



Figure 8. aRPD layer depth (cm) at Quantico Embayment Site 99 SPI stations, two-month post-cap SPI survey September 24, 2014. The > symbol indicates that the aRPD layer was deeper than prism penetration depth.

01-1



02-1

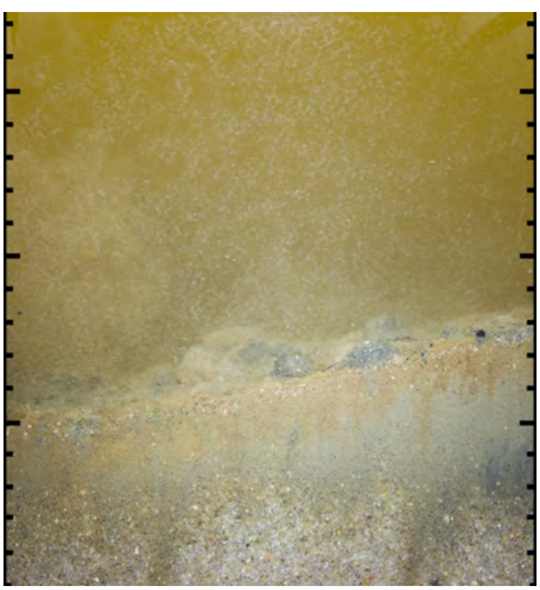


03-1

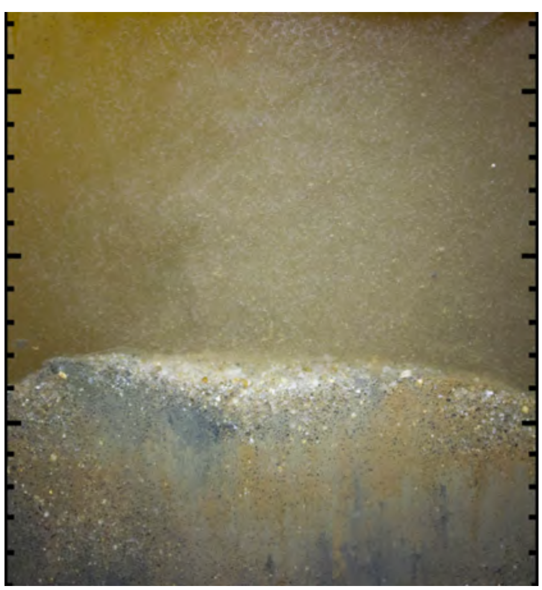
03-2

04-1

05-1



05-2



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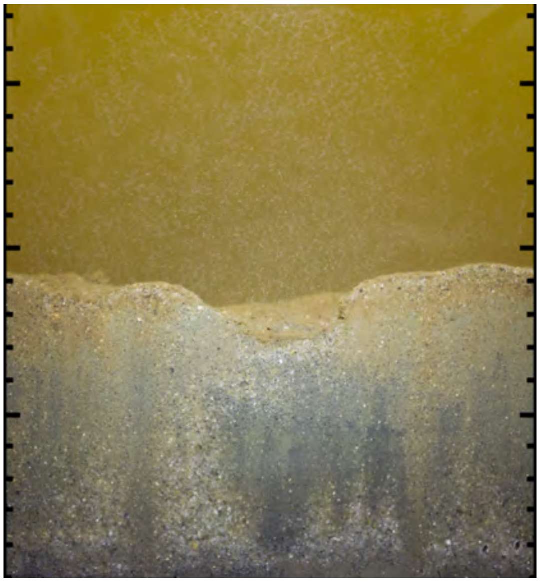
05-4



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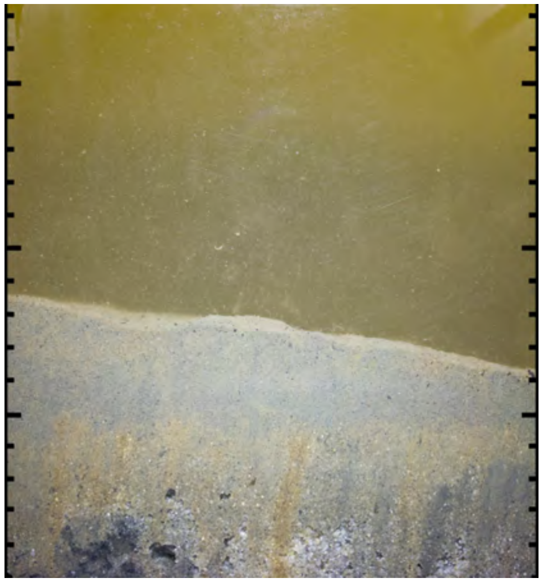


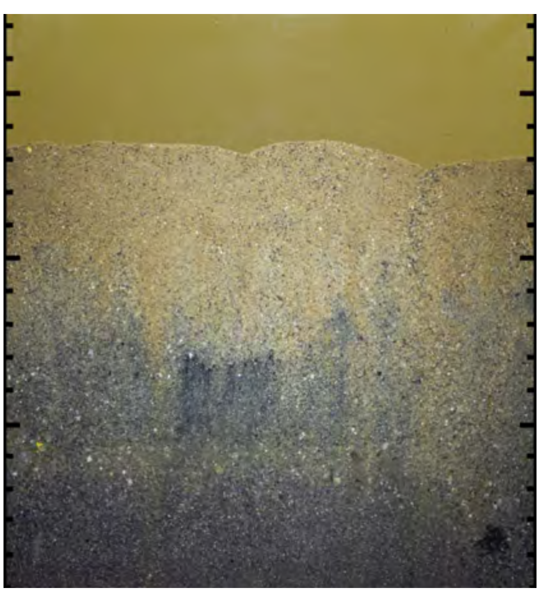
06-1

06-2

06-3

07-1

08-1



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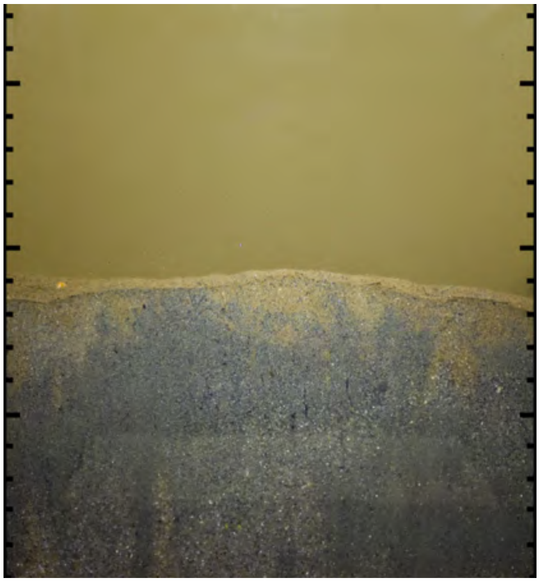
10-1

11-1



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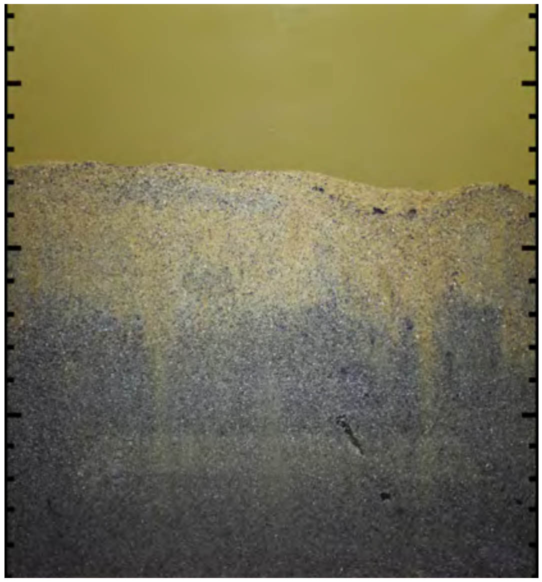
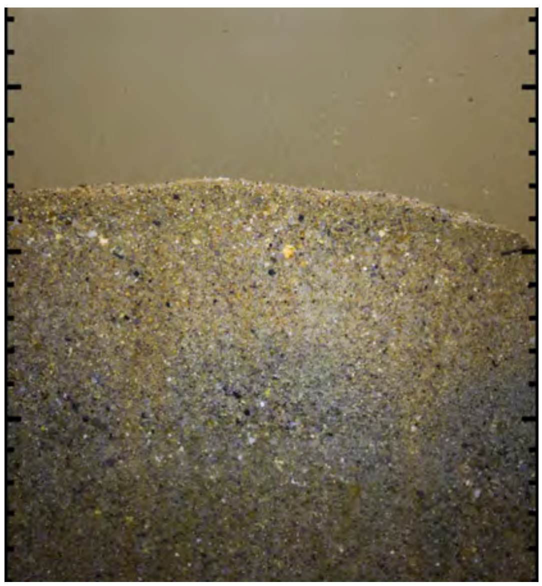


13-1

14-1

15-1



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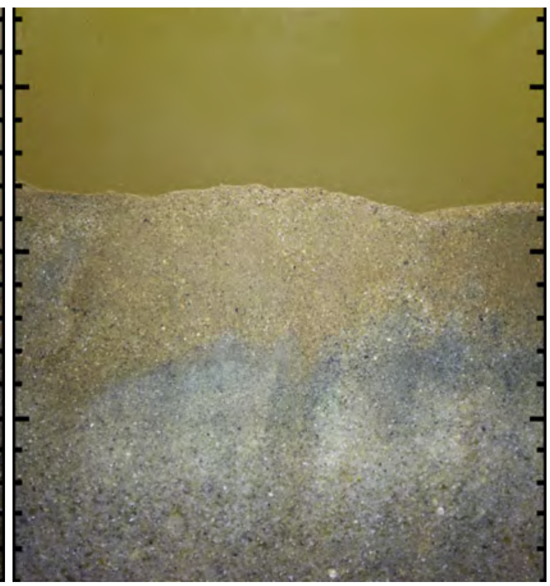

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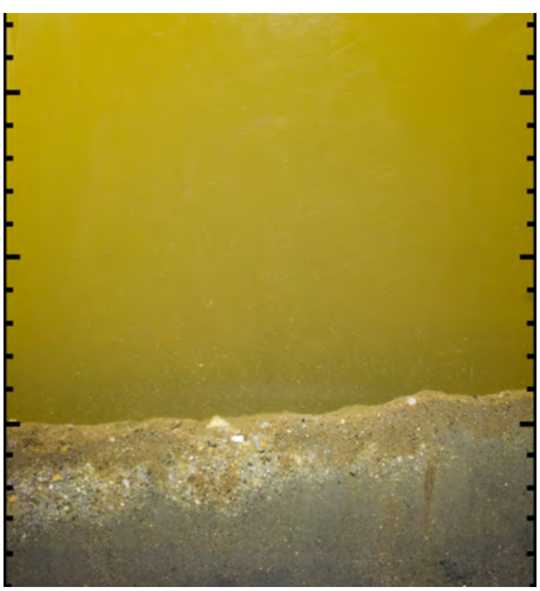
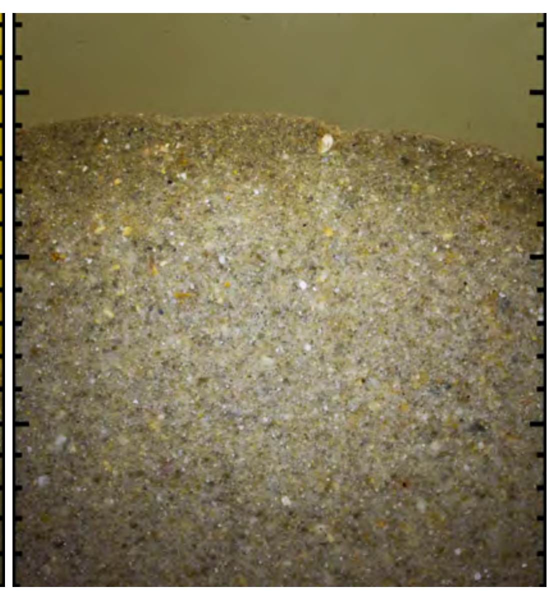


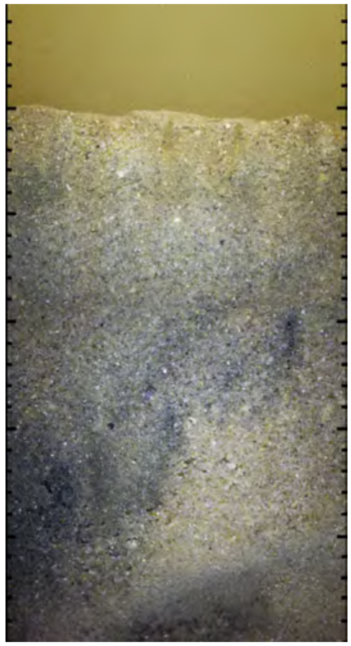
18-1

18-2



19-1

20-1



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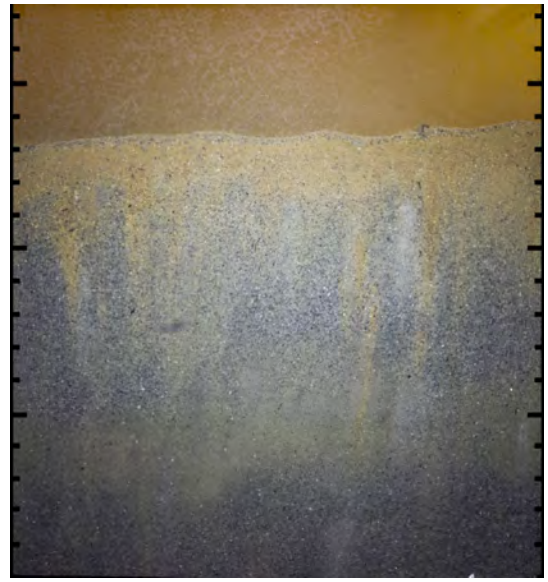


22-1

23-1

24-1

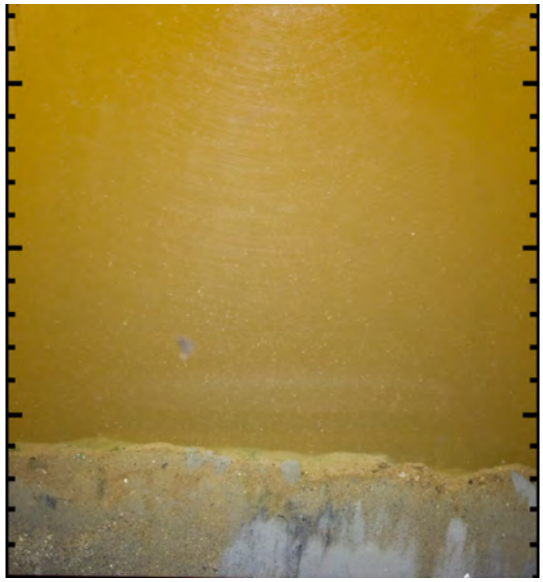
25-1

25-2

26-1

27-1

28-1



29-1

30-1

31-1

# Site 99, Marine Corps Base Quantico
# Sediment Profile Image Monitoring
# Year 1
# June 2016

Prepared for:

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**June 2016**

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## Acronyms and Abbreviations

| | |
|---|---|
| $aO_2$ | oxygen penetration |
| aRPD | apparent reduction-oxidation potential discontinuity depth |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| cm | centimeter |
| DDT | dichlorodiphenyltrichloroethane |
| DDE | dichlorodiphenyldichloroethylene |
| DDD | dichlorodiphenyldichloroethane |
| DDx | sum of DDT, DDE, and DDD |
| DoD | Department of Defense |
| ESTCP | Environmental Security Technology Certification Program |
| HEC | habitat enhancement cap |
| ID | identification |
| IR | Installation Restoration |
| lb | pound |
| psu | practical salinity unit |
| R/V | research vessel |
| REMOTS | remote ecological monitoring of the sea floor |
| RGB | red, green, blue image histograms |
| SAV | submerged aquatic vegetation |
| SPI | sediment profile imaging |

# 1.0 Introduction

As required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), a long-term monitoring study (Battelle and Neptune and Co., 2010) was designed and implemented at Installation Restoration (IR) Site 99 at the Marine Corps Base Quantico to assess benthic recolonization and stability of a thin-layered cap called a habitat enhancement cap (HEC). The HEC was designed to reduce ecological risk to fish and benthos from chemicals of concern in the sediment, mostly the pesticide DDT (dichlorodiphenyltrichloroethane) and its degradation products (dichlorodiphenyldichloroethane [DDD] and dichlorodiphenyldichloroethylene [DDE]), referred to collectively as DDx. Sediment profile imaging (SPI) was proposed to be conducted at 21 random locations within the submerged area of the HEC to assess cap integrity and benthic response through time.

SPI was initially developed to investigate processes occurring at the sediment-water interface. The technology of sediment profile photography has allowed the development of a better understanding of the complexity of sediment dynamics, from both a biological and physical point of view. This approach to evaluating the environment, and potential impacts, can be easily combined with classical approaches to habitat and impact assessment providing scientists and managers with a more holistic ecosystem view. SPI allows remote sensing of the bottom to quickly provide data for evaluation of existing conditions. The sediment profile camera was developed by Rhoads and Cande (1971) to investigate processes structuring the sediment-water interface and as a means of obtaining in situ data on benthic habitat conditions. The technology of SPI or remote ecological monitoring of the sea floor (REMOTS) has allowed for the development of a better understanding of the complexity of sediment dynamics, from both a biological and physical point of view (Solan et al., 2004; Germano et al., 2011).

This study is part of a larger investigation to assess existing conditions at Site 99. The objective of this survey was to assess existing benthic habitat conditions at the Quantico Embayment site one year post cap placement.

# 2.0 Site Description

The Quantico Embayment at Site 99 is a semi-circular inlet of the Potomac River, approximately 190 acres in size. A private 12-acre island, Chopawamsic Island, is situated in the middle of the embayment approximately 500 feet from the shoreline (Figure 1). Water depths within the embayment are approximately 3 to 6 feet. Benthic habitats in the embayment are primarily fine-grained silt and clay sediments (>55% silt and clay) characteristic of depositional areas and shallow, slow-moving water (Battelle and Neptune and Co., Inc., 2004). Close to shore sediments are coarser-grained material due to slight scouring from wave action or runoff. Subsurface core samples collected in the Quantico Embayment (Battelle and Neptune and Co., Inc., 2004) consisted of fine-grained, unconsolidated silt and clay underlain by firmer, more consolidated clay. The depth of the unconsolidated sediments ranged approximately 10 to 40 cm (Battelle and Neptune and Co. Inc., 2004). Salinity varies seasonally, ranging from less than 0.5 practical salinity unit (psu) in the spring to nearly 3 psu in the fall (U.S. Fish and Wildlife Service, 1999). The shallow waters and low salinity in the spring and summer months lead to colonization by a submerged aquatic vegetation (SAV) non-native plant *Hydrilla verticillata*, which is prolific in the summer months throughout the tidal freshwater Potomac River.

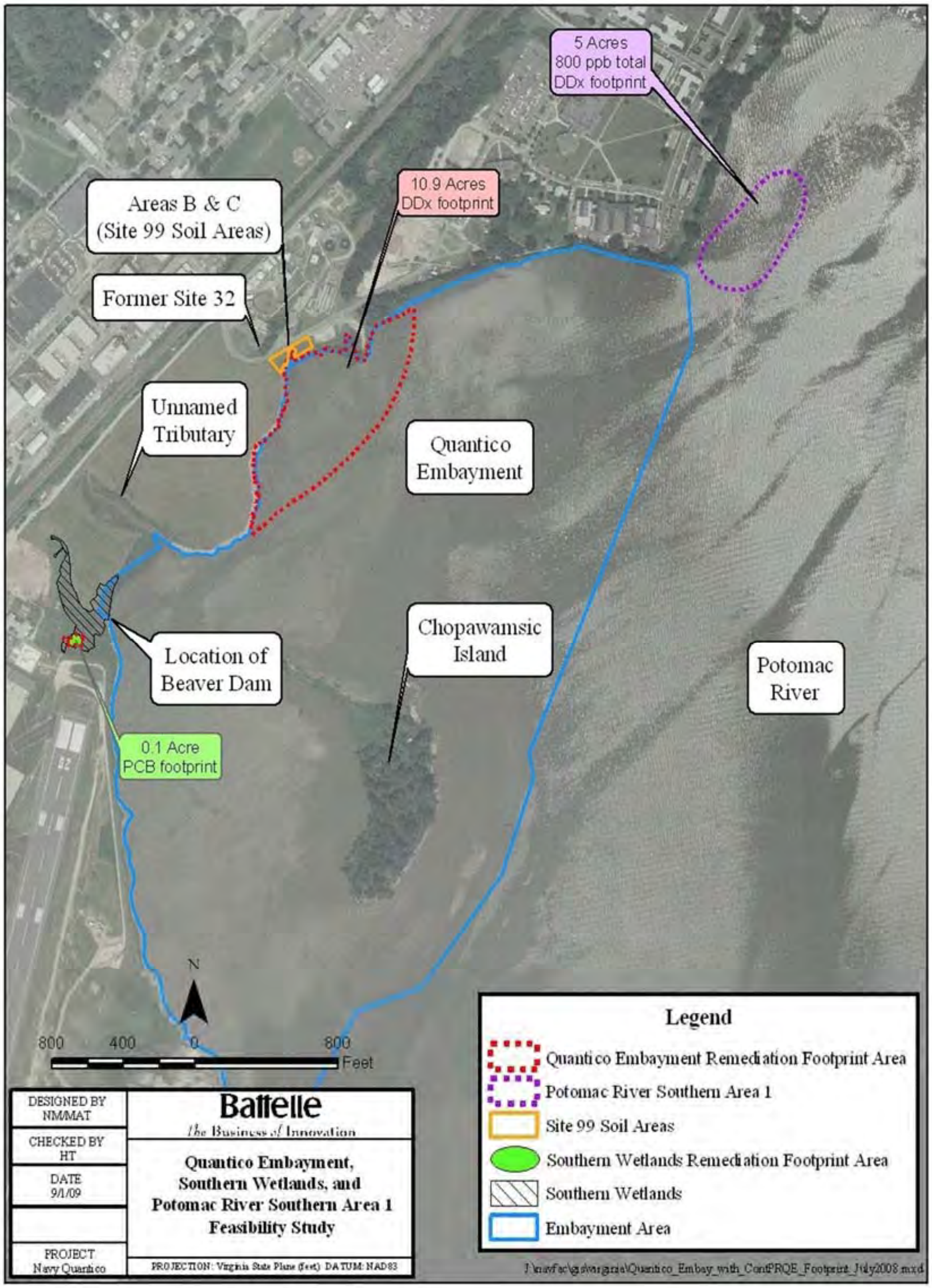



**Figure 1. Quantico Embayment Remediation Area**

## 3.0 Fieldwork

The Site 99 Year 1 SPI survey fieldwork was performed aboard the Research Vessel (R/V) *Gale Force* on June 9, 2015. A total of 21 stations were sampled (Figure 2). At each station, a digital sediment profile camera system was deployed one to three times to obtain one usable image. The locations of each station are provided in Table 1. A description of the SPI equipment, deployment, survey design, and field survey implementation is provided below.

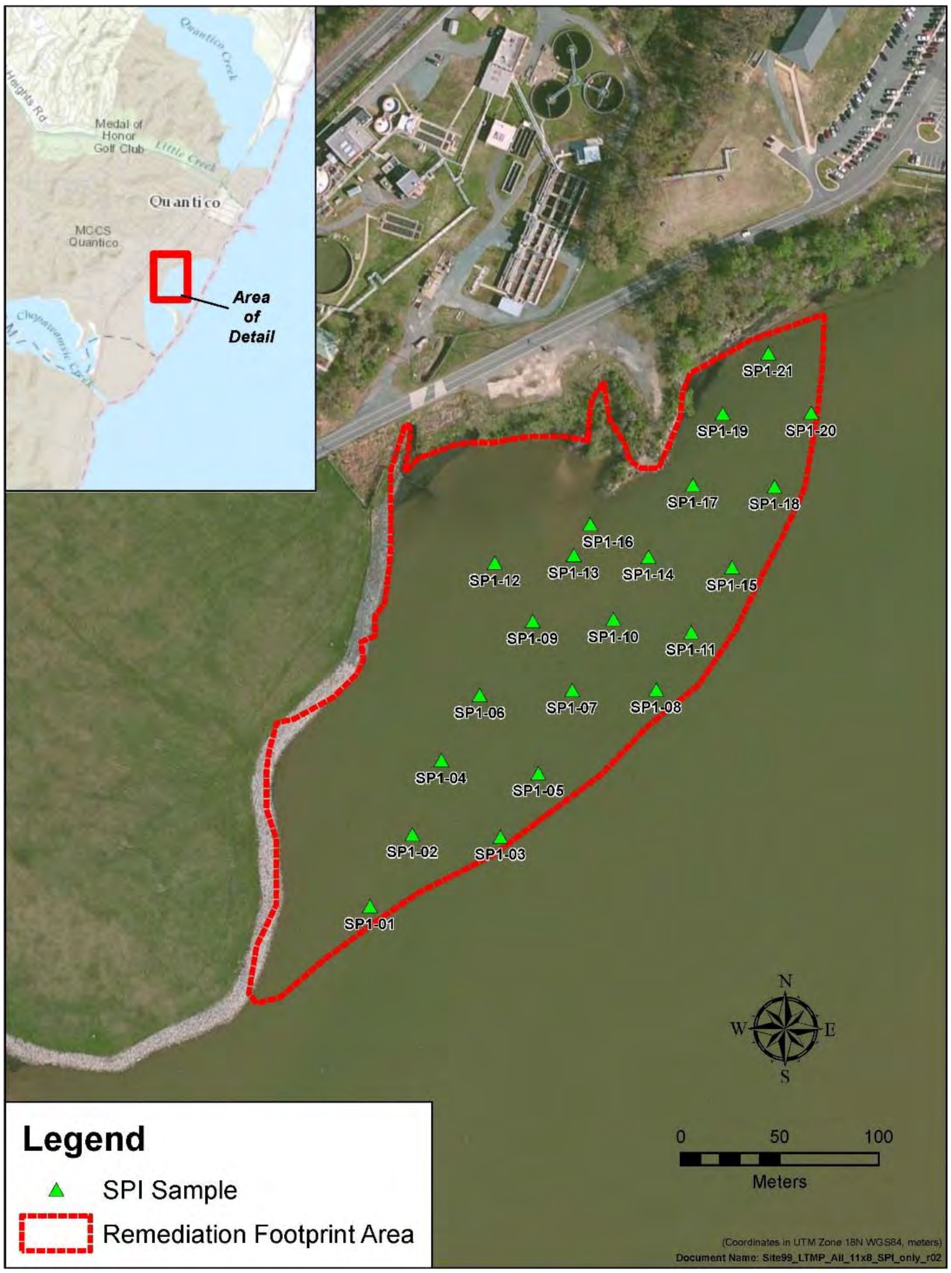



**Figure 2. Site 99 Year 1 SPI Station Locations within the 10.9-acre DDx Footprint**

**Table 1. Site 99 Year 1 SPI Survey Stations**

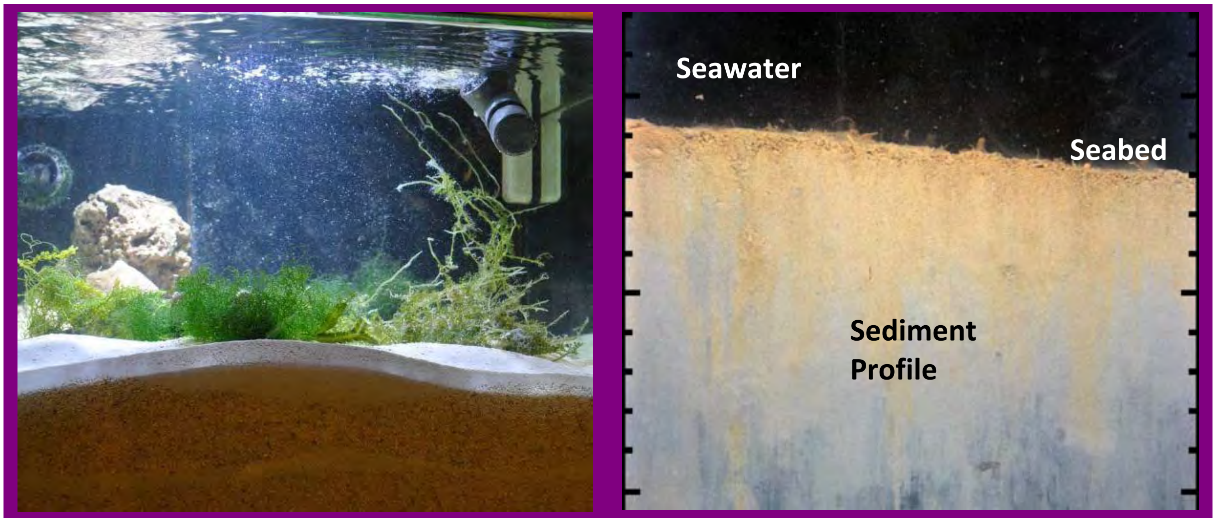
| Station ID | Date | Latitude[1] | Longitude[1] | SPI Photo Time |
|---|---|---|---|---|
| SP1-01 | 6/9/2015 | 38.512355 | -77.299015 | 0950 |
| SP1-02 | 6/9/2015 | 38.512686 | -77.298781 | 1008 |
| SP1-03 | 6/9/2015 | 38.512685 | -77.298271 | 1017 |
| SP1-04 | 6/9/2015 | 38.513025 | -77.298625 | 1022 |
| SP1-05 | 6/9/2015 | 38.512978 | -77.298061 | 1028 |
| SP1-06 | 6/9/2015 | 38.513325 | -77.298411 | 1037 |
| SP1-07 | 6/9/2015 | 38.513358 | -77.297877 | 1042 |
| SP1-08 | 6/9/2015 | 38.513370 | -77.297392 | 1049 |
| SP1-09 | 6/9/2015 | 38.513667 | -77.298116 | 1059 |
| SP1-10 | 6/9/2015 | 38.513685 | -77.297648 | 1106 |
| SP1-11 | 6/9/2015 | 38.513635 | -77.297198 | 1112 |
| SP1-12 | 6/9/2015 | 38.513926 | -77.298343 | 1126 |
| SP1-13 | 6/9/2015 | 38.513970 | -77.297888 | 1135 |
| SP1-14 | 6/9/2015 | 38.513971 | -77.297456 | 1145 |
| SP1-15 | 6/9/2015 | 38.513933 | -77.296971 | 1150 |
| SP1-16 | 6/9/2015 | 38.514113 | -77.297798 | 1210 |
| SP1-17 | 6/9/2015 | 38.514303 | -77.297208 | 1216 |
| SP1-18 | 6/9/2015 | 38.514305 | -77.296735 | 1223 |
| SP1-19 | 6/9/2015 | 38.514630 | -77.297046 | 1231 |
| SP1-20 | 6/9/2015 | 38.514643 | -77.296535 | 1238 |
| SP1-21 | 6/9/2015 | 38.514908 | -77.296790 | 1244 |

1 Latitude and longitude in World Geodetic System 1984

## 3.1 Equipment

SPI technology is an effective reconnaissance tool for evaluating and characterizing seabed conditions; the technology involves the use of a submersible digital camera to penetrate and acquire vertical cross-sectional photographic images of the sediment-water interface that can be analyzed for a variety of physical, chemical and biological parameters. The resulting image gives the viewer a perspective as though looking through the side of an aquarium (Figure 3).

The profile camera used a Canon 7D single lens reflex camera and captured 18-megapixel images onto an internal memory card using Canon's raw image format. The profile camera prism window was 15.5 centimeter (cm) wide and 30 cm tall. The profile camera was controlled from the surface vessel via a cable that supplied power and allowed monitoring of the Canon 7D operation and image capture in real time. The camera was triggered from the surface about 1second after bottom contact and after the prism stopped penetrating the sediment. One hundred




SPI technology is like looking at the side of an aquarium

Typical SPI Image; graduations are in cm

**Figure 3. SPI Technology**

pounds (lb) of lead was added to the camera frame to increase prism penetration (Figure 4). More detail on sediment profile camera operation can be found in Rhoads and Cande (1971) and Germano et al. (2011). As the SPI videos were being collected, they were downloaded onto a laptop computer, and transferred to CD-ROM at the end of fieldwork for permanent storage.

The sediment profile camera equipment was developed to investigate the nature and structure of the sediment-water interface, and as a means of obtaining in situ data on benthic habitat conditions (Rhoads and Cande, 1971). The SPI technology has allowed for the development of a broader understanding of the complexity of sediment dynamics from physical, chemical and biological points of view (Germano et al., 2011).

The SPI system works like an inverted periscope, wherein the digital camera is enclosed in a water-tight, pressure-resistant housing mounted on top of a wedge-shaped optical prism. As shown in Figure 5, the prism has an anterior transparent faceplate (1) with a mirror placed at a 45º angle to the rear (2). The camera lens (3) looks down at the mirror which reflects the image from the faceplate. The prism has a xenon strobe mounted next to the camera lens to provide illumination. The prism chamber is filled with fresh water which is exchanged as needed to ensure the camera/prism assembly always has a clear optical path.

## 3.2 Deployment

The camera/prism assembly is mounted on a moveable carriage attached to a frame which enables the prism to penetrate the sediment when lowered to the seabed. The frame is lowered at a steady rate on a winch wire, with the prism in its “up” position. Just before the frame encounters the seabed, at a predetermined elevation above the seabed dependent on water clarity,

**Figure 4. SPI Camera**

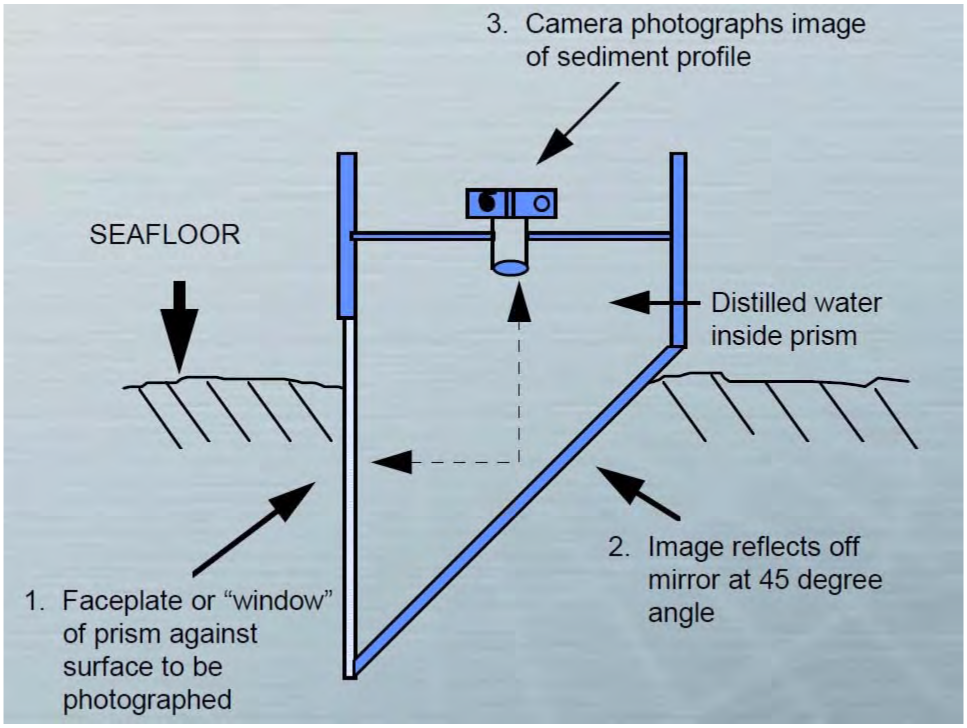



**Figure 5. Sediment Profile Imaging Schematic**

a mechanically-activated switch triggers the plan-view camera and an image is obtained of the seabed surface and epifauna conditions. When the frame encounters the seabed and the winch cable goes slack, the SPI camera/prism assembly continues to descend orthogonally into the seabed at a slow rate controlled by the dampening action of a hydraulic piston so as not to disturb the sediment-water interface. The leading-edge of the prism transects the sediment-seawater interface as it penetrates the seabed. As the SPI camera begins to descend into the sediment, a second trigger turns the SPI strobe on and starts a timer to initiate the SPI camera and collect the image after full penetration of the system is achieved. The system is then raised up about 2 to 3 meters off the bottom as the strobes recharge, and the system is then ready to be lowered again to collect replicate SPI images. A ruler is photographed on the faceplate prior to each survey to ensure profile image distance calibration.

## 3.3 Survey Design and Implementation

Twenty-one SPI stations were sampled in the Site 99 Year 1 survey. The sampling locations were randomly distributed throughout the Quantico Embayment (Figure 2). At each station, the SPI system was initially lowered, and then lifted and lowered twice more with the aim of collecting three replicate sets of SPI. Three replicate images were collected at each of 21 stations visited. Upon retrieval of the SPI system, images were viewed and assessed for acceptability prior to departing each station. Table 1 lists the station identification (ID), latitude/longitude, and date/time.

## 4.0 Image Analysis Methodology

For each station (Table 1), the clearest sediment profile image was selected for analysis from the multiple images obtained from each station. Images were analyzed using National Institute of Health ImageJ software version 1.48 and Adobe Photoshop®. To increase contrast, the red, green, blue (RGB) image histograms were equalized and clipped 0.1 to 1%. Prior to making image adjustments, excess water column space above the sediment-water interface was cropped from the image to improve contrast between RGB pixel layers. Pixel size, used to measure linear distance and area, was calibrated for the SPIs by measuring 1-cm gradations from the Kodak® Color Separation Guide. This calibration information was applied to all of the SPIs analyzed. Linear and area measurements were recorded as number of pixels and converted to scientific units by using calibration information. All measured parameters were recorded to Microsoft® Excel spreadsheets. Senior Scientist Dr. Robert Diaz conducted the image analysis. A listing of parameters measured is provided in Table 2. A brief description of each parameter measured and evaluated follows.

**Table 2. Sediment Profile Imaging Parameters**

| Parameter | Units | Method | Description |
|---|---|---|---|
| Prism Penetration | cm | Computer Analysis | A geotechnical estimate of sediment compaction. Average of maximum and minimum distance from sediment surface to bottom of prism window |
| Sediment Surface Relief | cm | Computer Analysis | An estimate of small-scale bed roughness. Maximum depth of penetration minus minimum |
| Oxygen Penetration ($aO_2$) & Apparent Reduction-oxidation Potential Discontinuity Depth (aRPD) | cm | Computer Analysis | Estimate of depth to which sediments appear to be oxidized (from color change in sediment). Area of aerobic sediment divided by width of digitized image |
| Sediment Grain Size | Modal phi interval | Visual | An estimate of sediment types present. Determined from comparison of image to images of known grain size |
| Thickness of Sediment Layers | cm | Computer Analysis | Measure thickness above original sediment surface |
| Methane/Nitrogen Gas Voids | Number | Visual | Count |
| Epifaunal Occurrence | Number | Visual | Count, identify |
| Tube Density | Number/sq. cm | Visual | Count |
| Tube Type | | | |
| Burrow Structures | — | Visual | Identify |
| Pelletal Layer | cm | Visual | Measure thickness, area |
| Bacterial Mats | — | Visual | Determine presence and color |
| Infaunal Occurrence | Number | Visual | Count, identify |
| Feeding Voids | Number | Visual | Count, measure thickness, area |

*Prism Penetration* — Prism penetration is a geotechnical estimate of sediment compaction with the profile camera prism acting as a dead weight penetrometer. The further the prism enters into the seabed, the softer the sediment and likely the higher the water content. Penetration is measured as the average distance the sediment surface appears to rise up the 30 cm length of the prism faceplate. For all stations, the weight was kept at 100 lb.

*Sediment Surface Relief or Boundary Roughness* — Surface relief is an important parameter for predicting sediment transport and in determining processes that dominate surface sediment dynamics (Rhoads et al., 1978). Surface relief or boundary roughness is measured as the difference between the minimum and maximum distance the prism penetrated. This parameter also estimates small-scale bed roughness, on the order of the prism faceplate width (14.5 cm). The origin of bed roughness is determined from visual analysis of the images. In physically dominated habitats, features such as ripples or bedforms, and sediment granularity cause bed roughness. In biologically dominated habitats, bed roughness is a result of biogenic activity such as tube structures, defecation mounds, or feeding pits.

*Apparent Redox Potential Discontinuity (aRPD) Layer and Oxygen Penetration ($aO_2$)* — These parameters are important estimators of benthic habitat conditions, which relate directly to the quality of the habitat (Pearson and Rosenberg, 1978; Rosenberg, 2001). Oxidation and reduction state in transitional marine to tidal freshwater sediments are related to a complex biogeochemistry that is controlled by a combination of factors ranging from sediment grain size, organic content, microbial communities, bioturbation, sediment sulfate concentration, and oxygen availability. The biogeochemistry reactions follow a consistent pattern with oxidants consumed in order of decreasing energy production per mole of organic carbon oxidized (oxygen > manganese oxides and nitrate > iron oxides > sulfate) (Froelich et al., 1979). Fortunately, these three biogeochemical states are relatively colorful. Oxic sediments are brown to reddish-brown, suboxic sediments are olive-brown to light-gray, and anoxic sediments are dark-gray to black. This is the basis for the well-known qualitative relationship between sediment color and redox state (Bull and Williamson, 2001). It is assumed that given the complexities of manganese, iron, and sulfate oxidation-reduction chemistry, the reddish-brown sediment color tones indicate sediments contain oxygen and are in an oxidative geochemical state, or at least are not intensely reducing (Fenchel, 1969; Bull and Williamson, 2001; Diaz and Trefry, 2006).

The aRPD layer depth includes the oxic portion of the sediment and also the depth to which sediments appear to be suboxic. The term apparent is used in describing these parameters because no actual measurement was made of oxygen or redox potential. Color in SPI is also dependent on non-sedimentary factors such as ambient water column light, reflections, and shadows that can make parts of the image seem lighter or darker. Thus, sediments visually assessed as oxic do not necessarily contain free oxygen, nor do visually anoxic sediments necessarily contain free sulfides (Wetzel et al., 1995). The number of pixels in the user-defined aRPD layers was counted and converted to linear measurement by dividing by the width of the image used in the analysis.

*Sediment Grain Size* — Grain size is an important parameter for determining the nature of the physical forces acting on the bottom of the sea and is one of the major factors in determining benthic community composition (Rhoads, 1974; Snelgrove and Butman, 1994). The sediment type descriptors used for image analysis followed the Wentworth classification as described in Folk (1974) and represent the major modal class for each image. Grain size was determined by comparison of collected images with a set of standard images for which mean grain size had been determined in the laboratory. The Phi scale sizes corresponding to sediment grain size estimated from images are provided in Table 3.

**Table 3. Comparison of Phi Scale to SPI Sediment Grain Size Descriptors**

| Phi Scale | SPI Grain Size Descriptor | Sediment Grain Size Subclass | Upper Limit Size (mm) | Grains per cm of image |
|---|---|---|---|---|
| **-6 to -8** | CB | Cobble | 256.0 | <<1 |
| **-2 to -6** | PB | Pebble | 64.0 | <1 |
| **-1 to -2** | GR | Gravel | 4.0 | 2.5 |
| **1 to -1** | CS | Coarse-sand | 2.0 | 5 |
| **2 to 1** | MS | Medium-sand | 0.5 | 20 |
| **4 to 2** | FS | Fine-sand | 0.25 | 40 |
| **4 to 3** | VFS | Very-fine-sand | 0.12 | 80 |
| **5 to 4** | FSSI | Fine-sandy-silt | 0.06 | 160 |
| **5.5 to 4.5** | FSSICL | Fine-sandy-silt-clay | 0.06 | 160 |
| **6 to 5** | SIFS | Silty-fine-sand | 0.0039 | >320 |
| **7 to 5** | SI | Silt | <0.0039 | >320 |
| **8 to 6** | SICL | Silty-clay | <0.0039 | >320 |
| **>8 to 7** | CLSI | Clayey-silt | <0.0039 | >320 |
| **>8** | CL | Clay | <0.0005 | >2560 |

*Surface Features and Bed Roughness* — These parameters include a wide variety of physical (such as bedforms) and biological features (such as biogenic mounds, shell, or tubes). The presence of certain surface features is indicative of the overall nature of the processes acting on surface sediment. For example, bedforms are associated with physically dominated habitats, whereas the presence of dense worm tubes or feeding pits would be indicative of a more biologically accommodating habitat (Rhoads and Germano, 1986; Diaz and Schaffner 1988). Surface features were visually evaluated from each image and compiled by type and frequency of occurrence.

*Subsurface Features* — Subsurface features included a wide variety of characteristics (such as infaunal organisms, burrows, water-filled voids, gas voids, or sediment layering) that reveal information about physical and biological processes influencing the sea bottom. For example, habitats with grain size layers or homogeneous color layers are generally dominated by physical processes while habitats with disruptive burrows, infaunal feeding voids, and/or visible infaunal organisms are generally dominated by biological processes (Rhoads and Germano, 1986; Diaz and Schaffner, 1988; Valente et al., 1992). Subsurface features are visually evaluated from each image and compiled by type and frequency of occurrence.

# 5.0 Survey Results

Twenty-three SPI images were analyzed from the 21 SPI stations. All SPI data are in Appendix A and a summary is in Table 4. Replicate images from Stations 05 and 07 indicated that there was some small scale spatial heterogeneity, on the order of 3 to 5 meters, within the Quantico Embayment site so both images were analyzed. A mosaic of all SPI images analyzed is in Figures 6 and 7. High resolution SPI images are in Appendix B. Field logs for each of the stations is provided in Appendix C. The profile images were histogram-equalized to highlight the apparent color RPD layer and other sedimentary features. The scale graduations on the sides of the images are in centimeters. An overall summary of the Site 99 Year 1 conditions based on the data acquired from observation of the images is provided below.

## 5.1 Sediments and Cap Characteristics

Modal sediment grain size at Quantico Embayment Site 99 ranged from silt-clay to medium-coarse-sand (Table 4). The coarsest sediments occurred at Station 05, which has a mixture of medium-coarse sand and gravel, and Station 16, which is composed of medium-coarse sand (Figures 6 and 7). About half of the stations (11 of 21 stations) were a mixture of fine-medium-coarse sand. An additional three stations were a mixture of silt-clay and fine-medium-coarse sand. The finest silt-clay sediments occurred at Station 03. Maximum grain size of pebbles was observed at Stations 05 and 08.

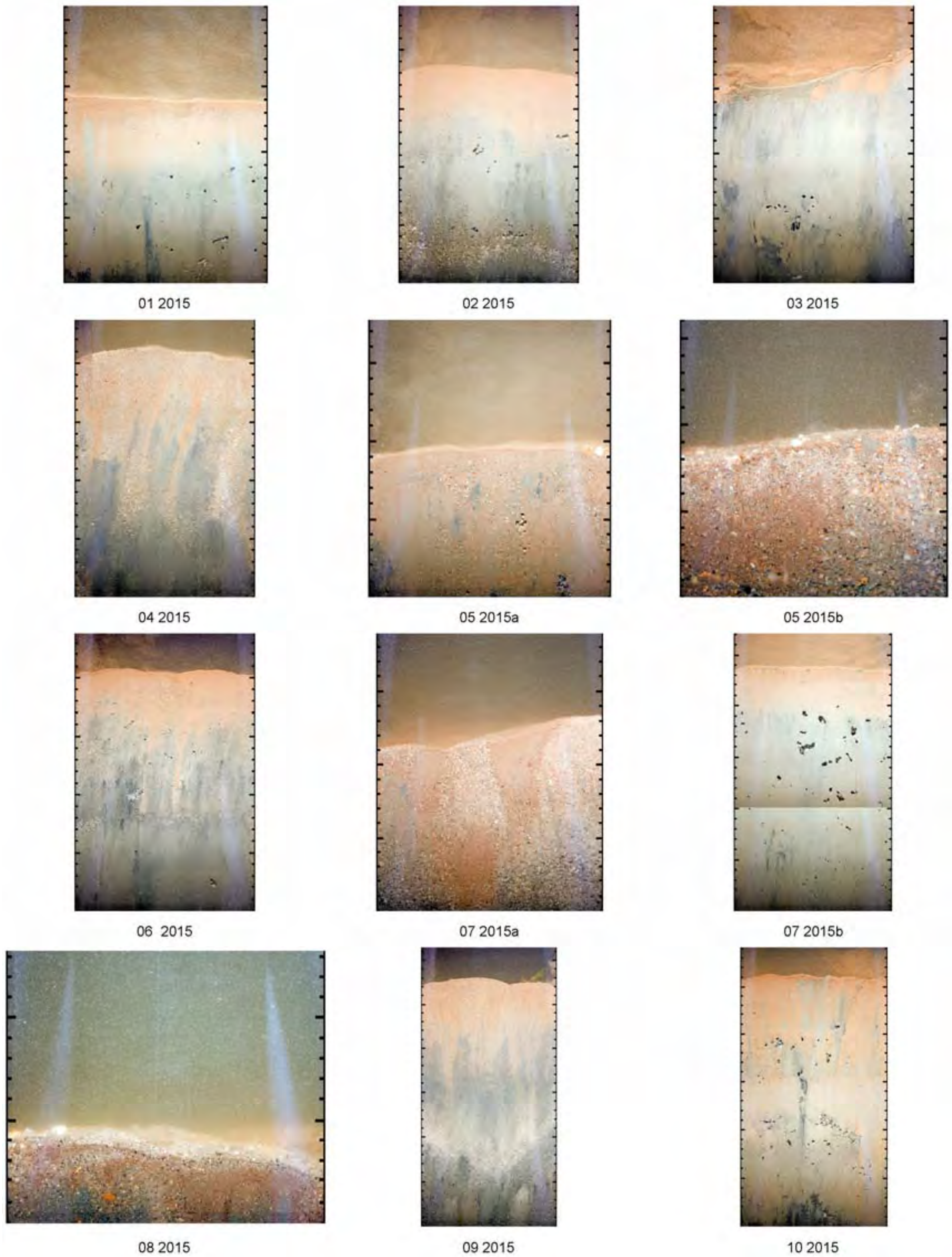
The sediment surface at all stations was dominated by physical processes. Appearances of current-generated asymmetric bedforms or ripples were observed at about half of the stations (11 of 21 stations). The boundary roughness associated with these bedforms could be measured when the profile prism cut the bedforms at nearly a right angle. This occurred at eight stations (7a, 13, 14, 15, 18, 19, 20, and 21) giving estimates of roughness that ranged from 1.3 cm at Stations 15 and 18 to 3.0 cm at Station 13 (Table 4). Spatially, stations toward the north-east end of the site tended to have bedforms (Figure 8).

Sediment sampling prior to cap placement determined that native sediments were primarily silt-clay (Battelle and Neptune and Co., Inc., 2004). Therefore, based on the presence of sediments that were medium sand and coarser and layering of finer sediment over coarser sediments, it was concluded that grain sizes from medium sand to gravel were all cap material. The cap was present at all stations except Station 03 which appeared to be native silt clay (Figure 6). Cap thickness exceeded prism penetration depth at all stations with cap material (Figure 9). At Stations 01, 02, 07, 10, and 17, appearances of silt clay native sediment layers were on top of or mixed into the cap sediments (Figures 6 and 7). Over the year since cap placement, it appears that native sediments from the surrounding bottom were transported to the capped site and mixed with cap material.

## Table 4. SPI Data for Site 99 Quantico Embayment Year 1 (June 9, 2015)

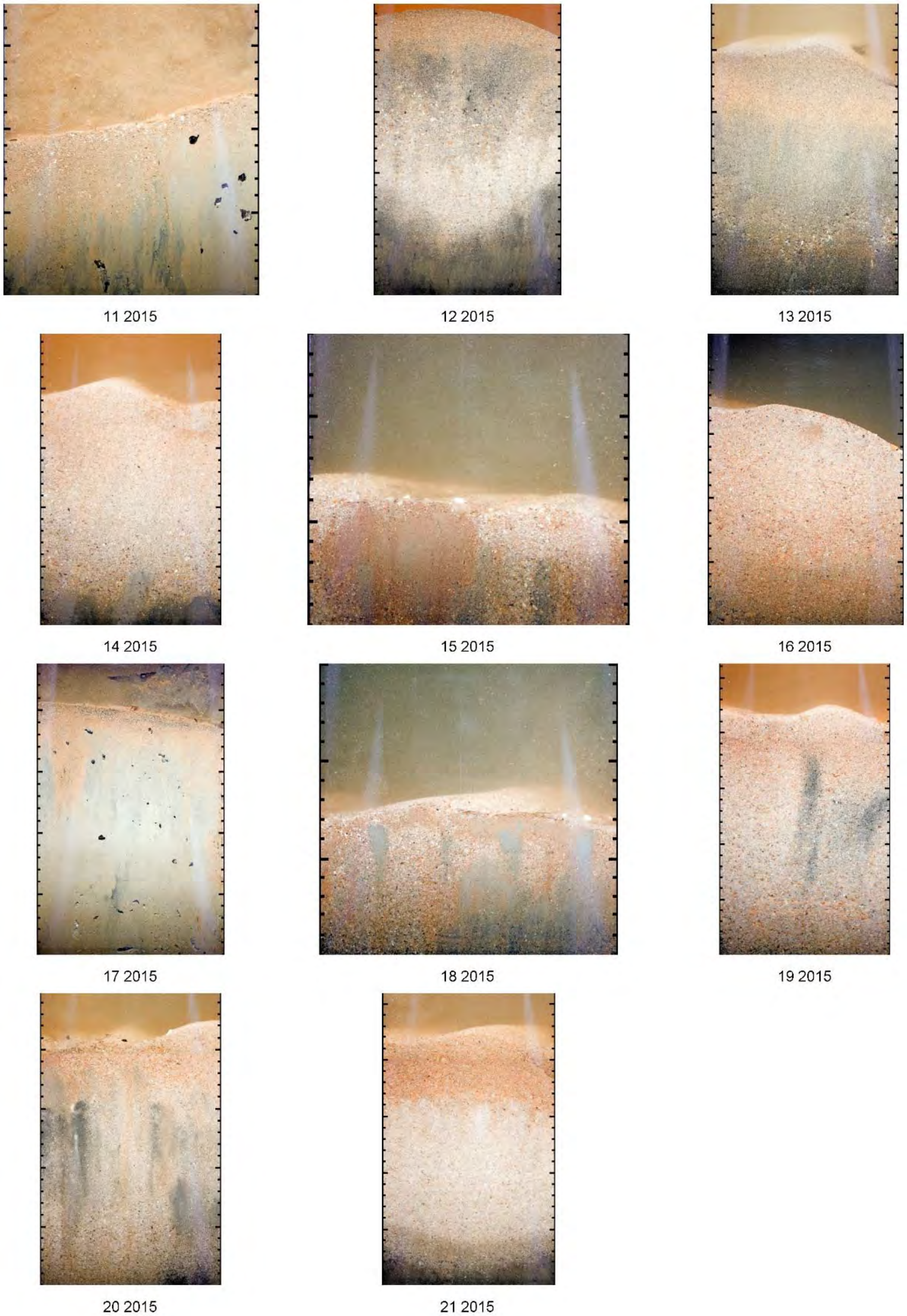
| Station | Pene-tration (cm) | Boundary Rough-ness (cm) | aRPD (cm) | Grain Size Major Mode* | Grain Size Min* | Grain Size Max* | Cap Layer (cm) | Sediment Comment | Surface Tubes | Infauna | Burrows | Gas Voids | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 14.0 | 0.6 | 2.1 | SICL/MSSI | CL | MS | 11.6 | Cap material under native sediments, Flocculent surface sediment | 0 | 0 | 0 | 20 to 29 | |
| 02 | 18.1 | 1.0 | 2.8 | SICL/MSSI/ MSCS | CL | CS | 12.4 | Cap material under native sediments, Flocculent surface sediment | 0 | 5 | 0 | 30 to 39 | Long thin worms? |
| 03 | 16.3 | 2.6 | 1.1 | SICL | CL | FS | 0.0 | Native sediment, Flocculent surface sediment | 0 | 2 | 0 | 20 to 29 | Long thin worms? |
| 04 | 20.8 | 1.1 | 5.0 | FSMSCS | SI | CS | >20.8 | Cap sand with a trace of silt, Bedforms | 1 to 9 | 0 | 0 | 1 to 9 | Long thin tubes, Fecal pellets on surface |
| 05a | 9.1 | 0.9 | 8.1 | FSMSCSSI | SI | CS | >9.1 | Cap sandy silt, Floc layer on surface | 1 to 9 | 0 | 0 | 1 to 9 | Fecal pellets on surface |
| 05b | 8.5 | 1.9 | >8.5 | MSCSGR | SI | PB | >8.5 | Cap clean sand, trace of silt | 1 to 9 | 0 | 0 | 0 | Fecal pellets on surface |
| 06 | 20.5 | 0.5 | 3.5 | FSMSCSSI | SI | CS | >20.5 | Cap sandy silt, Floc layer on surface | 0 | 2 | 0 | 0 | Large worms |
| 07a | 12.1 | 2.3 | 8.8 | FSMSCS | SI | CS | >12.1 | Cap clean sand, Floc layer on surface, Bedforms | 1 to 9 | 0 | 0 | 1 to 9 | Fecal pellets on surface |
| 07b | 23.6 | 0.5 | 2.3 | SICL/MSSI | CL | MS | 21.6 | Cap material under native sediments, Flocculent surface sediment | 0 | 1 | 0 | 0 | Worm near gas void |
| 08 | 3.5 | 0.8 | 2.5 | FSMSCS | FS | PB | >3.5 | Cap clean sand, Bedforms | 0 | 0 | 0 | 0 | |
| 09 | 27.4 | 1.0 | 4.5 | FSMSSI/ FSMSCS | SI | CS | >27.4 | Cap sandy silt | 0 | 1 | 0 | 0 | Aquatic vegetation |
| 10 | 25.8 | 1.0 | 1.7 | FSMSSI/ FSMS | SI | MS | 22.2 | Cap material under native sediments, Flocculent surface sediment | 0 | 2 | 0 | >50 | Worm in gas void |
| 11 | 10.7 | 2.8 | 3.3 | FSMSCSSI | SI | CS | >10.7 | Cap sandy silt | 1 to 9 | 1 | 0 | 1 to 9 | Fecal pellets on surface |
| 12 | 22.3 | 2.3 | 2.8 | FSMSCS | FS | CS | >22.3 | Cap clean sand | 0 | 0 | 0 | 0 | |
| 13 | 18.9 | 3.0 | 5.2 | FSMSCS | FS | CS | >18.9 | Cap clean sand, Bedforms | 0 | 0 | 0 | 10 to 19 | |
| 14 | 19.3 | 2.1 | 16.2 | FSMSCS | FS | CS | >19.3 | Cap clean sand, Bedforms | 1 to 9 | 0 | 0 | 0 | Fecal pellets on surface |
| 15 | 5.3 | 1.3 | 2.9 | FSMSCS | SI | CS | >5.3 | Cap clean sand, trace of silt, Bedforms | 1 to 9 | 0 | 0 | 0 | Fecal pellets on surface |
| 16 | 15.4 | 3.6 | >15.4 | MSCS | MS | CS | >15.4 | Cap clean sand, Bedforms | 0 | 0 | 0 | 0 | |
| 17 | 19.6 | 2.0 | 1.9 | FSSI/ FSMSSI | SI | MS | 16.0 | Cap material under native sediments, Flocculent surface sediment | 1 to 9 | 0 | 0 | 40 to 49 | Fecal pellets on surface |
| 18 | 7.1 | 1.3 | 5.6 | FSMSCS | SI | CS | >7.1 | Cap clean sand, trace of silt, Bedforms | 1 to 9 | 0 | 0 | 0 | Fecal pellets on surface |
| 19 | 21.3 | 1.5 | >21.3 | FSMSCS | FS | CS | >21.3 | Cap clean sand, Bedforms | 0 | 0 | 0 | 0 | |
| 20 | 21.1 | 2.2 | >21.1 | FSMSCS | FS | CS | >21.1 | Cap clean sand, Bedforms | 1 to 9 | 0 | 0 | 0 | Fecal pellets on surface |
| 21 | 21.3 | 2.1 | 19.8 | FSMSCS | FS | CS | >21.3 | Cap clean sand, Bedforms | 0 | 0 | 0 | 0 | |

* Sediment descriptors:
CL = Clay FS = Fine-Sand MS = Medium=Sand SI = Silt
CS = Coarse-Sand GR = Gravel PB = Pebble



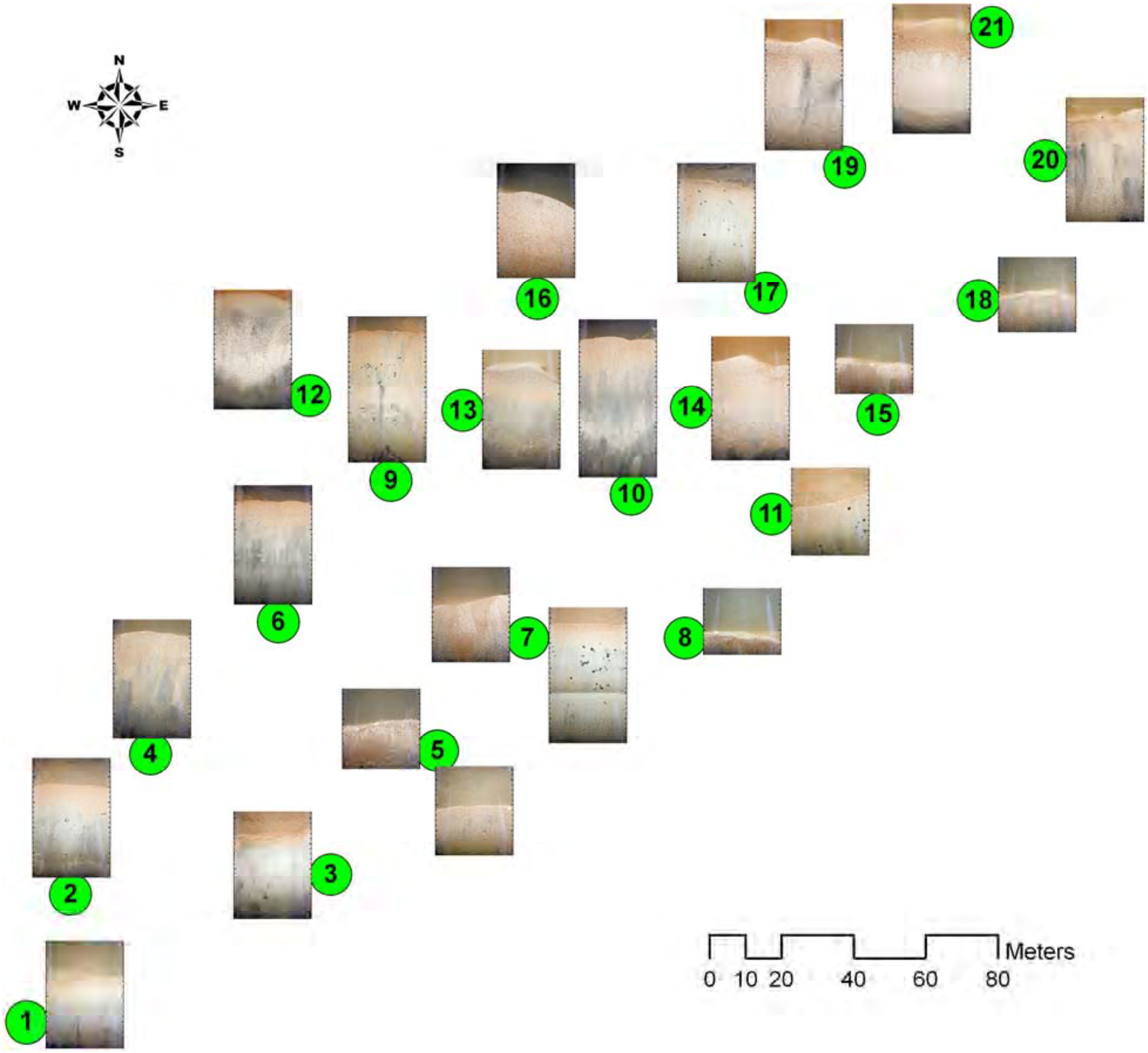

(Scale on side of images is in cm).

**Figure 6. Mosaic of Images from Quantico Embayment Site 99 Stations 01 to 10 for One Year Post-cap SPI Survey June 9, 2015**



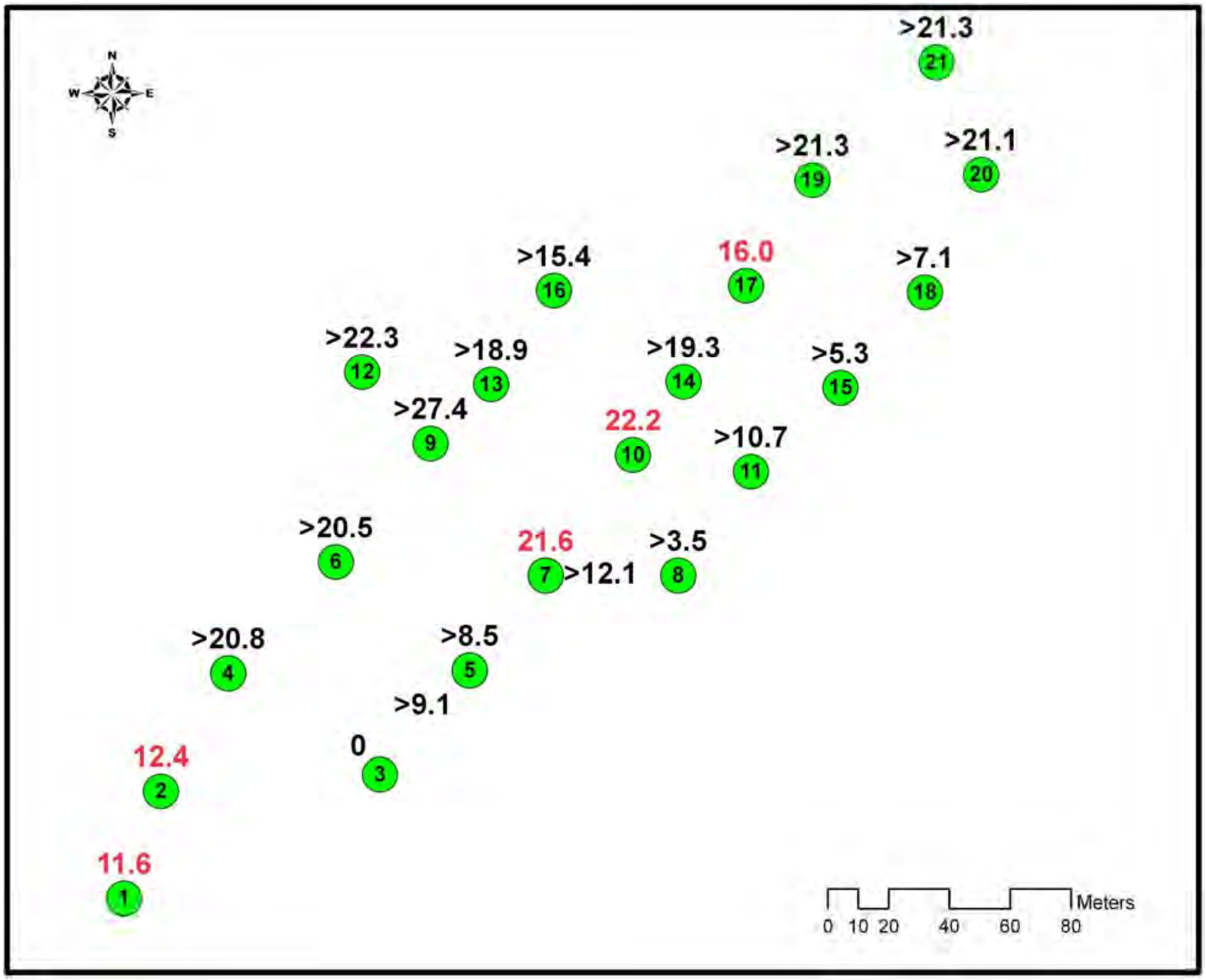

(Scale on side of images is in cm).

**Figure 7. Mosaic of Images from Quantico Embayment Site 99 Stations 11 to 21 for One Year Post-cap SPI Survey June 9, 2015**




(Scale on side of images is in cm.)

**Figure 8. Spatial Mosaic of Images from Quantico Embayment Site 99 for One Year Post-cap SPI Survey June 9, 2015**




(The > symbol indicates that cap material was thicker than prism penetration. Red numbers indicate the thickness of native sediments on top of or mixed in with cap material.)

**Figure 9. Cap Thickness (cm) at Quantico Embayment Site 99 SPI Stations, June 9, 2015**

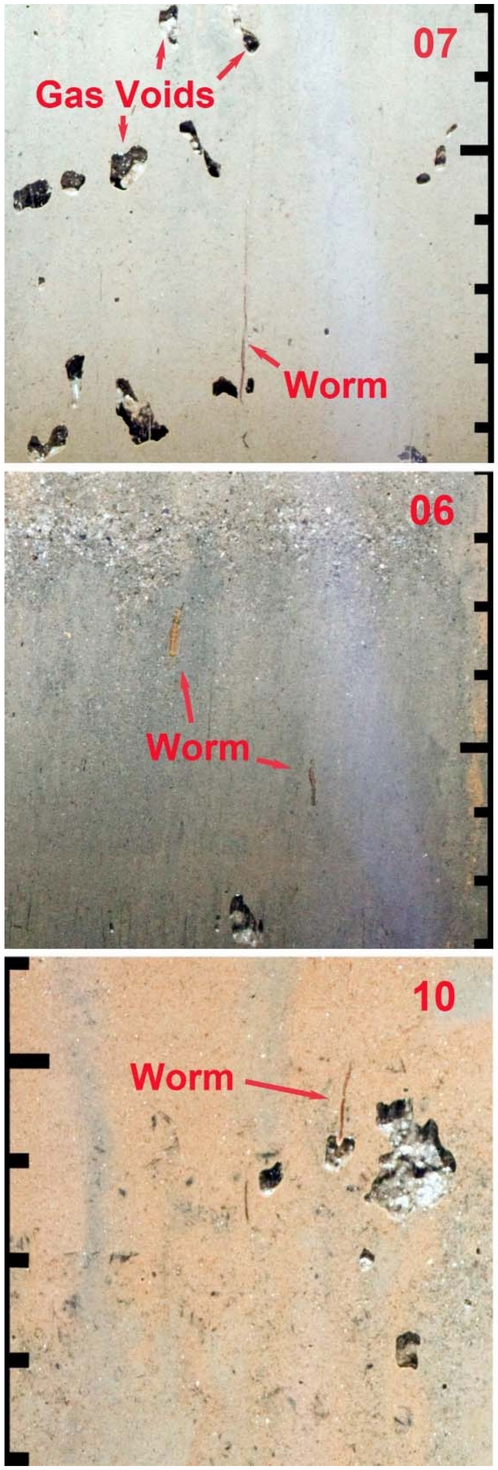
## 5.2 Biology

Appearances of small tubes occurred in low densities (one to nine per image) at about half the stations (nine of 21 stations) (Table 4). These tubes could also have been small fecal pellets as there are not many tube-building species in marine-freshwater transitional habitats (Dauer, 1993). Tubes could be from newly settled *Marenzelleria viridis, Streblospio benedicti, or Boccardiella ligerica*, which are three small tube-building polychaete species common in fine-grained sediments from tidal freshwater to about salinities of 3 psu (Dauer, 1993). The fecal pellets are likely from the bivalves *Rangia cuneata* or *Corbicula fluminea,* both of which were found at the Quantico Embayment Site 99 during fieldwork. They are also known to be common in the low salinity and tidal freshwater Potomac River (Dauer, 1993).

Oligochaetes, which are the dominant faunal group at low salinity and tidal freshwater, do not build tubes (Brinkhurst and Jamieson, 1971) or ventilate their burrows (Fisher et al., 1980; McCall and Fisher 1980), which would oxidize the burrow walls and make them more visible in the SPI images. Oligochaetes were observed below the sediment surface at one third (seven of 21 stations) stations (Table 4). The largest oligochaetes were observed at Stations 06, 07, and 10 (Figure 10). There was no evidence of burrowing by any other infaunal species, such as Chironomid larvae (Bonsdorff et al., 1996).

The dominance of surficial sediments by physical processes appeared to be the principal factor determining oxidation-reduction state of the sediments. There was no evidence of bioturbation by infauna or other benthic species at any of the Quantico Embayment stations. The shallowest depth of the aRPD occurred at Station 03 (1.1 cm) which was native sediment with a flocculent surface sediment (Table 4). In silt-clay sediments, physical diffusion limits oxygen penetration to <1 cm (Jørgensen and Revsbech, 1985). This indicated that resuspension-deposition events were likely responsible for the shallower aRPD layer at Station 03. In sandy porous sediment, deep aRPD layers appeared primarily to be a function of porewater circulation driven by current or wave action that pumps oxygenated water into the sediment. This appeared to be the factor responsible for the deep aRPDs at many stations (Table 4, Figure 11).

The most obvious signs of biogenic activity were gas voids produced by anaerobic methanogenic microbes. When sediment sulfate is depleted, methanogenesis becomes the dominating diagenetic process producing methane and carbon dioxide (Fenchel, 1987; Kristensen, 2000). Gas voids occurred at about half of the stations (10 of 21 stations) with over 50 small gas voids in the image from Station 10 (Figure 6). Gas voids were primarily associated with silt-clay sediments, but also occurred in what appeared to be clean sand, for example at Station 13 (Figure 7).




(Scale on side of images is in cm.)

**Figure 10. Oligochaetes Observed at Quantico Embayment Site 99 SPI Station 06 at 14 and 16 cm Below Sediment Surface, Station 07 at 12 cm Below the Surface, and Station 10 at 7 cm Below the Surface, June 9, 2015**

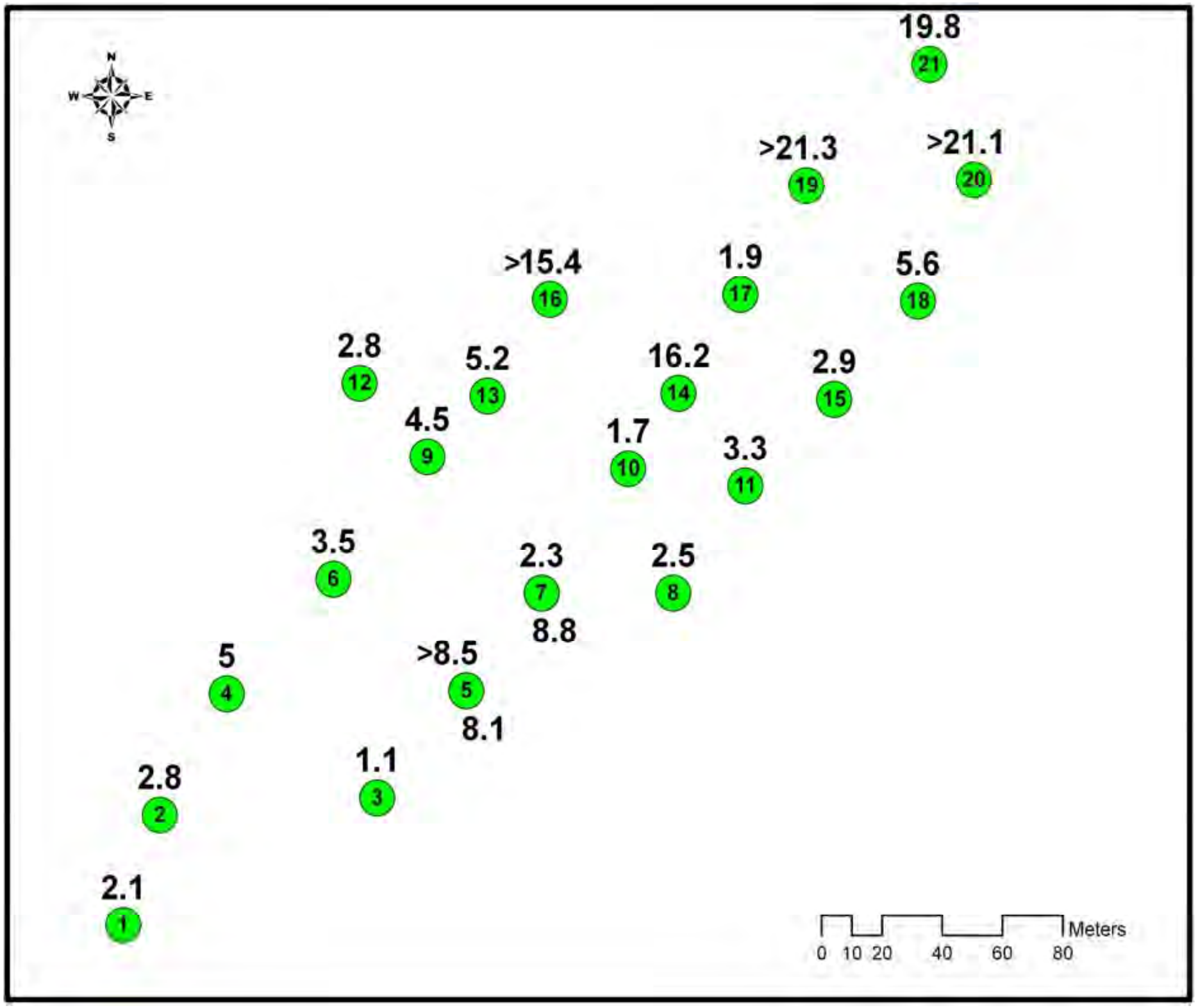



**Figure 11. aRPD Layer Depth (cm) at Quantico Embayment Site 99 SPI Stations, June 9, 2015**

## 6.0 Discussion

Overall, the Quantico Embayment Site 99 appeared to be typical of other marine-freshwater transitional zones within the Potomac River and other Chesapeake Bay tributaries (Diaz, 1989, 1994; Dauer, 1993; Clarke et al., 2003). Native sediments in these tidal freshwater habitats are primarily silt-clays with sandy sediments composed mostly of fine sand.

The general muddy nature of native sediments facilitated the identification of the cap material which was primarily medium- to coarse-sand (Table 4, Figures 6 and 7). Shortly after cap placement in 2014, the surface of cap stations was primarily clean sands (Diaz, unpublished data from the Department of Defense [DoD] Environmental Security Technology Certification Program [ESTCP] project evaluating the Site 99 HEC). One year after cap placement, the surface sediments at most cap stations had significant amounts of fine silt-clay sediments on top of cap sands or mixed into the surface. For example, at Station 02, there was an approximate 4 cm layer of native silt clay sediment over a layer of about 8 cm of silty medium sand that was over clean medium-coarse sand cap sediments (Figure 6). It was likely that storm-related resuspension-deposition events were responsible for mixing native and cap sediments. Due to limited prism penetration, native sediments under cap material were not observed at any of the Quantico Embayment Site 99 SPI stations. Only Station 03 on the south-eastern edge of the cap site appeared to be without cap sediment.

There was no evidence in the sediment profile images that biological processes were involved in sediment mixing at the Site 99 HEC. Bioturbation, which is a primary mixing process in marine sediments, is not an important factor in transitional or tidal freshwater benthic habitats (Diaz, 1994).

## 7.0 References

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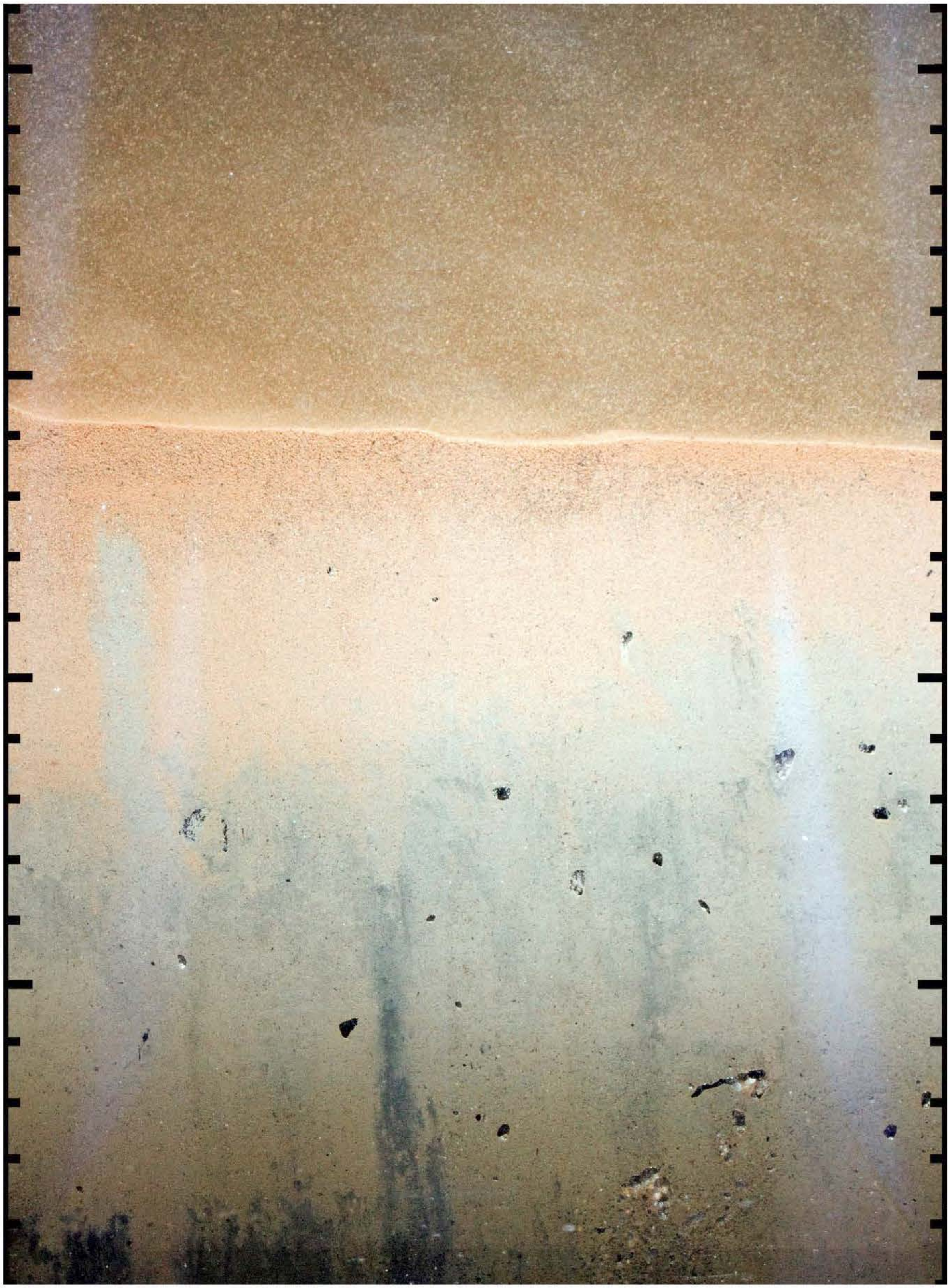
# Appendix A:
# Sediment Profile Image Data

| Station | Rep | Penetration Mean (cm) | Boundary Roughness (cm) | Boundary Roughness Source | aRPD Qualifier | aRPD Mean (cm) | Grain Size Major Mode (phi) | Grain Size Minimum (phi) | Grain Size Maximum (phi) | Cap Layer Qualifier | Cap Layer |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | 1 | 14.01 | 0.6 | PHY | | 2.1 | SICL/MSSI | CL | MS | | 11.6 |
| **2** | 1 | 18.11 | 1 | PHY | | 2.8 | SICL/MSSI/ MSCS | CL | CS | | 12.4 |
| **3** | 1 | 16.27 | 2.6 | PHY | | 1.1 | SICL | CL | FS | | 0 |
| **4** | 1 | 20.78 | 1.1 | PHY | | 5 | FSMSCS | SI | CS | > | 20.8 |
| **5** | 1 | 9.12 | 0.9 | PHY | | 8.1 | FSMSCSSI | SI | CS | > | 9.1 |
| **5** | 2 | 8.51 | 1.9 | PHY | > | 8.5 | MSCSGR | SI | PB | > | 8.5 |
| **6** | 1 | 20.47 | 0.5 | PHY | | 3.5 | FSMSCSSI | SI | CS | > | 20.5 |
| **7** | 1 | 12.11 | 2.3 | PHY | | 8.8 | FSMSCS | SI | CS | > | 12.1 |
| **7** | 2 | 23.6 | 0.5 | PHY | | 2.3 | SICL/MSSI | CL | MS | | 21.6 |
| **8** | 1 | 3.47 | 0.8 | PHY | | 2.5 | FSMSCS | FS | PB | > | 3.5 |
| **9** | 1 | 27.44 | 1 | PHY | | 4.5 | FSMSSI/FS MSCS | SI | CS | > | 27.4 |
| **10** | 1 | 25.81 | 1 | PHY | | 1.7 | FSMSSI/FS MS | SI | MS | | 22.2 |
| **11** | 1 | 10.69 | 2.8 | PHY | | 3.3 | FSMSCSSI | SI | CS | > | 10.7 |
| **12** | 1 | 22.27 | 2.3 | PHY | | 2.8 | FSMSCS | FS | CS | > | 22.3 |
| **13** | 1 | 18.94 | 3 | PHY | | 5.2 | FSMSCS | FS | CS | > | 18.9 |
| **14** | 1 | 19.27 | 2.1 | PHY | | 16.2 | FSMSCS | FS | CS | > | 19.3 |
| **15** | 1 | 5.28 | 1.3 | PHY | | 2.9 | FSMSCS | SI | CS | > | 5.3 |
| **16** | 1 | 15.44 | 3.6 | PHY | > | 15.4 | MSCS | MS | CS | > | 15.4 |
| **17** | 1 | 19.58 | 2 | PHY | | 1.9 | FSSI/FSMSS I | SI | MS | | 16 |
| **18** | 1 | 7.06 | 1.3 | PHY | | 5.6 | FSMSCS | SI | CS | > | 7.1 |
| **19** | 1 | 21.34 | 1.5 | PHY | > | 21.3 | FSMSCS | FS | CS | > | 21.3 |
| **20** | 1 | 21.14 | 2.2 | PHY | > | 21.1 | FSMSCS | FS | CS | > | 21.1 |
| **21** | 1 | 21.32 | 2.1 | PHY | | 19.8 | FSMSCS | FS | CS | > | 21.3 |

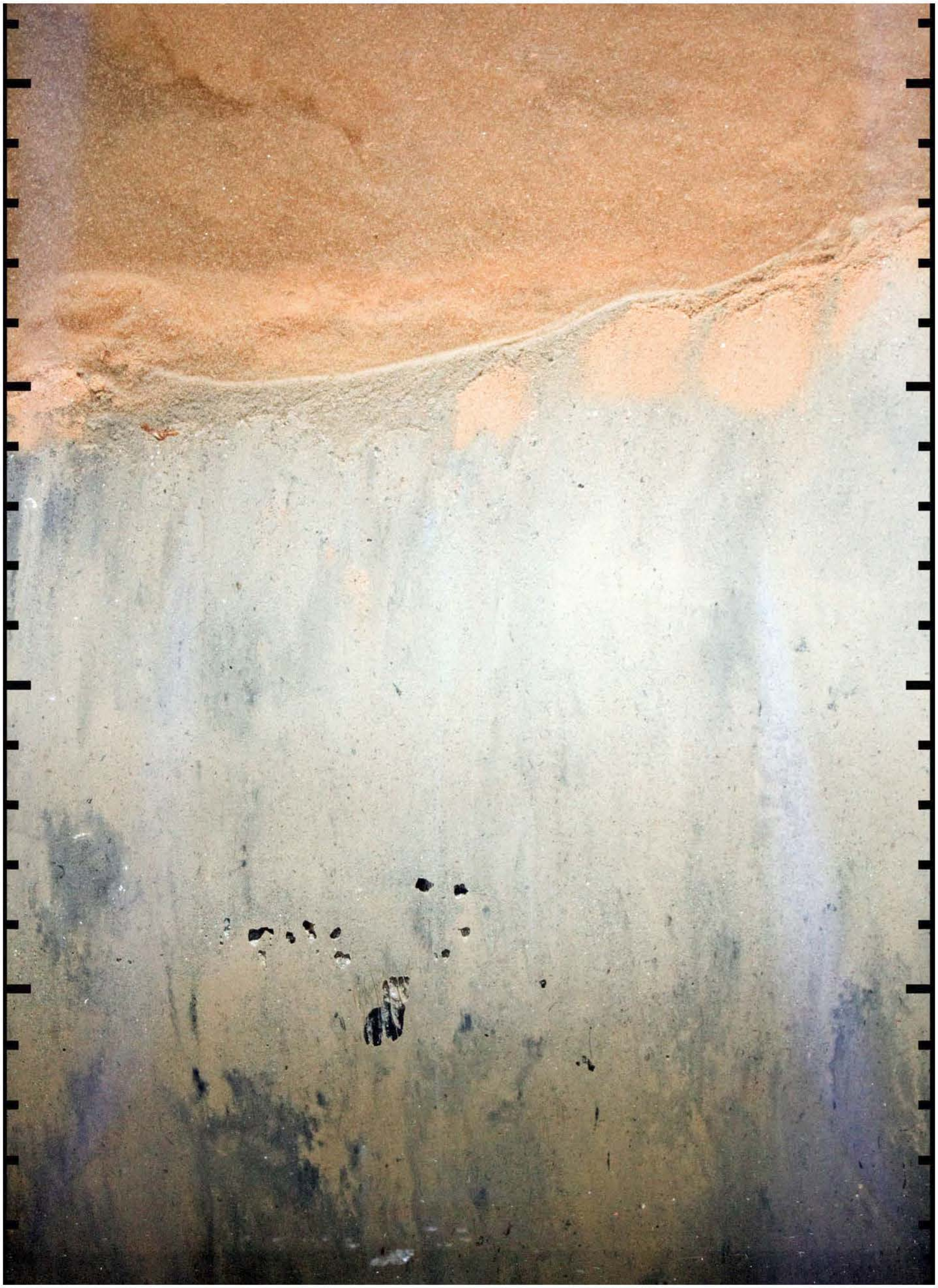
| Station | Rep | Sediment Comment | Surface Tubes | Infauna | Burrows | Gas Voids | Comment |
|---|---|---|---|---|---|---|---|
| **1** | 1 | Cap material under native sediments, Floculent surface sediment | 0 | 0 | 0 | 20 to 29 | |
| **2** | 1 | Cap material under native sediments, Floculent surface sediment | 0 | 5 | 0 | 30 to 39 | Long thin worms? |
| **3** | 1 | Native sediment, Floculent surface sediment | 0 | 2 | 0 | 20 to 29 | Long thin worms? |
| **4** | 1 | Cap sand with a trace of silt, Bedforms | 1 to 9 | 0 | 0 | 1 to 9 | Long thin tubes, Fecal pellets on surface |
| **5** | 1 | Cap sandy silt, Floc layer on surface | 1 to 9 | 0 | 0 | 1 to 9 | Fecal pellets on surface |
| **5** | 2 | Cap clean sand, trace of silt | 1 to 9 | 0 | 0 | 0 | Fecal pellets on surface |
| **6** | 1 | Cap sandy silt, Floc layer on surface | 0 | 2 | 0 | 0 | Large worms |
| **7** | 1 | Cap clean sand, Floc layer on surface, Bedforms | 1 to 9 | 0 | 0 | 1 to 9 | Fecal pellets on surface |
| **7** | 2 | Cap material under native sediments, Floculent surface sediment | 0 | 1 | 0 | 0 | Worm near gas void |
| **8** | 1 | Cap clean sand, Bedforms | 0 | 0 | 0 | 0 | |
| **9** | 1 | Cap sandy silt | 0 | 1 | 0 | 0 | Aquatic vegetation |
| **10** | 1 | Cap material under native sediments, Floculent surface sediment | 0 | 2 | 0 | >50 | Worm in gas void |
| **11** | 1 | Cap sandy silt | 1 to 9 | 1 | 0 | 1 to 9 | Fecal pellets on surface |
| **12** | 1 | Cap clean sand | 0 | 0 | 0 | 0 | |
| **13** | 1 | Cap clean sand, Bedforms | 0 | 0 | 0 | 10 to 19 | |
| **14** | 1 | Cap clean sand, Bedforms | 1 to 9 | 0 | 0 | 0 | Fecal pellets on surface |
| **15** | 1 | Cap clean sand, trace of silt, Bedforms | 1 to 9 | 0 | 0 | 0 | Fecal pellets on surface |
| **16** | 1 | Cap clean sand, Bedforms | 0 | 0 | 0 | 0 | |
| **17** | 1 | Cap material under native sediments, Floculent surface sediment | 1 to 9 | 0 | 0 | 40 to 49 | Fecal pellets on surface |
| **18** | 1 | Cap clean sand, trace of silt, Bedforms | 1 to 9 | 0 | 0 | 0 | Fecal pellets on surface |
| **19** | 1 | Cap clean sand, Bedforms | 0 | 0 | 0 | 0 | |
| **20** | 1 | Cap clean sand, Bedforms | 1 to 9 | 0 | 0 | 0 | Fecal pellets on surface |
| **21** | 1 | Cap clean sand, Bedforms | 0 | 0 | 0 | 0 | |

# Appendix B:
# Sediment Profile Images



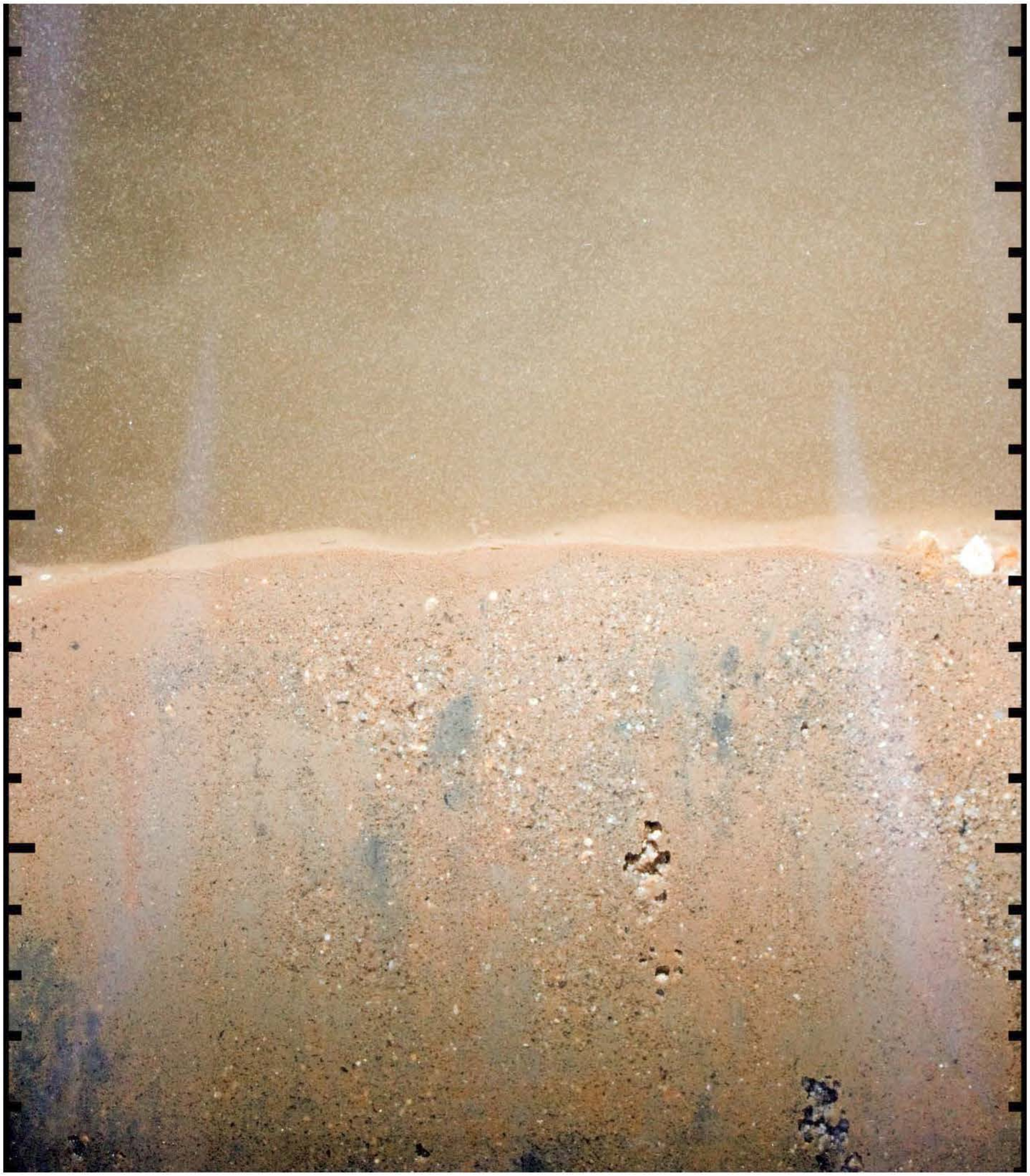
Station 01 - 2015

Station 02 - 2015

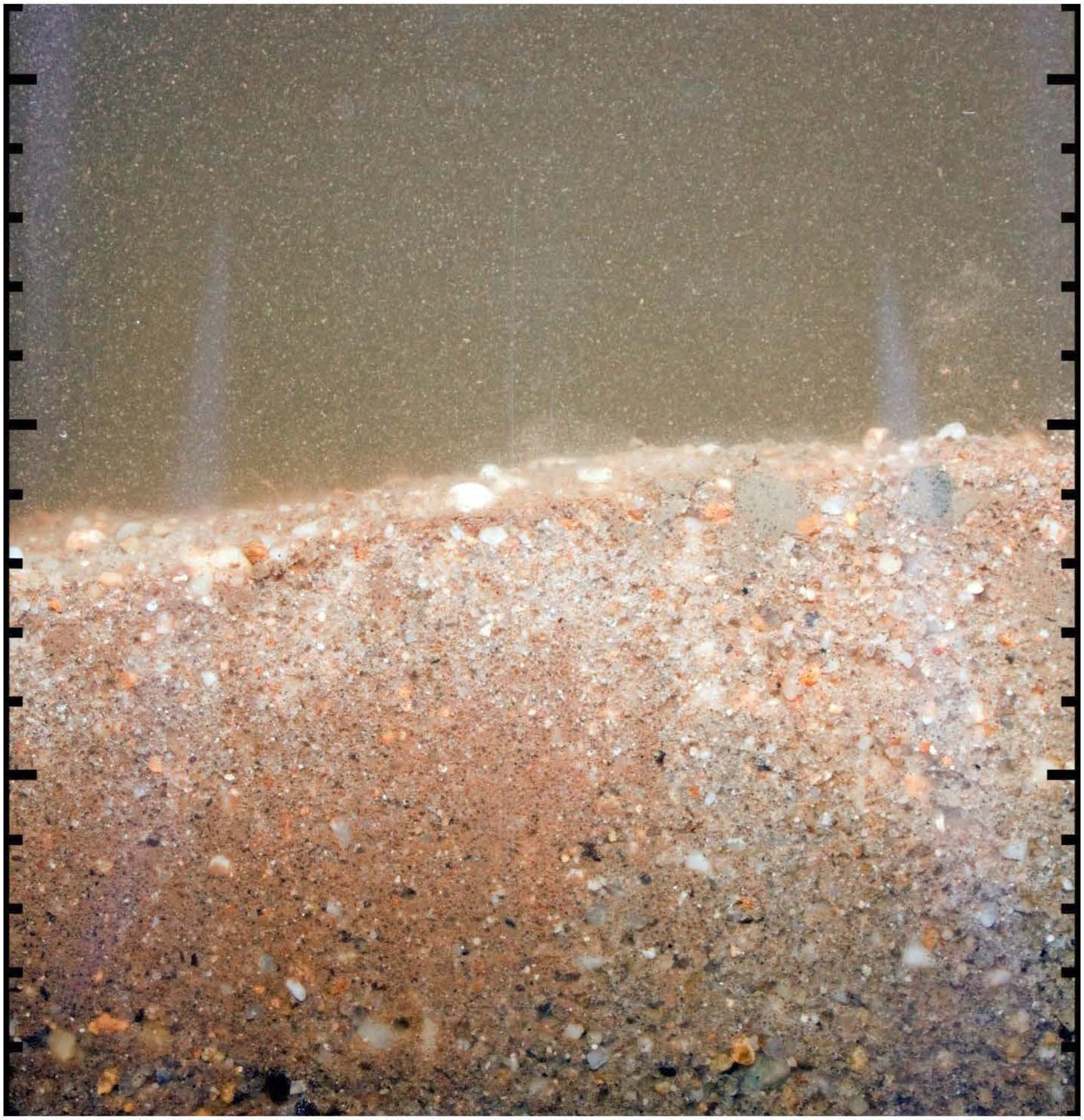


Station 03 - 2015

Station 04 - 2015



Station 05a - 2015



Station 05b - 2015

Station 06 - 2015

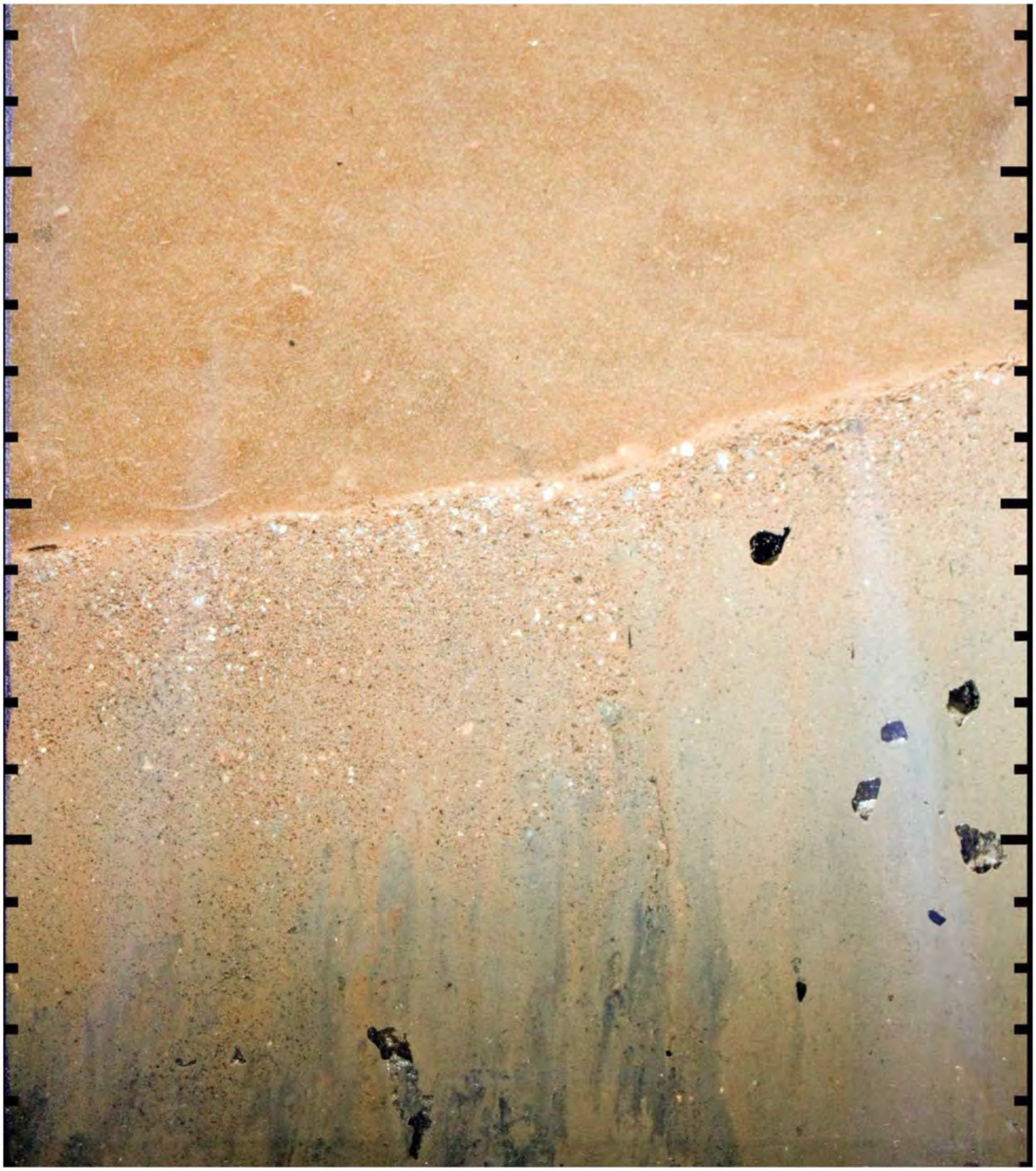
Station 07a - 2015

Station 07b - 2015

Station 08 - 2015

Station 09 - 2015

Station 10 - 2015



Station 11 - 2015

Station 12 - 2015

Station 13 - 2015

Station 14 - 2015

Station 15 - 2015

Station 16 - 2015

Station 17 - 2015

Station 18 - 2015

Station 19 - 2015

Station 20 - 2015

Station 21 - 2015

**Appendix C:**
**Site 99 Year 1 Field Logs**

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# IR SITE 99 LONG TERM MONITORING
## SPI DEPLOYMENT LOG

| | | | | | |
|---|---|---|---|---|---|
| **Battelle Project No.** 100018515 | **Date:** 6/9/15 | | **Recorder:** Caitlyn Farragher | | |
| **Vessel:** Gale Force | **Sampling Staff:** DIAZ PBC/MRE/CNF | | **Sampler type:** SPI | | |
| **Area:** CAP | **Station ID:** ~~SPI-01~~ ① SP1-01 | | **Water depth** (ft): 5.2 | | |
| **Sample Time** (local): 09:50 | **Water depth (ft)** | | **GPS units:** | | |
| **Northing /Lat:** 38.512355 | | **Easting/Long:** -77.299015 | | **DGPS Accuracy Estimate:** | |
| **SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%).** | | | | | |
| **Comments:** Way Point 4001 ① SB (PBC 6/9/15) | | | | | |
| **Sample Time** (local): | **Water depth (ft)** | | **GPS units:** | | |
| **Northing /Lat:** | | **Easting/Long:** | | **DGPS Accuracy Estimate:** | |
| **SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%).** | | | | | |
| **Comments:** | | | | | |
| **Sample Time** (local): | **Water depth (ft)** | | **GPS units:** | | |
| **Northing /Lat:** | | **Easting/Long:** | | **DGPS Accuracy Estimate:** | |
| **SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%).** | | | | | |
| **Comments:** | | | | | |
| **Field Activities / Comments / Observations:** | | | | | |

Field Team Leader Review and Approval ____________________

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# IR SITE 99 LONG TERM MONITORING
## SPI DEPLOYMENT LOG

| | | | |
|---|---|---|---|
| Battelle Project No. 100018515 | Date: 6/9/15 | Recorder: PBC | |
| Vessel: Gale Force | Sampling Staff: DIAZ PBC / MRF / CNF | Sampler type: SPI | |
| Area: CAP | Station ID: ~~SPI 02~~ ① SPI-02 | Water depth (ft): 4.1 | |
| Sample Time (local): 10:08 | Water depth (ft) | GPS units: | |
| Northing /Lat: 38.512686 | Easting/Long: -77.298781 | DGPS Accuracy Estimate: | |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: Way Point 4002 ① SB (PBC 6/9/15) | | | |
| Sample Time (local): | Water depth (ft) | GPS units: | |
| Northing /Lat: | Easting/Long: | DGPS Accuracy Estimate: | |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Sample Time (local): | Water depth (ft) | GPS units: | |
| Northing /Lat: | Easting/Long: | DGPS Accuracy Estimate: | |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Field Activities / Comments / Observations: | | | |

Field Team Leader Review and Approval ____________________

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# IR SITE 99 LONG TERM MONITORING
## SPI DEPLOYMENT LOG

| | | |
|---|---|---|
| Battelle Project No. 100018515 | Date: 6/9/15 | Recorder: PBC |
| Vessel: Gale Force | Sampling Staff: DIAZ MRF/PBC/CNF | Sampler type: SPI |
| Area: CAP | Station ID: ~~SPI 03~~ SP1-03 | Water depth (ft): 6.2 |
| Sample Time (local): 1017 | Water depth (ft) | GPS units: |
| Northing /Lat: 38.512685 ~~38.512686~~ HLT | Easting/Long: -77.298271 ~~-77.298781~~ HLT | DGPS Accuracy Estimate: |

SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%).

Comments: Way Point 4003 ① SB (PBC 6/9/15)

| | | |
|---|---|---|
| Sample Time (local): | Water depth (ft) | GPS units: |
| Northing /Lat: | Easting/Long: | DGPS Accuracy Estimate: |

SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%).

Comments:

| | | |
|---|---|---|
| Sample Time (local): | Water depth (ft) | GPS units: |
| Northing /Lat: | Easting/Long: | DGPS Accuracy Estimate: |

SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%).

Comments:

Field Activities / Comments / Observations:

Field Team Leader Review and Approval ____________________

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# IR SITE 99 LONG TERM MONITORING
## SPI DEPLOYMENT LOG

| | | | |
|---|---|---|---|
| Battelle Project No. 100018515 | Date: 6/9/15 | Recorder: PBC | |
| Vessel: Gale Force | Sampling Staff: DIAZ PBC/MRF/CNF | | Sampler type: SPI |
| Area: CAP | Station ID: ~~SPI 04~~ SP1-04 PBC 6/9/15 | | Water depth (ft): ~~5.3~~ ① 2.4 |
| Sample Time (local): 10:22 | Water depth (ft) | | GPS units: |
| Northing /Lat: 38.513025 | Easting/Long: -77.298625 | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: Way Point 4004 ① SB (PBC 9 Jun 2015) | | | |
| Sample Time (local): | Water depth (ft) | | GPS units: |
| Northing /Lat: | Easting/Long: | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Sample Time (local): | Water depth (ft) | | GPS units: |
| Northing /Lat: | Easting/Long: | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Field Activities / Comments / Observations: | | | |

Field Team Leader Review and Approval ____________________

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# IR SITE 99 LONG TERM MONITORING
## SPI DEPLOYMENT LOG

| | | | |
|---|---|---|---|
| Battelle Project No. 100018515 | Date: 6/9/15 | Recorder: PBC | |
| Vessel: Gale Force | Sampling Staff: DIAZ PBC/MAF/CNF | | Sampler type: SPI |
| Area: CAP | Station ID: ~~SPI-05~~ SP1-05 PBC 6/9/15 | | Water depth (ft): 5.3 |
| Sample Time (local): 10:28 | Water depth (ft) | | GPS units: |
| Northing /Lat: 38.512978 | Easting/Long: -77.298061 | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: WP= 4005 | | | |
| Sample Time (local): | Water depth (ft) | | GPS units: |
| Northing /Lat: | Easting/Long: | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Sample Time (local): | Water depth (ft) | | GPS units: |
| Northing /Lat: | Easting/Long: | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Field Activities / Comments / Observations: | | | |

Field Team Leader Review and Approval ________________

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# IR SITE 99 LONG TERM MONITORING
## SPI DEPLOYMENT LOG

| | | |
|---|---|---|
| Battelle Project No. 100018515 | Date: 9/Jun/2015 | Recorder: CNF |
| Vessel: Gale Force | Sampling Staff: DIAZ PBC/MRF/CNF | Sampler type: SPI |
| Area: CAP | Station ID: ~~SPI-06~~ SP1-06 PBC 6/9/15 | Water depth (ft): 3.3 |

| | | |
|---|---|---|
| Sample Time (local): 10:37 | Water depth (ft) | GPS units: |
| Northing /Lat: 38.513325 | Easting/Long: -77.298411 | DGPS Accuracy Estimate: |

SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%).

Comments: Waypoint ~~4007~~ 4006

| | | |
|---|---|---|
| Sample Time (local): | Water depth (ft) | GPS units: |
| Northing /Lat: | Easting/Long: | DGPS Accuracy Estimate: |

SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%).

Comments:

| | | |
|---|---|---|
| Sample Time (local): | Water depth (ft) | GPS units: |
| Northing /Lat: | Easting/Long: | DGPS Accuracy Estimate: |

SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%).

Comments:

Field Activities / Comments / Observations:

Field Team Leader Review and Approval ______________________

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# IR SITE 99 LONG TERM MONITORING
## SPI DEPLOYMENT LOG

| | | |
|---|---|---|
| Battelle Project No. 100018515 | Date: 9 June 2015 | Recorder: PBC |
| Vessel: Gale Force | Sampling Staff: Diaz PBC/MRF/CNF | Sampler type: SPI |
| Area: CAP | Station ID: ① ~~SPI-007~~ SPI-07 PBC 6/9/15 | Water depth (ft): 5.2 |

| | | | |
|---|---|---|---|
| Sample Time (local): 10:42 | Water depth (ft) | | GPS units: |
| Northing /Lat: 38.513358 | Easting/Long: -77.297877 | | DGPS Accuracy Estimate: |

SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%).

Comments: Waypoint 4007 ① SB (PBC 9 June 2015)

| | | | |
|---|---|---|---|
| Sample Time (local): | Water depth (ft) | | GPS units: |
| Northing /Lat: | Easting/Long: | | DGPS Accuracy Estimate: |

SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%).

Comments:

| | | | |
|---|---|---|---|
| Sample Time (local): | Water depth (ft) | | GPS units: |
| Northing /Lat: | Easting/Long: | | DGPS Accuracy Estimate: |

SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%).

Comments:

Field Activities / Comments / Observations:

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| | | | |
|---|---|---|---|
| Battelle Project No. 100018515 | Date: 9 JUNE 2015 | Recorder: PBL | |
| Vessel: Gale Force | Sampling Staff: DIAZ PBL/MAF/CNF | | Sampler type: SPI |
| Area: CAP | Station ID: ~~SPI-08~~ SP1-08 PBL 6/9/15 | | Water depth (ft): 4.5 |
| Sample Time (local): 10:49 | Water depth (ft) | | GPS units: |
| Northing /Lat: 38.513370 | Easting/Long: -77.297392 | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: WAYPoint 4008 | | | |
| Sample Time (local): | Water depth (ft) | | GPS units: |
| Northing /Lat: | Easting/Long: | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Sample Time (local): | Water depth (ft) | | GPS units: |
| Northing /Lat: | Easting/Long: | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Field Activities / Comments / Observations: | | | |

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## SPI DEPLOYMENT LOG

| | | | |
|---|---|---|---|
| Battelle Project No. 100018515 | Date: 9 June 2015 | Recorder: PBZ | |
| Vessel: Gale Force | Sampling Staff: DIAZ PBC/MRF/CNF | | Sampler type: SPI |
| Area: CAP | Station ID: ~~SPI-09~~ SP1-09 PBC 6/9/15 | | Water depth (ft): 3.2 |
| Sample Time (local): 1059 | Water depth (ft) | | GPS units: |
| Northing /Lat: 38.513667 | Easting/Long: -77.298116 | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: Waypoint 4009 | | | |
| Sample Time (local): | Water depth (ft) | | GPS units: |
| Northing /Lat: | Easting/Long: | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Sample Time (local): | Water depth (ft) | | GPS units: |
| Northing /Lat: | Easting/Long: | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Field Activities / Comments / Observations: | | | |
| | | | |

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| | | |
|---|---|---|
| Battelle Project No. 100018515 | Date: 9 June 2015 | Recorder: PBC |
| Vessel: Gale Force | Sampling Staff: DIAZ PBC/MRF/CNF | Sampler type: SPI |
| Area: CAP | Station ID: ~~SPI-10~~ SPI-10 PBC 6/9/15 | Water depth (ft): 4.1 |

| | | |
|---|---|---|
| Sample Time (local): 11:06 | Water depth (ft) | GPS units: |
| Northing /Lat: 38.513685 | Easting/Long: -77.297648 | DGPS Accuracy Estimate: |

SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%).

Comments: Waypoint 4010

| | | |
|---|---|---|
| Sample Time (local): | Water depth (ft) | GPS units: |
| Northing /Lat: | Easting/Long: | DGPS Accuracy Estimate: |

SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%).

Comments:

| | | |
|---|---|---|
| Sample Time (local): | Water depth (ft) | GPS units: |
| Northing /Lat: | Easting/Long: | DGPS Accuracy Estimate: |

SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%).

Comments:

Field Activities / Comments / Observations:

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## SPI DEPLOYMENT LOG

| | | | |
|---|---|---|---|
| Battelle Project No. 100018515 | Date: 9 June 2015 | Recorder: PBC | |
| Vessel: Gale Force | Sampling Staff: DIAZ PBC/MRF/CWF | | Sampler type: SPI |
| Area: CAP | Station ID: ~~SPI-11~~ SP1-11 PBC 6/9/15 | | Water depth (ft): 5.1 |
| Sample Time (local): 11:12 | Water depth (ft) | | GPS units: |
| Northing /Lat: 38.513635 | Easting/Long: -77.297198 | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: WAYPOINT 4011 | | | |
| Sample Time (local): | Water depth (ft) | | GPS units: |
| Northing /Lat: | Easting/Long: | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Sample Time (local): | Water depth (ft) | | GPS units: |
| Northing /Lat: | Easting/Long: | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Field Activities / Comments / Observations: | | | |

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| | | | |
|---|---|---|---|
| Battelle Project No. 100018515 | Date: 9 JUNE 2015 | Recorder: PBC | |
| Vessel: Gale Force | Sampling Staff: DIAZ PBC/CNF/MAF | | Sampler type: SPI |
| Area: CAP | Station ID: ~~SPI-12~~ SP1-12 PBC 6/9/15 | | Water depth (ft): 2.0 |
| Sample Time (local): 11:26 | Water depth (ft) | | GPS units: |
| Northing /Lat: 38.513926 | Easting/Long: -77.298343 | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: WAYPoint 4012 | | | |
| Sample Time (local): | Water depth (ft) | | GPS units: |
| Northing /Lat: | Easting/Long: | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Sample Time (local): | Water depth (ft) | | GPS units: |
| Northing /Lat: | Easting/Long: | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Field Activities / Comments / Observations: | | | |

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| | | | |
|---|---|---|---|
| Battelle Project No. 100018515 | Date: 9 June 2015 | Recorder: PBC | |
| Vessel: Gale Force | Sampling Staff: Diaz PBC/MRF/CNF | | Sampler type: SPI |
| Area: OAP | Station ID: ~~SPI 13~~ SP1-13 PBC 6/9/15 | | Water depth (ft): 2.7 |
| Sample Time (local): 11:35 | Water depth (ft) | | GPS units: |
| Northing /Lat: 38.513970 | Easting/Long: -77.297888 | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: waypoint 4013 | | | |
| Sample Time (local): | Water depth (ft) | | GPS units: |
| Northing /Lat: | Easting/Long: | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Sample Time (local): | Water depth (ft) | | GPS units: |
| Northing /Lat: | Easting/Long: | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Field Activities / Comments / Observations: | | | |

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| | | | |
|---|---|---|---|
| Battelle Project No. 100018515 | Date: 9 June 2015 | Recorder: PBC | |
| Vessel: Gale Force | Sampling Staff: DIAZ PBC/MRF/CNF | | Sampler type: SPI |
| Area: CAP | Station ID: ~~SPI-14~~ SP1-14 PBC 6/9/14 | | Water depth (ft): 3.6 |
| Sample Time (local): 11:45 | Water depth (ft) | | GPS units: |
| Northing /Lat: 38.513971 | Easting/Long: -77.297456 | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: WAYPOINT 4014 | | | |
| Sample Time (local): | Water depth (ft) | | GPS units: |
| Northing /Lat: | Easting/Long: | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Sample Time (local): | Water depth (ft) | | GPS units: |
| Northing /Lat: | Easting/Long: | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Field Activities / Comments / Observations: | | | |

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| Battelle Project No. 100018515 | Date: 9 JUNE 2015 | Recorder: PBC | |
|---|---|---|---|
| Vessel: Gale Force | Sampling Staff: DIAZ PBC / MRF / CNF | Sampler type: SPI | |
| Area: CAP | Station ID: ~~SPI-15~~ SPI-15 PBC 6/9/15 | Water depth (ft): 4.6 | |
| Sample Time (local): 11:50 | Water depth (ft) | GPS units: | |
| Northing /Lat: 38.513933 | Easting/Long: -77.296971 | DGPS Accuracy Estimate: | |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: WAYPOINT 4015 | | | |
| Sample Time (local): | Water depth (ft) | GPS units: | |
| Northing /Lat: | Easting/Long: | DGPS Accuracy Estimate: | |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Sample Time (local): | Water depth (ft) | GPS units: | |
| Northing /Lat: | Easting/Long: | DGPS Accuracy Estimate: | |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Field Activities / Comments / Observations: | | | |

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| | | | |
|---|---|---|---|
| Battelle Project No. 100018515 | Date: 9 June 2015 | Recorder: PBL | |
| Vessel: Gale Force | Sampling Staff: DIAZ PBL / MAF / CNT | | Sampler type: SPI |
| Area: CAP | Station ID: ~~SPI 16~~ SP1-16 PBL 6/9/15 | | Water depth (ft): 1.2 |
| Sample Time (local): 12:10 | Water depth (ft) | | GPS units: |
| Northing /Lat: 38.514113 | Easting/Long: -77.297798 | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: WAYPOINT ~~#06~~ 058 (PBL 9-June-2015) ① Could not get to station. Too shallow MOVED STATION | | | |
| Sample Time (local): | Water depth (ft) | | GPS units: |
| Northing /Lat: | Easting/Long: | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Sample Time (local): | Water depth (ft) | | GPS units: |
| Northing /Lat: | Easting/Long: | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Field Activities / Comments / Observations: | | | |

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| | | | |
|---|---|---|---|
| Battelle Project No. 100018515 | Date: 9 June 2015 | Recorder: PBC | |
| Vessel: Gale Force | Sampling Staff: Diaz PBC/MRF/CNF | | Sampler type: SPI |
| Area: CAP | Station ID: ~~SPT-17~~ SPI-17 PBC 6/9/15 | | Water depth (ft): 4.2 |
| Sample Time (local): 12:16 | Water depth (ft) | | GPS units: |
| Northing /Lat: 38.514303 | Easting/Long: -77.297208 | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: WP = 4017 | | | |
| Sample Time (local): | Water depth (ft) | | GPS units: |
| Northing /Lat: | Easting/Long: | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Sample Time (local): | Water depth (ft) | | GPS units: |
| Northing /Lat: | Easting/Long: | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Field Activities / Comments / Observations: | | | |

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| | | | |
|---|---|---|---|
| Battelle Project No. 100018515 | Date: 9 June 2015 | Recorder: PBL | |
| Vessel: Gale Force | Sampling Staff: DIAZ PBL/MRF/CNF | | Sampler type: SPI |
| Area: CAP | Station ID: ~~SPI-18~~ SP1-18 PBC 6/9/15 | | Water depth (ft): 4.3 |
| Sample Time (local): 12:23 | Water depth (ft) | | GPS units: |
| Northing /Lat: 38.514305 | Easting/Long: -77.296735 | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: WAYPOINT 4018 | | | |
| Sample Time (local): | Water depth (ft) | | GPS units: |
| Northing /Lat: | Easting/Long: | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Sample Time (local): | Water depth (ft) | | GPS units: |
| Northing /Lat: | Easting/Long: | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Field Activities / Comments / Observations: | | | |

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| Battelle Project No. 100018515 | Date: 9 June 2015 | Recorder: PBC | |
|---|---|---|---|
| Vessel: Gale Force | Sampling Staff: DIAZ PBC/MRF/CNF | | Sampler type: SPI |
| Area: CAP | Station ID: ~~SPI-19~~ SP1-19 PBC 6/9/15 | | Water depth (ft): 2.2 |

| Sample Time (local): 1231 | Water depth (ft) | GPS units: |
|---|---|---|
| Northing /Lat: 38.514630 | Easting/Long: -77.297046 | DGPS Accuracy Estimate: |

SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%).

Comments:

| Sample Time (local): | Water depth (ft) | GPS units: |
|---|---|---|
| Northing /Lat: | Easting/Long: | DGPS Accuracy Estimate: |

SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%).

Comments:

| Sample Time (local): | Water depth (ft) | GPS units: |
|---|---|---|
| Northing /Lat: | Easting/Long: | DGPS Accuracy Estimate: |

SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%).

Comments:

Field Activities / Comments / Observations:

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| | | |
|---|---|---|
| Battelle Project No. 100018515 | Date: 9 June 2015 | Recorder: PBC |
| Vessel: Gale Force | Sampling Staff: DIAZ PBC/MRF/CNF | Sampler type: SPI |
| Area: CHP | Station ID: ~~SPI-20~~ SP1-20 PBC 6/9/15 | Water depth (ft): 3.4 |
| Sample Time (local): 12:38 | Water depth (ft) | GPS units: |
| Northing /Lat: 38.514643 | Easting/Long: -77.296535 | DGPS Accuracy Estimate: |

SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%).

Comments: WP= 4020

| | | |
|---|---|---|
| Sample Time (local): | Water depth (ft) | GPS units: |
| Northing /Lat: | Easting/Long: | DGPS Accuracy Estimate: |

SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%).

Comments:

| | | |
|---|---|---|
| Sample Time (local): | Water depth (ft) | GPS units: |
| Northing /Lat: | Easting/Long: | DGPS Accuracy Estimate: |

SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%).

Comments:

Field Activities / Comments / Observations:

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| | | | |
|---|---|---|---|
| Battelle Project No. 100018515 | Date: 9 June 2015 | Recorder: PBC | |
| Vessel: Gale Force | Sampling Staff: DIAZ PBC/MRF/CNF | | Sampler type: SPI |
| Area: CAP | Station ID: SP1-21 ~~SPI 21~~ PBC | | Water depth (ft): 2.3 |
| Sample Time (local): 12:44 | Water depth (ft) | | GPS units: |
| Northing /Lat: 38.514908 | Easting/Long: -77.296790 | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: WP= 4021 | | | |
| Sample Time (local): | Water depth (ft) | | GPS units: |
| Northing /Lat: | Easting/Long: | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Sample Time (local): | Water depth (ft) | | GPS units: |
| Northing /Lat: | Easting/Long: | | DGPS Accuracy Estimate: |
| SAV: Species present, relative abundance, & Percent Cover (< 33%, 33 – 66%, >66%). | | | |
| Comments: | | | |
| Field Activities / Comments / Observations: | | | |

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# Appendix E-3

# Benthic Community Census

**Table 1: Counts, Abundance and Species Richness of Benthic Invertebrates in Baseline 1 (2009) Monitoring Event**
SSC Pacific
Quantico, Virginia

| Taxonomic Group | | | Benthic sampling results (number of individuals found in three 0.023-$m^2$ grabs) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Order** | **Family** | **Genus / Species** | **Station 5 (CAP 1) Primary** | **Station 5 (CAP 1) Duplicate** | **Station 3 (CAP 2)** | **Station 2 (CAP 3)** | **Station 7 (OFFCAP 1)** | **Station 6 (OFFCAP 2)** | **OFFCAP 3** |
| Nematoda | -- | -- | | 3 | 4 | 1 | | 12 | 4 |
| Lumbriculida | Lumbriculidae | *Lumbriculus variegatus* | | | | | | 1 | |
| Tubificidae | Tubificidae | *Aulodrilus sp.* | | | | | | | 4 |
| | | *Brachirua sowerbyi* | | | | | | 2 | |
| | | *Limnodrilus sp.* | 2 | | 2 | 1 | | 41 | 12 |
| Spionida | Spionidae | *Marenzelleria viridis* | | | | | | | 4 |
| Mesogastropoda | Hydrobiidae | *Amnicola sp.* | | | | | 1 | | |
| Basommatophora | Planorbidae | *Gyraulus sp.* | | | | | | | 1 |
| Veneroidea | Mactridae | *Rangia cuneata* | | | | 2 | | 1 | 1 |
| Amphipoda | Gammaridae | *Gammarus sp.* | 6 | | 21 | 39 | 39 | 204 | 57 |
| | Aoridae | *Leptocheirus plumulosus* | | 1 | | | | 4 | |
| Isopoda | Anthuridae | *Cyathura polita* | | | | | | | 1 |
| | Asellidae | *Lirceus sp.* | | | | | | | 1 |
| Acariformes | -- | -- | | 2 | | | | | |
| Ephemeroptera | Caenidae | *Caenis sp.* | | | | | 1 | 1 | |
| Odonata | Coenagrionidae | *Enallagma sp.* | | 1 | | | 1 | 3 | 1 |
| Trichoptera | Hydroptilidae | *Orthotrichia sp.* | | | | | 1 | 2 | 1 |
| Diptera | Ceratopogonidae | *Probezzia sp.* | 1 | | | | | | |
| | Chironomidae | *Chironomus sp.* | 1 | | | | 1 | 1 | 1 |
| | | *Cladopelma sp.* | | 1 | | | | | |
| | | *Clinotanypus sp.* | | | | 2 | | | |
| | | *Coelotanypus sp.* | | 2 | | | 9 | 4 | 1 |
| | | *Cricotopus sp.* | 1 | | | | | | |
| | | *Cryptochironomus fulvus gr.* | | | 3 | | 1 | 4 | 1 |
| | | *Demicryptochironomus sp.* | 1 | | | | | | |
| | | *Glyptotendipes sp.* | 5 | 2 | 1 | 2 | 5 | 6 | 1 |
| | | *Halotanypus sp.* | | | | | | | 1 |
| | | *Orthocladius sp.* | | | 2 | | | | |
| | | *Polypedilum sp.* | 2 | | 1 | | | | |
| | | *Procladius sp.* | 1 | | | | | | |
| | | *Rheotanytarsus sp.* | 1 | | 1 | | | | |
| | | *Tanytarsus sp.* | | | | | 2 | | |
| **Total Number of Individuals [2]** | | | **21** | **12** | **35** | **47** | **61** | **286** | **92** |
| **Species Richness (total number of taxa) [3]** | | | **10** | **7** | **8** | **6** | **10** | **14** | **16** |
| **Total Abundance (number / $m^2$) [4]** | | | **304** | **174** | **507** | **681** | **884** | **4,145** | **1,333** |

**Notes**

1. Samples were collected in May 2009. Benthic macroinvertebrate were identified to the lowest taxonomic level.
2. Number of Individuals is the total number of identifiable benthic invertebrate collected in each composite sample.
3. Species Richness is the number of different taxon collected in each composite sample.
4. Total Abundance is the number of individuals divided by the sample area (US EPA 1987). Area sampled at each station was 0.069 $m^2$ (0.023 $m^2$ multiplied by three grab samples).

**Table 2: Calculation of Shannon-Wiener Diversity (H') and Pielou's Evenness (J') in Baseline 1 (2009) Monitoring Event**
SSC Pacific
Quantico, Virginia

| Taxonomic Group | | | $p_i \times \ln(p_i)$ [1] | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Order** | **Family** | **Genus / Species** | **Station 5 (CAP 1) Primary** | **Station 5 (CAP 1) Duplicate** | **Station 3 (CAP 2)** | **Station 2 (CAP 3)** | **Station 7 (OFFCAP 1)** | **Station 6 (OFFCAP 2)** | **OFFCAP 3** |
| Nematoda | Not Identified | Not Identified | | -0.3466 | -0.2479 | -0.0819 | | -0.1331 | -0.1363 |
| Lumbriculida | Lumbriculidae | *Lumbriculus variegatus* | | | | | | -0.0198 | |
| Tubificidae | Tubificidae | *Aulodrilus sp.* | | | | | | | -0.1363 |
| | | *Branchirua sowerbyi* | | | | | | -0.0347 | |
| | | *Limnodrilus sp.* | -0.2239 | | -0.1636 | -0.0819 | | -0.2785 | -0.2657 |
| Spionida | Spionidae | *Marenzelleria viridis* | | | | | | | -0.1363 |
| Mesogastropoda | Hydrobiidae | *Amnicola sp.* | | | | | -0.0674 | | |
| Basommatophora | Planorbidae | *Gyraulus sp.* | | | | | | | -0.0491 |
| Veneroidea | Mactridae | *Rangia cuneata* | | | | -0.1343 | | -0.0198 | -0.0491 |
| Amphipoda | Gammaridae | *Gammarus sp.* | -0.3579 | | -0.3065 | -0.1548 | -0.286 | -0.241 | -0.2966 |
| | Aoridae | *Leptocheirus plumulosus* | | -0.2071 | | | | -0.0597 | |
| Isopoda | Anthuridae | *Cyathura polita* | | | | | | | -0.0491 |
| | Asellidae | *Lirceus sp.* | | | | | | | -0.0491 |
| Acariformes | Not Identified | Not Identified | | -0.2986 | | | | | |
| Ephemeroptera | Caenidae | *Caenis sp.* | | | | | -0.0674 | -0.0198 | |
| Odonata | Coenagrionidae | *Enallagma sp.* | | -0.2071 | | | -0.0674 | -0.0478 | -0.0491 |
| Trichoptera | Hydroptilidae | *Orthotrichia sp.* | | | | | -0.0674 | -0.0347 | -0.0491 |
| Diptera | Ceratopogonida | *Probezzia sp.* | -0.145 | | | | | | |
| | Chironomidae | *Chironomus sp.* | -0.145 | | | | -0.0674 | -0.0198 | -0.0491 |
| | | *Cladopelma sp.* | | -0.2071 | | | | | |
| | | *Clinotanypus sp.* | | | | -0.1343 | | | |
| | | *Coelotanypus sp.* | | -0.2986 | | | -0.2823 | -0.0597 | -0.0491 |
| | | *Cricotopus sp.* | -0.145 | | | | | | |
| | | *Cryptochironomus fulvus gr.* | | | -0.2106 | | -0.0674 | -0.0597 | -0.0491 |
| | | *Demicryptochironomus sp.* | -0.145 | | | | | | |
| | | *Glyptotendipes sp.* | -0.3417 | -0.2986 | -0.1016 | -0.1343 | -0.205 | -0.0811 | -0.0491 |
| | | *Halotanypus sp.* | | | | | | | -0.0491 |
| | | *Orthocladius sp.* | | | -0.1636 | | | | |
| | | *Polypedilum sp.* | -0.2239 | | -0.1016 | | | | |
| | | *Procladius sp.* | -0.145 | | | | | | |
| | | *Rheotanytarsus sp.* | -0.145 | | -0.1016 | | | | |
| | | *Tanytarsus sp.* | | | | | -0.1121 | | |
| **Shannon-Weiner Diversity (H')** [2] | | | **2.02** | **1.86** | **1.40** | **0.72** | **1.29** | **1.11** | **1.51** |
| **Pielou's Evenness (J')** [3] | | | **0.88** | **0.96** | **0.67** | **0.40** | **0.56** | **0.42** | **0.55** |

**Notes**

1. $p_i$ is the proportion of individuals in species $i$ to the total number of individuals in each sample. Ln is the natural logarithm of $p_i$.
2. Shannon-Wiener Diversity (H') is calculated as the sum of $p_i \times \ln(p_i)$ for each species in each sample (Becker et al. 2011, USEPA 1987).
3. Pielou's Evenness (J') is calculated as H' divided by the natural logarithm of the number of taxa (Becker et al. 2011, USEPA 1987).

**Table 3: Calculation of Metrics used in the Benthic Index of Biotic Integrity (B-IBI) in Baseline 1 (2009) Monitoring Event**
SSC Pacific
Quantico, Virginia

| Taxonomic Group | | | Benthic sampling results (number of individuals found in three 0.023-m2 grabs) | | | | | | | Exlude from B-IBI Calculations? [1] | Oligohaline pollution-indicative taxa [2] | Oligohaline pollution-sensitive taxa [3] | Species classified as carnivores-omnivores [4] | Tolerance Values [5] | Tanypodinae or Chironomidae [6] | Tolerance Scores [5] | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | Station 5 (CAP 1) Primary | | Station 5 (CAP 1) Duplicate | | Station 3 (CAP 2) | | Station 2 (CAP 3) | | Station 7 (OFFCAP 1) | | Station 6 (OFFCAP 2) | | OFFCAP 3 | |
| Order | Family | Genus/Species | Station 5 (CAP 1) Primary | Station 5 (CAP 1) Duplicate | Station 3 (CAP 2) | Station 2 (CAP 3) | Station 7 (OFFCAP 1) | Station 6 (OFFCAP 2) | OFFCAP 3 | | | | | | | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* |
| Nematoda | -- | -- | | 3 | 4 | 1 | | 12 | 4 | X | | | | | | | | | | | | | | | | | | | |
| Lumbriculida | Lumbriculidae | *Lumbriculus variegatus* | | | | | | 1 | | | | | | 7.3 | | | | | | | | | | | | 105.8 | 14.49 | | |
| Tubificidae | Tubificidae | *Aulodrilus sp.* | | | | | | | 4 | | X | | | 4.7 | | | | | | | | | | | | | | 272.5 | 57.97 |
| | | *Brachirua sowerbyi* | | | | | | 2 | | | X | | | 8.4 | | | | | | | | | | | | 243.5 | 28.99 | | |
| | | *Limnodrilus sp.* | 2 | | 2 | 1 | | 41 | 12 | | X | | | 9.9 | | 285.5 | 28.99 | | | 285.5 | 28.99 | 142.8 | 14.49 | | | 5853 | 594.2 | 1713 | 173.9 |
| Spionida | Spionidae | *Marenzelleria viridis* | | | | | | | 4 | | | X | | | | | | | | | | | | | | | | | |
| Mesogastropoda | Hydrobiidae | *Amnicola sp.* | | | | | 1 | | | X | | | | | | | | | | | | | | | | | | | |
| Basommatophor | Planorbidae | *Gyraulus sp.* | | | | | | | 1 | X | | | | | | | | | | | | | | | | | | | |
| Veneroidea | Mactridae | *Rangia cuneata* | | | | 2 | | 1 | 1 | | | | | 6 | | | | | | | | 173.9 | 28.99 | | | 86.96 | 14.49 | 86.96 | 14.49 |
| Amphipoda | Gammaridae | *Gammarus fasciatus* | 6 | | 21 | 39 | 39 | 204 | 57 | X | | | | | | | | | | | | | | | | | | | |
| | Aoridae | *Leptocheirus plumulosus* | | 1 | | | | 4 | | | X | | | | | | | | | | | | | | | | | | |
| Isopoda | Anthuridae | *Cyathura polita* | | | | | | | 1 | | | | X | | | | | | | | | | | | | | | | |
| | Asellidae | *Lirceus sp.* | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | |
| Acariformes | -- | -- | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ephemeroptera | Caenidae | *Caenis sp.* | | | | | 1 | 1 | | X | | | | | | | | | | | | | | | | | | | |
| Odonata | Coenagrionidae | *Enallagma sp.* | | 1 | | | 1 | 3 | 1 | | | | | | | | | | | | | | | | | | | | |
| Trichoptera | Hydroptilidae | *Orthotrichia sp.* | | | | | 1 | 2 | 1 | X | | | | | | | | | | | | | | | | | | | |
| Diptera | Ceratopogonida | *Probezzia sp.* | 1 | | | | | | | | | | X | 6 | | 86.96 | 14.49 | | | | | | | | | | | | |
| | Chironomidae | *Chironomus sp.* | 1 | | | | 1 | 1 | 1 | | X | | X | 9.8 | C | 142 | 14.49 | | | | | | | 142 | 14.49 | 142 | 14.49 | 142 | 14.49 |
| | | *Cladopelma sp.* | | 1 | | | | | | | | | X | 2.5 | C | | | 36.23 | 14.49 | | | | | | | | | | |
| | | *Clinotanypus sp.* | | | | 2 | | | | | | | X | 9.1 | T | | | | | | | 263.8 | 28.99 | | | | | | |
| | | *Coelotanypus sp.* | | 2 | | | 9 | 4 | 1 | | X | | X | 6.2 | T | | | | | | | | | | | | | | |
| | | *Cricotopus sp.* | 1 | | | | | | | | | | X | | C | | | | | | | | | | | | | | |
| | | *Cryptochironomus fulvus gr.* | | | 3 | | 1 | 4 | 1 | | | | X | 7.3 | C | | | | | 317.4 | 43.48 | | | 105.8 | 14.49 | 423.2 | 57.97 | 105.8 | 14.49 |
| | | *Demicryptochironomus sp.* | 1 | | | | | | | | | | X | | C | | | | | | | | | | | | | | |
| | | *Glyptotendipes sp.* | 5 | 2 | 1 | 2 | 5 | 6 | 1 | | X | | X | 8.5 | C | 615.9 | 72.46 | 246.4 | 28.99 | 123.2 | 14.49 | 246.4 | 28.99 | 615.9 | 72.46 | 739.1 | 86.96 | 123.2 | 14.49 |
| | | *Halotanypus sp.* | | | | | | | 1 | | | | X | | C | | | | | | | | | | | | | | |
| | | *Orthocladius sp.* | | | 2 | | | | | | | | X | 6 | C | | | | | 173.9 | 28.99 | | | | | | | | |
| | | *Polypedilum sp.* | 2 | | 1 | | | | | | X | | X | 6.7 | C | 194.2 | 28.99 | | | 97.1 | 14.49 | | | | | | | | |
| | | *Procladius sp.* | 1 | | | | | | | | X | | X | 9.3 | T | 134.8 | 14.49 | | | | | | | | | | | | |
| | | *Rheotanytarsus sp.* | 1 | | 1 | | | | | | | | X | 6.4 | C | 92.75 | 14.49 | | | 92.75 | 14.49 | | | | | | | | |
| | | *Tanytarsus sp.* | | | | | 2 | | | | | | X | 6.7 | C | | | | | | | | | 194.2 | 28.99 | | | | |
| **Total Number of Individuals** | | | **21.00** | **12.00** | **35.00** | **47.00** | **61.00** | **286.00** | **92.00** | | | | | | | | | | | | | | | | | | | | |
| **Species Richness (total number of taxa)** | | | **10.00** | **7.00** | **8.00** | **6.00** | **10.00** | **14.00** | **16.00** | | | | | | | | | | | | | | | | | | | | |
| **Total Abundance (number/m$^2$)** | | | **304.35** | **173.91** | **507.25** | **681.16** | **884.06** | **4,144.93** | **1,333.33** | | | | | | | | | | | | | | | | | | | | |
| **Total Abundance of B-IBI Taxa (number/m$^2$)** | | | **217.39** | **130.43** | **144.93** | **101.45** | **275.36** | **971.01** | **420.29** | | | | | | | | | | | | | | | | | | | | |
| **Abundance of pollution-indicative taxa (number/m2)** | | | **159.42** | **72.46** | **57.97** | **43.48** | **217.39** | **840.58** | **275.36** | | | | | | | | | | | | | | | | | | | | |
| **Abundance of pollution-indicative taxa (%)** | | | **73%** | **56%** | **40%** | **43%** | **79%** | **87%** | **66%** | | | | | | | | | | | | | | | | | | | | |
| **Abundance of pollution-sensitive taxa (number/m2)** | | | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **57.97** | | | | | | | | | | | | | | | | | | | | |
| **Abundance of pollution-sensitive taxa (%)** | | | **0%** | **0%** | **0%** | **0%** | **0%** | **0%** | **14%** | | | | | | | | | | | | | | | | | | | | |
| **Abundance of carnivore and omnivores (number/m2)** | | | **188.41** | **72.46** | **115.94** | **57.97** | **260.87** | **217.39** | **86.96** | | | | | | | | | | | | | | | | | | | | |
| **Abundance of carnivore and omnivores (%)** | | | **87%** | **56%** | **80%** | **57%** | **95%** | **22%** | **21%** | | | | | | | | | | | | | | | | | | | | |
| **Tolerance Scores** | | | | | | | | | | | | | | | | **8.24** | | **6.50** | | **7.52** | | **8.15** | | **8.11** | | **9.36** | | **8.43** | |
| **Tanypodinae to Chironomidae abundance ratio (%)** | | | **9%** | **67%** | **0%** | **100%** | **100%** | **36%** | **25%** | | | | | | | | | | | | | | | | | | | | |

[1] Species excluded from IBI calculations based on Llanso (2002)
[2] Percent abundance of pollution-indicative taxa is the percent abundance contribution of taxa classified as pollution-indicative to the total abundance of organisms in a sample.
[3] Percent abundance of pollution-sensitive taxa is the percent abundance contribution of taxa classified as pollution-sensitive to the total abundance of organisms in a sample.
[4] Percent abundance of carnivore and omnivores is the percent abundance contribution of taxa currently classified as carnivores or omnivores to the total abundance of organisms in a sample.
[5] The Tolerance Score is a weighted abundance average for taxa classified according to their sensitiveness to pollution. The Tolerance Score is based on the North Carolina biotic index of Lenat (1993):

$$\text{Tolerance Score} = \frac{\sum TV_i \cdot N_i}{\sum N_i}$$

where TVi is the tolerance value of the ith taxa, and Ni is the abundance of the ith taxa. Tolerance values for each taxa from Llanso (2002).
[6] The Tanypodinae to Chironomidae percent abundance ratio is a measure of the relative contribution of midges in the subfamily Tanypodinae to all the midges (Class Insecta, family Chironomidae) found in a sample.

**Table 4: Summary of Benthic Metrics and B-IBI Scores in Baseline 1 (2009) Monitoring Event**
SSC Pacific
Quantico, Virginia

| Within Cap Placement Area? | Within | | | | | | | | | | Outside | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Community Index | Station 5 (CAP 1) Primary | | Station 5 (CAP 1) Duplicate | | Station 5 (CAP 1) Avg [1] | | Station 3 (CAP 2) | | Station 2 (CAP 3) | | Station 7 (OFFCAP 1) | | Station 6 (OFFCAP 2) | | OFFCAP 3 | |
| | Value | Score | Value | Score | Value | Score | Value | Score | Value | Score | Value | Score | Value | Score | Value | Score |
| Total Abundance of B-IBI Taxa (number/m$^2$) | 217 | 3 | 130 | 1 | 174 | 1 | 145 | 1 | 101 | 1 | 275 | 3 | 971 | 5 | 420 | 3 |
| Abundance of Pollution-indicative taxa (%) | 73% | 3 | 56% | 3 | 64% | 3 | 40% | 3 | 43% | 3 | 79% | 3 | 87% | 3 | 66% | 3 |
| Abundance of Pollution-sensitive taxa (%) | 0% | 1 | 0% | 1 | 0% | 1 | 0% | 1 | 0% | 1 | 0% | 1 | 0% | 1 | 14% | 3 |
| Abundance of carnivore and omnivores (%) | 87% | 5 | 56% | 5 | 71% | 5 | 80% | 5 | 57% | 5 | 95% | 5 | 22% | 3 | 21% | 3 |
| Tolerance Score | 8.2 | 3 | 6.5 | 3 | 7.4 | 3 | 7.5 | 3 | 8.2 | 3 | 8.1 | 3 | 9.4 | 1 | 8.4 | 3 |
| Tanypodinae to Chironomidae percent abundance ratio (%) | 9% | 5 | 67% | 1 | 38% | 3 | 0% | 5 | 100% | 1 | 100% | 1 | 36% | 3 | 25% | 3 |
| B-IBI Value [2] | - | 3.3 | | 2.3 | | 2.7 | | 3.0 | | 2.3 | | 2.7 | | 2.7 | | 3.0 |

**Notes:**
1. Primary and duplicate metrics collected at Cap 1 were averaged, followed by calculation of B-IBI on these average values.
2. B-IBI Value is calculated as the average of scored metrics. B-IBI values > 3 indicate a station 'meets restoration goals', scores from 2.7 to 2.9 indicate marginal degradation, scores from 2.1 to 2.6 indicate degradation, and scores <2.0 indicate severe degradation.

**Table 5. Summary of Benthic Community Health Metrics in Baseline 1 (2009) Monitoring Event**
SSC Pacific
Quantico, Virginia

| Within Cap Placement Area? | Within | | | | | Outside | | |
|---|---|---|---|---|---|---|---|---|
| Station ID | Station 5 (CAP 1) Primary | Station 5 (CAP 1) Duplicate | Station 5 (CAP 1) Avg [1] | Station 3 (CAP 2) | Station 2 (CAP 3) | Station 7 (OFFCAP 1) | Station 6 (OFFCAP 2) | OFFCAP 3 |
| Total Abundance [2] | 304 | 174 | 239 | 507 | 681 | 884 | 4,145 | 1,333 |
| Species Richness [3] | 10 | 7 | 9 | 8 | 6 | 10 | 14 | 16 |
| Shannon-Wiener Diversity Index [4] | 2.02 | 1.86 | 1.94 | 1.40 | 0.72 | 1.29 | 1.11 | 1.51 |
| Pielou's Eveness [5] | 0.88 | 0.96 | 0.92 | 0.67 | 0.40 | 0.56 | 0.42 | 0.55 |
| B-IBI Score [6] | 3.3 | 2.3 | 2.7 | 3.0 | 2.3 | 2.7 | 2.7 | 3.0 |

**Notes:**

1. Primary and duplicate metrics collected at Cap 1 were averaged, followed by calculation of B-IBI on these average values.
2. Total Abundance is the number of individuals divided by the sample area (US EPA 1987) - 3 x 0.023$m^2$ grab samples.
3. Species Richness is the number of different taxon collected in each composite sample.
4. Shannon-Wiener Diversity (H') is calculated as the sum of $p_i \times \ln(p_i)$ for each species in each sample (Becker et al. 2011, USEPA 1987).
5. Pielou's Evenness (J') is calculated as H' divided by the natural logarithm of the number of taxa (Becker et al. 2011, USEPA 1987).
6. B-IBI values are calculated as the average of scored metrics. B-IBI values > 3 indicate a station 'meets restoration goals', scores from 2.7 to 2.9 indicate marginal degradation, scores from 2.1 to 2.6 indicate degradation, and scores < 2.0 indicate severe degradation.

**Table 1: Counts, Abundance and Species Richness of Benthic Invertebrates in Baseline 3 (2012) Monitoring Event**
SSC Pacific
Quantico, Virginia

| Taxonomic Group | | | Benthic sampling results (number of individuals found in three 0.023-$m^2$ grabs) | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Order** | **Family** | **Genus / Species** | **QB 1** | **QB 2** | **QB 3** | **QB 4** | **QB 5** | **QB 6** |
| Nematoda | -- | -- | 8 | 8 | 3 | 1 | 4 | 1 |
| Tubificinae | Tubificidae | *Branchiura sowerbyi* | | | | | | 2 |
| | | *Limnodrilus sp.* | 7 | 25 | 20 | 4 | 7 | 5 |
| Spionida | Spionidae | *Marenzelleria viridis* | 1 | | | | | 1 |
| | | *Polydora sp.* | 1 | 5 | | | | |
| | | *Streblospio benedictyi* | 9 | 31 | 96 | 10 | 38 | 24 |
| Veneroidea | Mactridae | *Rangia cuneata* | 3 | 1 | 2 | | | |
| Amphipoda | Corophiidae | *Corophium sp.* | 1 | 2 | 2 | | | 1 |
| | Gammaridae | *Gammarus sp.* | | | | | | 1 |
| Cumacea | Nannastacidae | *Almyracuma proximoculi* | 2 | 2 | | | | |
| Isopoda | Anthuridae | *Cyathura polita* | 32 | 38 | 20 | | 1 | 1 |
| Trichoptera | Leptoceridae | *Oecetis sp.* | 1 | 3 | 1 | | | |
| Diptera | Ceratopogonidae | *Palpomyia cplx.* | | | | | 1 | |
| | Chaoboridae | *Chaoborus sp.* | | | | | 1 | |
| | Chironomidae | *Cladotanytarsus sp.* | 3 | 5 | 2 | | | |
| | | *Cryptochironomus fulvus gr.* | 4 | 13 | 4 | 1 | | |
| | | *Polypedilum halterale gr.* | 20 | 15 | 8 | | | |
| | | *Pseudochironomus sp.* | | 2 | 1 | | | |
| | | *Tanytarsus sp.* | 1 | 4 | 8 | 3 | | |
| | | *Chironomus sp.* | | | 1 | | 1 | |
| | | *Coelotanypus sp.* | | | 2 | 6 | 18 | 2 |
| | | *Stictochironomus sp.* | | | 1 | | | |
| **Total Number of Individuals [2]** | | | **93** | **154** | **171** | **25** | **71** | **38** |
| **Total Abundance (individuals per $m^2$) [3]** | | | **1348** | **2232** | **2478** | **362** | **1029** | **551** |
| **Species Richness (total number of taxa) [4]** | | | **14** | **14** | **15** | **6** | **8** | **9** |

**Notes**

[1] Samples collected October, 2012. Benthic macroinvertebrate were identified to the lowest taxonomic level.

[2] Number of Individuals is the total number of identifiable benthic invertebrate collected in each composite sample.

[3] Total Abundance is the number of individuals divided by the sample area (US EPA 1987) - 3 x 0.023$m^2$ grab samples.

[4] Species Richness is the number of different taxon collected in each composite sample.

**Table 2: Calculation of Shannon-Wiener Diversity (H') and Pielou's Evenness (J') in Baseline 3 (2012) Monitoring Event**
SSC Pacific
Quantico, Virginia

| Order | Family | Genus / Species | $p_i \times \ln(p_i)$ [1] | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | QB 1 | QB 2 | QB 3 | QB 4 | QB 5 | QB 6 |
| Nematoda | -- | -- | -0.21 | -0.15 | -0.07 | -0.13 | -0.16 | -0.10 |
| Tubificinae | Tubificidae | *Branchiura sowerbyi* | | | | | | -0.15 |
| | | *Limnodrilus sp.* | -0.19 | -0.30 | -0.25 | -0.29 | -0.23 | -0.27 |
| Spionida | Spionidae | *Marenzelleria viridis* | -0.05 | | | | | -0.10 |
| | | *Polydora sp.* | -0.05 | -0.11 | | | | |
| | | *Streblospio benedictyi* | -0.23 | -0.32 | -0.32 | -0.37 | -0.33 | -0.29 |
| Veneroidea | Mactridae | *Rangia cuneata* | -0.11 | -0.03 | -0.05 | | | |
| Amphipoda | Corophiidae | *Corophium sp.* | -0.05 | -0.06 | -0.05 | | | -0.10 |
| | Gammaridae | *Gammarus sp.* | | | | | | -0.10 |
| Cumacea | Nannastacidae | *Almyracuma proximoculi* | -0.08 | -0.06 | | | | |
| Isopoda | Anthuridae | *Cyathura polita* | -0.37 | -0.35 | -0.25 | | -0.06 | -0.10 |
| Trichoptera | Leptoceridae | *Oecetis sp.* | -0.05 | -0.08 | -0.03 | | | |
| Diptera | Ceratopogonidae | *Palpomyia cplx.* | | | | | -0.06 | |
| | Chaoboridae | *Chaoborus sp.* | | | | | -0.06 | |
| | Chironomidae | *Cladotanytarsus sp.* | -0.11 | -0.11 | -0.05 | | | |
| | | *Cryptochironomus fulvus gr.* | -0.14 | -0.21 | -0.09 | -0.13 | | |
| | | *Polypedilum halterale gr.* | -0.33 | -0.23 | -0.14 | | | |
| | | *Pseudochironomus sp.* | | -0.06 | -0.03 | | | |
| | | *Tanytarsus sp.* | -0.05 | -0.09 | -0.14 | -0.25 | | |
| | | *Chironomus sp.* | | | -0.03 | | -0.06 | |
| | | *Coelotanypus sp.* | | | -0.05 | -0.34 | -0.35 | -0.15 |
| | | *Stictochironomus sp.* | | | -0.03 | | | |
| **Shannon-Weiner Diversity (H') [2]** | | | **2.01** | **2.15** | **1.60** | **1.51** | **1.31** | **1.35** |
| **Pielou's Evenness (J') [3]** | | | **0.76** | **0.81** | **0.59** | **0.85** | **0.63** | **0.61** |

**Notes**

1. $p_i$ is the proportion of individuals in species $i$ to the total number of individuals in each sample. Ln is the natural logarithm of $p_i$.
2. Shannon-Wiener Diversity (H') is calculated as the sum of $p_i \times \ln(p_i)$ for each species in each sample (Becker et al. 2011, USEPA 1987).
3. Pielou's Evenness (J') is calculated as H' divided by the natural logarithm of the number of taxa (Becker et al. 2011, USEPA 1987).

**Table 3: Calculation of Metrics used in the Benthic Index of Biotic Integrity (B-IBI) in Baseline 3 (2012) Monitoring Event**
SSC Pacific
Quantico, Virginia

| Taxonomic Group | | | Benthic sampling results (number of individuals found in three 0.023-m² grabs) | | | | | | Exlude from B-IBI Calculations? [1] | Oligohaline pollution-indicative taxa [2] | Oligohaline pollution-sensitive taxa [3] | Species classified as carnivores-omnivores [4] | Tolerance Values [5] | Tanypodinae or Chironomidae [6] | Tolerance Scores [5] QB 1 | | QB 2 | | QB 3 | | QB 4 | | QB 5 | | QB 6 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Order | Family | Genus / Species | QB 1 | QB 2 | QB 3 | QB 4 | QB 5 | QB 6 | | | | | | | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* |
| Nematoda | -- | -- | 8 | 8 | 3 | 1 | 4 | 1 | X | | | | | | | | | | | | | | | | | |
| Tubificinae | Tubificidae | *Branchiura sowerbyi* | | | | | | 2 | | X | | | 8.4 | | | | | | | | | | | | 243 | 29 |
| | | *Limnodrilus sp.* | 7 | 25 | 20 | 4 | 7 | 5 | | X | | | 10 | | 1,014 | 101 | 3,623 | 362 | 2,899 | 290 | 580 | 58 | 1,014 | 101 | 725 | 72 |
| Spionida | Spionidae | *Marenzelleria viridis* | 1 | | | | | 1 | | | X | | | | | | | | | | | | | | | |
| | | *Polydora sp.* | 1 | 5 | | | | | | | | | | | | | | | | | | | | | | |
| | | *Streblospio benedictyi* | 9 | 31 | 96 | 10 | 38 | 24 | | | | | | | | | | | | | | | | | | |
| Veneroidea | Mactridae | *Rangia cuneata* | 3 | 1 | 2 | | | | | | | | 6 | | 261 | 43 | 87 | 14 | 174 | 29 | | | | | | |
| Amphipoda | Corophiidae | *Corophium sp.* | 1 | 2 | 2 | | | 1 | X | | | | | | | | | | | | | | | | | |
| | Gammaridae | *Gammarus sp.* | | | | | | 1 | X | | | | | | | | | | | | | | | | | |
| Cumacea | Nannastacidae | *Almyracuma proximoculi* | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | |
| Isopoda | Anthuridae | *Cyathura polita* | 32 | 38 | 20 | | 1 | 1 | | | | X | | | | | | | | | | | | | | |
| Trichoptera | Leptoceridae | *Oecetis sp.* | 1 | 3 | 1 | | | | X | | | | | | | | | | | | | | | | | |
| Diptera | Ceratopogonidae | *Palpomyia cplx.* | | | | | 1 | | | | | X | 6.9 | | | | | | | | | | 100 | 14 | | |
| | Chaoboridae | *Chaoborus sp.* | | | | | 1 | | | | | X | 8.5 | | | | | | | | | | 123 | 14 | | |
| | Chironomidae | *Cladotanytarsus sp.* | 3 | 5 | 2 | | | | | X | | X | 3.7 | C | 161 | 43 | 268 | 72 | 107 | 29 | | | | | | |
| | | *Cryptochironomus fulvus gr.* | 4 | 13 | 4 | 1 | | | | | | X | 7.3 | C | 423 | 58 | 1,375 | 188 | 423 | 58 | 106 | 14 | | | | |
| | | *Polypedilum halterale gr.* | 20 | 15 | 8 | | | | | X | | X | 6.7 | C | 1,942 | 290 | 1,457 | 217 | 777 | 116 | | | | | | |
| | | *Pseudochironomus sp.* | | 2 | 1 | | | | | | | X | 4.2 | C | | | 122 | 29 | 61 | 14 | | | | | | |
| | | *Tanytarsus sp.* | 1 | 4 | 8 | 3 | | | | | | X | 6.7 | C | 97 | 14 | 388 | 58 | 777 | 116 | 291 | 43 | | | | |
| | | *Chironomus sp.* | | | 1 | | 1 | | | X | | X | 9.8 | C | | | | | 142 | 14 | | | 142 | 14 | | |
| | | *Coelotanypus sp.* | | | 2 | 6 | 18 | 2 | | X | | X | 6.2 | T | | | | | 180 | 29 | 539 | 87 | 1,617 | 261 | 180 | 29 |
| | | *Stictochironomus sp.* | | | 1 | | | | | | | X | 6.7 | C | | | | | 97 | 14 | | | | | | |
| **TOTAL** | | | **93** | **154** | **171** | **25** | **71** | **38** | | | | | | | | | | | | | | | | | | |
| **NUMBER OF TAXA** | | | **14** | **14** | **15** | **6** | **8** | **9** | | | | | | | | | | | | | | | | | | |
| **Total Abundance (number / m²)** | | | **1,348** | **2,232** | **2,478** | **362** | **1,029** | **551** | | | | | | | | | | | | | | | | | | |
| **Total Abundance of B-IBI Taxa (number / m²)** | | | **1,203** | **2,043** | **2,391** | **348** | **971** | **507** | | | | | | | | | | | | | | | | | | |
| **Abundance of pollution-indicative taxa (number / m²)** | | | **435** | **652** | **478** | **145** | **377** | **130** | | | | | | | | | | | | | | | | | | |
| **Abundance of pollution-indicative taxa (%)** | | | **36%** | **32%** | **20%** | **42%** | **39%** | **26%** | | | | | | | | | | | | | | | | | | |
| **Abundance of pollution-sensitive taxa (number / m²)** | | | **14.49** | **0.00** | **0.00** | **0.00** | **0.00** | **14.49** | | | | | | | | | | | | | | | | | | |
| **Abundance of pollution-sensitive taxa (%)** | | | **1%** | **0%** | **0%** | **0%** | **0%** | **3%** | | | | | | | | | | | | | | | | | | |
| **Abundance of carnivore and omnivores (number / m²)** | | | **870** | **1,116** | **681** | **145** | **319** | **43** | | | | | | | | | | | | | | | | | | |
| **Abundance of carnivore and omnivores (%)** | | | **72%** | **55%** | **28%** | **42%** | **33%** | **9%** | | | | | | | | | | | | | | | | | | |
| **Tolerance Scores** | | | | | | | | | | | | | | | **7.08** | | **7.77** | | **7.94** | | **7.47** | | **7.39** | | **8.80** | |
| **Tanypodinae to Chironomidae abundance ratio (%)** | | | **0%** | **0%** | **8%** | **150%** | **1800%** | **NA [7]** | | | | | | | | | | | | | | | | | | |

[1] Species excluded from IBI calculations based on Llanso (2002)
[2] Percent abundance of pollution-indicative taxa is the percent abundance contribution of taxa classified as pollution-indicative to the total abundance of organisms in a sample.
[3] Percent abundance of pollution-sensitive taxa is the percent abundance contribution of taxa classified as pollution-sensitive to the total abundance of organisms in a sample.
[4] Percent abundance of carnivore and omnivores is the percent abundance contribution of taxa currently classified as carnivores or omnivores to the total abundance of organisms in a sample.
[5] The Tolerance Score is a weighted abundance average for taxa classified according to their sensitiveness to pollution. The Tolerance Score is based on the North Carolina biotic index of Lenat (1993):

$$\text{Tolerance Score} = \frac{\sum TV_i \cdot N_i}{\sum N_i}$$

where TVi is the tolerance value of the ith taxa, and Ni is the abundance of the ith taxa. Tolerance values for each taxa from Llanso (2002).

[6] The Tanypodinae to Chironomidae percent abundance ratio is a measure of the relative contribution of midges in the subfamily Tanypodinae to all the midges (Class Insecta, family Chironomidae) found in a sample.

[7] As only Tanypodinae were collected in this sample, the ratio of Tanypodinae to Chironomidae cannot be calculated.

**Table 4: Summary of Benthic Metrics and B-IBI Scores in Baseline 3 (2012) Monitoring Event**
SSC Pacific
Quantico, Virginia

| Within Cap Placement Area? | Within | | | | | | | | | | Outside | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | QB 1 | | QB 2 | | QB 3 | | QB 4 | | QB 5 | | QB 6 | |
| Metric | Value | Score | Value | Score | Value | Score | Value | Score | Value | Score | Value | Score |
| Total Abundance of B-IBI Taxa (number/m$^2$) | 1,203 | 5 | 2,043 | 5 | 2,391 | 5 | 348 | 3 | 971 | 5 | 507 | 5 |
| Abundance of Pollution-indicative taxa (%) | 36% | 3 | 32% | 3 | 20% | 5 | 42% | 3 | 39% | 3 | 26% | 5 |
| Abundance of Pollution-sensitive taxa (%) | 1.2% | 3 | 0.0% | 1 | 0.0% | 1 | 0.0% | 1 | 0.0% | 1 | 2.9% | 3 |
| Abundance of carnivore and omnivores (%) | 72% | 5 | 55% | 5 | 28% | 3 | 42% | 5 | 33% | 3 | 9% | 1 |
| Tolerance Score | 7.1 | 3 | 7.8 | 3 | 7.9 | 3 | 7.5 | 3 | 7.4 | 3 | 8.8 | 3 |
| Tanypodinae to Chironomidae percent abundance ratio (%) | 0% | 5 | 0% | 5 | 8% | 5 | 150% | 1 | 1800% | 1 | NC[2] | 1 |
| B-IBI Value [1] | 4.0 | | 3.7 | | 3.7 | | 2.7 | | 2.7 | | 3.0 | |

**Notes:**

1) B-IBI values are calculated as the average of scored metrics. B-IBI values > 3 indicate a station 'meets restoration goals', scores from 2.7 to 2.9 indicate marginal degradation, scores from 2.1 to 2.6 indicate degradation, and scores < 2.0 indicate severe degradation.
2) As only Tanypodinae were collected in this sample, the ratio of Tanypodinae to Chironomidae cannot be calculated and a score of 1 was assigned.

**Table 5. Summary of Benthic Community Health Metrics in Baseline 3 (2012) Monitoring Event**
SSC Pacific
Quantico, Virginia

| Within Cap Placement Area? | Within | | | | | Outside |
|---|---|---|---|---|---|---|
| **Station ID** | **QB 1** | **QB 2** | **QB 3** | **QB 4** | **QB 5** | **QB 6** |
| Total Abundance [1] | 1,348 | 2,232 | 2,478 | 362 | 1,029 | 551 |
| Species Richness [2] | 14 | 14 | 15 | 6 | 8 | 9 |
| Shannon-Wiener Diversity Index [3] | 2.01 | 2.15 | 1.60 | 1.51 | 1.31 | 1.35 |
| Pielou's Eveness [4] | 0.76 | 0.81 | 0.59 | 0.85 | 0.63 | 0.61 |
| B-IBI Value [5] | 4.0 | 3.7 | 3.7 | 2.7 | 2.7 | 3.4 |

**Notes:**

1. Total Abundance is the number of individuals divided by the sample area (US EPA 1987) - 3 x 0.023$m^2$ grab samples.
2. Species Richness is the number of different taxon collected in each composite sample.
3. Shannon-Wiener Diversity (H') is calculated as the sum of $p_i \times \ln(p_i)$ for each species in each sample (Becker et al. 2011, USEPA 1987).
4. Pielou's Evenness (J') is calculated as H' divided by the natural logarithm of the number of taxa (Becker et al. 2011, USEPA 1987).
5. B-IBI values are calculated as the average of scored metrics. B-IBI values > 3 indicate a station 'meets restoration goals', scores from 2.7 to 2.9 indicate marginal degradation, scores from 2.1 to 2.6 indicate degradation, and scores < 2.0 indicate severe degradation.

**Table 1: Counts, Abundance and Species Richness of Benthic Invertebrates in 2-Month Post Cap Monitoring Event**
SSC Pacific
Quantico, Virginia

| Taxonomic Group | | | Benthic sampling results (number of individuals found in three 0.023-$m^2$ grabs) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | **QT2-1** | **QT2-2** | **QT2-3** | **QT2-4** | **QT2-5** | **QT2-6** | **QT2-7** |
| Nematoda | -- | -- | 10 | 3 | 3 | 8 | 2 | | |
| Trepaxonemata | Planariidae | *Dugesia sp.* | | | | | | | 19 |
| Oligochaeta | Tubificidae | *Branchiura sowerbyi* | | | | 5 | 1 | 7 | 6 |
| | | *Limnodrilus sp.* | 188 | 45 | 71 | 68 | 60 | 13 | 23 |
| | | *Aulodrilus sp.* | 4 | 9 | 5 | 1 | 1 | 7 | 6 |
| | | *Rhyacodrilus sp.* | 3 | 3 | 19 | 26 | 18 | 33 | 2 |
| | Naididae | *Nais sp.* | 6 | | | | | | |
| | | *Dero sp.* | 1 | | 1 | | | | |
| | Lumbriculidae indet. | -- | | | | | | | 3 |
| Polychaeta | Spionidae | *Marenzelleria viridis* | | | | 1 | | 6 | 2 |
| Veneroidea | Mactridae | *Rangia cuneata* | | | | | | 1 | |
| | Corbiculidae | *Corbicula fluminea* | 11 | 8 | 15 | 2 | 4 | | 3 |
| | Sphaeriidae | *Musculium sp.* | | 6 | | | | | |
| | Unionoida | *Unionidae indet. (juvenile)* | | 1 | | | | | |
| Gastropoda | Physidae | *Physella heterostropha* | | | | | | | 2 |
| | Pleuroceridae | *Pleurocera sp.* | | | 1 | | | | |
| | Planorbidae | *Gyraulus sp.* | | | | | | | 1 |
| Amphipoda | Gammaridae | *Gammarus sp.* | | | 2 | | | | 264 |
| Isopoda | Anthuridae | *Cyathura polita* | 14 | 4 | 5 | 5 | 9 | | 3 |
| Decapoda | Palaemonidae | *Palaemonetes sp.* | | | | | | | 1 |
| Cumacea | Nannastacidae | *Almyracuma proximoculi* | 5 | 7 | 7 | 4 | 3 | | |
| Acariformes | Limnesiidae | *Limnesia sp.* | | 1 | | | 1 | | |
| Trichoptera | Leptoceridae | *Oecetis sp.* | 6 | 10 | 8 | 3 | 10 | | |
| | Hydroptilidae | *Othrotrichia sp.* | | | | | | | 11 |
| Lepidoptera | Pyralidae indet. (early instar lacking gills) | | | | | | | | 1 |
| Ephemeroptera | Caenidae | *Caenis sp.* | | | | | | | 5 |
| Odonata | Coenagrionidae | *Enallagma sp.* | | | | | | | 2 |
| Diptera | Ceratopogonidae | *Probezzia sp.* | | 1 | | | | | |
| | | *Sphaeromias sp.* | | 1 | | | | 1 | |
| | Chaoboridae | *Chaoborus sp.* | | 1 | | | | 8 | |
| | Chironomidae | *Coelotanypus sp.* | 7 | 52 | 50 | 51 | 2 | 75 | 29 |
| | | *Einfeldia sp.* | | 4 | 8 | 5 | | | |
| | | *Polypedilum sp.* | 39 | 34 | 140 | 32 | 75 | 2 | |
| | | *Microchironomus sp.* | | 2 | 3 | 3 | | | |
| | | *Djalmabatista sp.* | | | | | 1 | | |
| | | *Rheotanytarsus sp.* | 16 | 50 | 15 | 22 | 13 | | |
| | | *Cryptochironomus sp.* | 8 | 5 | 8 | 3 | 7 | 6 | 1 |
| | | *Chironomus sp.* | 1 | 1 | 1 | 11 | | | 2 |
| | | *Pseudochironomus sp.* | 7 | 7 | 6 | 1 | 8 | | |
| | | *Dicrotendipes sp.* | | | 1 | 2 | | 2 | 9 |
| | | *Orthocladius sp.* | 1 | 3 | 2 | | | | |
| | | *Tanytarsus sp.* | 1 | | 2 | | 2 | 2 | 10 |
| | | *Nanocladius sp.* | | | | | | | 27 |
| | | *Procladius sp.* | 4 | 14 | 13 | 6 | 9 | 2 | 6 |
| | | *Microspectra sp.* | 2 | 1 | | | 2 | | |
| | | *Glyptotendipes sp.* | | | 3 | | 3 | | |
| **Total Number of Individuals [2]** | | | 334 | 273 | 389 | 259 | 231 | 165 | 438 |
| **Total Abundance (individuals per $m^2$) [3]** | | | 4,841 | 3,957 | 5,638 | 3,754 | 3,348 | 2,391 | 6,348 |
| **Species Richness (total number of taxa) [4]** | | | 20 | 25 | 24 | 20 | 20 | 14 | 24 |

**Notes**

1. Samples were collected in October 2014 by ENVIRON International Corporation. Benthic macroinvertebrate were identified to the lowest taxonomic level.
2. Number of Individuals is the total number of identifiable benthic invertebrate collected in each composite sample.
3. Total Abundance is the number of individuals divided by the sample area (US EPA 1987). Area sampled at each station was 0.069 $m^2$ (0.023 $m^2$ multiplied by three grab samples).
4. Species Richness is the number of different taxon collected in each composite sample.

**Table 2. Calculation of Shannon-Wiener Diversity and Pielou's Evenness in 2-Month Post Cap Monitoring Event**
SSC Pacific
Quantico, Virginia

| Taxonomic Group | | | $p_i \times \ln(p_i)$ [1] | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | QT2-1 | QT2-2 | QT2-3 | QT2-4 | QT2-5 | QT2-6 | QT2-7 |
| Nematoda | -- | -- | -0.11 | -0.05 | -0.04 | -0.11 | -0.04 | | |
| Trepaxonemata | Planariidae | *Dugesia sp.* | | | | | | | -0.14 |
| Oligochaeta | Tubificidae | *Branchiura sowerbyi* | | | | -0.08 | -0.02 | -0.13 | -0.06 |
| | | *Limnodrilus sp.* | -0.32 | -0.30 | -0.31 | -0.35 | -0.35 | -0.20 | -0.15 |
| | | *Aulodrilus sp.* | -0.05 | -0.11 | -0.06 | -0.02 | -0.02 | -0.13 | -0.06 |
| | | *Rhyacodrilus sp.* | -0.04 | -0.05 | -0.15 | -0.23 | -0.20 | -0.32 | -0.02 |
| | Naididae | *Nais sp.* | -0.07 | | | | | | |
| | | *Dero sp.* | -0.02 | | -0.02 | | | | |
| | Lumbriculidae indet. | -- | | | | | | | -0.03 |
| Polychaeta | Spionidae | *Marenzelleria viridis* | | | | -0.02 | | -0.12 | -0.02 |
| Veneroidea | Mactridae | *Rangia cuneata* | | | | | | -0.03 | |
| | Corbiculidae | *Corbicula fluminea* | -0.11 | -0.10 | -0.13 | -0.04 | -0.07 | | -0.03 |
| | Sphaeriidae | *Musculium sp.* | | -0.08 | | | | | |
| | Unionoida | *Unionidae indet. (juvenile)* | | -0.02 | | | | | |
| Gastropoda | Physidae | *Physella heterostropha* | | | | | | | -0.02 |
| | Pleuroceridae | *Pleurocera sp.* | | | -0.02 | | | | |
| | Planorbidae | *Gyraulus sp.* | | | | | | | -0.01 |
| Amphipoda | Gammaridae | *Gammarus sp.* | | | -0.03 | | | | -0.31 |
| Isopoda | Anthuridae | *Cyathura polita* | -0.13 | -0.06 | -0.06 | -0.08 | -0.13 | | -0.03 |
| Decapoda | Palaemonidae | *Palaemonetes sp.* | | | | | | | -0.01 |
| Cumacea | Nannastacidae | *Almyracuma proximoculi* | -0.06 | -0.09 | -0.07 | -0.06 | -0.06 | | |
| Acariformes | Limnesiidae | *Limnesia sp.* | | -0.02 | | | -0.02 | | |
| Trichoptera | Leptoceridae | *Oecetis sp.* | -0.07 | -0.12 | -0.08 | -0.05 | -0.14 | | |
| | Hydroptilidae | *Othrotrichia sp.* | | | | | | | -0.09 |
| Lepidoptera | Pyralidae indet. (early instar lacking gills) | | | | | | | | -0.01 |
| Ephemeroptera | Caenidae | *Caenis sp.* | | | | | | | -0.05 |
| Odonata | Coenagrionidae | *Enallagma sp.* | | | | | | | -0.02 |
| Diptera | Ceratopogonidae | *Probezzia sp.* | | -0.02 | | | | | |
| | | *Sphaeromias sp.* | | -0.02 | | | | -0.03 | |
| | Chaoboridae | *Chaoborus sp.* | | -0.02 | | | | -0.15 | |
| | Chironomidae | *Coelotanypus sp.* | -0.08 | -0.32 | -0.26 | -0.32 | -0.04 | -0.36 | -0.18 |
| | | *Einfeldia sp.* | | -0.06 | -0.08 | -0.08 | | | |
| | | *Polypedilum sp.* | -0.25 | -0.26 | -0.37 | -0.26 | -0.37 | -0.05 | |
| | | *Microchironomus sp.* | | -0.04 | -0.04 | -0.05 | | | |
| | | *Djalmabatista sp.* | | | | | -0.02 | | |
| | | *Rheotanytarsus sp.* | -0.15 | -0.31 | -0.13 | -0.21 | -0.16 | | |
| | | *Cryptochironomus sp.* | -0.09 | -0.07 | -0.08 | -0.05 | -0.11 | -0.12 | -0.01 |
| | | *Chironomus sp.* | -0.02 | -0.02 | -0.02 | -0.13 | | | -0.02 |
| | | *Pseudochironomus sp.* | -0.08 | -0.09 | -0.06 | -0.02 | -0.12 | | |
| | | *Dicrotendipes sp.* | | | -0.02 | -0.04 | | -0.05 | -0.08 |
| | | *Orthocladius sp.* | -0.02 | -0.05 | -0.03 | | | | |
| | | *Tanytarsus sp.* | -0.02 | | -0.03 | | -0.04 | -0.05 | -0.09 |
| | | *Nanocladius sp.* | | | | | | | -0.17 |
| | | *Procladius sp.* | -0.05 | -0.15 | -0.11 | -0.09 | -0.13 | -0.05 | -0.06 |
| | | *Microspectra sp.* | -0.03 | -0.02 | | | -0.04 | | |
| | | *Glyptotendipes sp.* | | | -0.04 | | -0.06 | | |
| **Shannon-Weiner Diversity (H') [2]** | | | **1.78** | **2.47** | **2.20** | **2.29** | **2.13** | **1.81** | **1.71** |
| **Pielou's Evenness (J') [3]** | | | **0.59** | **0.77** | **0.69** | **0.76** | **0.71** | **0.69** | **0.54** |

**Notes**
1. $p_i$ is the proportion of individuals in species $i$ to the total number of individuals in each sample. Ln is the natural logarithm of $p_i$.
2. Shannon-Wiener Diversity (H') is calculated as the sum of $p_i \times \ln(p_i)$ for each species in each sample (Becker et al. 2011, USEPA 1987).
3. Pielou's Evenness (J') is calculated as H' divided by the natural logarithm of the number of taxa (Becker et al. 2011, USEPA 1987).

**Table 3. Calculation of Metrics Used in the Benthic Index of Biotic Integrity (B-IBI) in 2-Month Post Cap Monitoring Event**
SSC Pacific
Quantico, Virginia

| Taxonomic Group | | | Benthic sampling results (number of individuals found in three 0.023-$m^2$ grabs) | | | | | | | Exclude from B-IBI Calculations? [1] | Oligohaline pollution-indicative taxa [2] | Oligohaline pollution-sensitive taxa [3] | Species classified as carnivores-omnivores [4] | Tolerance Values [5] | Tanypodinae or Chironomidae [6] | Tolerance Scores [5] | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | QT2-1 | | QT2-2 | | QT2-3 | | QT2-4 | | QT2-5 | | QT2-6 | | QT2-7 | |
| **Order** | **Family** | **Genus/Species** | **QT2-1** | **QT2-2** | **QT2-3** | **QT2-4** | **QT2-5** | **QT2-6** | **QT2-7** | | | | | | | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* |
| Nematoda | -- | -- | 10 | 3 | 3 | 8 | 2 | | | X | | | | | | | | | | | | | | | | | | | |
| Trepaxonemata | Planariidae | *Dugesia sp.* | | | | | | | 19 | | | | | | | | | | | | | | | | | | | | |
| Oligochaeta | Tubificidae | *Branchiura sowerbyi* | | | | 5 | 1 | 7 | 6 | | X | | | 8.4 | | | | | | | | 609 | 72 | 122 | 14 | 852 | 101 | 730 | 87 |
| | | *Limnodrilus sp.* | 188 | 45 | 71 | 68 | 60 | 13 | 23 | | X | | | 10 | | 27,246 | 2,725 | 6,522 | 652 | 10,290 | 1,029 | 9,855 | 986 | 8,696 | 870 | 1,884 | 188 | 3,333 | 333 |
| | | *Aulodrilus sp.* | 4 | 9 | 5 | 1 | 1 | 7 | 6 | | X | | | 4.7 | | 272 | 58 | 613 | 130 | 341 | 72 | 68 | 14 | 68 | 14 | 477 | 101 | 409 | 87 |
| | | *Rhyacodrilus sp.* | 3 | 3 | 19 | 26 | 18 | 33 | 2 | | | | | | | | | | | | | | | | | | | | |
| | Naididae | *Nais sp.* | 6 | | | | | | | | | | | 8 | | 696 | 87 | | | | | | | | | | | | |
| | | *Dero sp.* | 1 | | 1 | | | | | | | | | 10 | | 145 | 14 | | | 145 | 14 | | | | | | | | |
| | Lumbriculidae indet. | -- | | | | | | | 3 | | | | | 7.3 | | | | | | | | | | | | | | 317 | 43 |
| Polychaeta | Spionidae | *Marenzelleria viridis* | | | | 1 | | 6 | 2 | | | X | | | | | | | | | | | | | | | | | |
| Veneroidea | Mactridae | *Rangia cuneata* | | | | | | 1 | | | | | | 6 | | | | | | | | | | | | 87 | 14 | | |
| | Corbiculidae | *Corbicula fluminea* | 11 | 8 | 15 | 2 | 4 | | 3 | | X | | | 6.3 | | 1,004 | 159 | 730 | 116 | 1,370 | 217 | 183 | 29 | 365 | 58 | | | 274 | 43 |
| | Sphaeriidae | *Musculium sp.* | | 6 | | | | | | | | | | 7.7 | | | | 670 | 87 | | | | | | | | | | |
| | Unionoida | *Unionidae indet. (juvenile)* | | 1 | | | | | | | | | | 3.6 | | | | 52 | 14 | | | | | | | | | | |
| Gastropoda | Physidae | *Physella heterostropha* | | | | | | | 2 | X | | | | | | | | | | | | | | | | | | | |
| | Pleuroceridae | *Pleurocera sp.* | | | 1 | | | | | X | | | | | | | | | | | | | | | | | | | |
| | Planorbidae | *Gyraulus sp.* | | | | | | | 1 | X | | | | | | | | | | | | | | | | | | | |
| Amphipoda | Gammaridae | *Gammarus sp.* | | | 2 | | | | 264 | X | | | | | | | | | | | | | | | | | | | |
| Isopoda | Anthuridae | *Cyathura polita* | 14 | 4 | 5 | 5 | 9 | | 3 | | | | X | | | | | | | | | | | | | | | | |
| Decapoda | Palaemonidae | *Palaemonetes sp.* | | | | | | | 1 | X | | | | | | | | | | | | | | | | | | | |
| Cumacea | Nannastacidae | *Almyracuma proximoculi* | 5 | 7 | 7 | 4 | 3 | | | | | | | | | | | | | | | | | | | | | | |
| Acariformes | Limnesiidae | *Limnesia sp.* | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | |
| Trichoptera | Leptoceridae | *Oecetis sp.* | 6 | 10 | 8 | 3 | 10 | | | X | | | | | | | | | | | | | | | | | | | |
| | Hydroptilidae | *Othrotrichia sp.* | | | | | | | 11 | X | | | | | | | | | | | | | | | | | | | |
| Lepidoptera | Pyralidae indet. (early instar lacking gills) | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | |
| Ephemeroptera | Caenidae | *Caenis sp.* | | | | | | | 5 | X | | | | | | | | | | | | | | | | | | | |
| Odonata | Coenagrionidae | *Enallagma sp.* | | | | | | | 2 | | | | | | | | | | | | | | | | | | | | |
| Diptera | Ceratopogonidae | *Probezzia sp.* | | 1 | | | | | | | | | X | 6 | | | | 87 | 14 | | | | | | | | | | |
| | | *Sphaeromias sp.* | | 1 | | | | 1 | | | | | X | | | | | | | | | | | | | | | | |
| | Chaoboridae | *Chaoborus sp.* | | 1 | | | | 8 | | | | | X | 8.5 | | | | 123 | 14 | | | | | | | 986 | 116 | | |
| | Chironomidae | *Coelotanypus sp.* | 7 | 52 | 50 | 51 | 2 | 75 | 29 | | X | | X | 6.2 | T | 629 | 101 | 4,672 | 754 | 4,493 | 725 | 4,583 | 739 | 180 | 29 | 6,739 | 1,087 | 2,606 | 420 |
| | | *Einfeldia sp.* | | 4 | 8 | 5 | | | | | | | X | | C | | | | | | | | | | | | | | |
| | | *Polypedilum sp.* | 39 | 34 | 140 | 32 | 75 | 2 | | | X | | X | 6.7 | C | 3,787 | 565 | 3,301 | 493 | 13,594 | 2,029 | 3,107 | 464 | 7,283 | 1,087 | 194 | 29 | | |
| | | *Microchironomus sp.* | | 2 | 3 | 3 | | | | | | | X | 8 | C | | | 232 | 29 | 348 | 43 | 348 | 43 | | | | | | |
| | | *Djalmabatista sp.* | | | | | 1 | | | | | | X | | C | | | | | | | | | | | | | | |
| | | *Rheotanytarsus sp.* | 16 | 50 | 15 | 22 | 13 | | | | | | X | 6.4 | C | 1,484 | 232 | 4,638 | 725 | 1,391 | 217 | 2,041 | 319 | 1,206 | 188 | | | | |
| | | *Cryptochironomus sp.* | 8 | 5 | 8 | 3 | 7 | 6 | 1 | | | | X | 7.3 | C | 846 | 116 | 529 | 72 | 846 | 116 | 317 | 43 | 741 | 101 | 635 | 87 | 106 | 14 |
| | | *Chironomus sp.* | 1 | 1 | 1 | 11 | | | 2 | | X | | X | 9.8 | C | 142 | 14 | 142 | 14 | 142 | 14 | 1,562 | 159 | | | | | 284 | 29 |
| | | *Pseudochironomus sp.* | 7 | 7 | 6 | 1 | 8 | | | | | | X | 4.2 | C | 426 | 101 | 426 | 101 | 365 | 87 | 61 | 14 | 487 | 116 | | | | |
| | | *Dicrotendipes sp.* | | | 1 | 2 | | 2 | 9 | | | | X | 7.9 | C | | | | | 114 | 14 | 229 | 29 | | | 229 | 29 | 1,030 | 130 |
| | | *Orthocladius sp.* | 1 | 3 | 2 | | | | | | | | X | 6 | C | 87 | 14 | 261 | 43 | 174 | 29 | | | | | | | | |
| | | *Tanytarsus sp.* | 1 | | 2 | | 2 | 2 | 10 | | | | X | 6.7 | C | 97 | 14 | | | 194 | 29 | | | 194 | 29 | 194 | 29 | 971 | 145 |
| | | *Nanocladius sp.* | | | | | | | 27 | | | | X | 7.2 | C | | | | | | | | | | | | | 2,817 | 391 |
| | | *Procladius sp.* | 4 | 14 | 13 | 6 | 9 | 2 | 6 | | X | | X | 9.3 | T | 539 | 58 | 1,887 | 203 | 1,752 | 188 | 809 | 87 | 1,213 | 130 | 270 | 29 | 809 | 87 |
| | | *Microspectra sp.* | 2 | 1 | | | 2 | | | | | | X | | C | | | | | | | | | | | | | | |
| | | *Glyptotendipes sp.* | | | 3 | | 3 | | | | X | | X | 8.5 | C | | | | | 370 | 43 | | | 370 | 43 | | | | |
| **Total Abundance of B-IBI Taxa (number/$m^2$)** | | | **4,609** | **3,768** | **5,435** | **3,594** | **3,174** | **2,391** | **2,232** | | | | | | | | | | | | | | | | | | | | |
| **Abundance of pollution-indicative taxa (number/$m^2$)** | | | **3,681** | **2,362** | **4,319** | **2,551** | **2,246** | **1,536** | **1,087** | | | | | | | | | | | | | | | | | | | | |
| **Abundance of pollution-indicative taxa (%)** | | | **80%** | **63%** | **79%** | **71%** | **71%** | **64%** | **48.7%** | | | | | | | | | | | | | | | | | | | | |
| **Abundance of pollution-sensitive taxa (number/$m^2$)** | | | **0** | **0** | **0** | **14.5** | **0** | **87.0** | **29.0** | | | | | | | | | | | | | | | | | | | | |
| **Abundance of pollution-sensitive taxa (%)** | | | **0%** | **0%** | **0%** | **0.4%** | **0%** | **3.6%** | **1.3%** | | | | | | | | | | | | | | | | | | | | |
| **Abundance of carnivore and omnivores (number/$m^2$)** | | | **1,449** | **2,609** | **3,725** | **2,043** | **1,899** | **1,420** | **1,261** | | | | | | | | | | | | | | | | | | | | |
| **Abundance of carnivore and omnivores (%)** | | | **31%** | **69%** | **69%** | **57%** | **60%** | **59%** | **56%** | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | **Tolerance Scores** | **8.78** | | **7.18** | | **7.38** | | **7.92** | | **7.80** | | **6.93** | | **7.56** | |
| **Tanypodinae to Chironomidae abundance ratio (%)** | | | **15%** | **62%** | **33%** | **72%** | **10%** | **642%** | **71%** | | | | | | | | | | | | | | | | | | | | |

**Notes**
1. Species excluded from IBI calculations based on Llanso (2002).
2. Percent abundance of pollution-indicative taxa is the percent abundance contribution of taxa classified as pollution-indicative to the total abundance of organisms in a sample.
3. Percent abundance of pollution-sensitive taxa is the percent abundance contribution of taxa classified as pollution-sensitive to the total abundance of organisms in a sample.
4. Percent abundance of carnivore and omnivores is the percent abundance contribution of taxa currently classified as carnivores or omnivores to the total abundance of organisms in a sample.
5. The Tolerance Score is a weighted abundance average for taxa classified according to their sensitiveness to pollution. The Tolerance Score is based on the North Carolina biotic index of Lenat (1993):

$$\text{Tolerance Score} = \frac{\sum TV_i \cdot N_i}{\sum N_i}$$

where TVi is the tolerance value of the ith taxa, and Ni is the abundance of the ith taxa. Tolerance values for each taxa from Llanso (2002).

6. The Tanypodinae to Chironomidae percent abundance ratio is a measure of the relative contribution of midges in the subfamily Tanypodinae to all the midges (Class Insecta, family Chironomidae) found in a sample.

**Table 4. Calculation of Benthic Index of Biotic Integrity (B-IBI) in 2-Month Post Cap Monitoring Event**
SSC Pacific
Quantico, Virginia

| Within Cap Placement Area? | Within | | | | | | | | | | Outside | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | QT2-1 | | QT2-2 | | QT2-3 | | QT2-4 | | QT2-5 | | QT2-6 | | QT2-7 | |
| Metric | Value | Score | Value | Score | Value | Score | Value | Score | Value | Score | Value | Score | Value | Score |
| Total Abundance of B-IBI Taxa (number/$m^2$) | 4,609 | 1 | 3,768 | 3 | 5,435 | 1 | 3,594 | 3 | 3,174 | 5 | 2,391 | 5 | 2,232 | 5 |
| Abundance of Pollution-Indicative Taxa (%) | 80% | 3 | 63% | 3 | 79% | 3 | 71% | 3 | 71% | 3 | 64% | 3 | 49% | 3 |
| Abundance of Pollution-Sensitive Taxa (%) | 0% | 1 | 0% | 1 | 0% | 1 | 0.4% | 3 | 0% | 1 | 3.6% | 3 | 1.3% | 3 |
| Abundance of Carnivore and Omnivores (%) | 31% | 3 | 69% | 5 | 69% | 5 | 57% | 5 | 60% | 5 | 59% | 5 | 56% | 5 |
| Tolerance Score | 8.78 | 3 | 7.18 | 3 | 7.38 | 3 | 7.92 | 3 | 7.80 | 3 | 6.93 | 3 | 7.56 | 3 |
| Tanypodinae to Chironomidae Percent Abundance Ratio (%) | 15% | 5 | 62% | 3 | 33% | 3 | 72% | 1 | 10% | 5 | 642% | 1 | 71% | 1 |
| B-IBI Value [1] | | 2.7 | | 3.0 | | 2.7 | | 3.0 | | 3.7 | | 3.3 | | 3.3 |

**Notes:**
1. B-IBI Value is calculated as the average of scored metrics. B-IBI values > 3 indicate a station 'meets restoration goals', scores from 2.7 to 2.9 indicate scores from 2.1 to 2.6 indicate degradation, and scores <2.0 indicate severe

**Table 5. Summary of Benthic Community Health Metrics in 2-Month Post Cap Monitoring Event**
SSC Pacific
Quantico, Virginia

| Within Cap Placement Area? | Within | | | | | Outside | |
|---|---|---|---|---|---|---|---|
| **Station ID** | **QT2-1** | **QT2-2** | **QT2-3** | **QT2-4** | **QT2-5** | **QT2-6** | **QT2-7** |
| Total Abundance [1] | 4,841 | 3,957 | 5,638 | 3,754 | 3,348 | 2,391 | 6,348 |
| Species Richness [2] | 20 | 25 | 24 | 20 | 20 | 14 | 24 |
| Shannon-Wiener Diversity Index [3] | 1.78 | 2.47 | 2.20 | 2.29 | 2.13 | 1.81 | 1.71 |
| Pielou's Eveness [4] | 0.59 | 0.77 | 0.69 | 0.76 | 0.71 | 0.69 | 0.54 |
| B-IBI Score [5] | 2.7 | 3.0 | 2.7 | 3.0 | 3.7 | 3.3 | 3.3 |

**Notes:**

1. Total Abundance is the number of individuals divided by the sample area (US EPA 1987) - 3 x 0.023$m^2$ grab samples.
2. Species Richness is the number of different taxon collected in each composite sample.
3. Shannon-Wiener Diversity (H') is calculated as the sum of $p_i \times \ln(p_i)$ for each species in each sample (Becker et al. 2011, USEPA 1987).
4. Pielou’s Evenness (J') is calculated as H' divided by the natural logarithm of the number of taxa (Becker et al. 2011, USEPA 1987).
5. B-IBI values are calculated as the average of scored metrics. B-IBI values > 3 indicate a station 'meets restoration goals', scores from 2.7 to 2.9 indicate marginal degradation, scores from 2.1 to 2.6 indicate degradation, and scores < 2.0 indicate severe degradation.

**Table 1: Counts, Abundance and Species Richness of Benthic Invertebrates in 14-Month Post Cap Monitoring Event**
SSC Pacific
Quantico, Virginia

| Taxonomic Group | | | Benthic sampling results (number of individuals found in three 0.023-$m^2$ grabs) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | QT14-1 | QT14-2 | QT14-3 | QT14-4 | QT14-5 | QT14-6 | QT14-7 |
| Nematoda | -- | -- | 18 | 15 | 11 | 43 | 31 | | 1 |
| Cnidaria | Olindiidae | *Craspedacusta sowerbyi (hydromedusae polyp)* | | | | | | 1 | |
| Oligochaeta | Tubificidae | *Branchiura sowerbyi* | | | | | | 11 | 9 |
| | | *Aulodrilus spp.* | | 4 | 2 | 2 | 8 | 22 | 2 |
| | | *Limnodrilus spp.* | 31 | 119 | 81 | 44 | 119 | 24 | 17 |
| | | *Rhyacodrilus spp.* | 7 | 6 | 3 | 2 | 3 | 4 | |
| | Naididae | *Nais spp.* | 29 | 19 | 14 | 22 | 10 | 1 | |
| | | *Paranais spp.* | 16 | 12 | 28 | 15 | 11 | | |
| | | *Pristina longiseta* | 1 | | 1 | | | | 1 |
| Polychaeta | Spionidae | *Marenzelleria viridis* | 7 | 5 | 4 | 10 | 12 | 6 | 2 |
| Veneroidea | Mactridae | *Rangia cuneata* | | | | 1 | | | |
| | Corbiculidae | *Corbicula fluminea* | 4 | 4 | 6 | 3 | 7 | 1 | 1 |
| | Sphaeriidae | *Musculium sp.* | 4 | 1 | 5 | 5 | 3 | 6 | |
| Amphipoda | Gammaridae | *Gammarus sp.* | 1 | 1 | 1 | 1 | 13 | 13 | |
| | Hyalellidae | *Hyalella spp.* | 1 | 3 | 3 | 4 | 1 | | |
| Isopoda | Anthuridae | *Cyathura polita* | 5 | 12 | 8 | 13 | 17 | 1 | 1 |
| Cumacea | Nannastacidae | *Almyracuma proximoculi* | | 20 | 33 | 3 | 10 | | |
| Cladocera | - | - | 101 | | | | 2 | | |
| Ostracoda | - | - | 4 | 5 | 7 | 6 | 2 | 3 | |
| Acariformes | Hydrachnidae indet. | - | 1 | | 1 | 1 | | | |
| | Limnesiidae | *Limnesia sp.* | 1 | | | | | 1 | |
| Trichoptera | Leptoceridae | *Oecetis sp.* | | | 3 | 3 | 3 | | |
| Ephemeroptera | Caenidae | *Caenis sp.* | 1 | | | | 1 | | |
| | Baetidae | *Centroptilum spp.* | 3 | | | | | | |
| Diptera | Chironomidae | *Coelotanypus sp.* | | | | | | 19 | 5 |
| | | *Polypedilum sp.* | 91 | 90 | 118 | 122 | 125 | | |
| | | *Rheotanytarsus sp.* | 42 | 37 | 27 | 35 | 37 | 1 | |
| | | *Cryptochironomus sp.* | 9 | 8 | 5 | 6 | 8 | 3 | |
| | | *Chironomus sp.* | | 1 | | 11 | 3 | 6 | |
| | | *Pseudochironomus sp.* | 2 | | | | | | |
| | | *Orthocladius sp.* | | | | | 2 | 1 | |
| | | *Paratanytarsus sp.* | 1 | 1 | 1 | | | | |
| | | *Tanytarsus sp.* | 3 | | 1 | | | | |
| | | *Procladius sp.* | 1 | 2 | | 3 | 8 | 4 | |
| | | *Microspectra sp.* | | | | | 1 | | |
| **Total Number of Individuals [2]** | | | 384 | 365 | 363 | 355 | 437 | 128 | 39 |
| **Total Abundance (individuals per $m^2$) [3]** | | | 5,565 | 5,290 | 5,261 | 5,145 | 6,333 | 1,855 | 565 |
| **Species Richness (total number of taxa) [4]** | | | 25 | 20 | 22 | 22 | 24 | 19 | 9 |

**Notes**

1. Samples were collected in October 2015 by Ramboll Environ US Corp. Benthic macroinvertebrate were identified to the lowest taxonomic level.
2. Number of Individuals is the total number of identifiable benthic invertebrate collected in each composite sample.
3. Total Abundance is the number of individuals divided by the sample area (US EPA 1987). Area sampled at each station was 0.069 $m^2$ (0.023 $m^2$ multiplied by three grab samples).
4. Species Richness is the number of different taxon collected in each composite sample.

**Table 2. Calculation of Shannon-Wiener Diversity and Pielou's Evenness in 14-Month Post Cap Monitoring Event**
SSC Pacific
Quantico, Virginia

| Taxonomic Group | | | $p_i \times \ln(p_i)$ [1] | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | QT14-1 | QT14-2 | QT14-3 | QT14-4 | QT14-5 | QT14-6 | QT14-7 |
| Nematoda | -- | -- | -0.14 | -0.13 | -0.11 | -0.26 | -0.19 | | -0.09 |
| Cnidaria | Olindiidae | *Craspedacusta sowerbyi (hydromedusae polyp)* | | | | | | -0.04 | |
| Oligochaeta | Tubificidae | *Branchiura sowerbyi* | | | | | | -0.21 | -0.34 |
| | | *Aulodrilus spp.* | | -0.05 | -0.03 | -0.03 | -0.07 | -0.30 | -0.15 |
| | | *Limnodrilus spp.* | -0.20 | -0.37 | -0.33 | -0.26 | -0.35 | -0.31 | -0.36 |
| | | *Rhyacodrilus spp.* | -0.07 | -0.07 | -0.04 | -0.03 | -0.03 | -0.11 | |
| | Naididae | *Nais spp.* | -0.20 | -0.15 | -0.13 | -0.17 | -0.09 | -0.04 | |
| | | *Paranais spp.* | -0.13 | -0.11 | -0.20 | -0.13 | -0.09 | | |
| | | *Pristina longiseta* | -0.02 | | -0.02 | | | | -0.09 |
| Polychaeta | Spionidae | *Marenzelleria viridis* | -0.07 | -0.06 | -0.05 | -0.10 | -0.10 | -0.14 | -0.15 |
| Veneroidea | Mactridae | *Rangia cuneata* | | | | -0.02 | | | |
| | Corbiculidae | *Corbicula fluminea* | -0.05 | -0.05 | -0.07 | -0.04 | -0.07 | -0.04 | -0.09 |
| | Sphaeriidae | *Musculium sp.* | -0.05 | -0.02 | -0.06 | -0.06 | -0.03 | -0.14 | |
| Amphipoda | Gammaridae | *Gammarus sp.* | -0.02 | -0.02 | -0.02 | -0.02 | -0.10 | -0.23 | |
| | Hyalellidae | *Hyalella spp.* | -0.02 | -0.04 | -0.04 | -0.05 | -0.01 | | |
| Isopoda | Anthuridae | *Cyathura polita* | -0.06 | -0.11 | -0.08 | -0.12 | -0.13 | -0.04 | -0.09 |
| Cumacea | Nannastacidae | *Almyracuma proximoculi* | | -0.16 | -0.22 | -0.04 | -0.09 | | |
| Cladocera | - | - | -0.35 | | | | -0.02 | | |
| Ostracoda | - | - | -0.05 | -0.06 | -0.08 | -0.07 | -0.02 | -0.09 | |
| Acariformes | Hydrachnidae indet. | - | -0.02 | | -0.02 | -0.02 | | | |
| | Limnesiidae | *Limnesia sp.* | -0.02 | | | | | -0.04 | |
| Trichoptera | Leptoceridae | *Oecetis sp.* | | | -0.04 | -0.04 | -0.03 | | |
| Ephemeroptera | Caenidae | *Caenis sp.* | -0.02 | | | | -0.01 | | |
| | Baetidae | *Centroptilum spp.* | -0.04 | | | | | | |
| Diptera | Chironomidae | *Coelotanypus spp.* | | | | | | -0.28 | -0.26 |
| | | *Polypedilum spp.* | -0.34 | -0.35 | -0.37 | -0.37 | -0.36 | | |
| | | *Rheotanytarsus spp.* | -0.24 | -0.23 | -0.19 | -0.23 | -0.21 | -0.04 | |
| | | *Cryptochironomus spp.* | -0.09 | -0.08 | -0.06 | -0.07 | -0.07 | -0.09 | |
| | | *Chironomus spp.* | | -0.02 | | -0.11 | -0.03 | -0.14 | |
| | | *Pseudochironomus spp.* | -0.03 | | | | | | |
| | | *Orthocladius spp.* | | | | | -0.02 | -0.04 | |
| | | *Paratanytarsus spp.* | -0.02 | -0.02 | -0.02 | | | | |
| | | *Tanytarsus spp.* | -0.04 | | -0.02 | | | | |
| | | *Procladius spp.* | -0.02 | -0.03 | | -0.04 | -0.07 | -0.11 | |
| | | *Microspectra sp.* | | | | | -0.01 | | |
| **Shannon-Weiner Diversity (H') [2]** | | | **2.27** | **2.11** | **2.16** | **2.26** | **2.24** | **2.43** | **1.64** |
| **Pielou's Evenness (J') [3]** | | | **0.70** | **0.70** | **0.70** | **0.73** | **0.71** | **0.83** | **0.75** |

**Notes**
1. $p_i$ is the proportion of individuals in species *i* to the total number of individuals in each sample. Ln is the natural logarithm of $p_i$.
2. Shannon-Wiener Diversity (H') is calculated as the sum of $p_i \times \ln(p_i)$ for each species in each sample (Becker et al. 2011, USEPA 1987).
3. Pielou's Evenness (J') is calculated as H' divided by the natural logarithm of the number of taxa (Becker et al. 2011, USEPA 1987).

**Table 3. Calculation of Metrics Used in the Benthic Index of Biotic Integrity (B-IBI)in 14-Month Post Cap Monitoring Event**
SSC Pacific
Quantico, Virginia

| Taxonomic Group | | | Benthic sampling results (number of individuals found in three 0.023-$m^2$ grabs) | | | | | | | Exclude from B-IBI Calculations? [1] | Oligohaline pollution-indicative taxa [2] | Oligohaline pollution-sensitive taxa [3] | Species classified as carnivores-omnivores [4] | Tolerance Values [5] | Tanypodinae or Chironomidae [6] | Tolerance Scores [5] | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Order | Family | Genus/Species | QT14-1 | QT14-2 | QT14-3 | QT14-4 | QT14-5 | QT14-6 | QT14-7 | | | | | | | QT14-1 | | QT14-2 | | QT14-3 | | QT14-4 | | QT14-5 | | QT14-6 | | QT14-7 | |
| | | | | | | | | | | | | | | | | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* |
| Nematoda | -- | -- | 18 | 15 | 11 | 43 | 31 | | 1 | X | | | | | | | | | | | | | | | | | | | |
| Cnidaria | Olindiidae | *Craspedacusta sowerbyi (hydromedusae polyp)* | | | | | | 1 | | X | | | | | | | | | | | | | | | | | | | |
| Oligochaeta | Tubificidae | *Branchiura sowerbyi* | | | | | | 11 | 9 | | X | | | 8.4 | | | | | | | | | | | | 1,339 | 159 | 1,096 | 130 |
| | | *Aulodrilus spp.* | | 4 | 2 | 2 | 8 | 22 | 2 | | X | | | 4.7 | | | | 272 | 58 | 136 | 29 | 136 | 29 | 545 | 116 | 1,499 | 319 | 136 | 29 |
| | | *Limnodrilus spp.* | 31 | 119 | 81 | 44 | 119 | 24 | 17 | | X | | | 10 | | 4,493 | 449 | #### | 1,725 | #### | 1,174 | 6,377 | 638 | #### | 1,725 | 3,478 | 348 | 2,464 | 246 |
| | | *Rhyacodrilus spp.* | 7 | 6 | 3 | 2 | 3 | 4 | | | | | | | | | | | | | | | | | | | | | |
| | Naididae | *Nais spp.* | 29 | 19 | 14 | 22 | 10 | 1 | | | | | | 8 | | 3,362 | 420 | 2,203 | 275 | 1,623 | 203 | 2,551 | 319 | 1,159 | 145 | 116 | 14 | | |
| | | *Paranais spp.* | 16 | 12 | 28 | 15 | 11 | | | | | | | | | | | | | | | | | | | | | | |
| | | *Pristina longiseta* | 1 | | 1 | | | | 1 | | | | | | | | | | | | | | | | | | | | |
| Polychaeta | Spionidae | *Marenzelleria viridis* | 7 | 5 | 4 | 10 | 12 | 6 | 2 | | | X | | | | | | | | | | | | | | | | | |
| Veneroidea | Mactridae | *Rangia cuneata* | | | | 1 | | | | | | | | 6 | | | | | | | | 87 | 14 | | | | | | |
| | Corbiculidae | *Corbicula fluminea* | 4 | 4 | 6 | 3 | 7 | 1 | 1 | | X | | | 6.3 | | 365 | 58 | 365 | 58 | 548 | 87 | 274 | 43 | 639 | 101 | 91 | 14 | 91 | 14 |
| | Sphaeriidae | *Musculium sp.* | 4 | 1 | 5 | 5 | 3 | 6 | | | | | | 7.7 | | 446 | 58 | 112 | 14 | 558 | 72 | 558 | 72 | 335 | 43 | 670 | 87 | | |
| Amphipoda | Gammaridae | *Gammarus sp.* | 1 | 1 | 1 | 1 | 13 | 13 | | X | | | | | | | | | | | | | | | | | | | |
| | Hyalellidae | *Hyalella spp.* | 1 | 3 | 3 | 4 | 1 | | | | | | | | | | | | | | | | | | | | | | |
| Isopoda | Anthuridae | *Cyathura polita* | 5 | 12 | 8 | 13 | 17 | 1 | 1 | | | X | | | | | | | | | | | | | | | | | |
| Cumacea | Nannastacidae | *Almyracuma proximoculi* | | 20 | 33 | 3 | 10 | | | | | | | | | | | | | | | | | | | | | | |
| Cladocera | - | - | 101 | | | | 2 | | | | | | | | | | | | | | | | | | | | | | |
| Ostracoda | - | - | 4 | 5 | 7 | 6 | 2 | 3 | | | | | | | | | | | | | | | | | | | | | |
| Acariformes | Hydrachnidae indet. | - | 1 | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| | Limnesiidae | *Limnesia sp.* | 1 | | | | | 1 | | | | | | | | | | | | | | | | | | | | | |
| Trichoptera | Leptoceridae | *Oecetis sp.* | | | 3 | 3 | 3 | | | X | | | | | | | | | | | | | | | | | | | |
| Ephemeroptera | Caenidae | *Caenis sp.* | 1 | | | | 1 | | | X | | | | | | | | | | | | | | | | | | | |
| | Baetidae | *Centroptilum spp.* | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Diptera | Chironomidae | *Coelotanypus spp.* | | | | | | 19 | 5 | | X | | X | 6.2 | T | | | | | | | | | | | 1,707 | 275 | 449 | 72 |
| | | *Polypedilum spp.* | 91 | 90 | 118 | 122 | 125 | | | | X | | X | 6.7 | C | 8,836 | 1,319 | 8,739 | 1,304 | #### | 1,710 | #### | 1,768 | #### | 1,812 | | | | |
| | | *Rheotanytarsus spp.* | 42 | 37 | 27 | 35 | 37 | 1 | | | | | X | 6.4 | C | 3,896 | 609 | 3,432 | 536 | 2,504 | 391 | 3,246 | 507 | 3,432 | 536 | 93 | 14 | | |
| | | *Cryptochironomus spp.* | 9 | 8 | 5 | 6 | 8 | 3 | | | | | X | 7.3 | C | 952 | 130 | 846 | 116 | 529 | 72 | 635 | 87 | 846 | 116 | 317 | 43 | | |
| | | *Chironomus spp.* | | 1 | | 11 | 3 | 6 | | | X | | X | 9.8 | C | | | 142 | 14 | | | 1,562 | 159 | 426 | 43 | 852 | 87 | | |
| | | *Pseudochironomus spp.* | 2 | | | | | | | | | | X | 4.2 | C | 122 | 29 | | | | | | | | | | | | |
| | | *Orthocladius spp.* | | | | | 2 | 1 | | | | | X | 6 | C | | | | | | | | | 174 | 29 | 87 | 14 | | |
| | | *Paratanytarsus spp.* | 1 | 1 | 1 | | | | | | | | X | | C | | | | | | | | | | | | | | |
| | | *Tanytarsus spp.* | 3 | | 1 | | | | | | | | X | 6.7 | C | 291 | 43 | | | 97 | 14 | | | | | | | | |
| | | *Procladius spp.* | 1 | 2 | | 3 | 8 | 4 | | | X | | X | 9.3 | T | 135 | 14 | 270 | 29 | | | 404 | 43 | 1,078 | 116 | 539 | 58 | | |
| | | *Microspectra sp.* | | | | | 1 | | | | | | X | | C | | | | | | | | | | | | | | |
| **Total Abundance of B-IBI Taxa (number/$m^2$)** | | | **5,275** | **5,058** | **5,043** | **4,464** | **5,638** | **1,652** | **551** | | | | | | | | | | | | | | | | | | | | |
| **Abundance of pollution-indicative taxa (number/$m^2$)** | | | **1,841** | **3,188** | **3,000** | **2,681** | **3,913** | **1,261** | **493** | | | | | | | | | | | | | | | | | | | | |
| **Abundance of pollution-indicative taxa (%)** | | | **35%** | **63%** | **59%** | **60%** | **69%** | **76%** | **89%** | | | | | | | | | | | | | | | | | | | | |
| **Abundance of pollution-sensitive taxa (number/$m^2$)** | | | **174** | **246** | **174** | **333.3** | **420** | **101.4** | **43.5** | | | | | | | | | | | | | | | | | | | | |
| **Abundance of pollution-sensitive taxa (%)** | | | **3%** | **5%** | **3%** | **7.5%** | **7%** | **6.1%** | **7.9%** | | | | | | | | | | | | | | | | | | | | |
| **Abundance of carnivore and omnivores (number/$m^2$)** | | | **2,159** | **2,014** | **2,203** | **2,565** | **2,667** | **493** | **72** | | | | | | | | | | | | | | | | | | | | |
| **Abundance of carnivore and omnivores (%)** | | | **41%** | **40%** | **44%** | **57%** | **47%** | **30%** | **13%** | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | **Tolerance Scores** | **7.31** | | **8.14** | | **7.78** | | **7.52** | | **7.95** | | **7.52** | | **8.60** | |
| **Tanypodinae to Chironomidae abundance ratio (%)** | | | **1%** | **1%** | **0%** | **2%** | **5%** | **209%** | **NC [7]** | | | | | | | | | | | | | | | | | | | | |

**Notes**
1. Species excluded from IBI calculations based on Llanso (2002).
2. Percent abundance of pollution-indicative taxa is the percent abundance contribution of taxa classified as pollution-indicative to the total abundance of organisms in a sample.
3. Percent abundance of pollution-sensitive taxa is the percent abundance contribution of taxa classified as pollution-sensitive to the total abundance of organisms in a sample.
4. Percent abundance of carnivore and omnivores is the percent abundance contribution of taxa currently classified as carnivores or omnivores to the total abundance of organisms in a sample.
5. The Tolerance Score is a weighted abundance average for taxa classified according to their sensitiveness to pollution. The Tolerance Score is based on the North Carolina biotic index of Lenat (1993):

$$\text{Tolerance Score} = \frac{\sum TV_i \cdot N_i}{\sum N_i}$$

where TVi is the tolerance value of the ith taxa, and Ni is the abundance of the ith taxa. Tolerance values for each taxa from Llanso (2002).

6. The Tanypodinae to Chironomidae percent abundance ratio is a measure of the relative contribution of midges in the subfamily Tanypodinae to all the midges (Class Insecta, family Chironomidae) found in a sample.

7. As only Tanypodinae were identified in QT14-7, the Tanypodinae to Chironomidae percent abundance ratio could not be calculated.

**Table 4. Calculation of Benthic Index of Biotic Integrity (B-IBI) in 14-Month Post Cap Monitoring Event**
SSC Pacific
Quantico, Virginia

| Within Cap Placement Area? | Within | | | | | | | | | | Outside | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Metric | QT14-1 | | QT14-2 | | QT14-3 | | QT14-4 | | QT14-5 | | QT14-6 | | QT14-7 | |
| | Value | Score | Value | Score | Value | Score | Value | Score | Value | Score | Value | Score | Value | Score |
| Total Abundance of B-IBI Taxa (number/$m^2$) | 5,275 | 1 | 5,058 | 1 | 5,043 | 1 | 4,464 | 1 | 5,638 | 1 | 1,652 | 5 | 551 | 5 |
| Abundance of Pollution-Indicative Taxa (%) | 35% | 3 | 63% | 3 | 59% | 3 | 60% | 3 | 69% | 3 | 76% | 3 | 89% | 3 |
| Abundance of Pollution-Sensitive Taxa (%) | 3.3% | 3 | 4.9% | 3 | 3.4% | 3 | 7.5% | 3 | 7.5% | 3 | 6.1% | 3 | 7.9% | 3 |
| Abundance of Carnivore and Omnivores (%) | 41% | 5 | 40% | 5 | 44% | 5 | 57% | 5 | 47% | 5 | 30% | 3 | 13% | 1 |
| Tolerance Score | 7.31 | 3 | 8.14 | 3 | 7.78 | 3 | 7.52 | 3 | 7.95 | 3 | 7.52 | 3 | 8.60 | 3 |
| Tanypodinae to Chironomidae Percent Abundance Ratio (%) | 1% | 5 | 1% | 5 | 0% | 5 | 2% | 5 | 5% | 5 | 209% | 1 | NC [2] | 1 |
| B-IBI Value [1] | | 3.3 | | 3.3 | | 3.3 | | 3.3 | | 3.3 | | 3.0 | | 2.7 |

**Notes:**
1. B-IBI Value is calculated as the average of scored metrics. B-IBI values > 3 indicate a station 'meets restoration goals', scores from 2.7 to 2.9 indicate scores from 2.1 to 2.6 indicate degradation, and scores <2.0 indicate severe
2. As only Tanypodinae were identified in QT14-7, the Tanypodinae to Chironomidae percent abundance ratio could not be calculated and a score of 1 was assigned.

**Table 5. Summary of Benthic Community Health Metrics in 14-Month Post Cap Monitoring Event**
SSC Pacific
Quantico, Virginia

| Within Cap Placement Area? | Within | | | | | Outside | |
|---|---|---|---|---|---|---|---|
| **Station ID** | **QT14-1** | **QT14-2** | **QT14-3** | **QT14-4** | **QT14-5** | **QT14-6** | **QT14-7** |
| Total Abundance [1] | 5,565 | 5,290 | 5,261 | 5,145 | 6,333 | 1,855 | 565 |
| Species Richness [2] | 25 | 20 | 22 | 22 | 24 | 19 | 9 |
| Shannon-Wiener Diversity Index [3] | 2.27 | 2.11 | 2.16 | 2.26 | 2.24 | 2.43 | 1.64 |
| Pielou's Eveness [4] | 0.70 | 0.70 | 0.70 | 0.73 | 0.71 | 0.83 | 0.75 |
| B-IBI Score [5] | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.0 | 2.7 |

**Notes:**

1. Total Abundance is the number of individuals divided by the sample area (US EPA 1987) - 3 x 0.023$m^2$ grab samples.
2. Species Richness is the number of different taxon collected in each composite sample.
3. Shannon-Wiener Diversity (H') is calculated as the sum of $p_i \times \ln(p_i)$ for each species in each sample (Becker et al. 2011, USEPA 1987).
4. Pielou's Evenness (J') is calculated as H' divided by the natural logarithm of the number of taxa (Becker et al. 2011, USEPA 1987).
5. B-IBI values are calculated as the average of scored metrics. B-IBI values > 3 indicate a station 'meets restoration goals', scores from 2.7 to 2.9 indicate marginal degradation, scores from 2.1 to 2.6 indicate degradation, and scores < 2.0 indicate severe degradation.

**Table 1: Counts, Abundance and Species Richness of Benthic Invertebrates in 25-Month Post Cap Monitoring Event**
SSC Pacific
Quantico, Virginia

| Taxonomic Group | | | Number of Individuals per Sample | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | QT25-1 | QT25-2 | QT25-3 | QT25-4 | QT25-5 | QT25-6 | QT25-7 |
| Nematoda | -- | -- | 2 | 6 | 9 | 5 | 2 | | |
| Oligochaeta | Tubificidae | *Branchiura sowerbyi* | | | 1 | | | 3 | 1 |
| | | *Aulodrilus spp.* | 20 | 7 | 15 | | | 1 | |
| | | *Limnodrilus spp.* | 109 | 76 | 68 | 25 | | 1 | 5 |
| | | *Rhyacodrilus spp.* | | 8 | | | | | |
| | Naididae | *Nais spp.* | 2 | 4 | 2 | | | | |
| | | *Dero spp.* | | | 1 | | | | |
| Polychaeta | Spionidae | *Marenzelleria viridis* | | | 3 | | | | |
| Veneroida | Corbiculidae | *Corbicula fluminea* | | | | 1 | 2 | | 1 |
| | Sphaeriidae | *Musculium spp.* | | 9 | 7 | | | | |
| Gastropoda | Planorbidae | *Gyraulus sp.* | | | | 1 | | | |
| Unionoida | Unionidae indet. (juvenile) | -- | 1 | | | | | | |
| Amphipoda | Gammaridae | *Gammarus spp.* | 1 | | 3 | | | | |
| Isopoda | Anthuridae | *Cyathura polita* | 22 | 28 | 12 | 11 | 18 | | 1 |
| Ostracoda | -- | -- | 9 | 11 | 17 | | 1 | | |
| Decapoda | Panopeidae | *Rhithropanopeus harrisii* | 1 | | 1 | 1 | | | |
| Acariformes | Limnesiidae | *Limnesia spp.* | 2 | | 5 | | | | |
| | Unionicolidae | *Unionicola sp.* | | | 1 | | | | |
| Trichoptera | Leptoceridae | *Oecetis spp.* | 2 | | 1 | 1 | | | |
| Ephemeroptera | Caenidae | *Caenis sp.* | | | 1 | | | | |
| | Baetidae | *Centroptilum spp.* | | | | 1 | | | |
| Coleoptera | Hydrophilidae | *Berosus spp.* | | | 2 | | | | |
| Odonata | Coenagrionidae | *Enallagma sp.* | | | | | | | 1 |
| Diptera | Ceratopogonidae | *Probezzia spp.* | 2 | | 2 | 1 | | | |
| | Chironomidae | *Coelotanypus spp.* | 1 | | 17 | | | 4 | 11 |
| | | *Cladotanytarsus spp.* | 9 | 118 | 6 | 2 | 79 | | |
| | | *Polypedilum spp.* | 8 | 80 | 1 | 16 | 47 | | |
| | | *Rheotanytarsus spp.* | 1 | | | | | | |
| | | *Cryptochironomus spp.* | 4 | | 5 | | | 1 | |
| | | *Dicrotendipes sp.* | | | 1 | | | | |
| | | *Glyptotendipes sp.* | | | 1 | | | | |
| | | *Pseudochironomus spp.* | 1 | 1 | | | | | |
| | | *Tanytarsus spp.* | 12 | | 13 | | 1 | | |
| | | *Procladius spp.* | 4 | 1 | 18 | 3 | | | 1 |
| | | *Microtendipes sp.* | 1 | | | | | | |
| | | *Nanocladius spp.* | 1 | | 5 | 1 | | | |
| | | *Parachironomus spp.* | 14 | | 8 | | | | |
| | | *Thienemanniella spp.* | 5 | | 2 | | | | |
| | | *Rheocricotopus sp.* | | 1 | | | | | |
| **Total Number of Individuals [2]** | | | 234 | 350 | 228 | 69 | 150 | 10 | 21 |
| **Total Abundance (individuals per $m^2$) [3]** | | | 3,391 | 5,072 | 3,304 | 1,000 | 2,174 | 145 | 304 |
| **Species Richness (total number of taxa) [4]** | | | 24 | 13 | 29 | 13 | 7 | 5 | 7 |

**Notes**
1. Samples were collected in August 2016 by Ramboll Environ US Corp. Benthic macroinvertebrate were identified to the lowest taxonomic level.
2. Number of Individuals is the total number of identifiable benthic invertebrate collected in each composite sample.
3. Total Abundance is the number of individuals divided by the sample area (US EPA 1987). Area sampled at each station was 0.069 $m^2$ (0.023 $m^2$ multiplied by three grab samples).
4. Species Richness is the number of different taxon collected in each composite sample.

**Table 2. Calculation of Shannon-Wiener Diversity and Pielou's Evenness in 25-Month Post Cap Monitoring Event**
SSC Pacific
Quantico, Virginia

| Taxonomic Group | | | $p_i \times \ln(p_i)$ [1] | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | **QT25-1** | **QT25-2** | **QT25-3** | **QT25-4** | **QT25-5** | **QT25-6** | **QT25-7** |
| Nematoda | -- | -- | -0.04 | -0.07 | -0.13 | -0.19 | -0.06 | | |
| Oligochaeta | Tubificidae | *Branchiura sowerbyi* | | | -0.02 | | | -0.36 | -0.14 |
| | | *Aulodrilus spp.* | -0.21 | -0.08 | -0.18 | | | -0.23 | |
| | | *Limnodrilus spp.* | -0.36 | -0.33 | -0.36 | -0.37 | | -0.23 | -0.34 |
| | | *Rhyacodrilus spp.* | | -0.09 | | | | | |
| | Naididae | *Nais spp.* | -0.04 | -0.05 | -0.04 | | | | |
| | | *Dero spp.* | | | -0.02 | | | | |
| Polychaeta | Spionidae | *Marenzelleria viridis* | | | -0.06 | | | | |
| Veneroida | Corbiculidae | *Corbicula fluminea* | | | | -0.06 | -0.06 | | -0.14 |
| | Sphaeriidae | *Musculium spp.* | | -0.09 | -0.11 | | | | |
| Gastropoda | Planorbidae | *Gyraulus sp.* | | | | -0.06 | | | |
| Unionoida | Unionidae indet. (juvenile) | -- | -0.02 | | | | | | |
| Amphipoda | Gammaridae | *Gammarus spp.* | -0.02 | | -0.06 | | | | |
| Isopoda | Anthuridae | *Cyathura polita* | -0.22 | -0.20 | -0.15 | -0.29 | -0.25 | | -0.14 |
| Ostracoda | -- | -- | -0.13 | -0.11 | -0.19 | | -0.03 | | |
| Decapoda | Panopeidae | *Rhithropanopeus harrisii* | -0.02 | | -0.02 | -0.06 | | | |
| Acariformes | Limnesiidae | *Limnesia spp.* | -0.04 | | -0.08 | | | | |
| | Unionicolidae | *Unionicola sp.* | | | -0.02 | | | | |
| Trichoptera | Leptoceridae | *Oecetis spp.* | -0.04 | | -0.02 | -0.06 | | | |
| Ephemeroptera | Caenidae | *Caenis sp.* | | | -0.02 | | | | |
| | Baetidae | *Centroptilum spp.* | | | | -0.06 | | | |
| Coleoptera | Hydrophilidae | *Berosus spp.* | | | -0.04 | | | | |
| Odonata | Coenagrionidae | *Enallagma sp.* | | | | | | | -0.14 |
| Diptera | Ceratopogonidae | *Probezzia spp.* | -0.04 | | -0.04 | -0.06 | | | |
| | Chironomidae | *Coelotanypus spp.* | -0.02 | | -0.19 | | | -0.37 | -0.34 |
| | | *Cladotanytarsus spp.* | -0.13 | -0.37 | -0.10 | -0.10 | -0.34 | | |
| | | *Polypedilum spp.* | -0.12 | -0.34 | -0.02 | -0.34 | -0.36 | | |
| | | *Rheotanytarsus spp.* | -0.02 | | | | | | |
| | | *Cryptochironomus spp.* | -0.07 | | -0.08 | | | -0.23 | |
| | | *Dicrotendipes sp.* | | | -0.02 | | | | |
| | | *Glyptotendipes sp.* | | | -0.02 | | | | |
| | | *Pseudochironomus spp.* | -0.02 | -0.02 | | | | | |
| | | *Tanytarsus spp.* | -0.15 | | -0.16 | | -0.03 | | |
| | | *Procladius spp.* | -0.07 | -0.02 | -0.20 | -0.14 | | | -0.14 |
| | | *Microtendipes sp.* | -0.02 | | | | | | |
| | | *Nanocladius spp.* | -0.02 | | -0.08 | -0.06 | | | |
| | | *Parachironomus spp.* | -0.17 | | -0.12 | | | | |
| | | *Thienemanniella spp.* | -0.08 | | -0.04 | | | | |
| | | *Rheocricotopus sp.* | | -0.02 | | | | | |
| **Shannon-Weiner Diversity (H')** [2] | | | **2.09** | **1.78** | **2.64** | **1.86** | **1.14** | **1.42** | **1.41** |
| **Pielou's Evenness (J')** [3] | | | **0.66** | **0.69** | **0.78** | **0.72** | **0.58** | **0.88** | **0.72** |

**Notes**
1. $p_i$ is the proportion of individuals in species $i$ to the total number of individuals in each sample. Ln is the natural logarithm of $p_i$.
2. Shannon-Wiener Diversity (H') is calculated as the sum of $p_i \times \ln(p_i)$ for each species in each sample (Becker et al. 2011, USEPA 1987).
3. Pielou's Evenness (J') is calculated as H' divided by the natural logarithm of the number of taxa (Becker et al. 2011, USEPA 1987).

**Table 3. Calculation of Metrics Used in the Benthic Index of Biotic Integrity (B-IBI) in 25-Month Post Cap Monitoring Event**
SSC Pacific
Quantico, Virginia

| Taxonomic Group | | | Benthic sampling results (number of individuals found in three 0.023-$m^2$ grabs) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Order | Family | Genus/Species | QT25-1 | QT25-2 | QT25-3 | QT25-4 | QT25-5 | QT25-6 | QT25-7 | Exclude from B-IBI Calculations? [1] | Oligohaline pollution-indicative taxa [2] | Oligohaline pollution-sensitive taxa [3] | Species classified as carnivores-omnivores [4] | Tolerance Values [5] | Tanypodinae or Chironomidae [6] |
| Nematoda | -- | -- | 2 | 6 | 9 | 5 | 2 | | | X | | | | | |
| Oligochaeta | Tubificidae | *Branchiura sowerbyi* | | | 1 | | | 3 | 1 | | X | | | 8.4 | |
| | | *Aulodrilus spp.* | 20 | 7 | 15 | | | 1 | | | X | | | 4.7 | |
| | | *Limnodrilus spp.* | 109 | 76 | 68 | 25 | | 1 | 5 | | X | | | 10 | |
| | | *Rhyacodrilus spp.* | | 8 | | | | | | | | | | | |
| | Naididae | *Nais spp.* | 2 | 4 | 2 | | | | | | | | | 8 | |
| | | *Dero spp.* | | | 1 | | | | | | | | | 10 | |
| Polychaeta | Spionidae | *Marenzelleria viridis* | | | 3 | | | | | | | X | | | |
| Veneroida | Corbiculidae | *Corbicula fluminea* | | | | 1 | 2 | | 1 | | X | | | 6.3 | |
| | Sphaeriidae | *Musculium spp.* | | 9 | 7 | | | | | | | | | 7.7 | |
| Gastropoda | Planorbidae | *Gyraulus sp.* | | | | 1 | | | | | | | | | |
| Unionoida | Unionidae indet. (juvenile) | -- | 1 | | | | | | | | | | | 3.6 | |
| Amphipoda | Gammaridae | *Gammarus spp.* | 1 | | 3 | | | | | X | | | | | |
| Isopoda | Anthuridae | *Cyathura polita* | 22 | 28 | 12 | 11 | 18 | | 1 | | | X | | | |
| Ostracoda | -- | -- | 9 | 11 | 17 | | 1 | | | | | | | | |
| Decapoda | Panopeidae | *Rhithropanopeus harrisii* | 1 | | 1 | 1 | | | | | | | | | |
| Acariformes | Limnesiidae | *Limnesia spp.* | 2 | | 5 | | | | | | | | | | |
| | Unionicolidae | *Unionicola sp.* | | | 1 | | | | | | | | | | |
| Trichoptera | Leptoceridae | *Oecetis spp.* | 2 | | 1 | 1 | | | | X | | | | | |
| Ephemeroptera | Caenidae | *Caenis sp.* | | | 1 | | | | | X | | | | | |
| | Baetidae | *Centroptilum spp.* | | | | 1 | | | | | | | | | |
| Coleoptera | Hydrophilidae | *Berosus spp.* | | | 2 | | | | | X | | | | | |
| Odonata | Coenagrionidae | *Enallagma sp.* | | | | | | | 1 | | | | | | |
| Diptera | Ceratopogonidae | *Probezzia spp.* | 2 | | 2 | 1 | | | | | | | X | | |
| | Chironomidae | *Coelotanypus spp.* | 1 | | 17 | | | 4 | 11 | | X | | X | 6.2 | T |
| | | *Cladotanytarsus spp.* | 9 | 118 | 6 | 2 | 79 | | | | X | | X | 3.7 | C |
| | | *Polypedilum spp.* | 8 | 80 | 1 | 16 | 47 | | | | X | | X | 6.7 | C |
| | | *Rheotanytarsus spp.* | 1 | | | | | | | | | | X | 6.4 | C |
| | | *Cryptochironomus spp.* | 4 | | 5 | | | 1 | | | | | X | 7.3 | C |
| | | *Dicrotendipes sp.* | | | 1 | | | | | | | | X | 7.9 | C |
| | | *Glyptotendipes sp.* | | | 1 | | | | | | X | | X | 8.5 | C |
| | | *Pseudochironomus spp.* | 1 | 1 | | | | | | | | | X | 4.2 | C |
| | | *Tanytarsus spp.* | 12 | | 13 | | 1 | | | | | | X | 6.7 | C |
| | | *Procladius spp.* | 4 | 1 | 18 | 3 | | | 1 | | X | | X | 9.3 | T |
| | | *Microtendipes sp.* | 1 | | | | | | | | | | X | | C |
| | | *Nanocladius spp.* | 1 | | 5 | 1 | | | | | | | X | | C |
| | | *Parachironomus spp.* | 14 | | 8 | | | | | | | | X | 9.2 | C |
| | | *Thienemanniella spp.* | 5 | | 2 | | | | | | | | X | | C |
| | | *Rheocricotopus sp.* | | 1 | | | | | | | | | X | | C |
| **Total Abundance of B-IBI Taxa (number/$m^2$)** | | | **3,319** | **4,986** | **3,072** | **913** | **2,145** | **145** | **304** | | | | | | |
| **Abundance of pollution-indicative taxa (number/$m^2$)** | | | **2,188** | **4,087** | **1,841** | **681** | **1,855** | **130** | **275** | | | | | | |
| **Abundance of pollution-indicative taxa (%)** | | | **66%** | **82%** | **60%** | **75%** | **86%** | **90%** | **90%** | | | | | | |
| **Abundance of pollution-sensitive taxa (number/$m^2$)** | | | **319** | **406** | **217** | **159** | **261** | **0** | **14** | | | | | | |
| **Abundance of pollution-sensitive taxa (%)** | | | **10%** | **8%** | **7%** | **17%** | **12%** | **0%** | **5%** | | | | | | |
| **Abundance of carnivore and omnivores (number/$m^2$)** | | | **913** | **2,913** | **1,145** | **333** | **1,841** | **72** | **174** | | | | | | |
| **Abundance of carnivore and omnivores (%)** | | | **28%** | **58%** | **37%** | **37%** | **86%** | **50%** | **57%** | | | | | | |
| **Tanypodinae to Chironomidae abundance ratio (%)** | | | **9%** | **1%** | **83%** | **16%** | **0%** | **400%** | **NC [7]** | | | | | | |

| Genus/Species | Tolerance Scores [5] | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | QT25-1 | | QT25-2 | | QT25-3 | | QT25-4 | | QT25-5 | | QT25-6 | | QT25-7 | |
| | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* | TV*i* x N*i* | N*i* |
| -- (Nematoda) | | | | | | | | | | | | | | |
| *Branchiura sowerbyi* | | | | | 122 | 14 | | | | | 365 | 43 | 122 | 14 |
| *Aulodrilus spp.* | 1,362 | 290 | 477 | 101 | 1,022 | 217 | | | | | 68 | 14 | | |
| *Limnodrilus spp.* | #### | 1,580 | #### | 1,101 | 9,855 | 986 | 3,623 | 362 | | | 145 | 14 | 725 | 72 |
| *Rhyacodrilus spp.* | | | | | | | | | | | | | | |
| *Nais spp.* | 232 | 29 | 464 | 58 | 232 | 29 | | | | | | | | |
| *Dero spp.* | | | | | 145 | 14 | | | | | | | | |
| *Marenzelleria viridis* | | | | | | | | | | | | | | |
| *Corbicula fluminea* | | | | | | | 91 | 14 | 183 | 29 | | | 91 | 14 |
| *Musculium spp.* | | | 1,004 | 130 | 781 | 101 | | | | | | | | |
| *Gyraulus sp.* | | | | | | | | | | | | | | |
| -- (Unionidae indet. (juvenile)) | 52 | 14 | | | | | | | | | | | | |
| *Gammarus spp.* | | | | | | | | | | | | | | |
| *Cyathura polita* | | | | | | | | | | | | | | |
| -- (Ostracoda) | | | | | | | | | | | | | | |
| *Rhithropanopeus harrisii* | | | | | | | | | | | | | | |
| *Limnesia spp.* | | | | | | | | | | | | | | |
| *Unionicola sp.* | | | | | | | | | | | | | | |
| *Oecetis spp.* | | | | | | | | | | | | | | |
| *Caenis sp.* | | | | | | | | | | | | | | |
| *Centroptilum spp.* | | | | | | | | | | | | | | |
| *Berosus spp.* | | | | | | | | | | | | | | |
| *Enallagma sp.* | | | | | | | | | | | | | | |
| *Probezzia spp.* | | | | | | | | | | | | | | |
| *Coelotanypus spp.* | 90 | 14 | | | 1,528 | 246 | | | | | 359 | 58 | 988 | 159 |
| *Cladotanytarsus spp.* | 483 | 130 | 6,328 | 1,710 | 322 | 87 | 107 | 29 | 4,236 | 1,145 | | | | |
| *Polypedilum spp.* | 777 | 116 | 7,768 | 1,159 | 97 | 14 | 1,554 | 232 | 4,564 | 681 | | | | |
| *Rheotanytarsus spp.* | 93 | 14 | | | | | | | | | | | | |
| *Cryptochironomus spp.* | 423 | 58 | | | 529 | 72 | | | | | 106 | 14 | | |
| *Dicrotendipes sp.* | | | | | 114 | 14 | | | | | | | | |
| *Glyptotendipes sp.* | | | | | 123 | 14 | | | | | | | | |
| *Pseudochironomus spp.* | 61 | 14 | 61 | 14 | | | | | | | | | | |
| *Tanytarsus spp.* | 1,165 | 174 | | | 1,262 | 188 | | | 97 | 14 | | | | |
| *Procladius spp.* | 539 | 58 | 135 | 14 | 2,426 | 261 | 404 | 43 | | | | | 135 | 14 |
| *Microtendipes sp.* | | | | | | | | | | | | | | |
| *Nanocladius spp.* | | | | | | | | | | | | | | |
| *Parachironomus spp.* | 1,867 | 203 | | | 1,067 | 116 | | | | | | | | |
| *Thienemanniella spp.* | | | | | | | | | | | | | | |
| *Rheocricotopus sp.* | | | | | | | | | | | | | | |
| **Tolerance Scores** | **8.51** | | **6.35** | | **8.26** | | **8.49** | | **4.86** | | **7.20** | | **7.48** | |

**Notes**
1. Species excluded from IBI calculations based on Llanso (2002).
2. Percent abundance of pollution-indicative taxa is the percent abundance contribution of taxa classified as pollution-indicative to the total abundance of organisms in a sample.
3. Percent abundance of pollution-sensitive taxa is the percent abundance contribution of taxa classified as pollution-sensitive to the total abundance of organisms in a sample.
4. Percent abundance of carnivore and omnivores is the percent abundance contribution of taxa currently classified as carnivores or omnivores to the total abundance of organisms in a sample.
5. The Tolerance Score is a weighted abundance average for taxa classified according to their sensitiveness to pollution. The Tolerance Score is based on the North Carolina biotic index of Lenat (1993):

$$\text{Tolerance Score} = \frac{\sum TV_i \cdot N_i}{\sum N_i}$$

where TVi is the tolerance value of the ith taxa, and Ni is the abundance of the ith taxa. Tolerance values for each taxa from Llanso (2002).

6. The Tanypodinae to Chironomidae percent abundance ratio is a measure of the relative contribution of midges in the subfamily Tanypodinae to all the midges (Class Insecta, family Chironomidae) found in a sample.
7. As only Tanypodinae were identified in QT25-7, the Tanypodinae to Chironomidae percent abundance ratio could not be calculated.

**Table 4. Calculation of Benthic Index of Biotic Integrity (B-IBI) in 25-Month Post Cap Monitoring Event**
SSC Pacific
Quantico, Virginia

| Within Cap Placement Area? | Within | | | | | | | | | | Outside | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | QT25-1 | | QT25-2 | | QT25-3 | | QT25-4 | | QT25-5 | | QT25-6 | | QT25-7 | |
| Metric | Value | Score | Value | Score | Value | Score | Value | Score | Value | Score | Value | Score | Value | Score |
| Total Abundance of B-IBI Taxa (number/$m^2$) | 3,319 | 5 | 4,986 | 1 | 3,072 | 5 | 913 | 5 | 2,145 | 5 | 145 | 1 | 304 | 3 |
| Abundance of Pollution-Indicative Taxa (%) | 66% | 3 | 82% | 3 | 60% | 3 | 75% | 3 | 86% | 3 | 90% | 3 | 90% | 3 |
| Abundance of Pollution-Sensitive Taxa (%) | 9.6% | 3 | 8.1% | 3 | 7.1% | 3 | 17.5% | 3 | 12.2% | 3 | 0.0% | 1 | 4.8% | 3 |
| Abundance of Carnivore and Omnivores (%) | 28% | 3 | 58% | 5 | 37% | 5 | 37% | 5 | 86% | 5 | 50% | 5 | 57% | 5 |
| Tolerance Score | 8.51 | 3 | 6.35 | 3 | 8.26 | 3 | 8.49 | 3 | 4.86 | 5 | 7.20 | 3 | 7.48 | 3 |
| Tanypodinae to Chironomidae Percent Abundance Ratio (%) | 9% | 5 | 1% | 5 | 83% | 1 | 16% | 5 | 0% | 5 | 400% | 1 | NC [2] | 1 |
| B-IBI Value [1] | | 3.7 | | 3.3 | | 3.3 | | 4.0 | | 4.3 | | 2.3 | | 3.0 |

**Notes:**
1. B-IBI Value is calculated as the average of scored metrics. B-IBI values > 3 indicate a station 'meets restoration goals', scores from 2.7 to 2.9 indicate marginal degradation, scores from 2.1 to 2.6 indicate degradation, and scores <2.0 indicate severe degradation.
2. As only Tanypodinae were identified in QT25-7, the Tanypodinae to Chironomidae percent abundance ratio could not be calculated and a score of 1 was assigned.

**Table 5. Summary of Benthic Community Health Metrics in 25-Month Post Cap Monitoring Event**
SSC Pacific
Quantico, Virginia

| Within Cap Placement Area? | Within | | | | | Outside | |
|---|---|---|---|---|---|---|---|
| **Station ID** | **QT25-1** | **QT25-2** | **QT25-3** | **QT25-4** | **QT25-5** | **QT25-6** | **QT25-7** |
| Total Abundance [1] | 3,391 | 5,072 | 3,304 | 1,000 | 2,174 | 145 | 304 |
| Species Richness [2] | 24 | 13 | 29 | 13 | 7 | 5 | 7 |
| Shannon-Wiener Diversity Index [3] | 2.09 | 1.78 | 2.64 | 1.86 | 1.14 | 1.42 | 1.41 |
| Pielou's Eveness [4] | 0.66 | 0.69 | 0.78 | 0.72 | 0.58 | 0.88 | 0.72 |
| B-IBI Score [5] | 3.7 | 3.3 | 3.3 | 4.0 | 4.3 | 2.3 | 3.0 |

**Notes:**
1. Total Abundance is the number of individuals divided by the sample area (US EPA 1987) - 3 x 0.023$m^2$ grab samples.
2. Species Richness is the number of different taxon collected in each composite sample.
3. Shannon-Wiener Diversity (H') is calculated as the sum of $p_i \times \ln(p_i)$ for each species in each sample (Becker et al. 2011, USEPA 1987).
4. Pielou’s Evenness (J') is calculated as H' divided by the natural logarithm of the number of taxa (Becker et al. 2011, USEPA 1987).
5. B-IBI values are calculated as the average of scored metrics. B-IBI values > 3 indicate a station 'meets restoration goals', scores from 2.7 to 2.9 indicate marginal degradation, scores from 2.1 to 2.6 indicate degradation, and scores < 2.0 indicate severe degradation.

# Appendix E-4

## Sediment - Physical and Chemical Characterization

## Data Compilation and Lab Reports

**Table 1. Compilation of Sediment DDX and Total Organic Carbon Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval (cm)[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (µg/kg dw; ND=<DL) | TOC (mg/kg dw) | Result (µg/kg OC; DDx ND=<0.5 DL)[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Baseline 2 | CAP3 | 2 | 0-2 | Sample | In Cap | B2-CAP3-0002 | In Cap | 2,4′-DDD | 21.54 | 24,410 | 882.4 |
| Baseline 2 | CAP3 | 2 | 0-2 | Sample | In Cap | B2-CAP3-0002 | In Cap | 2,4′-DDE | 1.46 | 24,410 | 59.8 |
| Baseline 2 | CAP3 | 2 | 0-2 | Sample | In Cap | B2-CAP3-0002 | In Cap | 2,4′-DDT | 1.15 | 24,410 | 47.1 |
| Baseline 2 | CAP3 | 2 | 0-2 | Sample | In Cap | B2-CAP3-0002 | In Cap | 4,4′-DDD | 93.66 | 24,410 | 3837.0 |
| Baseline 2 | CAP3 | 2 | 0-2 | Sample | In Cap | B2-CAP3-0002 | In Cap | 4,4′-DDE | 20.85 | 24,410 | 854.2 |
| Baseline 2 | CAP3 | 2 | 0-2 | Sample | In Cap | B2-CAP3-0002 | In Cap | 4,4′-DDT | 29.92 | 24,410 | 1225.7 |
| Baseline 2 | CAP3 | 2 | 0-2 | Sample | In Cap | B2-CAP3-0002 | In Cap | Total DDX | 168.58 | 24,410 | 6906.2 |
| Baseline 2 | CAP3 | 2 | 2-5 | Sample | In Cap | B2-CAP3-0205 | In Cap | 2,4′-DDD | 18.18 | 9,331 | 1948.3 |
| Baseline 2 | CAP3 | 2 | 2-5 | Sample | In Cap | B2-CAP3-0205 | In Cap | 2,4′-DDE | 0.96 | 9,331 | 102.9 |
| Baseline 2 | CAP3 | 2 | 2-5 | Sample | In Cap | B2-CAP3-0205 | In Cap | 2,4′-DDT | <0.23 | 9,331 | 24.6 |
| Baseline 2 | CAP3 | 2 | 2-5 | Sample | In Cap | B2-CAP3-0205 | In Cap | 4,4′-DDD | 48.85 | 9,331 | 5235.2 |
| Baseline 2 | CAP3 | 2 | 2-5 | Sample | In Cap | B2-CAP3-0205 | In Cap | 4,4′-DDE | 17.36 | 9,331 | 1860.5 |
| Baseline 2 | CAP3 | 2 | 2-5 | Sample | In Cap | B2-CAP3-0205 | In Cap | 4,4′-DDT | 3.92 | 9,331 | 420.1 |
| Baseline 2 | CAP3 | 2 | 2-5 | Sample | In Cap | B2-CAP3-0205 | In Cap | Total DDX | 89.5 | 9,331 | 9591.7 |
| Baseline 2 | CAP3 | 2 | 5-7 | Sample | In Cap | B2-CAP3-0507 | In Cap | 2,4′-DDD | 17.35 | 15,332 | 1131.6 |
| Baseline 2 | CAP3 | 2 | 5-7 | Sample | In Cap | B2-CAP3-0507 | In Cap | 2,4′-DDE | 1.29 | 15,332 | 84.1 |
| Baseline 2 | CAP3 | 2 | 5-7 | Sample | In Cap | B2-CAP3-0507 | In Cap | 2,4′-DDT | 1.67 | 15,332 | 108.9 |
| Baseline 2 | CAP3 | 2 | 5-7 | Sample | In Cap | B2-CAP3-0507 | In Cap | 4,4′-DDD | 43.64 | 15,332 | 2846.3 |
| Baseline 2 | CAP3 | 2 | 5-7 | Sample | In Cap | B2-CAP3-0507 | In Cap | 4,4′-DDE | 18.45 | 15,332 | 1203.4 |
| Baseline 2 | CAP3 | 2 | 5-7 | Sample | In Cap | B2-CAP3-0507 | In Cap | 4,4′-DDT | 6.92 | 15,332 | 451.3 |
| Baseline 2 | CAP3 | 2 | 5-7 | Sample | In Cap | B2-CAP3-0507 | In Cap | Total DDX | 89.32 | 15,332 | 5825.7 |
| Baseline 2 | CAP3 | 2 | 0-10 | Sample | In Cap | B2-CAP3-GRAB | In Cap | 2,4′-DDD | 13.69 | 17,100 | 800.6 |
| Baseline 2 | CAP3 | 2 | 0-10 | Sample | In Cap | B2-CAP3-GRAB | In Cap | 2,4′-DDE | 0.73 | 17,100 | 42.7 |
| Baseline 2 | CAP3 | 2 | 0-10 | Sample | In Cap | B2-CAP3-GRAB | In Cap | 2,4′-DDT | 1.83 | 17,100 | 107.0 |
| Baseline 2 | CAP3 | 2 | 0-10 | Sample | In Cap | B2-CAP3-GRAB | In Cap | 4,4′-DDD | 58.22 | 17,100 | 3404.7 |
| Baseline 2 | CAP3 | 2 | 0-10 | Sample | In Cap | B2-CAP3-GRAB | In Cap | 4,4′-DDE | 17.5 | 17,100 | 1023.4 |
| Baseline 2 | CAP3 | 2 | 0-10 | Sample | In Cap | B2-CAP3-GRAB | In Cap | 4,4′-DDT | 6.18 | 17,100 | 361.4 |
| Baseline 2 | CAP3 | 2 | 0-10 | Sample | In Cap | B2-CAP3-GRAB | In Cap | Total DDX | 98.15 | 17,100 | 5739.8 |
| Baseline 2 | CAP2 | 3 | 0-2 | Sample | In Cap | B2-CAP2-0002 | In Cap | 2,4′-DDD | 36.79 | 67,084 | 548.4 |
| Baseline 2 | CAP2 | 3 | 0-2 | Sample | In Cap | B2-CAP2-0002 | In Cap | 2,4′-DDE | 3.39 | 67,084 | 50.5 |
| Baseline 2 | CAP2 | 3 | 0-2 | Sample | In Cap | B2-CAP2-0002 | In Cap | 2,4′-DDT | 8.81 | 67,084 | 131.3 |
| Baseline 2 | CAP2 | 3 | 0-2 | Sample | In Cap | B2-CAP2-0002 | In Cap | 4,4′-DDD | 1091.85 | 67,084 | 16275.9 |
| Baseline 2 | CAP2 | 3 | 0-2 | Sample | In Cap | B2-CAP2-0002 | In Cap | 4,4′-DDE | 47.4 | 67,084 | 706.6 |
| Baseline 2 | CAP2 | 3 | 0-2 | Sample | In Cap | B2-CAP2-0002 | In Cap | 4,4′-DDT | 48.02 | 67,084 | 715.8 |
| Baseline 2 | CAP2 | 3 | 0-2 | Sample | In Cap | B2-CAP2-0002 | In Cap | Total DDX | 1236.26 | 67,084 | 18428.5 |
| Baseline 2 | CAP2 | 3 | 2-5 | Sample | In Cap | B2-CAP2-0205 | In Cap | 2,4′-DDD | 34.97 | 40,727 | 858.6 |
| Baseline 2 | CAP2 | 3 | 2-5 | Sample | In Cap | B2-CAP2-0205 | In Cap | 2,4′-DDE | 2.45 | 40,727 | 60.2 |
| Baseline 2 | CAP2 | 3 | 2-5 | Sample | In Cap | B2-CAP2-0205 | In Cap | 2,4′-DDT | 3.12 | 40,727 | 76.6 |
| Baseline 2 | CAP2 | 3 | 2-5 | Sample | In Cap | B2-CAP2-0205 | In Cap | 4,4′-DDD | 112.62 | 40,727 | 2765.2 |
| Baseline 2 | CAP2 | 3 | 2-5 | Sample | In Cap | B2-CAP2-0205 | In Cap | 4,4′-DDE | 31.85 | 40,727 | 782.0 |
| Baseline 2 | CAP2 | 3 | 2-5 | Sample | In Cap | B2-CAP2-0205 | In Cap | 4,4′-DDT | 8.05 | 40,727 | 197.7 |
| Baseline 2 | CAP2 | 3 | 2-5 | Sample | In Cap | B2-CAP2-0205 | In Cap | Total DDX | 193.06 | 40,727 | 4740.3 |
| Baseline 2 | CAP2 | 3 | 5-7 | Sample | In Cap | B2-CAP2-0507 | In Cap | 2,4′-DDD | 47.79 | 43,556 | 1097.2 |
| Baseline 2 | CAP2 | 3 | 5-7 | Sample | In Cap | B2-CAP2-0507 | In Cap | 2,4′-DDE | 3.13 | 43,556 | 71.9 |
| Baseline 2 | CAP2 | 3 | 5-7 | Sample | In Cap | B2-CAP2-0507 | In Cap | 2,4′-DDT | 6.17 | 43,556 | 141.7 |
| Baseline 2 | CAP2 | 3 | 5-7 | Sample | In Cap | B2-CAP2-0507 | In Cap | 4,4′-DDD | 5902.16 | 43,556 | 135507.4 |
| Baseline 2 | CAP2 | 3 | 5-7 | Sample | In Cap | B2-CAP2-0507 | In Cap | 4,4′-DDE | 38.15 | 43,556 | 875.9 |
| Baseline 2 | CAP2 | 3 | 5-7 | Sample | In Cap | B2-CAP2-0507 | In Cap | 4,4′-DDT | 70.12 | 43,556 | 1609.9 |
| Baseline 2 | CAP2 | 3 | 5-7 | Sample | In Cap | B2-CAP2-0507 | In Cap | Total DDX | 6067.52 | 43,556 | 139303.9 |
| Baseline 2 | CAP2 | 3 | 0-10 | Sample | In Cap | B2-CAP2-GRAB | In Cap | 2,4′-DDD | 40.33 | 90,193 | 447.2 |
| Baseline 2 | CAP2 | 3 | 0-10 | Sample | In Cap | B2-CAP2-GRAB | In Cap | 2,4′-DDE | 3.79 | 90,193 | 42.0 |
| Baseline 2 | CAP2 | 3 | 0-10 | Sample | In Cap | B2-CAP2-GRAB | In Cap | 2,4′-DDT | 5.01 | 90,193 | 55.5 |
| Baseline 2 | CAP2 | 3 | 0-10 | Sample | In Cap | B2-CAP2-GRAB | In Cap | 4,4′-DDD | 143.2 | 90,193 | 1587.7 |

**Table 1. Compilation of Sediment DDX and Total Organic Carbon Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval (cm)[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (µg/kg dw; ND=<DL) | TOC (mg/kg dw) | Result (µg/kg OC; DDx ND=<0.5 DL)[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Baseline 2 | CAP2 | 3 | 0-10 | Sample | In Cap | B2-CAP2-GRAB | In Cap | 4,4′-DDE | 50.8 | 90,193 | 563.2 |
| Baseline 2 | CAP2 | 3 | 0-10 | Sample | In Cap | B2-CAP2-GRAB | In Cap | 4,4′-DDT | 11.67 | 90,193 | 129.4 |
| Baseline 2 | CAP2 | 3 | 0-10 | Sample | In Cap | B2-CAP2-GRAB | In Cap | Total DDX | 254.8 | 90,193 | 2825.1 |
| Baseline 2 | CAP1 | 5 | 0-2 | Primary | In Cap | B2-CAP1-0002 | In Cap | 2,4′-DDD | 40.94 | 50,280 | 814.2 |
| Baseline 2 | CAP1 | 5 | 0-2 | Primary | In Cap | B2-CAP1-0002 | In Cap | 2,4′-DDE | 11.83 | 50,280 | 235.3 |
| Baseline 2 | CAP1 | 5 | 0-2 | Primary | In Cap | B2-CAP1-0002 | In Cap | 2,4′-DDT | 13.07 | 50,280 | 259.9 |
| Baseline 2 | CAP1 | 5 | 0-2 | Primary | In Cap | B2-CAP1-0002 | In Cap | 4,4′-DDD | 201.01 | 50,280 | 3997.8 |
| Baseline 2 | CAP1 | 5 | 0-2 | Primary | In Cap | B2-CAP1-0002 | In Cap | 4,4′-DDE | 60.78 | 50,280 | 1208.8 |
| Baseline 2 | CAP1 | 5 | 0-2 | Primary | In Cap | B2-CAP1-0002 | In Cap | 4,4′-DDT | 18.15 | 50,280 | 361.0 |
| Baseline 2 | CAP1 | 5 | 0-2 | Primary | In Cap | B2-CAP1-0002 | In Cap | Total DDX | 345.78 | 50,280 | 6877.1 |
| Baseline 2 | CAP1 | 5 | 0-2 | Sample | In Cap | B2-CAP1-0002-Avg | In Cap | 2,4′-DDD | 33.325 | 57,855 | 201.5 |
| Baseline 2 | CAP1 | 5 | 0-2 | Sample | In Cap | B2-CAP1-0002-Avg | In Cap | 2,4′-DDE | 7.935 | 57,855 | 603.6 |
| Baseline 2 | CAP1 | 5 | 0-2 | Sample | In Cap | B2-CAP1-0002-Avg | In Cap | 2,4′-DDT | 11.215 | 57,855 | 909.9 |
| Baseline 2 | CAP1 | 5 | 0-2 | Sample | In Cap | B2-CAP1-0002-Avg | In Cap | 4,4′-DDD | 175.18 | 57,855 | 3140.2 |
| Baseline 2 | CAP1 | 5 | 0-2 | Sample | In Cap | B2-CAP1-0002-Avg | In Cap | 4,4′-DDE | 50.375 | 57,855 | 148.5 |
| Baseline 2 | CAP1 | 5 | 0-2 | Sample | In Cap | B2-CAP1-0002-Avg | In Cap | 4,4′-DDT | 137.035 | 57,855 | 2136.2 |
| Baseline 2 | CAP1 | 5 | 0-2 | Sample | In Cap | B2-CAP1-0002-Avg | In Cap | Total DDX | 415.065 | 57,855 | 7139.8 |
| Baseline 2 | CAP1 | 5 | 2-5 | Primary | In Cap | B2-CAP1-0205 | In Cap | 2,4′-DDD | 33.22 | 44,450 | 747.4 |
| Baseline 2 | CAP1 | 5 | 2-5 | Primary | In Cap | B2-CAP1-0205 | In Cap | 2,4′-DDE | 3.69 | 44,450 | 83.0 |
| Baseline 2 | CAP1 | 5 | 2-5 | Primary | In Cap | B2-CAP1-0205 | In Cap | 2,4′-DDT | 15.63 | 44,450 | 351.6 |
| Baseline 2 | CAP1 | 5 | 2-5 | Primary | In Cap | B2-CAP1-0205 | In Cap | 4,4′-DDD | 149.73 | 44,450 | 3368.5 |
| Baseline 2 | CAP1 | 5 | 2-5 | Primary | In Cap | B2-CAP1-0205 | In Cap | 4,4′-DDE | 43.68 | 44,450 | 982.7 |
| Baseline 2 | CAP1 | 5 | 2-5 | Primary | In Cap | B2-CAP1-0205 | In Cap | 4,4′-DDT | 9.94 | 44,450 | 223.6 |
| Baseline 2 | CAP1 | 5 | 2-5 | Primary | In Cap | B2-CAP1-0205 | In Cap | Total DDX | 255.89 | 44,450 | 5756.8 |
| Baseline 2 | CAP1 | 5 | 2-5 | Sample | In Cap | B2-CAP1-0205-Avg | In Cap | 2,4′-DDD | 28.88 | 49,291 | 177.9 |
| Baseline 2 | CAP1 | 5 | 2-5 | Sample | In Cap | B2-CAP1-0205-Avg | In Cap | 2,4′-DDE | 3.325 | 49,291 | 600.4 |
| Baseline 2 | CAP1 | 5 | 2-5 | Sample | In Cap | B2-CAP1-0205-Avg | In Cap | 2,4′-DDT | 7.93 | 49,291 | 814.4 |
| Baseline 2 | CAP1 | 5 | 2-5 | Sample | In Cap | B2-CAP1-0205-Avg | In Cap | 4,4′-DDD | 120.8 | 49,291 | 2532.8 |
| Baseline 2 | CAP1 | 5 | 2-5 | Sample | In Cap | B2-CAP1-0205-Avg | In Cap | 4,4′-DDE | 39.33 | 49,291 | 68.8 |
| Baseline 2 | CAP1 | 5 | 2-5 | Sample | In Cap | B2-CAP1-0205-Avg | In Cap | 4,4′-DDT | 9.65 | 49,291 | 198.3 |
| Baseline 2 | CAP1 | 5 | 2-5 | Sample | In Cap | B2-CAP1-0205-Avg | In Cap | Total DDX | 209.915 | 49,291 | 4392.7 |
| Baseline 2 | CAP1 | 5 | 5-7 | Primary | In Cap | B2-CAP1-0507 | In Cap | 2,4′-DDD | 24 | 65,988 | 363.7 |
| Baseline 2 | CAP1 | 5 | 5-7 | Primary | In Cap | B2-CAP1-0507 | In Cap | 2,4′-DDE | 4.13 | 65,988 | 62.6 |
| Baseline 2 | CAP1 | 5 | 5-7 | Primary | In Cap | B2-CAP1-0507 | In Cap | 2,4′-DDT | 6.92 | 65,988 | 104.9 |
| Baseline 2 | CAP1 | 5 | 5-7 | Primary | In Cap | B2-CAP1-0507 | In Cap | 4,4′-DDD | 96.73 | 65,988 | 1465.9 |
| Baseline 2 | CAP1 | 5 | 5-7 | Primary | In Cap | B2-CAP1-0507 | In Cap | 4,4′-DDE | 38.31 | 65,988 | 580.6 |
| Baseline 2 | CAP1 | 5 | 5-7 | Primary | In Cap | B2-CAP1-0507 | In Cap | 4,4′-DDT | 13.48 | 65,988 | 204.3 |
| Baseline 2 | CAP1 | 5 | 5-7 | Primary | In Cap | B2-CAP1-0507 | In Cap | Total DDX | 183.57 | 65,988 | 2781.9 |
| Baseline 2 | CAP1 | 5 | 5-7 | Sample | In Cap | B2-CAP1-0507-Avg | In Cap | 2,4′-DDD | 28.205 | 59,638 | 102.7 |
| Baseline 2 | CAP1 | 5 | 5-7 | Sample | In Cap | B2-CAP1-0507-Avg | In Cap | 2,4′-DDE | 4.43 | 59,638 | 486.0 |
| Baseline 2 | CAP1 | 5 | 5-7 | Sample | In Cap | B2-CAP1-0507-Avg | In Cap | 2,4′-DDT | 6.14 | 59,638 | 815.1 |
| Baseline 2 | CAP1 | 5 | 5-7 | Sample | In Cap | B2-CAP1-0507-Avg | In Cap | 4,4′-DDD | 129.24 | 59,638 | 2250.6 |
| Baseline 2 | CAP1 | 5 | 5-7 | Sample | In Cap | B2-CAP1-0507-Avg | In Cap | 4,4′-DDE | 47.12 | 59,638 | 75.7 |
| Baseline 2 | CAP1 | 5 | 5-7 | Sample | In Cap | B2-CAP1-0507-Avg | In Cap | 4,4′-DDT | 67.655 | 59,638 | 1245.3 |
| Baseline 2 | CAP1 | 5 | 5-7 | Sample | In Cap | B2-CAP1-0507-Avg | In Cap | Total DDX | 282.79 | 59,638 | 4975.3 |
| Baseline 2 | CAP1 | 5 | 0-10 | Sample | In Cap | B2-CAP1-GRAB | In Cap | 2,4′-DDD | 26.7 | 59,154 | 451.4 |
| Baseline 2 | CAP1 | 5 | 0-10 | Sample | In Cap | B2-CAP1-GRAB | In Cap | 2,4′-DDE | 3.8 | 59,154 | 64.2 |
| Baseline 2 | CAP1 | 5 | 0-10 | Sample | In Cap | B2-CAP1-GRAB | In Cap | 2,4′-DDT | 4.42 | 59,154 | 74.7 |
| Baseline 2 | CAP1 | 5 | 0-10 | Sample | In Cap | B2-CAP1-GRAB | In Cap | 4,4′-DDD | 80.18 | 59,154 | 1355.4 |
| Baseline 2 | CAP1 | 5 | 0-10 | Sample | In Cap | B2-CAP1-GRAB | In Cap | 4,4′-DDE | 35 | 59,154 | 591.7 |
| Baseline 2 | CAP1 | 5 | 0-10 | Sample | In Cap | B2-CAP1-GRAB | In Cap | 4,4′-DDT | 13.47 | 59,154 | 227.7 |
| Baseline 2 | CAP1 | 5 | 0-10 | Sample | In Cap | B2-CAP1-GRAB | In Cap | Total DDX | 163.57 | 59,154 | 2765.2 |
| Baseline 2 | CAPX | 5 | 0-2 | Duplicate | In Cap | B2-CAPX-0002 | In Cap | 2,4′-DDD | 25.71 | 65,430 | 392.9 |

**Table 1. Compilation of Sediment DDX and Total Organic Carbon Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval (cm)[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (µg/kg dw; ND=<DL) | TOC (mg/kg dw) | Result (µg/kg OC; DDx ND=<0.5 DL)[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Baseline 2 | CAPX | 5 | 0-2 | Duplicate | In Cap | B2-CAPX-0002 | In Cap | 2,4′-DDE | 4.04 | 65,430 | 61.7 |
| Baseline 2 | CAPX | 5 | 0-2 | Duplicate | In Cap | B2-CAPX-0002 | In Cap | 2,4′-DDT | 9.36 | 65,430 | 143.1 |
| Baseline 2 | CAPX | 5 | 0-2 | Duplicate | In Cap | B2-CAPX-0002 | In Cap | 4,4′-DDD | 149.35 | 65,430 | 2282.6 |
| Baseline 2 | CAPX | 5 | 0-2 | Duplicate | In Cap | B2-CAPX-0002 | In Cap | 4,4′-DDE | 39.97 | 65,430 | 610.9 |
| Baseline 2 | CAPX | 5 | 0-2 | Duplicate | In Cap | B2-CAPX-0002 | In Cap | 4,4′-DDT | 255.92 | 65,430 | 3911.4 |
| Baseline 2 | CAPX | 5 | 0-2 | Duplicate | In Cap | B2-CAPX-0002 | In Cap | Total DDX | 484.35 | 65,430 | 7402.6 |
| Baseline 2 | CAPX | 5 | 2-5 | Duplicate | In Cap | B2-CAPX-0205 | In Cap | 2,4′-DDD | 24.54 | 54,131 | 453.3 |
| Baseline 2 | CAPX | 5 | 2-5 | Duplicate | In Cap | B2-CAPX-0205 | In Cap | 2,4′-DDE | 2.96 | 54,131 | 54.7 |
| Baseline 2 | CAPX | 5 | 2-5 | Duplicate | In Cap | B2-CAPX-0205 | In Cap | 2,4′-DDT | <0.23 | 54,131 | 4.2 |
| Baseline 2 | CAPX | 5 | 2-5 | Duplicate | In Cap | B2-CAPX-0205 | In Cap | 4,4′-DDD | 91.87 | 54,131 | 1697.2 |
| Baseline 2 | CAPX | 5 | 2-5 | Duplicate | In Cap | B2-CAPX-0205 | In Cap | 4,4′-DDE | 34.98 | 54,131 | 646.2 |
| Baseline 2 | CAPX | 5 | 2-5 | Duplicate | In Cap | B2-CAPX-0205 | In Cap | 4,4′-DDT | 9.36 | 54,131 | 172.9 |
| Baseline 2 | CAPX | 5 | 2-5 | Duplicate | In Cap | B2-CAPX-0205 | In Cap | Total DDX | 163.94 | 54,131 | 3028.6 |
| Baseline 2 | CAPX | 5 | 5-7 | Duplicate | In Cap | B2-CAPX-0507 | In Cap | 2,4′-DDD | 32.41 | 53,288 | 608.2 |
| Baseline 2 | CAPX | 5 | 5-7 | Duplicate | In Cap | B2-CAPX-0507 | In Cap | 2,4′-DDE | 4.73 | 53,288 | 88.8 |
| Baseline 2 | CAPX | 5 | 5-7 | Duplicate | In Cap | B2-CAPX-0507 | In Cap | 2,4′-DDT | 5.36 | 53,288 | 100.6 |
| Baseline 2 | CAPX | 5 | 5-7 | Duplicate | In Cap | B2-CAPX-0507 | In Cap | 4,4′-DDD | 161.75 | 53,288 | 3035.4 |
| Baseline 2 | CAPX | 5 | 5-7 | Duplicate | In Cap | B2-CAPX-0507 | In Cap | 4,4′-DDE | 55.93 | 53,288 | 1049.6 |
| Baseline 2 | CAPX | 5 | 5-7 | Duplicate | In Cap | B2-CAPX-0507 | In Cap | 4,4′-DDT | 121.83 | 53,288 | 2286.3 |
| Baseline 2 | CAPX | 5 | 5-7 | Duplicate | In Cap | B2-CAPX-0507 | In Cap | Total DDX | 382.01 | 53,288 | 7168.8 |
| Baseline 2 | OFF2 | 6 | 0-10 | Sample | Off Cap | B2-OFF2-GRAB | Off Cap | 2,4′-DDD | 3.48 | 20,535 | 169.5 |
| Baseline 2 | OFF2 | 6 | 0-10 | Sample | Off Cap | B2-OFF2-GRAB | Off Cap | 2,4′-DDE | <0.08 | 20,535 | 3.9 |
| Baseline 2 | OFF2 | 6 | 0-10 | Sample | Off Cap | B2-OFF2-GRAB | Off Cap | 2,4′-DDT | 1.93 | 20,535 | 94.0 |
| Baseline 2 | OFF2 | 6 | 0-10 | Sample | Off Cap | B2-OFF2-GRAB | Off Cap | 4,4′-DDD | 14.5 | 20,535 | 706.1 |
| Baseline 2 | OFF2 | 6 | 0-10 | Sample | Off Cap | B2-OFF2-GRAB | Off Cap | 4,4′-DDE | 5.77 | 20,535 | 281.0 |
| Baseline 2 | OFF2 | 6 | 0-10 | Sample | Off Cap | B2-OFF2-GRAB | Off Cap | 4,4′-DDT | 3.72 | 20,535 | 181.2 |
| Baseline 2 | OFF2 | 6 | 0-10 | Sample | Off Cap | B2-OFF2-GRAB | Off Cap | Total DDX | 29.48 | 20,535 | 1435.6 |
| Baseline 2 | OFF1 | 7 | 0-10 | Sample | Off Cap | B2-OFF1-GRAB | Off Cap | 2,4′-DDD | 5.79 | 31,755 | 182.3 |
| Baseline 2 | OFF1 | 7 | 0-10 | Sample | Off Cap | B2-OFF1-GRAB | Off Cap | 2,4′-DDE | <0.08 | 31,755 | 2.5 |
| Baseline 2 | OFF1 | 7 | 0-10 | Sample | Off Cap | B2-OFF1-GRAB | Off Cap | 2,4′-DDT | <0.23 | 31,755 | 7.2 |
| Baseline 2 | OFF1 | 7 | 0-10 | Sample | Off Cap | B2-OFF1-GRAB | Off Cap | 4,4′-DDD | 21.14 | 31,755 | 665.7 |
| Baseline 2 | OFF1 | 7 | 0-10 | Sample | Off Cap | B2-OFF1-GRAB | Off Cap | 4,4′-DDE | 12.57 | 31,755 | 395.8 |
| Baseline 2 | OFF1 | 7 | 0-10 | Sample | Off Cap | B2-OFF1-GRAB | Off Cap | 4,4′-DDT | 3.32 | 31,755 | 104.6 |
| Baseline 2 | OFF1 | 7 | 0-10 | Sample | Off Cap | B2-OFF1-GRAB | Off Cap | Total DDX | 43.13 | 31,755 | 1358.2 |
| Baseline 3 | 1 | 1 | 0-10 | Sample | In Cap | B3-QB1-0010-Grab | In Cap | 4,4′-DDD | 527 | 12,000 | 43916.7 |
| Baseline 3 | 1 | 1 | 0-10 | Sample | In Cap | B3-QB1-0010-Grab | In Cap | 4,4′-DDE | 27 | 12,000 | 2250.0 |
| Baseline 3 | 1 | 1 | 0-10 | Sample | In Cap | B3-QB1-0010-Grab | In Cap | 4,4′-DDT | 9.44 | 12,000 | 786.7 |
| Baseline 3 | 1 | 1 | 0-10 | Sample | In Cap | B3-QB1-0010-Grab | In Cap | Total DDX | 563.44 | 12,000 | 46953 |
| Baseline 3 | 2 | 2 | 0-10 | Sample | In Cap | B3-QB2-0010-Grab | In Cap | 4,4′-DDD | 122 | 30,000 | 4066.7 |
| Baseline 3 | 2 | 2 | 0-10 | Sample | In Cap | B3-QB2-0010-Grab | In Cap | 4,4′-DDE | 22.9 | 30,000 | 763.3 |
| Baseline 3 | 2 | 2 | 0-10 | Sample | In Cap | B3-QB2-0010-Grab | In Cap | 4,4′-DDT | 8.4 | 30,000 | 280.0 |
| Baseline 3 | 2 | 2 | 0-10 | Sample | In Cap | B3-QB2-0010-Grab | In Cap | Total DDX | 153.3 | 30,000 | 5110 |
| Baseline 3 | 3 | 3 | 0-10 | Sample | In Cap | B3-QB3-0010-Grab | In Cap | 4,4′-DDD | 216 | 67,000 | 3223.9 |
| Baseline 3 | 3 | 3 | 0-10 | Sample | In Cap | B3-QB3-0010-Grab | In Cap | 4,4′-DDE | 48.3 | 67,000 | 720.9 |
| Baseline 3 | 3 | 3 | 0-10 | Sample | In Cap | B3-QB3-0010-Grab | In Cap | 4,4′-DDT | 6.45 | 67,000 | 96.3 |
| Baseline 3 | 3 | 3 | 0-10 | Sample | In Cap | B3-QB3-0010-Grab | In Cap | Total DDX | 270.75 | 67,000 | 4041 |
| Baseline 3 | 4 | 4 | 0-10 | Sample | In Cap | B3-QB4-0010-Grab | In Cap | 4,4′-DDD | 134 | 82,000 | 1634.1 |
| Baseline 3 | 4 | 4 | 0-10 | Sample | In Cap | B3-QB4-0010-Grab | In Cap | 4,4′-DDE | 30.1 | 82,000 | 367.1 |
| Baseline 3 | 4 | 4 | 0-10 | Sample | In Cap | B3-QB4-0010-Grab | In Cap | 4,4′-DDT | 3.57 | 82,000 | 43.5 |
| Baseline 3 | 4 | 4 | 0-10 | Sample | In Cap | B3-QB4-0010-Grab | In Cap | Total DDX | 167.67 | 82,000 | 2045 |
| Baseline 3 | 5 | 5 | 0-10 | Sample | In Cap | B3-QB5-0010-Grab | In Cap | 4,4′-DDD | 124 | 73,000 | 1698.6 |
| Baseline 3 | 5 | 5 | 0-10 | Sample | In Cap | B3-QB5-0010-Grab | In Cap | 4,4′-DDE | 37.3 | 73,000 | 511.0 |
| Baseline 3 | 5 | 5 | 0-10 | Sample | In Cap | B3-QB5-0010-Grab | In Cap | 4,4′-DDT | 4.38 | 73,000 | 60.0 |

**Table 1. Compilation of Sediment DDX and Total Organic Carbon Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval (cm)[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (µg/kg dw; ND=<DL) | TOC (mg/kg dw) | Result (µg/kg OC; DDx ND=<0.5 DL)[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Baseline 3 | 5 | 5 | 0-10 | Sample | In Cap | B3-QB5-0010-Grab | In Cap | Total DDX | 165.68 | 73,000 | 2270 |
| Baseline 3 | 6 | 6 | 0-10 | Sample | Off Cap | B3-QB6-0010-Grab | Off Cap | 4,4′-DDD | 9.81 | 8,900 | 1102.2 |
| Baseline 3 | 6 | 6 | 0-10 | Sample | Off Cap | B3-QB6-0010-Grab | Off Cap | 4,4′-DDE | 3.09 | 8,900 | 347.2 |
| Baseline 3 | 6 | 6 | 0-10 | Sample | Off Cap | B3-QB6-0010-Grab | Off Cap | 4,4′-DDT | 0.9 | 8,900 | 101.1 |
| Baseline 3 | 6 | 6 | 0-10 | Sample | Off Cap | B3-QB6-0010-Grab | Off Cap | Total DDX | 13.8 | 8,900 | 1551 |
| 2-Month | 1 | 1 | 0-2 | Sample | In Cap | QT2-1-0002-SEDCHEM | In Cap | 2,4′-DDD | 36.3 | 3,100 | 11709.7 |
| 2-Month | 1 | 1 | 0-2 | Sample | In Cap | QT2-1-0002-SEDCHEM | In Cap | 2,4′-DDE | 20.7 | 3,100 | 6677.4 |
| 2-Month | 1 | 1 | 0-2 | Sample | In Cap | QT2-1-0002-SEDCHEM | In Cap | 2,4′-DDT | 29.8 | 3,100 | 9612.9 |
| 2-Month | 1 | 1 | 0-2 | Sample | In Cap | QT2-1-0002-SEDCHEM | In Cap | 4,4′-DDD | 1700 | 3,100 | 548387.1 |
| 2-Month | 1 | 1 | 0-2 | Sample | In Cap | QT2-1-0002-SEDCHEM | In Cap | 4,4′-DDE | 20.9 | 3,100 | 6741.9 |
| 2-Month | 1 | 1 | 0-2 | Sample | In Cap | QT2-1-0002-SEDCHEM | In Cap | 4,4′-DDT | 411 | 3,100 | 132580.6 |
| 2-Month | 1 | 1 | 0-2 | Sample | In Cap | QT2-1-0002-SEDCHEM | In Cap | Total DDX | 2218.7 | 3,100 | 715709.7 |
| 2-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-1-0002-SEDCHEM-AI | In Cap | 2,4′-DDD | 4.71 | 2,400 | 1962.5 |
| 2-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-1-0002-SEDCHEM-AI | In Cap | 2,4′-DDE | <0.06 | 2,400 | <12.5 |
| 2-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-1-0002-SEDCHEM-AI | In Cap | 2,4′-DDT | <0.06 | 2,400 | <12.5 |
| 2-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-1-0002-SEDCHEM-AI | In Cap | 4,4′-DDD | 118 | 2,400 | 49166.7 |
| 2-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-1-0002-SEDCHEM-AI | In Cap | 4,4′-DDE | 3.28 | 2,400 | 1366.7 |
| 2-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-1-0002-SEDCHEM-AI | In Cap | 4,4′-DDT | 1.3 | 2,400 | 541.7 |
| 2-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-1-0002-SEDCHEM-AI | In Cap | Total DDX | 127.29 | 2,400 | 53037.5 |
| 2-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0002-SEDCHEM-BI | In Cap | 2,4′-DDD | 24.1 | 26,000 | 926.9 |
| 2-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0002-SEDCHEM-BI | In Cap | 2,4′-DDE | 13.5 | 26,000 | 519.2 |
| 2-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0002-SEDCHEM-BI | In Cap | 2,4′-DDT | <0.07 | 26,000 | <1.3 |
| 2-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0002-SEDCHEM-BI | In Cap | 4,4′-DDD | 90.8 | 26,000 | 3492.3 |
| 2-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0002-SEDCHEM-BI | In Cap | 4,4′-DDE | 17.4 | 26,000 | 669.2 |
| 2-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0002-SEDCHEM-BI | In Cap | 4,4′-DDT | 10.9 | 26,000 | 419.2 |
| 2-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0002-SEDCHEM-BI | In Cap | Total DDX | 156.7 | 26,000 | 6026.9 |
| 2-Month | 1 | 1 | 2-5 | Sample | In Cap | QT2-1-0205-SEDCHEM | In Cap | 2,4′-DDD | 3.44 | 2,400 | 1433.3 |
| 2-Month | 1 | 1 | 2-5 | Sample | In Cap | QT2-1-0205-SEDCHEM | In Cap | 2,4′-DDE | 1.92 | 2,400 | 800.0 |
| 2-Month | 1 | 1 | 2-5 | Sample | In Cap | QT2-1-0205-SEDCHEM | In Cap | 2,4′-DDT | 1.61 | 2,400 | 670.8 |
| 2-Month | 1 | 1 | 2-5 | Sample | In Cap | QT2-1-0205-SEDCHEM | In Cap | 4,4′-DDD | 9.22 | 2,400 | 3841.7 |
| 2-Month | 1 | 1 | 2-5 | Sample | In Cap | QT2-1-0205-SEDCHEM | In Cap | 4,4′-DDE | 2.98 | 2,400 | 1241.7 |
| 2-Month | 1 | 1 | 2-5 | Sample | In Cap | QT2-1-0205-SEDCHEM | In Cap | 4,4′-DDT | 2.03 | 2,400 | 845.8 |
| 2-Month | 1 | 1 | 2-5 | Sample | In Cap | QT2-1-0205-SEDCHEM | In Cap | Total DDX | 21.2 | 2,400 | 8833.3 |
| 2-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0205-SEDCHEM-BI | In Cap | 2,4′-DDD | 39 | 31,000 | 1258.1 |
| 2-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0205-SEDCHEM-BI | In Cap | 2,4′-DDE | 19.9 | 31,000 | 641.9 |
| 2-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0205-SEDCHEM-BI | In Cap | 2,4′-DDT | 4.24 | 31,000 | 136.8 |
| 2-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0205-SEDCHEM-BI | In Cap | 4,4′-DDD | 149 | 31,000 | 4806.5 |
| 2-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0205-SEDCHEM-BI | In Cap | 4,4′-DDE | 28.8 | 31,000 | 929.0 |
| 2-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0205-SEDCHEM-BI | In Cap | 4,4′-DDT | 6.65 | 31,000 | 214.5 |
| 2-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0205-SEDCHEM-BI | In Cap | Total DDX | 247.59 | 31,000 | 7986.8 |
| 2-Month | 1 | 1 | 5-7 | Sample | In Cap | QT2-1-0507-SEDCHEM | In Cap | 2,4′-DDD | 4.1 | 3,200 | 1281.3 |
| 2-Month | 1 | 1 | 5-7 | Sample | In Cap | QT2-1-0507-SEDCHEM | In Cap | 2,4′-DDE | 3.58 | 3,200 | 1118.8 |
| 2-Month | 1 | 1 | 5-7 | Sample | In Cap | QT2-1-0507-SEDCHEM | In Cap | 2,4′-DDT | <0.06 | 3,200 | <9.4 |
| 2-Month | 1 | 1 | 5-7 | Sample | In Cap | QT2-1-0507-SEDCHEM | In Cap | 4,4′-DDD | 12.5 | 3,200 | 3906.3 |
| 2-Month | 1 | 1 | 5-7 | Sample | In Cap | QT2-1-0507-SEDCHEM | In Cap | 4,4′-DDE | 3.27 | 3,200 | 1021.9 |
| 2-Month | 1 | 1 | 5-7 | Sample | In Cap | QT2-1-0507-SEDCHEM | In Cap | 4,4′-DDT | <0.06 | 3,200 | <9.4 |
| 2-Month | 1 | 1 | 5-7 | Sample | In Cap | QT2-1-0507-SEDCHEM | In Cap | Total DDX | 23.45 | 3,200 | 7328.1 |
| 2-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0507-SEDCHEM-BI | In Cap | 2,4′-DDD | 52.8 | 55,000 | 960.0 |
| 2-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0507-SEDCHEM-BI | In Cap | 2,4′-DDE | 28.3 | 55,000 | 514.5 |
| 2-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0507-SEDCHEM-BI | In Cap | 2,4′-DDT | 13.4 | 55,000 | 243.6 |
| 2-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0507-SEDCHEM-BI | In Cap | 4,4′-DDD | 959 | 55,000 | 17436.4 |
| 2-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0507-SEDCHEM-BI | In Cap | 4,4′-DDE | 9.99 | 55,000 | 181.6 |
| 2-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0507-SEDCHEM-BI | In Cap | 4,4′-DDT | 16.8 | 55,000 | 305.5 |

**Table 1. Compilation of Sediment DDX and Total Organic Carbon Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval (cm)[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (µg/kg dw; ND=<DL) | TOC (mg/kg dw) | Result (µg/kg OC; DDx ND=<0.5 DL)[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0507-SEDCHEM-BI | In Cap | Total DDX | 1080.29 | 55,000 | 19641.6 |
| 2-Month | 2 | 2 | 0-2 | Sample | In Cap | QT2-2-0002-SEDCHEM | In Cap | 2,4′-DDD | 6.67 | 2,900 | 2300.0 |
| 2-Month | 2 | 2 | 0-2 | Sample | In Cap | QT2-2-0002-SEDCHEM | In Cap | 2,4′-DDE | 3.55 | 2,900 | 1224.1 |
| 2-Month | 2 | 2 | 0-2 | Sample | In Cap | QT2-2-0002-SEDCHEM | In Cap | 2,4′-DDT | 2.04 | 2,900 | 703.4 |
| 2-Month | 2 | 2 | 0-2 | Sample | In Cap | QT2-2-0002-SEDCHEM | In Cap | 4,4′-DDD | 23.6 | 2,900 | 8137.9 |
| 2-Month | 2 | 2 | 0-2 | Sample | In Cap | QT2-2-0002-SEDCHEM | In Cap | 4,4′-DDE | 0.66 | 2,900 | 227.6 |
| 2-Month | 2 | 2 | 0-2 | Sample | In Cap | QT2-2-0002-SEDCHEM | In Cap | 4,4′-DDT | 0.81 | 2,900 | 279.3 |
| 2-Month | 2 | 2 | 0-2 | Sample | In Cap | QT2-2-0002-SEDCHEM | In Cap | Total DDX | 37.33 | 2,900 | 12872.4 |
| 2-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-2-0002-SEDCHEM-AI | In Cap | 2,4′-DDD | 2.55 | 2,600 | 980.8 |
| 2-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-2-0002-SEDCHEM-AI | In Cap | 2,4′-DDE | 1.73 | 2,600 | 665.4 |
| 2-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-2-0002-SEDCHEM-AI | In Cap | 2,4′-DDT | <0.06 | 2,600 | <11.5 |
| 2-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-2-0002-SEDCHEM-AI | In Cap | 4,4′-DDD | 8.69 | 2,600 | 3342.3 |
| 2-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-2-0002-SEDCHEM-AI | In Cap | 4,4′-DDE | 0.96 | 2,600 | 369.2 |
| 2-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-2-0002-SEDCHEM-AI | In Cap | 4,4′-DDT | <0.06 | 2,600 | <11.5 |
| 2-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-2-0002-SEDCHEM-AI | In Cap | Total DDX | 13.93 | 2,600 | 5357.7 |
| 2-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0002-SEDCHEM-BI | In Cap | 2,4′-DDD | 20 | 18,000 | 1111.1 |
| 2-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0002-SEDCHEM-BI | In Cap | 2,4′-DDE | 10.1 | 18,000 | 561.1 |
| 2-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0002-SEDCHEM-BI | In Cap | 2,4′-DDT | 3.03 | 18,000 | 168.3 |
| 2-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0002-SEDCHEM-BI | In Cap | 4,4′-DDD | 78.9 | 18,000 | 4383.3 |
| 2-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0002-SEDCHEM-BI | In Cap | 4,4′-DDE | 12.6 | 18,000 | 700.0 |
| 2-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0002-SEDCHEM-BI | In Cap | 4,4′-DDT | 8.34 | 18,000 | 463.3 |
| 2-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0002-SEDCHEM-BI | In Cap | Total DDX | 132.97 | 18,000 | 7387.2 |
| 2-Month | 2 | 2 | 2-5 | Sample | In Cap | QT2-2-0205-SEDCHEM | In Cap | 2,4′-DDD | 2.55 | 1,000 | |
| 2-Month | 2 | 2 | 2-5 | Sample | In Cap | QT2-2-0205-SEDCHEM | In Cap | 2,4′-DDE | 1.19 | 1,000 | |
| 2-Month | 2 | 2 | 2-5 | Sample | In Cap | QT2-2-0205-SEDCHEM | In Cap | 2,4′-DDT | <0.06 | 1,000 | |
| 2-Month | 2 | 2 | 2-5 | Sample | In Cap | QT2-2-0205-SEDCHEM | In Cap | 4,4′-DDD | 5 | 1,000 | |
| 2-Month | 2 | 2 | 2-5 | Sample | In Cap | QT2-2-0205-SEDCHEM | In Cap | 4,4′-DDE | 0.92 | 1,000 | |
| 2-Month | 2 | 2 | 2-5 | Sample | In Cap | QT2-2-0205-SEDCHEM | In Cap | 4,4′-DDT | <0.06 | 1,000 | |
| 2-Month | 2 | 2 | 2-5 | Sample | In Cap | QT2-2-0205-SEDCHEM | In Cap | Total DDX | 9.66 | 1,000 | |
| 2-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0205-SEDCHEM-BI | In Cap | 2,4′-DDD | 24.3 | 18,000 | 1350.0 |
| 2-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0205-SEDCHEM-BI | In Cap | 2,4′-DDE | 13.2 | 18,000 | 733.3 |
| 2-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0205-SEDCHEM-BI | In Cap | 2,4′-DDT | 2.17 | 18,000 | 120.6 |
| 2-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0205-SEDCHEM-BI | In Cap | 4,4′-DDD | 90.6 | 18,000 | 5033.3 |
| 2-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0205-SEDCHEM-BI | In Cap | 4,4′-DDE | 20.3 | 18,000 | 1127.8 |
| 2-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0205-SEDCHEM-BI | In Cap | 4,4′-DDT | 17.9 | 18,000 | 994.4 |
| 2-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0205-SEDCHEM-BI | In Cap | Total DDX | 168.47 | 18,000 | 9359.4 |
| 2-Month | 2 | 2 | 5-7 | Sample | In Cap | QT2-2-0507-SEDCHEM | In Cap | 2,4′-DDD | 1.84 | 1,100 | |
| 2-Month | 2 | 2 | 5-7 | Sample | In Cap | QT2-2-0507-SEDCHEM | In Cap | 2,4′-DDE | 0.94 | 1,100 | |
| 2-Month | 2 | 2 | 5-7 | Sample | In Cap | QT2-2-0507-SEDCHEM | In Cap | 2,4′-DDT | <0.06 | 1,100 | |
| 2-Month | 2 | 2 | 5-7 | Sample | In Cap | QT2-2-0507-SEDCHEM | In Cap | 4,4′-DDD | 1.79 | 1,100 | |
| 2-Month | 2 | 2 | 5-7 | Sample | In Cap | QT2-2-0507-SEDCHEM | In Cap | 4,4′-DDE | 0.46 | 1,100 | |
| 2-Month | 2 | 2 | 5-7 | Sample | In Cap | QT2-2-0507-SEDCHEM | In Cap | 4,4′-DDT | <0.06 | 1,100 | |
| 2-Month | 2 | 2 | 5-7 | Sample | In Cap | QT2-2-0507-SEDCHEM | In Cap | Total DDX | 5.03 | 1,100 | |
| 2-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0507-SEDCHEM-BI | In Cap | 2,4′-DDD | 19.7 | 16,000 | 1231.3 |
| 2-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0507-SEDCHEM-BI | In Cap | 2,4′-DDE | 11.5 | 16,000 | 718.8 |
| 2-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0507-SEDCHEM-BI | In Cap | 2,4′-DDT | 3.91 | 16,000 | 244.4 |
| 2-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0507-SEDCHEM-BI | In Cap | 4,4′-DDD | 71.7 | 16,000 | 4481.3 |
| 2-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0507-SEDCHEM-BI | In Cap | 4,4′-DDE | 11.1 | 16,000 | 693.8 |
| 2-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0507-SEDCHEM-BI | In Cap | 4,4′-DDT | 3.02 | 16,000 | 188.8 |
| 2-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0507-SEDCHEM-BI | In Cap | Total DDX | 120.93 | 16,000 | 7558.1 |
| 2-Month | 3 | 3 | 0-2 | Sample | In Cap | QT2-3-0002-SEDCHEM | In Cap | 2,4′-DDD | 13.8 | 6,900 | 2000.0 |
| 2-Month | 3 | 3 | 0-2 | Sample | In Cap | QT2-3-0002-SEDCHEM | In Cap | 2,4′-DDE | 9.44 | 6,900 | 1368.1 |
| 2-Month | 3 | 3 | 0-2 | Sample | In Cap | QT2-3-0002-SEDCHEM | In Cap | 2,4′-DDT | <0.06 | 6,900 | <4.3 |

**Table 1. Compilation of Sediment DDX and Total Organic Carbon Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval (cm)[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (µg/kg dw; ND=<DL) | TOC (mg/kg dw) | Result (µg/kg OC; DDx ND=<0.5 DL)[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-Month | 3 | 3 | 0-2 | Sample | In Cap | QT2-3-0002-SEDCHEM | In Cap | 4,4′-DDD | 77.9 | 6,900 | 11289.9 |
| 2-Month | 3 | 3 | 0-2 | Sample | In Cap | QT2-3-0002-SEDCHEM | In Cap | 4,4′-DDE | 16 | 6,900 | 2318.8 |
| 2-Month | 3 | 3 | 0-2 | Sample | In Cap | QT2-3-0002-SEDCHEM | In Cap | 4,4′-DDT | 18.3 | 6,900 | 2652.2 |
| 2-Month | 3 | 3 | 0-2 | Sample | In Cap | QT2-3-0002-SEDCHEM | In Cap | Total DDX | 135.44 | 6,900 | 19629.0 |
| 2-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-3-0002-SEDCHEM-AI | In Cap | 2,4′-DDD | 94.8 | 4,300 | 22046.5 |
| 2-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-3-0002-SEDCHEM-AI | In Cap | 2,4′-DDE | 33.2 | 4,300 | 7720.9 |
| 2-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-3-0002-SEDCHEM-AI | In Cap | 2,4′-DDT | 9.92 | 4,300 | 2307.0 |
| 2-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-3-0002-SEDCHEM-AI | In Cap | 4,4′-DDD | 389 | 4,300 | 90465.1 |
| 2-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-3-0002-SEDCHEM-AI | In Cap | 4,4′-DDE | 52 | 4,300 | 12093.0 |
| 2-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-3-0002-SEDCHEM-AI | In Cap | 4,4′-DDT | 14.2 | 4,300 | 3302.3 |
| 2-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-3-0002-SEDCHEM-AI | In Cap | Total DDX | 593.12 | 4,300 | 137934.9 |
| 2-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0002-SEDCHEM-BI | In Cap | 2,4′-DDD | 7.38 | 35,000 | 210.9 |
| 2-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0002-SEDCHEM-BI | In Cap | 2,4′-DDE | 3.63 | 35,000 | 103.7 |
| 2-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0002-SEDCHEM-BI | In Cap | 2,4′-DDT | 1.69 | 35,000 | 48.3 |
| 2-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0002-SEDCHEM-BI | In Cap | 4,4′-DDD | 25 | 35,000 | 714.3 |
| 2-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0002-SEDCHEM-BI | In Cap | 4,4′-DDE | 2.1 | 35,000 | 60.0 |
| 2-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0002-SEDCHEM-BI | In Cap | 4,4′-DDT | 1.49 | 35,000 | 42.6 |
| 2-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0002-SEDCHEM-BI | In Cap | Total DDX | 41.29 | 35,000 | 1179.7 |
| 2-Month | 3 | 3 | 2-5 | Sample | In Cap | QT2-3-0205-SEDCHEM | In Cap | 2,4′-DDD | 12.9 | 7,100 | 1816.9 |
| 2-Month | 3 | 3 | 2-5 | Sample | In Cap | QT2-3-0205-SEDCHEM | In Cap | 2,4′-DDE | 4.35 | 7,100 | 612.7 |
| 2-Month | 3 | 3 | 2-5 | Sample | In Cap | QT2-3-0205-SEDCHEM | In Cap | 2,4′-DDT | 2.23 | 7,100 | 314.1 |
| 2-Month | 3 | 3 | 2-5 | Sample | In Cap | QT2-3-0205-SEDCHEM | In Cap | 4,4′-DDD | 45.2 | 7,100 | 6366.2 |
| 2-Month | 3 | 3 | 2-5 | Sample | In Cap | QT2-3-0205-SEDCHEM | In Cap | 4,4′-DDE | 3.42 | 7,100 | 481.7 |
| 2-Month | 3 | 3 | 2-5 | Sample | In Cap | QT2-3-0205-SEDCHEM | In Cap | 4,4′-DDT | 1.45 | 7,100 | 204.2 |
| 2-Month | 3 | 3 | 2-5 | Sample | In Cap | QT2-3-0205-SEDCHEM | In Cap | Total DDX | 69.55 | 7,100 | 9795.8 |
| 2-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0205-SEDCHEM-BI | In Cap | 2,4′-DDD | 93.7 | 87,000 | 1077.0 |
| 2-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0205-SEDCHEM-BI | In Cap | 2,4′-DDE | 55.3 | 87,000 | 635.6 |
| 2-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0205-SEDCHEM-BI | In Cap | 2,4′-DDT | 26.5 | 87,000 | 304.6 |
| 2-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0205-SEDCHEM-BI | In Cap | 4,4′-DDD | 4410 | 87,000 | 50689.7 |
| 2-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0205-SEDCHEM-BI | In Cap | 4,4′-DDE | 17.1 | 87,000 | 196.6 |
| 2-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0205-SEDCHEM-BI | In Cap | 4,4′-DDT | 64 | 87,000 | 735.6 |
| 2-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0205-SEDCHEM-BI | In Cap | Total DDX | 4666.6 | 87,000 | 53639.1 |
| 2-Month | 3 | 3 | 5-7 | Sample | In Cap | QT2-3-0507-SEDCHEM | In Cap | 2,4′-DDD | 18.9 | 14,000 | 1350.0 |
| 2-Month | 3 | 3 | 5-7 | Sample | In Cap | QT2-3-0507-SEDCHEM | In Cap | 2,4′-DDE | 9.21 | 14,000 | 657.9 |
| 2-Month | 3 | 3 | 5-7 | Sample | In Cap | QT2-3-0507-SEDCHEM | In Cap | 2,4′-DDT | 2.75 | 14,000 | 196.4 |
| 2-Month | 3 | 3 | 5-7 | Sample | In Cap | QT2-3-0507-SEDCHEM | In Cap | 4,4′-DDD | 86.6 | 14,000 | 6185.7 |
| 2-Month | 3 | 3 | 5-7 | Sample | In Cap | QT2-3-0507-SEDCHEM | In Cap | 4,4′-DDE | 8.01 | 14,000 | 572.1 |
| 2-Month | 3 | 3 | 5-7 | Sample | In Cap | QT2-3-0507-SEDCHEM | In Cap | 4,4′-DDT | 1.97 | 14,000 | 140.7 |
| 2-Month | 3 | 3 | 5-7 | Sample | In Cap | QT2-3-0507-SEDCHEM | In Cap | Total DDX | 127.44 | 14,000 | 9102.9 |
| 2-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0507-SEDCHEM-BI | In Cap | 2,4′-DDD | 99.1 | 100,000 | 991.0 |
| 2-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0507-SEDCHEM-BI | In Cap | 2,4′-DDE | 44.8 | 100,000 | 448.0 |
| 2-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0507-SEDCHEM-BI | In Cap | 2,4′-DDT | 5.19 | 100,000 | 51.9 |
| 2-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0507-SEDCHEM-BI | In Cap | 4,4′-DDD | 521 | 100,000 | 5210.0 |
| 2-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0507-SEDCHEM-BI | In Cap | 4,4′-DDE | 98.3 | 100,000 | 983.0 |
| 2-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0507-SEDCHEM-BI | In Cap | 4,4′-DDT | 15 | 100,000 | 150.0 |
| 2-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0507-SEDCHEM-BI | In Cap | Total DDX | 783.39 | 100,000 | 7833.9 |
| 2-Month | 4 | 4 | 0-2 | Sample | In Cap | QT2-4-0002-SEDCHEM | In Cap | 2,4′-DDD | 1.36 | 4,200 | 323.8 |
| 2-Month | 4 | 4 | 0-2 | Sample | In Cap | QT2-4-0002-SEDCHEM | In Cap | 2,4′-DDE | 0.75 | 4,200 | 178.6 |
| 2-Month | 4 | 4 | 0-2 | Sample | In Cap | QT2-4-0002-SEDCHEM | In Cap | 2,4′-DDT | <0.06 | 4,200 | <7.1 |
| 2-Month | 4 | 4 | 0-2 | Sample | In Cap | QT2-4-0002-SEDCHEM | In Cap | 4,4′-DDD | 6.9 | 4,200 | 1642.9 |
| 2-Month | 4 | 4 | 0-2 | Sample | In Cap | QT2-4-0002-SEDCHEM | In Cap | 4,4′-DDE | 2.68 | 4,200 | 638.1 |
| 2-Month | 4 | 4 | 0-2 | Sample | In Cap | QT2-4-0002-SEDCHEM | In Cap | 4,4′-DDT | 1.06 | 4,200 | 252.4 |
| 2-Month | 4 | 4 | 0-2 | Sample | In Cap | QT2-4-0002-SEDCHEM | In Cap | Total DDX | 12.75 | 4,200 | 3035.7 |

**Table 1. Compilation of Sediment DDX and Total Organic Carbon Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval (cm)[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (µg/kg dw; ND=<DL) | TOC (mg/kg dw) | Result (µg/kg OC; DDx ND=<0.5 DL)[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-4-0002-SEDCHEM-AI | In Cap | 2,4′-DDD | 0.09 | 1,200 | |
| 2-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-4-0002-SEDCHEM-AI | In Cap | 2,4′-DDE | 0.14 | 1,200 | |
| 2-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-4-0002-SEDCHEM-AI | In Cap | 2,4′-DDT | <0.06 | 1,200 | |
| 2-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-4-0002-SEDCHEM-AI | In Cap | 4,4′-DDD | 0.5 | 1,200 | |
| 2-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-4-0002-SEDCHEM-AI | In Cap | 4,4′-DDE | 0.16 | 1,200 | |
| 2-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-4-0002-SEDCHEM-AI | In Cap | 4,4′-DDT | <0.06 | 1,200 | |
| 2-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-4-0002-SEDCHEM-AI | In Cap | Total DDX | 0.89 | 1,200 | |
| 2-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0002-SEDCHEM-BI | In Cap | 2,4′-DDD | 7.63 | 26,000 | 293.5 |
| 2-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0002-SEDCHEM-BI | In Cap | 2,4′-DDE | 4.55 | 26,000 | 175.0 |
| 2-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0002-SEDCHEM-BI | In Cap | 2,4′-DDT | 0.82 | 26,000 | 31.5 |
| 2-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0002-SEDCHEM-BI | In Cap | 4,4′-DDD | 157 | 26,000 | 6038.5 |
| 2-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0002-SEDCHEM-BI | In Cap | 4,4′-DDE | 18.8 | 26,000 | 723.1 |
| 2-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0002-SEDCHEM-BI | In Cap | 4,4′-DDT | 4.92 | 26,000 | 189.2 |
| 2-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0002-SEDCHEM-BI | In Cap | Total DDX | 193.72 | 26,000 | 7450.8 |
| 2-Month | 4 | 4 | 2-5 | Sample | In Cap | QT2-4-0205-SEDCHEM | In Cap | 2,4′-DDD | 0.73 | 1,400 | |
| 2-Month | 4 | 4 | 2-5 | Sample | In Cap | QT2-4-0205-SEDCHEM | In Cap | 2,4′-DDE | 0.54 | 1,400 | |
| 2-Month | 4 | 4 | 2-5 | Sample | In Cap | QT2-4-0205-SEDCHEM | In Cap | 2,4′-DDT | <0.06 | 1,400 | |
| 2-Month | 4 | 4 | 2-5 | Sample | In Cap | QT2-4-0205-SEDCHEM | In Cap | 4,4′-DDD | 3.68 | 1,400 | |
| 2-Month | 4 | 4 | 2-5 | Sample | In Cap | QT2-4-0205-SEDCHEM | In Cap | 4,4′-DDE | 1.02 | 1,400 | |
| 2-Month | 4 | 4 | 2-5 | Sample | In Cap | QT2-4-0205-SEDCHEM | In Cap | 4,4′-DDT | 0.19 | 1,400 | |
| 2-Month | 4 | 4 | 2-5 | Sample | In Cap | QT2-4-0205-SEDCHEM | In Cap | Total DDX | 6.16 | 1,400 | |
| 2-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0205-SEDCHEM-BI | In Cap | 2,4′-DDD | 8.09 | 24,000 | 337.1 |
| 2-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0205-SEDCHEM-BI | In Cap | 2,4′-DDE | 5.94 | 24,000 | 247.5 |
| 2-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0205-SEDCHEM-BI | In Cap | 2,4′-DDT | <0.08 | 24,000 | <1.7 |
| 2-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0205-SEDCHEM-BI | In Cap | 4,4′-DDD | 78.5 | 24,000 | 3270.8 |
| 2-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0205-SEDCHEM-BI | In Cap | 4,4′-DDE | 25.8 | 24,000 | 1075.0 |
| 2-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0205-SEDCHEM-BI | In Cap | 4,4′-DDT | 5.11 | 24,000 | 212.9 |
| 2-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0205-SEDCHEM-BI | In Cap | Total DDX | 123.44 | 24,000 | 5143.3 |
| 2-Month | 4 | 4 | 5-7 | Sample | In Cap | QT2-4-0507-SEDCHEM | In Cap | 2,4′-DDD | 8.18 | 11,000 | 743.6 |
| 2-Month | 4 | 4 | 5-7 | Sample | In Cap | QT2-4-0507-SEDCHEM | In Cap | 2,4′-DDE | 3.72 | 11,000 | 338.2 |
| 2-Month | 4 | 4 | 5-7 | Sample | In Cap | QT2-4-0507-SEDCHEM | In Cap | 2,4′-DDT | 0.52 | 11,000 | 47.3 |
| 2-Month | 4 | 4 | 5-7 | Sample | In Cap | QT2-4-0507-SEDCHEM | In Cap | 4,4′-DDD | 47.6 | 11,000 | 4327.3 |
| 2-Month | 4 | 4 | 5-7 | Sample | In Cap | QT2-4-0507-SEDCHEM | In Cap | 4,4′-DDE | 11.2 | 11,000 | 1018.2 |
| 2-Month | 4 | 4 | 5-7 | Sample | In Cap | QT2-4-0507-SEDCHEM | In Cap | 4,4′-DDT | 2.21 | 11,000 | 200.9 |
| 2-Month | 4 | 4 | 5-7 | Sample | In Cap | QT2-4-0507-SEDCHEM | In Cap | Total DDX | 73.43 | 11,000 | 6675.5 |
| 2-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0507-SEDCHEM-BI | In Cap | 2,4′-DDD | 7.66 | 25,000 | 306.4 |
| 2-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0507-SEDCHEM-BI | In Cap | 2,4′-DDE | 5.55 | 25,000 | 222.0 |
| 2-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0507-SEDCHEM-BI | In Cap | 2,4′-DDT | <0.09 | 25,000 | <1.8 |
| 2-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0507-SEDCHEM-BI | In Cap | 4,4′-DDD | 55.1 | 25,000 | 2204.0 |
| 2-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0507-SEDCHEM-BI | In Cap | 4,4′-DDE | 23.2 | 25,000 | 928.0 |
| 2-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0507-SEDCHEM-BI | In Cap | 4,4′-DDT | 4.18 | 25,000 | 167.2 |
| 2-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0507-SEDCHEM-BI | In Cap | Total DDX | 95.69 | 25,000 | 3827.6 |
| 2-Month | 5 | 5 | 0-2 | Primary | In Cap | QT2-5-0002-SEDCHEM | In Cap | 2,4′-DDD | 3.15 | 6,100 | 516.4 |
| 2-Month | 5 | 5 | 0-2 | Primary | In Cap | QT2-5-0002-SEDCHEM | In Cap | 2,4′-DDE | 1.75 | 6,100 | 286.9 |
| 2-Month | 5 | 5 | 0-2 | Primary | In Cap | QT2-5-0002-SEDCHEM | In Cap | 2,4′-DDT | <0.07 | 6,100 | <5.7 |
| 2-Month | 5 | 5 | 0-2 | Primary | In Cap | QT2-5-0002-SEDCHEM | In Cap | 4,4′-DDD | 17.6 | 6,100 | 2885.2 |
| 2-Month | 5 | 5 | 0-2 | Primary | In Cap | QT2-5-0002-SEDCHEM | In Cap | 4,4′-DDE | 6.98 | 6,100 | 1144.3 |
| 2-Month | 5 | 5 | 0-2 | Primary | In Cap | QT2-5-0002-SEDCHEM | In Cap | 4,4′-DDT | 0.7 | 6,100 | 114.8 |
| 2-Month | 5 | 5 | 0-2 | Primary | In Cap | QT2-5-0002-SEDCHEM | In Cap | Total DDX | 30.18 | 6,100 | 4947.5 |
| 2-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-AI | In Cap | 2,4′-DDD | 0.76 | 670 | |
| 2-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-AI | In Cap | 2,4′-DDE | 0.91 | 670 | |
| 2-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-AI | In Cap | 2,4′-DDT | <0.06 | 670 | |
| 2-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-AI | In Cap | 4,4′-DDD | 3.48 | 670 | |

**Table 1. Compilation of Sediment DDX and Total Organic Carbon Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval (cm)[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (µg/kg dw; ND=<DL) | TOC (mg/kg dw) | Result (µg/kg OC; DDx ND=<0.5 DL)[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-AI | In Cap | 4,4′-DDE | 1.14 | 670 | |
| 2-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-AI | In Cap | 4,4′-DDT | 0.47 | 670 | |
| 2-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-AI | In Cap | Total DDX | 6.76 | 670 | |
| 2-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-AI-Avg | In Cap | 2,4′-DDD | 0.75 | 795 | |
| 2-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-AI-Avg | In Cap | 2,4′-DDE | 0.805 | 795 | |
| 2-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-AI-Avg | In Cap | 2,4′-DDT | <0.06 | 795 | |
| 2-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-AI-Avg | In Cap | 4,4′-DDD | 3.61 | 795 | |
| 2-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-AI-Avg | In Cap | 4,4′-DDE | 1.215 | 795 | |
| 2-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-AI-Avg | In Cap | 4,4′-DDT | 0.415 | 795 | |
| 2-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-AI-Avg | In Cap | Total DDX | 6.795 | 795 | |
| 2-Month | 5 | 5 | 0-2 | Sample | In Cap | QT2-5-0002-SEDCHEM-Avg | In Cap | 2,4′-DDD | 27.125 | 6,200 | 4313.8 |
| 2-Month | 5 | 5 | 0-2 | Sample | In Cap | QT2-5-0002-SEDCHEM-Avg | In Cap | 2,4′-DDE | 20.975 | 6,200 | 3333.9 |
| 2-Month | 5 | 5 | 0-2 | Sample | In Cap | QT2-5-0002-SEDCHEM-Avg | In Cap | 2,4′-DDT | <0.07 | 6,200 | <5.7 |
| 2-Month | 5 | 5 | 0-2 | Sample | In Cap | QT2-5-0002-SEDCHEM-Avg | In Cap | 4,4′-DDD | 172.3 | 6,200 | 27395.0 |
| 2-Month | 5 | 5 | 0-2 | Sample | In Cap | QT2-5-0002-SEDCHEM-Avg | In Cap | 4,4′-DDE | 39.84 | 6,200 | 6342.0 |
| 2-Month | 5 | 5 | 0-2 | Sample | In Cap | QT2-5-0002-SEDCHEM-Avg | In Cap | 4,4′-DDT | 9.05 | 6,200 | 1438.3 |
| 2-Month | 5 | 5 | 0-2 | Sample | In Cap | QT2-5-0002-SEDCHEM-Avg | In Cap | Total DDX | 269.29 | 6,200 | 42823.0 |
| 2-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-BI | In Cap | 2,4′-DDD | 50.3 | 61,000 | 824.6 |
| 2-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-BI | In Cap | 2,4′-DDE | 30.2 | 61,000 | 495.1 |
| 2-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-BI | In Cap | 2,4′-DDT | <0.08 | 61,000 | <0.7 |
| 2-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-BI | In Cap | 4,4′-DDD | 239 | 61,000 | 3918.0 |
| 2-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-BI | In Cap | 4,4′-DDE | 73 | 61,000 | 1196.7 |
| 2-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-BI | In Cap | 4,4′-DDT | 7.09 | 61,000 | 116.2 |
| 2-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-BI | In Cap | Total DDX | 399.59 | 61,000 | 6550.7 |
| 2-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-BI-Avg | In Cap | 2,4′-DDD | 48.15 | 59,500 | 808.8 |
| 2-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-BI-Avg | In Cap | 2,4′-DDE | 28 | 59,500 | 470.0 |
| 2-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-BI-Avg | In Cap | 2,4′-DDT | <0.08 | 59,500 | <0.7 |
| 2-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-BI-Avg | In Cap | 4,4′-DDD | 234 | 59,500 | 3933.2 |
| 2-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-BI-Avg | In Cap | 4,4′-DDE | 71.45 | 59,500 | 1200.9 |
| 2-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-BI-Avg | In Cap | 4,4′-DDT | 9.295 | 59,500 | 157.3 |
| 2-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0002-SEDCHEM-BI-Avg | In Cap | Total DDX | 390.895 | 59,500 | 6570.2 |
| 2-Month | 5 | 5 | 2-5 | Primary | In Cap | QT2-5-0205-SEDCHEM | In Cap | 2,4′-DDD | 2.9 | 5,500 | 527.3 |
| 2-Month | 5 | 5 | 2-5 | Primary | In Cap | QT2-5-0205-SEDCHEM | In Cap | 2,4′-DDE | 1.79 | 5,500 | 325.5 |
| 2-Month | 5 | 5 | 2-5 | Primary | In Cap | QT2-5-0205-SEDCHEM | In Cap | 2,4′-DDT | <0.07 | 5,500 | <6.4 |
| 2-Month | 5 | 5 | 2-5 | Primary | In Cap | QT2-5-0205-SEDCHEM | In Cap | 4,4′-DDD | 17.2 | 5,500 | 3127.3 |
| 2-Month | 5 | 5 | 2-5 | Primary | In Cap | QT2-5-0205-SEDCHEM | In Cap | 4,4′-DDE | 7.04 | 5,500 | 1280.0 |
| 2-Month | 5 | 5 | 2-5 | Primary | In Cap | QT2-5-0205-SEDCHEM | In Cap | 4,4′-DDT | 20.2 | 5,500 | 3672.7 |
| 2-Month | 5 | 5 | 2-5 | Primary | In Cap | QT2-5-0205-SEDCHEM | In Cap | Total DDX | 49.13 | 5,500 | 8932.7 |
| 2-Month | 5 | 5 | 2-5 | Sample | In Cap | QT2-5-0205-SEDCHEM-Avg | In Cap | 2,4′-DDD | 3.735 | 7,350 | 512.0 |
| 2-Month | 5 | 5 | 2-5 | Sample | In Cap | QT2-5-0205-SEDCHEM-Avg | In Cap | 2,4′-DDE | 2.29 | 7,350 | 314.4 |
| 2-Month | 5 | 5 | 2-5 | Sample | In Cap | QT2-5-0205-SEDCHEM-Avg | In Cap | 2,4′-DDT | <0.07 | 7,350 | <6.4 |
| 2-Month | 5 | 5 | 2-5 | Sample | In Cap | QT2-5-0205-SEDCHEM-Avg | In Cap | 4,4′-DDD | 22.8 | 7,350 | 3107.1 |
| 2-Month | 5 | 5 | 2-5 | Sample | In Cap | QT2-5-0205-SEDCHEM-Avg | In Cap | 4,4′-DDE | 8.97 | 7,350 | 1232.4 |
| 2-Month | 5 | 5 | 2-5 | Sample | In Cap | QT2-5-0205-SEDCHEM-Avg | In Cap | 4,4′-DDT | 11.26 | 7,350 | 1962.5 |
| 2-Month | 5 | 5 | 2-5 | Sample | In Cap | QT2-5-0205-SEDCHEM-Avg | In Cap | Total DDX | 49.055 | 7,350 | 7128.3 |
| 2-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0205-SEDCHEM-BI | In Cap | 2,4′-DDD | 54 | 61,000 | 885.2 |
| 2-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0205-SEDCHEM-BI | In Cap | 2,4′-DDE | 39 | 61,000 | 639.3 |
| 2-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0205-SEDCHEM-BI | In Cap | 2,4′-DDT | <0.08 | 61,000 | <0.7 |
| 2-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0205-SEDCHEM-BI | In Cap | 4,4′-DDD | 385 | 61,000 | 6311.5 |
| 2-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0205-SEDCHEM-BI | In Cap | 4,4′-DDE | 85.9 | 61,000 | 1408.2 |
| 2-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0205-SEDCHEM-BI | In Cap | 4,4′-DDT | 14.5 | 61,000 | 237.7 |
| 2-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0205-SEDCHEM-BI | In Cap | Total DDX | 578.4 | 61,000 | 9482.0 |
| 2-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0205-SEDCHEM-BI-Avg | In Cap | 2,4′-DDD | 62.5 | 63,500 | 980.5 |

**Table 1. Compilation of Sediment DDX and Total Organic Carbon Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval (cm)[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (µg/kg dw; ND=<DL) | TOC (mg/kg dw) | Result (µg/kg OC; DDx ND=<0.5 DL)[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0205-SEDCHEM-BI-Avg | In Cap | 2,4′-DDE | 36.6 | 63,500 | 578.8 |
| 2-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0205-SEDCHEM-BI-Avg | In Cap | 2,4′-DDT | <0.08 | 63,500 | <0.7 |
| 2-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0205-SEDCHEM-BI-Avg | In Cap | 4,4′-DDD | 321.5 | 63,500 | 5110.3 |
| 2-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0205-SEDCHEM-BI-Avg | In Cap | 4,4′-DDE | 73.15 | 63,500 | 1161.7 |
| 2-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0205-SEDCHEM-BI-Avg | In Cap | 4,4′-DDT | 16.65 | 63,500 | 261.3 |
| 2-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0205-SEDCHEM-BI-Avg | In Cap | Total DDX | 510.4 | 63,500 | 8092.5 |
| 2-Month | 5 | 5 | 5-7 | Primary | In Cap | QT2-5-0507-SEDCHEM | In Cap | 2,4′-DDD | 8.28 | 16,000 | 517.5 |
| 2-Month | 5 | 5 | 5-7 | Primary | In Cap | QT2-5-0507-SEDCHEM | In Cap | 2,4′-DDE | 5 | 16,000 | 312.5 |
| 2-Month | 5 | 5 | 5-7 | Primary | In Cap | QT2-5-0507-SEDCHEM | In Cap | 2,4′-DDT | <0.08 | 16,000 | <2.5 |
| 2-Month | 5 | 5 | 5-7 | Primary | In Cap | QT2-5-0507-SEDCHEM | In Cap | 4,4′-DDD | 47.7 | 16,000 | 2981.3 |
| 2-Month | 5 | 5 | 5-7 | Primary | In Cap | QT2-5-0507-SEDCHEM | In Cap | 4,4′-DDE | 16.3 | 16,000 | 1018.8 |
| 2-Month | 5 | 5 | 5-7 | Primary | In Cap | QT2-5-0507-SEDCHEM | In Cap | 4,4′-DDT | 3.31 | 16,000 | 206.9 |
| 2-Month | 5 | 5 | 5-7 | Primary | In Cap | QT2-5-0507-SEDCHEM | In Cap | Total DDX | 80.59 | 16,000 | 5036.9 |
| 2-Month | 5 | 5 | 5-7 | Sample | In Cap | QT2-5-0507-SEDCHEM-Avg | In Cap | 2,4′-DDD | 8.34 | 17,000 | 492.1 |
| 2-Month | 5 | 5 | 5-7 | Sample | In Cap | QT2-5-0507-SEDCHEM-Avg | In Cap | 2,4′-DDE | 5.435 | 17,000 | 319.3 |
| 2-Month | 5 | 5 | 5-7 | Sample | In Cap | QT2-5-0507-SEDCHEM-Avg | In Cap | 2,4′-DDT | <0.09 | 17,000 | <2.5 |
| 2-Month | 5 | 5 | 5-7 | Sample | In Cap | QT2-5-0507-SEDCHEM-Avg | In Cap | 4,4′-DDD | 53.95 | 17,000 | 3162.8 |
| 2-Month | 5 | 5 | 5-7 | Sample | In Cap | QT2-5-0507-SEDCHEM-Avg | In Cap | 4,4′-DDE | 20.15 | 17,000 | 1176.0 |
| 2-Month | 5 | 5 | 5-7 | Sample | In Cap | QT2-5-0507-SEDCHEM-Avg | In Cap | 4,4′-DDT | 3.765 | 17,000 | 220.7 |
| 2-Month | 5 | 5 | 5-7 | Sample | In Cap | QT2-5-0507-SEDCHEM-Avg | In Cap | Total DDX | 91.64 | 17,000 | 5370.9 |
| 2-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0507-SEDCHEM-BI | In Cap | 2,4′-DDD | 43.1 | 65,000 | 663.1 |
| 2-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0507-SEDCHEM-BI | In Cap | 2,4′-DDE | 30 | 65,000 | 461.5 |
| 2-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0507-SEDCHEM-BI | In Cap | 2,4′-DDT | <0.09 | 65,000 | <0.7 |
| 2-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0507-SEDCHEM-BI | In Cap | 4,4′-DDD | 248 | 65,000 | 3815.4 |
| 2-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0507-SEDCHEM-BI | In Cap | 4,4′-DDE | 86.1 | 65,000 | 1324.6 |
| 2-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0507-SEDCHEM-BI | In Cap | 4,4′-DDT | 17.5 | 65,000 | 269.2 |
| 2-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0507-SEDCHEM-BI | In Cap | Total DDX | 424.7 | 65,000 | 6533.8 |
| 2-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0507-SEDCHEM-BI-Avg | In Cap | 2,4′-DDD | 42.95 | 68,000 | 632.9 |
| 2-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0507-SEDCHEM-BI-Avg | In Cap | 2,4′-DDE | 29.35 | 68,000 | 432.9 |
| 2-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0507-SEDCHEM-BI-Avg | In Cap | 2,4′-DDT | <0.09 | 68,000 | <0.7 |
| 2-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0507-SEDCHEM-BI-Avg | In Cap | 4,4′-DDD | 230.5 | 68,000 | 3407.7 |
| 2-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0507-SEDCHEM-BI-Avg | In Cap | 4,4′-DDE | 76.95 | 68,000 | 1139.8 |
| 2-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0507-SEDCHEM-BI-Avg | In Cap | 4,4′-DDT | 10.375 | 68,000 | 157.5 |
| 2-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0507-SEDCHEM-BI-Avg | In Cap | Total DDX | 390.125 | 68,000 | 5770.8 |
| 2-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT2-5DUP-0002-SEDCHEM | In Cap | 2,4′-DDD | 51.1 | 6,300 | 8111.1 |
| 2-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT2-5DUP-0002-SEDCHEM | In Cap | 2,4′-DDE | 40.2 | 6,300 | 6381.0 |
| 2-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT2-5DUP-0002-SEDCHEM | In Cap | 2,4′-DDT | <0.07 | 6,300 | <5.6 |
| 2-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT2-5DUP-0002-SEDCHEM | In Cap | 4,4′-DDD | 327 | 6,300 | 51904.8 |
| 2-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT2-5DUP-0002-SEDCHEM | In Cap | 4,4′-DDE | 72.7 | 6,300 | 11539.7 |
| 2-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT2-5DUP-0002-SEDCHEM | In Cap | 4,4′-DDT | 17.4 | 6,300 | 2761.9 |
| 2-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT2-5DUP-0002-SEDCHEM | In Cap | Total DDX | 508.4 | 6,300 | 80698.4 |
| 2-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT2-5DUP-0002-SEDCHEM-AI | In Cap | 2,4′-DDD | 0.74 | 920 | |
| 2-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT2-5DUP-0002-SEDCHEM-AI | In Cap | 2,4′-DDE | 0.7 | 920 | |
| 2-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT2-5DUP-0002-SEDCHEM-AI | In Cap | 2,4′-DDT | <0.06 | 920 | |
| 2-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT2-5DUP-0002-SEDCHEM-AI | In Cap | 4,4′-DDD | 3.74 | 920 | |
| 2-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT2-5DUP-0002-SEDCHEM-AI | In Cap | 4,4′-DDE | 1.29 | 920 | |
| 2-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT2-5DUP-0002-SEDCHEM-AI | In Cap | 4,4′-DDT | 0.36 | 920 | |
| 2-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT2-5DUP-0002-SEDCHEM-AI | In Cap | Total DDX | 6.83 | 920 | |
| 2-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0002-SEDCHEM-BI | In Cap | 2,4′-DDD | 46 | 58,000 | 793.1 |
| 2-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0002-SEDCHEM-BI | In Cap | 2,4′-DDE | 25.8 | 58,000 | 444.8 |
| 2-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0002-SEDCHEM-BI | In Cap | 2,4′-DDT | <0.07 | 58,000 | <0.6 |
| 2-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0002-SEDCHEM-BI | In Cap | 4,4′-DDD | 229 | 58,000 | 3948.3 |
| 2-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0002-SEDCHEM-BI | In Cap | 4,4′-DDE | 69.9 | 58,000 | 1205.2 |

**Table 1. Compilation of Sediment DDX and Total Organic Carbon Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval (cm)[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (µg/kg dw; ND=<DL) | TOC (mg/kg dw) | Result (µg/kg OC; DDx ND=<0.5 DL)[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0002-SEDCHEM-BI | In Cap | 4,4′-DDT | 11.5 | 58,000 | 198.3 |
| 2-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0002-SEDCHEM-BI | In Cap | Total DDX | 382.2 | 58,000 | 6589.7 |
| 2-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT2-5DUP-0205-SEDCHEM | In Cap | 2,4′-DDD | 4.57 | 9,200 | 496.7 |
| 2-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT2-5DUP-0205-SEDCHEM | In Cap | 2,4′-DDE | 2.79 | 9,200 | 303.3 |
| 2-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT2-5DUP-0205-SEDCHEM | In Cap | 2,4′-DDT | <0.07 | 9,200 | <3.8 |
| 2-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT2-5DUP-0205-SEDCHEM | In Cap | 4,4′-DDD | 28.4 | 9,200 | 3087.0 |
| 2-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT2-5DUP-0205-SEDCHEM | In Cap | 4,4′-DDE | 10.9 | 9,200 | 1184.8 |
| 2-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT2-5DUP-0205-SEDCHEM | In Cap | 4,4′-DDT | 2.32 | 9,200 | 252.2 |
| 2-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT2-5DUP-0205-SEDCHEM | In Cap | Total DDX | 48.98 | 9,200 | 5323.9 |
| 2-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0205-SEDCHEM-BI | In Cap | 2,4′-DDD | 71 | 66,000 | 1075.8 |
| 2-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0205-SEDCHEM-BI | In Cap | 2,4′-DDE | 34.2 | 66,000 | 518.2 |
| 2-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0205-SEDCHEM-BI | In Cap | 2,4′-DDT | <0.08 | 66,000 | <0.6 |
| 2-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0205-SEDCHEM-BI | In Cap | 4,4′-DDD | 258 | 66,000 | 3909.1 |
| 2-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0205-SEDCHEM-BI | In Cap | 4,4′-DDE | 60.4 | 66,000 | 915.2 |
| 2-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0205-SEDCHEM-BI | In Cap | 4,4′-DDT | 18.8 | 66,000 | 284.8 |
| 2-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0205-SEDCHEM-BI | In Cap | Total DDX | 442.4 | 66,000 | 6703.0 |
| 2-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT2-5DUP-0507-SEDCHEM | In Cap | 2,4′-DDD | 8.4 | 18,000 | 466.7 |
| 2-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT2-5DUP-0507-SEDCHEM | In Cap | 2,4′-DDE | 5.87 | 18,000 | 326.1 |
| 2-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT2-5DUP-0507-SEDCHEM | In Cap | 2,4′-DDT | <0.09 | 18,000 | <2.5 |
| 2-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT2-5DUP-0507-SEDCHEM | In Cap | 4,4′-DDD | 60.2 | 18,000 | 3344.4 |
| 2-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT2-5DUP-0507-SEDCHEM | In Cap | 4,4′-DDE | 24 | 18,000 | 1333.3 |
| 2-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT2-5DUP-0507-SEDCHEM | In Cap | 4,4′-DDT | 4.22 | 18,000 | 234.4 |
| 2-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT2-5DUP-0507-SEDCHEM | In Cap | Total DDX | 102.69 | 18,000 | 5705.0 |
| 2-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0507-SEDCHEM-BI | In Cap | 2,4′-DDD | 42.8 | 71,000 | 602.8 |
| 2-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0507-SEDCHEM-BI | In Cap | 2,4′-DDE | 28.7 | 71,000 | 404.2 |
| 2-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0507-SEDCHEM-BI | In Cap | 2,4′-DDT | <0.09 | 71,000 | <0.6 |
| 2-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0507-SEDCHEM-BI | In Cap | 4,4′-DDD | 213 | 71,000 | 3000.0 |
| 2-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0507-SEDCHEM-BI | In Cap | 4,4′-DDE | 67.8 | 71,000 | 954.9 |
| 2-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0507-SEDCHEM-BI | In Cap | 4,4′-DDT | 3.25 | 71,000 | 45.8 |
| 2-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0507-SEDCHEM-BI | In Cap | Total DDX | 355.55 | 71,000 | 5007.7 |
| 2-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT2-6-GRAB-SEDCHEM | Off Cap | 2,4′-DDD | 1.6 | 24,000 | 66.7 |
| 2-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT2-6-GRAB-SEDCHEM | Off Cap | 2,4′-DDE | 0.88 | 24,000 | 36.7 |
| 2-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT2-6-GRAB-SEDCHEM | Off Cap | 2,4′-DDT | <0.07 | 24,000 | <1.5 |
| 2-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT2-6-GRAB-SEDCHEM | Off Cap | 4,4′-DDD | 7.43 | 24,000 | 309.6 |
| 2-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT2-6-GRAB-SEDCHEM | Off Cap | 4,4′-DDE | 3.21 | 24,000 | 133.8 |
| 2-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT2-6-GRAB-SEDCHEM | Off Cap | 4,4′-DDT | 0.57 | 24,000 | 23.8 |
| 2-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT2-6-GRAB-SEDCHEM | Off Cap | Total DDX | 13.69 | 24,000 | 570.4 |
| 2-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT2-7-GRAB-SEDCHEM | Off Cap | 2,4′-DDD | 2.3 | 35,000 | 65.7 |
| 2-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT2-7-GRAB-SEDCHEM | Off Cap | 2,4′-DDE | 1.59 | 35,000 | 45.4 |
| 2-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT2-7-GRAB-SEDCHEM | Off Cap | 2,4′-DDT | <0.16 | 35,000 | <2.3 |
| 2-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT2-7-GRAB-SEDCHEM | Off Cap | 4,4′-DDD | 10.4 | 35,000 | 297.1 |
| 2-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT2-7-GRAB-SEDCHEM | Off Cap | 4,4′-DDE | 6.41 | 35,000 | 183.1 |
| 2-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT2-7-GRAB-SEDCHEM | Off Cap | 4,4′-DDT | 1.35 | 35,000 | 38.6 |
| 2-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT2-7-GRAB-SEDCHEM | Off Cap | Total DDX | 22.05 | 35,000 | 630.0 |
| 14-Month | 1 | 1 | 0-2 | Sample | In Cap | QT12-1-0002-SEDCHEM | In Cap | 2,4′-DDD | 20.2 | 587 | |
| 14-Month | 1 | 1 | 0-2 | Sample | In Cap | QT12-1-0002-SEDCHEM | In Cap | 2,4′-DDE | 12.2 | 587 | |
| 14-Month | 1 | 1 | 0-2 | Sample | In Cap | QT12-1-0002-SEDCHEM | In Cap | 2,4′-DDT | 6.23 | 587 | |
| 14-Month | 1 | 1 | 0-2 | Sample | In Cap | QT12-1-0002-SEDCHEM | In Cap | 4,4′-DDD | 60.2 | 587 | |
| 14-Month | 1 | 1 | 0-2 | Sample | In Cap | QT12-1-0002-SEDCHEM | In Cap | 4,4′-DDE | 24.5 | 587 | |
| 14-Month | 1 | 1 | 0-2 | Sample | In Cap | QT12-1-0002-SEDCHEM | In Cap | 4,4′-DDT | 9.02 | 587 | |
| 14-Month | 1 | 1 | 0-2 | Sample | In Cap | QT12-1-0002-SEDCHEM | In Cap | Total DDX | 132.35 | 587 | |
| 14-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-1-0002-SEDCHEM-AI | In Cap | 2,4′-DDD | 0.26 | < 79 | |
| 14-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-1-0002-SEDCHEM-AI | In Cap | 2,4′-DDE | <0.07 | < 79 | |

**Table 1. Compilation of Sediment DDX and Total Organic Carbon Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval (cm)[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (µg/kg dw; ND=<DL) | TOC (mg/kg dw) | Result (µg/kg OC; DDx ND=<0.5 DL)[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 14-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-1-0002-SEDCHEM-AI | In Cap | 2,4′-DDT | <0.07 | < 79 | |
| 14-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-1-0002-SEDCHEM-AI | In Cap | 4,4′-DDD | 1.39 | < 79 | |
| 14-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-1-0002-SEDCHEM-AI | In Cap | 4,4′-DDE | 0.24 | < 79 | |
| 14-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-1-0002-SEDCHEM-AI | In Cap | 4,4′-DDT | <0.07 | < 79 | |
| 14-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-1-0002-SEDCHEM-AI | In Cap | Total DDX | 1.89 | < 79 | |
| 14-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0002-SEDCHEM-BI | In Cap | 2,4′-DDD | <0.07 | 1,838 | |
| 14-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0002-SEDCHEM-BI | In Cap | 2,4′-DDE | <0.07 | 1,838 | |
| 14-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0002-SEDCHEM-BI | In Cap | 2,4′-DDT | <0.07 | 1,838 | |
| 14-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0002-SEDCHEM-BI | In Cap | 4,4′-DDD | 0.24 | 1,838 | |
| 14-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0002-SEDCHEM-BI | In Cap | 4,4′-DDE | <0.07 | 1,838 | |
| 14-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0002-SEDCHEM-BI | In Cap | 4,4′-DDT | <0.07 | 1,838 | |
| 14-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0002-SEDCHEM-BI | In Cap | Total DDX | 0.24 | 1,838 | |
| 14-Month | 1 | 1 | 2-5 | Sample | In Cap | QT12-1-0205-SEDCHEM | In Cap | 2,4′-DDD | 0.98 | 596 | |
| 14-Month | 1 | 1 | 2-5 | Sample | In Cap | QT12-1-0205-SEDCHEM | In Cap | 2,4′-DDE | <0.07 | 596 | |
| 14-Month | 1 | 1 | 2-5 | Sample | In Cap | QT12-1-0205-SEDCHEM | In Cap | 2,4′-DDT | <0.07 | 596 | |
| 14-Month | 1 | 1 | 2-5 | Sample | In Cap | QT12-1-0205-SEDCHEM | In Cap | 4,4′-DDD | 4.25 | 596 | |
| 14-Month | 1 | 1 | 2-5 | Sample | In Cap | QT12-1-0205-SEDCHEM | In Cap | 4,4′-DDE | 0.96 | 596 | |
| 14-Month | 1 | 1 | 2-5 | Sample | In Cap | QT12-1-0205-SEDCHEM | In Cap | 4,4′-DDT | <0.07 | 596 | |
| 14-Month | 1 | 1 | 2-5 | Sample | In Cap | QT12-1-0205-SEDCHEM | In Cap | Total DDX | 6.19 | 596 | |
| 14-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0205-SEDCHEM-BI | In Cap | 2,4′-DDD | 5.52 | 6,989 | 789.8 |
| 14-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0205-SEDCHEM-BI | In Cap | 2,4′-DDE | 4.14 | 6,989 | 592.3 |
| 14-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0205-SEDCHEM-BI | In Cap | 2,4′-DDT | <0.08 | 6,989 | <5.7 |
| 14-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0205-SEDCHEM-BI | In Cap | 4,4′-DDD | 38 | 6,989 | 5436.9 |
| 14-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0205-SEDCHEM-BI | In Cap | 4,4′-DDE | 5.43 | 6,989 | 776.9 |
| 14-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0205-SEDCHEM-BI | In Cap | 4,4′-DDT | 8.71 | 6,989 | 1246.2 |
| 14-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0205-SEDCHEM-BI | In Cap | Total DDX | 61.8 | 6,989 | 8842.2 |
| 14-Month | 1 | 1 | 5-7 | Sample | In Cap | QT12-1-0507-SEDCHEM | In Cap | 2,4′-DDD | 0.29 | < 78 | |
| 14-Month | 1 | 1 | 5-7 | Sample | In Cap | QT12-1-0507-SEDCHEM | In Cap | 2,4′-DDE | 0.18 | < 78 | |
| 14-Month | 1 | 1 | 5-7 | Sample | In Cap | QT12-1-0507-SEDCHEM | In Cap | 2,4′-DDT | <0.07 | < 78 | |
| 14-Month | 1 | 1 | 5-7 | Sample | In Cap | QT12-1-0507-SEDCHEM | In Cap | 4,4′-DDD | 1.41 | < 78 | |
| 14-Month | 1 | 1 | 5-7 | Sample | In Cap | QT12-1-0507-SEDCHEM | In Cap | 4,4′-DDE | 0.4 | < 78 | |
| 14-Month | 1 | 1 | 5-7 | Sample | In Cap | QT12-1-0507-SEDCHEM | In Cap | 4,4′-DDT | 0.11 | < 78 | |
| 14-Month | 1 | 1 | 5-7 | Sample | In Cap | QT12-1-0507-SEDCHEM | In Cap | Total DDX | 2.39 | < 78 | |
| 14-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0507-SEDCHEM-BI | In Cap | 2,4′-DDD | 12.6 | 5,683 | 2217.0 |
| 14-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0507-SEDCHEM-BI | In Cap | 2,4′-DDE | 7.21 | 5,683 | 1268.6 |
| 14-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0507-SEDCHEM-BI | In Cap | 2,4′-DDT | <0.08 | 5,683 | <7 |
| 14-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0507-SEDCHEM-BI | In Cap | 4,4′-DDD | 64.3 | 5,683 | 11313.7 |
| 14-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0507-SEDCHEM-BI | In Cap | 4,4′-DDE | 15 | 5,683 | 2639.3 |
| 14-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0507-SEDCHEM-BI | In Cap | 4,4′-DDT | 3.39 | 5,683 | 596.5 |
| 14-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0507-SEDCHEM-BI | In Cap | Total DDX | 102.5 | 5,683 | 18035.1 |
| 14-Month | 2 | 2 | 0-2 | Sample | In Cap | QT12-2-0002-SEDCHEM | In Cap | 2,4′-DDD | 30.2 | 834 | |
| 14-Month | 2 | 2 | 0-2 | Sample | In Cap | QT12-2-0002-SEDCHEM | In Cap | 2,4′-DDE | 15.2 | 834 | |
| 14-Month | 2 | 2 | 0-2 | Sample | In Cap | QT12-2-0002-SEDCHEM | In Cap | 2,4′-DDT | <0.07 | 834 | |
| 14-Month | 2 | 2 | 0-2 | Sample | In Cap | QT12-2-0002-SEDCHEM | In Cap | 4,4′-DDD | 434 | 834 | |
| 14-Month | 2 | 2 | 0-2 | Sample | In Cap | QT12-2-0002-SEDCHEM | In Cap | 4,4′-DDE | 23.2 | 834 | |
| 14-Month | 2 | 2 | 0-2 | Sample | In Cap | QT12-2-0002-SEDCHEM | In Cap | 4,4′-DDT | 6.25 | 834 | |
| 14-Month | 2 | 2 | 0-2 | Sample | In Cap | QT12-2-0002-SEDCHEM | In Cap | Total DDX | 508.85 | 834 | |
| 14-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-2-0002-SEDCHEM-AI | In Cap | 2,4′-DDD | <0.07 | < 79 | |
| 14-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-2-0002-SEDCHEM-AI | In Cap | 2,4′-DDE | <0.07 | < 79 | |
| 14-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-2-0002-SEDCHEM-AI | In Cap | 2,4′-DDT | <0.07 | < 79 | |
| 14-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-2-0002-SEDCHEM-AI | In Cap | 4,4′-DDD | 0.35 | < 79 | |
| 14-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-2-0002-SEDCHEM-AI | In Cap | 4,4′-DDE | <0.07 | < 79 | |
| 14-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-2-0002-SEDCHEM-AI | In Cap | 4,4′-DDT | <0.07 | < 79 | |

**Table 1. Compilation of Sediment DDX and Total Organic Carbon Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval (cm)[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (µg/kg dw; ND=<DL) | TOC (mg/kg dw) | Result (µg/kg OC; DDx ND=<0.5 DL)[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 14-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-2-0002-SEDCHEM-AI | In Cap | Total DDX | 0.35 | < 79 | |
| 14-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0002-SEDCHEM-BI | In Cap | 2,4′-DDD | 12.3 | 6,324 | 1944.9 |
| 14-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0002-SEDCHEM-BI | In Cap | 2,4′-DDE | 6.09 | 6,324 | 963.0 |
| 14-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0002-SEDCHEM-BI | In Cap | 2,4′-DDT | <0.08 | 6,324 | <6.3 |
| 14-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0002-SEDCHEM-BI | In Cap | 4,4′-DDD | 59.5 | 6,324 | 9408.4 |
| 14-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0002-SEDCHEM-BI | In Cap | 4,4′-DDE | 8.23 | 6,324 | 1301.4 |
| 14-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0002-SEDCHEM-BI | In Cap | 4,4′-DDT | 2.28 | 6,324 | 360.5 |
| 14-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0002-SEDCHEM-BI | In Cap | Total DDX | 88.4 | 6,324 | 13978.3 |
| 14-Month | 2 | 2 | 2-5 | Sample | In Cap | QT12-2-0205-SEDCHEM | In Cap | 2,4′-DDD | 1.6 | < 79 | |
| 14-Month | 2 | 2 | 2-5 | Sample | In Cap | QT12-2-0205-SEDCHEM | In Cap | 2,4′-DDE | 0.68 | < 79 | |
| 14-Month | 2 | 2 | 2-5 | Sample | In Cap | QT12-2-0205-SEDCHEM | In Cap | 2,4′-DDT | <0.07 | < 79 | |
| 14-Month | 2 | 2 | 2-5 | Sample | In Cap | QT12-2-0205-SEDCHEM | In Cap | 4,4′-DDD | 6.66 | < 79 | |
| 14-Month | 2 | 2 | 2-5 | Sample | In Cap | QT12-2-0205-SEDCHEM | In Cap | 4,4′-DDE | 0.93 | < 79 | |
| 14-Month | 2 | 2 | 2-5 | Sample | In Cap | QT12-2-0205-SEDCHEM | In Cap | 4,4′-DDT | <0.07 | < 79 | |
| 14-Month | 2 | 2 | 2-5 | Sample | In Cap | QT12-2-0205-SEDCHEM | In Cap | Total DDX | 9.87 | < 79 | |
| 14-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0205-SEDCHEM-BI | In Cap | 2,4′-DDD | 3.06 | 10,630 | 287.9 |
| 14-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0205-SEDCHEM-BI | In Cap | 2,4′-DDE | 1.21 | 10,630 | 113.8 |
| 14-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0205-SEDCHEM-BI | In Cap | 2,4′-DDT | <0.08 | 10,630 | <3.8 |
| 14-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0205-SEDCHEM-BI | In Cap | 4,4′-DDD | 14.1 | 10,630 | 1326.4 |
| 14-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0205-SEDCHEM-BI | In Cap | 4,4′-DDE | 2.5 | 10,630 | 235.2 |
| 14-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0205-SEDCHEM-BI | In Cap | 4,4′-DDT | <0.08 | 10,630 | <3.8 |
| 14-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0205-SEDCHEM-BI | In Cap | Total DDX | 20.87 | 10,630 | 1963.3 |
| 14-Month | 2 | 2 | 5-7 | Sample | In Cap | QT12-2-0507-SEDCHEM | In Cap | 2,4′-DDD | 0.7 | < 76 | |
| 14-Month | 2 | 2 | 5-7 | Sample | In Cap | QT12-2-0507-SEDCHEM | In Cap | 2,4′-DDE | 0.27 | < 76 | |
| 14-Month | 2 | 2 | 5-7 | Sample | In Cap | QT12-2-0507-SEDCHEM | In Cap | 2,4′-DDT | <0.07 | < 76 | |
| 14-Month | 2 | 2 | 5-7 | Sample | In Cap | QT12-2-0507-SEDCHEM | In Cap | 4,4′-DDD | 2.83 | < 76 | |
| 14-Month | 2 | 2 | 5-7 | Sample | In Cap | QT12-2-0507-SEDCHEM | In Cap | 4,4′-DDE | 0.39 | < 76 | |
| 14-Month | 2 | 2 | 5-7 | Sample | In Cap | QT12-2-0507-SEDCHEM | In Cap | 4,4′-DDT | <0.07 | < 76 | |
| 14-Month | 2 | 2 | 5-7 | Sample | In Cap | QT12-2-0507-SEDCHEM | In Cap | Total DDX | 4.19 | < 76 | |
| 14-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0507-SEDCHEM-BI | In Cap | 2,4′-DDD | 12.4 | 7,785 | 1592.8 |
| 14-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0507-SEDCHEM-BI | In Cap | 2,4′-DDE | 5.39 | 7,785 | 692.3 |
| 14-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0507-SEDCHEM-BI | In Cap | 2,4′-DDT | <0.08 | 7,785 | <5.1 |
| 14-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0507-SEDCHEM-BI | In Cap | 4,4′-DDD | 62.1 | 7,785 | 7976.6 |
| 14-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0507-SEDCHEM-BI | In Cap | 4,4′-DDE | 14.5 | 7,785 | 1862.5 |
| 14-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0507-SEDCHEM-BI | In Cap | 4,4′-DDT | 15.5 | 7,785 | 1990.9 |
| 14-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0507-SEDCHEM-BI | In Cap | Total DDX | 109.89 | 7,785 | 14115.2 |
| 14-Month | 3 | 3 | 0-2 | Sample | In Cap | QT12-3-0002-SEDCHEM | In Cap | 2,4′-DDD | 61.9 | 3,586 | 17263.2 |
| 14-Month | 3 | 3 | 0-2 | Sample | In Cap | QT12-3-0002-SEDCHEM | In Cap | 2,4′-DDE | 22.3 | 3,586 | 6219.2 |
| 14-Month | 3 | 3 | 0-2 | Sample | In Cap | QT12-3-0002-SEDCHEM | In Cap | 2,4′-DDT | <0.08 | 3,586 | <11.2 |
| 14-Month | 3 | 3 | 0-2 | Sample | In Cap | QT12-3-0002-SEDCHEM | In Cap | 4,4′-DDD | 254 | 3,586 | 70837.8 |
| 14-Month | 3 | 3 | 0-2 | Sample | In Cap | QT12-3-0002-SEDCHEM | In Cap | 4,4′-DDE | 38.6 | 3,586 | 10765.1 |
| 14-Month | 3 | 3 | 0-2 | Sample | In Cap | QT12-3-0002-SEDCHEM | In Cap | 4,4′-DDT | 16.3 | 3,586 | 4545.9 |
| 14-Month | 3 | 3 | 0-2 | Sample | In Cap | QT12-3-0002-SEDCHEM | In Cap | Total DDX | 393.1 | 3,586 | 109631.2 |
| 14-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-3-0002-SEDCHEM-AI | In Cap | 2,4′-DDD | 0.41 | 356 | |
| 14-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-3-0002-SEDCHEM-AI | In Cap | 2,4′-DDE | 0.21 | 356 | |
| 14-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-3-0002-SEDCHEM-AI | In Cap | 2,4′-DDT | <0.07 | 356 | |
| 14-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-3-0002-SEDCHEM-AI | In Cap | 4,4′-DDD | 1.75 | 356 | |
| 14-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-3-0002-SEDCHEM-AI | In Cap | 4,4′-DDE | 0.37 | 356 | |
| 14-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-3-0002-SEDCHEM-AI | In Cap | 4,4′-DDT | 0.31 | 356 | |
| 14-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-3-0002-SEDCHEM-AI | In Cap | Total DDX | 3.05 | 356 | |
| 14-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0002-SEDCHEM-BI | In Cap | 2,4′-DDD | 42.3 | 1,656 | |
| 14-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0002-SEDCHEM-BI | In Cap | 2,4′-DDE | 13.3 | 1,656 | |
| 14-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0002-SEDCHEM-BI | In Cap | 2,4′-DDT | <0.08 | 1,656 | |

**Table 1. Compilation of Sediment DDX and Total Organic Carbon Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval (cm)[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (µg/kg dw; ND=<DL) | TOC (mg/kg dw) | Result (µg/kg OC; DDx ND=<0.5 DL)[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 14-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0002-SEDCHEM-BI | In Cap | 4,4′-DDD | 182 | 1,656 | |
| 14-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0002-SEDCHEM-BI | In Cap | 4,4′-DDE | 26.2 | 1,656 | |
| 14-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0002-SEDCHEM-BI | In Cap | 4,4′-DDT | 6.59 | 1,656 | |
| 14-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0002-SEDCHEM-BI | In Cap | Total DDX | 270.39 | 1,656 | |
| 14-Month | 3 | 3 | 2-5 | Sample | In Cap | QT12-3-0205-SEDCHEM | In Cap | 2,4′-DDD | 36.6 | 1,985 | |
| 14-Month | 3 | 3 | 2-5 | Sample | In Cap | QT12-3-0205-SEDCHEM | In Cap | 2,4′-DDE | 15.8 | 1,985 | |
| 14-Month | 3 | 3 | 2-5 | Sample | In Cap | QT12-3-0205-SEDCHEM | In Cap | 2,4′-DDT | <0.07 | 1,985 | |
| 14-Month | 3 | 3 | 2-5 | Sample | In Cap | QT12-3-0205-SEDCHEM | In Cap | 4,4′-DDD | 133 | 1,985 | |
| 14-Month | 3 | 3 | 2-5 | Sample | In Cap | QT12-3-0205-SEDCHEM | In Cap | 4,4′-DDE | 22.6 | 1,985 | |
| 14-Month | 3 | 3 | 2-5 | Sample | In Cap | QT12-3-0205-SEDCHEM | In Cap | 4,4′-DDT | 13.3 | 1,985 | |
| 14-Month | 3 | 3 | 2-5 | Sample | In Cap | QT12-3-0205-SEDCHEM | In Cap | Total DDX | 221.3 | 1,985 | |
| 14-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0205-SEDCHEM-BI | In Cap | 2,4′-DDD | 51.2 | 6,354 | 8058.4 |
| 14-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0205-SEDCHEM-BI | In Cap | 2,4′-DDE | 19.1 | 6,354 | 3006.2 |
| 14-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0205-SEDCHEM-BI | In Cap | 2,4′-DDT | <0.08 | 6,354 | <6.3 |
| 14-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0205-SEDCHEM-BI | In Cap | 4,4′-DDD | 275 | 6,354 | 43282.6 |
| 14-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0205-SEDCHEM-BI | In Cap | 4,4′-DDE | 43.4 | 6,354 | 6830.8 |
| 14-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0205-SEDCHEM-BI | In Cap | 4,4′-DDT | 10.5 | 6,354 | 1652.6 |
| 14-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0205-SEDCHEM-BI | In Cap | Total DDX | 399.2 | 6,354 | 62830.6 |
| 14-Month | 3 | 3 | 5-7 | Sample | In Cap | QT12-3-0507-SEDCHEM | In Cap | 2,4′-DDD | 34.9 | 1,892 | |
| 14-Month | 3 | 3 | 5-7 | Sample | In Cap | QT12-3-0507-SEDCHEM | In Cap | 2,4′-DDE | 15.1 | 1,892 | |
| 14-Month | 3 | 3 | 5-7 | Sample | In Cap | QT12-3-0507-SEDCHEM | In Cap | 2,4′-DDT | <0.08 | 1,892 | |
| 14-Month | 3 | 3 | 5-7 | Sample | In Cap | QT12-3-0507-SEDCHEM | In Cap | 4,4′-DDD | 134 | 1,892 | |
| 14-Month | 3 | 3 | 5-7 | Sample | In Cap | QT12-3-0507-SEDCHEM | In Cap | 4,4′-DDE | 26.3 | 1,892 | |
| 14-Month | 3 | 3 | 5-7 | Sample | In Cap | QT12-3-0507-SEDCHEM | In Cap | 4,4′-DDT | 30 | 1,892 | |
| 14-Month | 3 | 3 | 5-7 | Sample | In Cap | QT12-3-0507-SEDCHEM | In Cap | Total DDX | 240.3 | 1,892 | |
| 14-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0507-SEDCHEM-BI | In Cap | 2,4′-DDD | 47.2 | 12,444 | 3793.1 |
| 14-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0507-SEDCHEM-BI | In Cap | 2,4′-DDE | 25 | 12,444 | 2009.0 |
| 14-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0507-SEDCHEM-BI | In Cap | 2,4′-DDT | <0.09 | 12,444 | <3.6 |
| 14-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0507-SEDCHEM-BI | In Cap | 4,4′-DDD | 231 | 12,444 | 18563.5 |
| 14-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0507-SEDCHEM-BI | In Cap | 4,4′-DDE | 54.4 | 12,444 | 4371.7 |
| 14-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0507-SEDCHEM-BI | In Cap | 4,4′-DDT | 11.9 | 12,444 | 956.3 |
| 14-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0507-SEDCHEM-BI | In Cap | Total DDX | 369.5 | 12,444 | 29693.6 |
| 14-Month | 4 | 4 | 0-2 | Sample | In Cap | QT12-4-0002-SEDCHEM | In Cap | 2,4′-DDD | 1.02 | 1,161 | |
| 14-Month | 4 | 4 | 0-2 | Sample | In Cap | QT12-4-0002-SEDCHEM | In Cap | 2,4′-DDE | <0.07 | 1,161 | |
| 14-Month | 4 | 4 | 0-2 | Sample | In Cap | QT12-4-0002-SEDCHEM | In Cap | 2,4′-DDT | <0.07 | 1,161 | |
| 14-Month | 4 | 4 | 0-2 | Sample | In Cap | QT12-4-0002-SEDCHEM | In Cap | 4,4′-DDD | 4.43 | 1,161 | |
| 14-Month | 4 | 4 | 0-2 | Sample | In Cap | QT12-4-0002-SEDCHEM | In Cap | 4,4′-DDE | 1.13 | 1,161 | |
| 14-Month | 4 | 4 | 0-2 | Sample | In Cap | QT12-4-0002-SEDCHEM | In Cap | 4,4′-DDT | 0.53 | 1,161 | |
| 14-Month | 4 | 4 | 0-2 | Sample | In Cap | QT12-4-0002-SEDCHEM | In Cap | Total DDX | 7.11 | 1,161 | |
| 14-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-4-0002-SEDCHEM-AI | In Cap | 2,4′-DDD | <0.07 | < 78 | |
| 14-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-4-0002-SEDCHEM-AI | In Cap | 2,4′-DDE | <0.07 | < 78 | |
| 14-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-4-0002-SEDCHEM-AI | In Cap | 2,4′-DDT | <0.07 | < 78 | |
| 14-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-4-0002-SEDCHEM-AI | In Cap | 4,4′-DDD | 0.08 | < 78 | |
| 14-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-4-0002-SEDCHEM-AI | In Cap | 4,4′-DDE | <0.07 | < 78 | |
| 14-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-4-0002-SEDCHEM-AI | In Cap | 4,4′-DDT | <0.07 | < 78 | |
| 14-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-4-0002-SEDCHEM-AI | In Cap | Total DDX | 0.08 | < 78 | |
| 14-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0002-SEDCHEM-BI | In Cap | 2,4′-DDD | 11.4 | 13,176 | 865.2 |
| 14-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0002-SEDCHEM-BI | In Cap | 2,4′-DDE | 4.84 | 13,176 | 367.3 |
| 14-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0002-SEDCHEM-BI | In Cap | 2,4′-DDT | <0.10 | 13,176 | <3.8 |
| 14-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0002-SEDCHEM-BI | In Cap | 4,4′-DDD | 64.1 | 13,176 | 4865.0 |
| 14-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0002-SEDCHEM-BI | In Cap | 4,4′-DDE | 26.4 | 13,176 | 2003.7 |
| 14-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0002-SEDCHEM-BI | In Cap | 4,4′-DDT | 9.41 | 13,176 | 714.2 |
| 14-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0002-SEDCHEM-BI | In Cap | Total DDX | 116.15 | 13,176 | 8815.5 |

**Table 1. Compilation of Sediment DDX and Total Organic Carbon Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval (cm)[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (µg/kg dw; ND=<DL) | TOC (mg/kg dw) | Result (µg/kg OC; DDx ND=<0.5 DL)[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 14-Month | 4 | 4 | 2-5 | Sample | In Cap | QT12-4-0205-SEDCHEM | In Cap | 2,4′-DDD | 1.12 | 1,647 | |
| 14-Month | 4 | 4 | 2-5 | Sample | In Cap | QT12-4-0205-SEDCHEM | In Cap | 2,4′-DDE | 0.56 | 1,647 | |
| 14-Month | 4 | 4 | 2-5 | Sample | In Cap | QT12-4-0205-SEDCHEM | In Cap | 2,4′-DDT | <0.07 | 1,647 | |
| 14-Month | 4 | 4 | 2-5 | Sample | In Cap | QT12-4-0205-SEDCHEM | In Cap | 4,4′-DDD | 5.36 | 1,647 | |
| 14-Month | 4 | 4 | 2-5 | Sample | In Cap | QT12-4-0205-SEDCHEM | In Cap | 4,4′-DDE | 1.37 | 1,647 | |
| 14-Month | 4 | 4 | 2-5 | Sample | In Cap | QT12-4-0205-SEDCHEM | In Cap | 4,4′-DDT | 0.57 | 1,647 | |
| 14-Month | 4 | 4 | 2-5 | Sample | In Cap | QT12-4-0205-SEDCHEM | In Cap | Total DDX | 8.98 | 1,647 | |
| 14-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0205-SEDCHEM-BI | In Cap | 2,4′-DDD | 13.9 | 20,036 | 693.7 |
| 14-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0205-SEDCHEM-BI | In Cap | 2,4′-DDE | <0.11 | 20,036 | <2.7 |
| 14-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0205-SEDCHEM-BI | In Cap | 2,4′-DDT | <0.11 | 20,036 | <2.7 |
| 14-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0205-SEDCHEM-BI | In Cap | 4,4′-DDD | 73.9 | 20,036 | 3688.3 |
| 14-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0205-SEDCHEM-BI | In Cap | 4,4′-DDE | 31.9 | 20,036 | 1592.1 |
| 14-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0205-SEDCHEM-BI | In Cap | 4,4′-DDT | 4.28 | 20,036 | 213.6 |
| 14-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0205-SEDCHEM-BI | In Cap | Total DDX | 123.98 | 20,036 | 6187.7 |
| 14-Month | 4 | 4 | 5-7 | Sample | In Cap | QT12-4-0507-SEDCHEM | In Cap | 2,4′-DDD | 1.13 | 938 | |
| 14-Month | 4 | 4 | 5-7 | Sample | In Cap | QT12-4-0507-SEDCHEM | In Cap | 2,4′-DDE | 0.55 | 938 | |
| 14-Month | 4 | 4 | 5-7 | Sample | In Cap | QT12-4-0507-SEDCHEM | In Cap | 2,4′-DDT | <0.07 | 938 | |
| 14-Month | 4 | 4 | 5-7 | Sample | In Cap | QT12-4-0507-SEDCHEM | In Cap | 4,4′-DDD | 4.73 | 938 | |
| 14-Month | 4 | 4 | 5-7 | Sample | In Cap | QT12-4-0507-SEDCHEM | In Cap | 4,4′-DDE | 1.32 | 938 | |
| 14-Month | 4 | 4 | 5-7 | Sample | In Cap | QT12-4-0507-SEDCHEM | In Cap | 4,4′-DDT | 1.32 | 938 | |
| 14-Month | 4 | 4 | 5-7 | Sample | In Cap | QT12-4-0507-SEDCHEM | In Cap | Total DDX | 9.05 | 938 | |
| 14-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0507-SEDCHEM-BI | In Cap | 2,4′-DDD | 17.6 | 17,040 | 1032.9 |
| 14-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0507-SEDCHEM-BI | In Cap | 2,4′-DDE | 8.91 | 17,040 | 522.9 |
| 14-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0507-SEDCHEM-BI | In Cap | 2,4′-DDT | 0.21 | 17,040 | 12.3 |
| 14-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0507-SEDCHEM-BI | In Cap | 4,4′-DDD | 90.6 | 17,040 | 5317.0 |
| 14-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0507-SEDCHEM-BI | In Cap | 4,4′-DDE | 27.5 | 17,040 | 1613.9 |
| 14-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0507-SEDCHEM-BI | In Cap | 4,4′-DDT | 5.09 | 17,040 | 298.7 |
| 14-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0507-SEDCHEM-BI | In Cap | Total DDX | 149.91 | 17,040 | 8797.7 |
| 14-Month | 5 | 5 | 0-2 | Primary | In Cap | QT12-5-0002-SEDCHEM | In Cap | 2,4′-DDD | 0.61 | 1,118 | |
| 14-Month | 5 | 5 | 0-2 | Primary | In Cap | QT12-5-0002-SEDCHEM | In Cap | 2,4′-DDE | <0.07 | 1,118 | |
| 14-Month | 5 | 5 | 0-2 | Primary | In Cap | QT12-5-0002-SEDCHEM | In Cap | 2,4′-DDT | <0.07 | 1,118 | |
| 14-Month | 5 | 5 | 0-2 | Primary | In Cap | QT12-5-0002-SEDCHEM | In Cap | 4,4′-DDD | 2.36 | 1,118 | |
| 14-Month | 5 | 5 | 0-2 | Primary | In Cap | QT12-5-0002-SEDCHEM | In Cap | 4,4′-DDE | 1 | 1,118 | |
| 14-Month | 5 | 5 | 0-2 | Primary | In Cap | QT12-5-0002-SEDCHEM | In Cap | 4,4′-DDT | 0.49 | 1,118 | |
| 14-Month | 5 | 5 | 0-2 | Primary | In Cap | QT12-5-0002-SEDCHEM | In Cap | Total DDX | 4.46 | 1,118 | |
| 14-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-AI | In Cap | 2,4′-DDD | 0.89 | 731 | |
| 14-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-AI | In Cap | 2,4′-DDE | 0.47 | 731 | |
| 14-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-AI | In Cap | 2,4′-DDT | <0.07 | 731 | |
| 14-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-AI | In Cap | 4,4′-DDD | 4 | 731 | |
| 14-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-AI | In Cap | 4,4′-DDE | 1.19 | 731 | |
| 14-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-AI | In Cap | 4,4′-DDT | 0.57 | 731 | |
| 14-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-AI | In Cap | Total DDX | 7.12 | 731 | |
| 14-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-AI-Avg | In Cap | 2,4′-DDD | 0.585 | 527 | |
| 14-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-AI-Avg | In Cap | 2,4′-DDE | 0.315 | 527 | |
| 14-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-AI-Avg | In Cap | 2,4′-DDT | <0.07 | 527 | |
| 14-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-AI-Avg | In Cap | 4,4′-DDD | 2.53 | 527 | |
| 14-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-AI-Avg | In Cap | 4,4′-DDE | 0.745 | 527 | |
| 14-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-AI-Avg | In Cap | 4,4′-DDT | 0.465 | 527 | |
| 14-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-AI-Avg | In Cap | Total DDX | 4.64 | 527 | |
| 14-Month | 5 | 5 | 0-2 | Sample | In Cap | QT12-5-0002-SEDCHEM-Avg | In Cap | 2,4′-DDD | 1.205 | 793 | |
| 14-Month | 5 | 5 | 0-2 | Sample | In Cap | QT12-5-0002-SEDCHEM-Avg | In Cap | 2,4′-DDE | <0.07 | 793 | |
| 14-Month | 5 | 5 | 0-2 | Sample | In Cap | QT12-5-0002-SEDCHEM-Avg | In Cap | 2,4′-DDT | <0.07 | 793 | |
| 14-Month | 5 | 5 | 0-2 | Sample | In Cap | QT12-5-0002-SEDCHEM-Avg | In Cap | 4,4′-DDD | 4.585 | 793 | |

**Table 1. Compilation of Sediment DDX and Total Organic Carbon Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval (cm)[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (µg/kg dw; ND=<DL) | TOC (mg/kg dw) | Result (µg/kg OC; DDx ND=<0.5 DL)[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 14-Month | 5 | 5 | 0-2 | Sample | In Cap | QT12-5-0002-SEDCHEM-Avg | In Cap | 4,4′-DDE | 1.37 | 793 | |
| 14-Month | 5 | 5 | 0-2 | Sample | In Cap | QT12-5-0002-SEDCHEM-Avg | In Cap | 4,4′-DDT | 0.57 | 793 | |
| 14-Month | 5 | 5 | 0-2 | Sample | In Cap | QT12-5-0002-SEDCHEM-Avg | In Cap | Total DDX | 7.73 | 793 | |
| 14-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-BI | In Cap | 2,4′-DDD | 12.7 | 12,006 | 1057.8 |
| 14-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-BI | In Cap | 2,4′-DDE | 8.03 | 12,006 | 668.8 |
| 14-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-BI | In Cap | 2,4′-DDT | 0.95 | 12,006 | 79.1 |
| 14-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-BI | In Cap | 4,4′-DDD | 77.6 | 12,006 | 6463.4 |
| 14-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-BI | In Cap | 4,4′-DDE | 39.1 | 12,006 | 3256.7 |
| 14-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-BI | In Cap | 4,4′-DDT | 13.2 | 12,006 | 1099.4 |
| 14-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-BI | In Cap | Total DDX | 151.58 | 12,006 | 12625.3 |
| 14-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-BI-Avg | In Cap | 2,4′-DDD | 10.51 | 12,124 | 868.7 |
| 14-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-BI-Avg | In Cap | 2,4′-DDE | 5.725 | 12,124 | 474.1 |
| 14-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-BI-Avg | In Cap | 2,4′-DDT | 0.655 | 12,124 | 54.3 |
| 14-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-BI-Avg | In Cap | 4,4′-DDD | 56.2 | 12,124 | 4653.1 |
| 14-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-BI-Avg | In Cap | 4,4′-DDE | 26.95 | 12,124 | 2232.8 |
| 14-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-BI-Avg | In Cap | 4,4′-DDT | 8.54 | 12,124 | 708.2 |
| 14-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0002-SEDCHEM-BI-Avg | In Cap | Total DDX | 108.58 | 12,124 | 8991.2 |
| 14-Month | 5 | 5 | 2-5 | Primary | In Cap | QT12-5-0205-SEDCHEM | In Cap | 2,4′-DDD | 0.46 | 795 | |
| 14-Month | 5 | 5 | 2-5 | Primary | In Cap | QT12-5-0205-SEDCHEM | In Cap | 2,4′-DDE | <0.07 | 795 | |
| 14-Month | 5 | 5 | 2-5 | Primary | In Cap | QT12-5-0205-SEDCHEM | In Cap | 2,4′-DDT | <0.07 | 795 | |
| 14-Month | 5 | 5 | 2-5 | Primary | In Cap | QT12-5-0205-SEDCHEM | In Cap | 4,4′-DDD | 1.87 | 795 | |
| 14-Month | 5 | 5 | 2-5 | Primary | In Cap | QT12-5-0205-SEDCHEM | In Cap | 4,4′-DDE | 0.79 | 795 | |
| 14-Month | 5 | 5 | 2-5 | Primary | In Cap | QT12-5-0205-SEDCHEM | In Cap | 4,4′-DDT | 0.47 | 795 | |
| 14-Month | 5 | 5 | 2-5 | Primary | In Cap | QT12-5-0205-SEDCHEM | In Cap | Total DDX | 3.59 | 795 | |
| 14-Month | 5 | 5 | 2-5 | Sample | In Cap | QT12-5-0205-SEDCHEM-Avg | In Cap | 2,4′-DDD | 0.425 | 950 | |
| 14-Month | 5 | 5 | 2-5 | Sample | In Cap | QT12-5-0205-SEDCHEM-Avg | In Cap | 2,4′-DDE | <0.07 | 950 | |
| 14-Month | 5 | 5 | 2-5 | Sample | In Cap | QT12-5-0205-SEDCHEM-Avg | In Cap | 2,4′-DDT | <0.07 | 950 | |
| 14-Month | 5 | 5 | 2-5 | Sample | In Cap | QT12-5-0205-SEDCHEM-Avg | In Cap | 4,4′-DDD | 1.71 | 950 | |
| 14-Month | 5 | 5 | 2-5 | Sample | In Cap | QT12-5-0205-SEDCHEM-Avg | In Cap | 4,4′-DDE | 0.865 | 950 | |
| 14-Month | 5 | 5 | 2-5 | Sample | In Cap | QT12-5-0205-SEDCHEM-Avg | In Cap | 4,4′-DDT | 0.46 | 950 | |
| 14-Month | 5 | 5 | 2-5 | Sample | In Cap | QT12-5-0205-SEDCHEM-Avg | In Cap | Total DDX | 3.46 | 950 | |
| 14-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0205-SEDCHEM-BI | In Cap | 2,4′-DDD | 35.2 | 12,191 | 2887.3 |
| 14-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0205-SEDCHEM-BI | In Cap | 2,4′-DDE | 16.3 | 12,191 | 1337.0 |
| 14-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0205-SEDCHEM-BI | In Cap | 2,4′-DDT | 0.75 | 12,191 | 61.5 |
| 14-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0205-SEDCHEM-BI | In Cap | 4,4′-DDD | 125 | 12,191 | 10253.2 |
| 14-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0205-SEDCHEM-BI | In Cap | 4,4′-DDE | 37.4 | 12,191 | 3067.7 |
| 14-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0205-SEDCHEM-BI | In Cap | 4,4′-DDT | 13.5 | 12,191 | 1107.3 |
| 14-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0205-SEDCHEM-BI | In Cap | Total DDX | 228.15 | 12,191 | 18714.1 |
| 14-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0205-SEDCHEM-BI-Avg | In Cap | 2,4′-DDD | 37.85 | 12,831 | 2946.9 |
| 14-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0205-SEDCHEM-BI-Avg | In Cap | 2,4′-DDE | 16.6 | 12,831 | 1295.8 |
| 14-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0205-SEDCHEM-BI-Avg | In Cap | 2,4′-DDT | 0.795 | 12,831 | 61.9 |
| 14-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0205-SEDCHEM-BI-Avg | In Cap | 4,4′-DDD | 151 | 12,831 | 11696.4 |
| 14-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0205-SEDCHEM-BI-Avg | In Cap | 4,4′-DDE | 42.5 | 12,831 | 3300.7 |
| 14-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0205-SEDCHEM-BI-Avg | In Cap | 4,4′-DDT | 12.05 | 12,831 | 947.1 |
| 14-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0205-SEDCHEM-BI-Avg | In Cap | Total DDX | 260.795 | 12,831 | 20248.8 |
| 14-Month | 5 | 5 | 5-7 | Primary | In Cap | QT12-5-0507-SEDCHEM | In Cap | 2,4′-DDD | 0.1 | 556 | |
| 14-Month | 5 | 5 | 5-7 | Primary | In Cap | QT12-5-0507-SEDCHEM | In Cap | 2,4′-DDE | <0.07 | 556 | |
| 14-Month | 5 | 5 | 5-7 | Primary | In Cap | QT12-5-0507-SEDCHEM | In Cap | 2,4′-DDT | <0.07 | 556 | |
| 14-Month | 5 | 5 | 5-7 | Primary | In Cap | QT12-5-0507-SEDCHEM | In Cap | 4,4′-DDD | 0.67 | 556 | |
| 14-Month | 5 | 5 | 5-7 | Primary | In Cap | QT12-5-0507-SEDCHEM | In Cap | 4,4′-DDE | 0.27 | 556 | |
| 14-Month | 5 | 5 | 5-7 | Primary | In Cap | QT12-5-0507-SEDCHEM | In Cap | 4,4′-DDT | 0.47 | 556 | |
| 14-Month | 5 | 5 | 5-7 | Primary | In Cap | QT12-5-0507-SEDCHEM | In Cap | Total DDX | 1.51 | 556 | |
| 14-Month | 5 | 5 | 5-7 | Sample | In Cap | QT12-5-0507-SEDCHEM-Avg | In Cap | 2,4′-DDD | 0.24 | 673 | |

**Table 1. Compilation of Sediment DDX and Total Organic Carbon Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval (cm)[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (µg/kg dw; ND=<DL) | TOC (mg/kg dw) | Result (µg/kg OC; DDx ND=<0.5 DL)[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 14-Month | 5 | 5 | 5-7 | Sample | In Cap | QT12-5-0507-SEDCHEM-Avg | In Cap | 2,4′-DDE | <0.07 | 673 | |
| 14-Month | 5 | 5 | 5-7 | Sample | In Cap | QT12-5-0507-SEDCHEM-Avg | In Cap | 2,4′-DDT | <0.07 | 673 | |
| 14-Month | 5 | 5 | 5-7 | Sample | In Cap | QT12-5-0507-SEDCHEM-Avg | In Cap | 4,4′-DDD | 1.04 | 673 | |
| 14-Month | 5 | 5 | 5-7 | Sample | In Cap | QT12-5-0507-SEDCHEM-Avg | In Cap | 4,4′-DDE | 0.455 | 673 | |
| 14-Month | 5 | 5 | 5-7 | Sample | In Cap | QT12-5-0507-SEDCHEM-Avg | In Cap | 4,4′-DDT | 0.435 | 673 | |
| 14-Month | 5 | 5 | 5-7 | Sample | In Cap | QT12-5-0507-SEDCHEM-Avg | In Cap | Total DDX | 2.17 | 673 | |
| 14-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0507-SEDCHEM-BI | In Cap | 2,4′-DDD | 70.8 | 12,617 | 5611.6 |
| 14-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0507-SEDCHEM-BI | In Cap | 2,4′-DDE | 34.7 | 12,617 | 2750.3 |
| 14-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0507-SEDCHEM-BI | In Cap | 2,4′-DDT | 2.25 | 12,617 | 178.3 |
| 14-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0507-SEDCHEM-BI | In Cap | 4,4′-DDD | 788 | 12,617 | 62456.3 |
| 14-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0507-SEDCHEM-BI | In Cap | 4,4′-DDE | 70 | 12,617 | 5548.1 |
| 14-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0507-SEDCHEM-BI | In Cap | 4,4′-DDT | 75 | 12,617 | 5944.4 |
| 14-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0507-SEDCHEM-BI | In Cap | Total DDX | 1040.75 | 12,617 | 82489.1 |
| 14-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0507-SEDCHEM-BI-Avg | In Cap | 2,4′-DDD | 58.3 | 13,474 | 4403.7 |
| 14-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0507-SEDCHEM-BI-Avg | In Cap | 2,4′-DDE | 28.65 | 13,474 | 2163.6 |
| 14-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0507-SEDCHEM-BI-Avg | In Cap | 2,4′-DDT | 1.55 | 13,474 | 118.8 |
| 14-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0507-SEDCHEM-BI-Avg | In Cap | 4,4′-DDD | 669 | 13,474 | 50417.0 |
| 14-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0507-SEDCHEM-BI-Avg | In Cap | 4,4′-DDE | 57.6 | 13,474 | 4351.1 |
| 14-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0507-SEDCHEM-BI-Avg | In Cap | 4,4′-DDT | 49.7 | 13,474 | 3823.5 |
| 14-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0507-SEDCHEM-BI-Avg | In Cap | Total DDX | 864.8 | 13,474 | 65277.7 |
| 14-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT12-5DUP-0002-SEDCHEM | In Cap | 2,4′-DDD | 1.8 | 469 | |
| 14-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT12-5DUP-0002-SEDCHEM | In Cap | 2,4′-DDE | <0.07 | 469 | |
| 14-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT12-5DUP-0002-SEDCHEM | In Cap | 2,4′-DDT | <0.07 | 469 | |
| 14-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT12-5DUP-0002-SEDCHEM | In Cap | 4,4′-DDD | 6.81 | 469 | |
| 14-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT12-5DUP-0002-SEDCHEM | In Cap | 4,4′-DDE | 1.74 | 469 | |
| 14-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT12-5DUP-0002-SEDCHEM | In Cap | 4,4′-DDT | 0.65 | 469 | |
| 14-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT12-5DUP-0002-SEDCHEM | In Cap | Total DDX | 11 | 469 | |
| 14-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT12-5DUP-0002-SEDCHEM-AI | In Cap | 2,4′-DDD | 0.28 | 322 | |
| 14-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT12-5DUP-0002-SEDCHEM-AI | In Cap | 2,4′-DDE | 0.16 | 322 | |
| 14-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT12-5DUP-0002-SEDCHEM-AI | In Cap | 2,4′-DDT | <0.07 | 322 | |
| 14-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT12-5DUP-0002-SEDCHEM-AI | In Cap | 4,4′-DDD | 1.06 | 322 | |
| 14-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT12-5DUP-0002-SEDCHEM-AI | In Cap | 4,4′-DDE | 0.3 | 322 | |
| 14-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT12-5DUP-0002-SEDCHEM-AI | In Cap | 4,4′-DDT | 0.36 | 322 | |
| 14-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT12-5DUP-0002-SEDCHEM-AI | In Cap | Total DDX | 2.16 | 322 | |
| 14-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0002-SEDCHEM-BI | In Cap | 2,4′-DDD | 8.32 | 12,242 | 679.6 |
| 14-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0002-SEDCHEM-BI | In Cap | 2,4′-DDE | 3.42 | 12,242 | 279.4 |
| 14-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0002-SEDCHEM-BI | In Cap | 2,4′-DDT | 0.36 | 12,242 | 29.4 |
| 14-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0002-SEDCHEM-BI | In Cap | 4,4′-DDD | 34.8 | 12,242 | 2842.8 |
| 14-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0002-SEDCHEM-BI | In Cap | 4,4′-DDE | 14.8 | 12,242 | 1209.0 |
| 14-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0002-SEDCHEM-BI | In Cap | 4,4′-DDT | 3.88 | 12,242 | 317.0 |
| 14-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0002-SEDCHEM-BI | In Cap | Total DDX | 65.58 | 12,242 | 5357.1 |
| 14-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT12-5DUP-0205-SEDCHEM | In Cap | 2,4′-DDD | 0.39 | 1,105 | |
| 14-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT12-5DUP-0205-SEDCHEM | In Cap | 2,4′-DDE | <0.07 | 1,105 | |
| 14-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT12-5DUP-0205-SEDCHEM | In Cap | 2,4′-DDT | <0.07 | 1,105 | |
| 14-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT12-5DUP-0205-SEDCHEM | In Cap | 4,4′-DDD | 1.55 | 1,105 | |
| 14-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT12-5DUP-0205-SEDCHEM | In Cap | 4,4′-DDE | 0.94 | 1,105 | |
| 14-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT12-5DUP-0205-SEDCHEM | In Cap | 4,4′-DDT | 0.45 | 1,105 | |
| 14-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT12-5DUP-0205-SEDCHEM | In Cap | Total DDX | 3.33 | 1,105 | |
| 14-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0205-SEDCHEM-BI | In Cap | 2,4′-DDD | 40.5 | 13,471 | 3006.5 |
| 14-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0205-SEDCHEM-BI | In Cap | 2,4′-DDE | 16.9 | 13,471 | 1254.6 |
| 14-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0205-SEDCHEM-BI | In Cap | 2,4′-DDT | 0.84 | 13,471 | 62.4 |
| 14-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0205-SEDCHEM-BI | In Cap | 4,4′-DDD | 177 | 13,471 | 13139.6 |
| 14-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0205-SEDCHEM-BI | In Cap | 4,4′-DDE | 47.6 | 13,471 | 3533.6 |

**Table 1. Compilation of Sediment DDX and Total Organic Carbon Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval (cm)[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (µg/kg dw; ND=<DL) | TOC (mg/kg dw) | Result (µg/kg OC; DDx ND=<0.5 DL)[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 14-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0205-SEDCHEM-BI | In Cap | 4,4´-DDT | 10.6 | 13,471 | 786.9 |
| 14-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0205-SEDCHEM-BI | In Cap | Total DDX | 293.44 | 13,471 | 21783.6 |
| 14-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT12-5DUP-0507-SEDCHEM | In Cap | 2,4´-DDD | 0.38 | 790 | |
| 14-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT12-5DUP-0507-SEDCHEM | In Cap | 2,4´-DDE | <0.07 | 790 | |
| 14-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT12-5DUP-0507-SEDCHEM | In Cap | 2,4´-DDT | <0.07 | 790 | |
| 14-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT12-5DUP-0507-SEDCHEM | In Cap | 4,4´-DDD | 1.41 | 790 | |
| 14-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT12-5DUP-0507-SEDCHEM | In Cap | 4,4´-DDE | 0.64 | 790 | |
| 14-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT12-5DUP-0507-SEDCHEM | In Cap | 4,4´-DDT | 0.4 | 790 | |
| 14-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT12-5DUP-0507-SEDCHEM | In Cap | Total DDX | 2.83 | 790 | |
| 14-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0507-SEDCHEM-BI | In Cap | 2,4´-DDD | 45.8 | 14,331 | 3195.8 |
| 14-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0507-SEDCHEM-BI | In Cap | 2,4´-DDE | 22.6 | 14,331 | 1577.0 |
| 14-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0507-SEDCHEM-BI | In Cap | 2,4´-DDT | 0.85 | 14,331 | 59.3 |
| 14-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0507-SEDCHEM-BI | In Cap | 4,4´-DDD | 550 | 14,331 | 38377.8 |
| 14-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0507-SEDCHEM-BI | In Cap | 4,4´-DDE | 45.2 | 14,331 | 3154.0 |
| 14-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0507-SEDCHEM-BI | In Cap | 4,4´-DDT | 24.4 | 14,331 | 1702.6 |
| 14-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0507-SEDCHEM-BI | In Cap | Total DDX | 688.85 | 14,331 | 48066.4 |
| 14-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT12-6-GRAB-SEDCHEM | Off Cap | 2,4´-DDD | <0.16 | 19,481 | <4.1 |
| 14-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT12-6-GRAB-SEDCHEM | Off Cap | 2,4´-DDE | 0.2 | 19,481 | 10.3 |
| 14-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT12-6-GRAB-SEDCHEM | Off Cap | 2,4´-DDT | <0.16 | 19,481 | <4.1 |
| 14-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT12-6-GRAB-SEDCHEM | Off Cap | 4,4´-DDD | 8.97 | 19,481 | 460.5 |
| 14-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT12-6-GRAB-SEDCHEM | Off Cap | 4,4´-DDE | 5.72 | 19,481 | 293.6 |
| 14-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT12-6-GRAB-SEDCHEM | Off Cap | 4,4´-DDT | 2.98 | 19,481 | 153.0 |
| 14-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT12-6-GRAB-SEDCHEM | Off Cap | Total DDX | 17.87 | 19,481 | 917.3 |
| 14-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT12-7-GRAB-SEDCHEM | Off Cap | 2,4´-DDD | 2.85 | 23,433 | 121.6 |
| 14-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT12-7-GRAB-SEDCHEM | Off Cap | 2,4´-DDE | <0.16 | 23,433 | <3.4 |
| 14-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT12-7-GRAB-SEDCHEM | Off Cap | 2,4´-DDT | <0.16 | 23,433 | <3.4 |
| 14-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT12-7-GRAB-SEDCHEM | Off Cap | 4,4´-DDD | 13.6 | 23,433 | 580.4 |
| 14-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT12-7-GRAB-SEDCHEM | Off Cap | 4,4´-DDE | 7.71 | 23,433 | 329.0 |
| 14-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT12-7-GRAB-SEDCHEM | Off Cap | 4,4´-DDT | 2.75 | 23,433 | 117.4 |
| 14-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT12-7-GRAB-SEDCHEM | Off Cap | Total DDX | 26.91 | 23,433 | 1148.4 |
| 25-Month | 1 | 1 | 0-2 | Sample | In Cap | QT25-1-0002-SedChem | In Cap | 2,4´-DDD | 20.4 | 2,379 | 8574.7 |
| 25-Month | 1 | 1 | 0-2 | Sample | In Cap | QT25-1-0002-SedChem | In Cap | 2,4´-DDE | 10.5 | 2,379 | 4413.5 |
| 25-Month | 1 | 1 | 0-2 | Sample | In Cap | QT25-1-0002-SedChem | In Cap | 2,4´-DDT | 0.24 | 2,379 | 100.9 |
| 25-Month | 1 | 1 | 0-2 | Sample | In Cap | QT25-1-0002-SedChem | In Cap | 4,4´-DDD | 23.6 | 2,379 | 9919.8 |
| 25-Month | 1 | 1 | 0-2 | Sample | In Cap | QT25-1-0002-SedChem | In Cap | 4,4´-DDE | 16.7 | 2,379 | 7019.5 |
| 25-Month | 1 | 1 | 0-2 | Sample | In Cap | QT25-1-0002-SedChem | In Cap | 4,4´-DDT | 46.1 | 2,379 | 19377.2 |
| 25-Month | 1 | 1 | 0-2 | Sample | In Cap | QT25-1-0002-SedChem | In Cap | Total DDX | 117.54 | 2,379 | 49405.5 |
| 25-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-1-0002-SedChem-AI | In Cap | 2,4´-DDD | 3.34 | <584.8 | |
| 25-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-1-0002-SedChem-AI | In Cap | 2,4´-DDE | 1.3 | <584.8 | |
| 25-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-1-0002-SedChem-AI | In Cap | 2,4´-DDT | <0.06 | <584.8 | |
| 25-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-1-0002-SedChem-AI | In Cap | 4,4´-DDD | 14.6 | <584.8 | |
| 25-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-1-0002-SedChem-AI | In Cap | 4,4´-DDE | 2.87 | <584.8 | |
| 25-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-1-0002-SedChem-AI | In Cap | 4,4´-DDT | 0.48 | <584.8 | |
| 25-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-1-0002-SedChem-AI | In Cap | Total DDX | 22.59 | <584.8 | |
| 25-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0002-SedChem-BI | In Cap | 2,4´-DDD | 21.8 | 1,860 | |
| 25-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0002-SedChem-BI | In Cap | 2,4´-DDE | 11.6 | 1,860 | |
| 25-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0002-SedChem-BI | In Cap | 2,4´-DDT | <0.07 | 1,860 | |
| 25-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0002-SedChem-BI | In Cap | 4,4´-DDD | 685 | 1,860 | |
| 25-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0002-SedChem-BI | In Cap | 4,4´-DDE | 15.9 | 1,860 | |
| 25-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0002-SedChem-BI | In Cap | 4,4´-DDT | 8.52 | 1,860 | |
| 25-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0002-SedChem-BI | In Cap | Total DDX | 742.82 | 1,860 | |
| 25-Month | 1 | 1 | 2-5 | Sample | In Cap | QT25-1-0205-SedChem | In Cap | 2,4´-DDD | 11.6 | 2,551 | 4546.5 |
| 25-Month | 1 | 1 | 2-5 | Sample | In Cap | QT25-1-0205-SedChem | In Cap | 2,4´-DDE | 3.74 | 2,551 | 1465.8 |

**Table 1. Compilation of Sediment DDX and Total Organic Carbon Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval (cm)[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (µg/kg dw; ND=<DL) | TOC (mg/kg dw) | Result (µg/kg OC; DDx ND=<0.5 DL)[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 25-Month | 1 | 1 | 2-5 | Sample | In Cap | QT25-1-0205-SedChem | In Cap | 2,4′-DDT | 0.18 | 2,551 | 70.5 |
| 25-Month | 1 | 1 | 2-5 | Sample | In Cap | QT25-1-0205-SedChem | In Cap | 4,4′-DDD | 58.2 | 2,551 | 22810.6 |
| 25-Month | 1 | 1 | 2-5 | Sample | In Cap | QT25-1-0205-SedChem | In Cap | 4,4′-DDE | 11.4 | 2,551 | 4468.1 |
| 25-Month | 1 | 1 | 2-5 | Sample | In Cap | QT25-1-0205-SedChem | In Cap | 4,4′-DDT | 5.5 | 2,551 | 2155.6 |
| 25-Month | 1 | 1 | 2-5 | Sample | In Cap | QT25-1-0205-SedChem | In Cap | Total DDX | 90.62 | 2,551 | 35517.2 |
| 25-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0205-SedChem-BI | In Cap | 2,4′-DDD | 12.4 | 2,202 | 5631.1 |
| 25-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0205-SedChem-BI | In Cap | 2,4′-DDE | 3.9 | 2,202 | 1771.1 |
| 25-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0205-SedChem-BI | In Cap | 2,4′-DDT | 1.54 | 2,202 | 699.3 |
| 25-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0205-SedChem-BI | In Cap | 4,4′-DDD | 52.7 | 2,202 | 23932.0 |
| 25-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0205-SedChem-BI | In Cap | 4,4′-DDE | 10.7 | 2,202 | 4859.1 |
| 25-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0205-SedChem-BI | In Cap | 4,4′-DDT | 3.96 | 2,202 | 1798.3 |
| 25-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0205-SedChem-BI | In Cap | Total DDX | 85.2 | 2,202 | 38690.8 |
| 25-Month | 1 | 1 | 5-7 | Sample | In Cap | QT25-1-0507-SedChem | In Cap | 2,4′-DDD | 12.5 | 2,377 | 5258.4 |
| 25-Month | 1 | 1 | 5-7 | Sample | In Cap | QT25-1-0507-SedChem | In Cap | 2,4′-DDE | 5.73 | 2,377 | 2410.4 |
| 25-Month | 1 | 1 | 5-7 | Sample | In Cap | QT25-1-0507-SedChem | In Cap | 2,4′-DDT | 0.35 | 2,377 | 147.2 |
| 25-Month | 1 | 1 | 5-7 | Sample | In Cap | QT25-1-0507-SedChem | In Cap | 4,4′-DDD | 66.2 | 2,377 | 27848.4 |
| 25-Month | 1 | 1 | 5-7 | Sample | In Cap | QT25-1-0507-SedChem | In Cap | 4,4′-DDE | 12.2 | 2,377 | 5132.2 |
| 25-Month | 1 | 1 | 5-7 | Sample | In Cap | QT25-1-0507-SedChem | In Cap | 4,4′-DDT | 4.15 | 2,377 | 1745.8 |
| 25-Month | 1 | 1 | 5-7 | Sample | In Cap | QT25-1-0507-SedChem | In Cap | Total DDX | 101.13 | 2,377 | 42542.4 |
| 25-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0507-SedChem-BI | In Cap | 2,4′-DDD | 7.58 | 2,205 | 3437.8 |
| 25-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0507-SedChem-BI | In Cap | 2,4′-DDE | 3.29 | 2,205 | 1492.1 |
| 25-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0507-SedChem-BI | In Cap | 2,4′-DDT | <0.07 | 2,205 | <15.9 |
| 25-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0507-SedChem-BI | In Cap | 4,4′-DDD | 29.7 | 2,205 | 13469.8 |
| 25-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0507-SedChem-BI | In Cap | 4,4′-DDE | 5.42 | 2,205 | 2458.1 |
| 25-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0507-SedChem-BI | In Cap | 4,4′-DDT | 1.02 | 2,205 | 462.6 |
| 25-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0507-SedChem-BI | In Cap | Total DDX | 47.01 | 2,205 | 21320.4 |
| 25-Month | 2 | 2 | 0-2 | Sample | In Cap | QT25-2-0002-SedChem | In Cap | 2,4′-DDD | 1.01 | 524 | |
| 25-Month | 2 | 2 | 0-2 | Sample | In Cap | QT25-2-0002-SedChem | In Cap | 2,4′-DDE | 0.15 | 524 | |
| 25-Month | 2 | 2 | 0-2 | Sample | In Cap | QT25-2-0002-SedChem | In Cap | 2,4′-DDT | <0.06 | 524 | |
| 25-Month | 2 | 2 | 0-2 | Sample | In Cap | QT25-2-0002-SedChem | In Cap | 4,4′-DDD | 3.93 | 524 | |
| 25-Month | 2 | 2 | 0-2 | Sample | In Cap | QT25-2-0002-SedChem | In Cap | 4,4′-DDE | 0.16 | 524 | |
| 25-Month | 2 | 2 | 0-2 | Sample | In Cap | QT25-2-0002-SedChem | In Cap | 4,4′-DDT | 0.09 | 524 | |
| 25-Month | 2 | 2 | 0-2 | Sample | In Cap | QT25-2-0002-SedChem | In Cap | Total DDX | 5.34 | 524 | |
| 25-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-2-0002-SedChem-AI | In Cap | 2,4′-DDD | 0.1 | 123 | |
| 25-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-2-0002-SedChem-AI | In Cap | 2,4′-DDE | 0.14 | 123 | |
| 25-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-2-0002-SedChem-AI | In Cap | 2,4′-DDT | <0.06 | 123 | |
| 25-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-2-0002-SedChem-AI | In Cap | 4,4′-DDD | 3.83 | 123 | |
| 25-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-2-0002-SedChem-AI | In Cap | 4,4′-DDE | 0.07 | 123 | |
| 25-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-2-0002-SedChem-AI | In Cap | 4,4′-DDT | 0.12 | 123 | |
| 25-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-2-0002-SedChem-AI | In Cap | Total DDX | 4.26 | 123 | |
| 25-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0002-SedChem-BI | In Cap | 2,4′-DDD | 20.6 | 1,364 | |
| 25-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0002-SedChem-BI | In Cap | 2,4′-DDE | 22.7 | 1,364 | |
| 25-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0002-SedChem-BI | In Cap | 2,4′-DDT | 0.51 | 1,364 | |
| 25-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0002-SedChem-BI | In Cap | 4,4′-DDD | 159 | 1,364 | |
| 25-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0002-SedChem-BI | In Cap | 4,4′-DDE | 10.6 | 1,364 | |
| 25-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0002-SedChem-BI | In Cap | 4,4′-DDT | 16.5 | 1,364 | |
| 25-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0002-SedChem-BI | In Cap | Total DDX | 229.91 | 1,364 | |
| 25-Month | 2 | 2 | 2-5 | Sample | In Cap | QT25-2-0205-SedChem | In Cap | 2,4′-DDD | 1.48 | 554 | |
| 25-Month | 2 | 2 | 2-5 | Sample | In Cap | QT25-2-0205-SedChem | In Cap | 2,4′-DDE | 0.53 | 554 | |
| 25-Month | 2 | 2 | 2-5 | Sample | In Cap | QT25-2-0205-SedChem | In Cap | 2,4′-DDT | <0.06 | 554 | |
| 25-Month | 2 | 2 | 2-5 | Sample | In Cap | QT25-2-0205-SedChem | In Cap | 4,4′-DDD | 7.6 | 554 | |
| 25-Month | 2 | 2 | 2-5 | Sample | In Cap | QT25-2-0205-SedChem | In Cap | 4,4′-DDE | 0.99 | 554 | |
| 25-Month | 2 | 2 | 2-5 | Sample | In Cap | QT25-2-0205-SedChem | In Cap | 4,4′-DDT | 0.21 | 554 | |

**Table 1. Compilation of Sediment DDX and Total Organic Carbon Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval (cm)[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (µg/kg dw; ND=<DL) | TOC (mg/kg dw) | Result (µg/kg OC; DDx ND=<0.5 DL)[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 25-Month | 2 | 2 | 2-5 | Sample | In Cap | QT25-2-0205-SedChem | In Cap | Total DDX | 10.81 | 554 | |
| 25-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0205-SedChem-BI | In Cap | 2,4′-DDD | 39.5 | 3,615 | 10927.4 |
| 25-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0205-SedChem-BI | In Cap | 2,4′-DDE | 20 | 3,615 | 5532.8 |
| 25-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0205-SedChem-BI | In Cap | 2,4′-DDT | <0.07 | 3,615 | <9.7 |
| 25-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0205-SedChem-BI | In Cap | 4,4′-DDD | 257 | 3,615 | 71097.1 |
| 25-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0205-SedChem-BI | In Cap | 4,4′-DDE | 23.3 | 3,615 | 6445.8 |
| 25-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0205-SedChem-BI | In Cap | 4,4′-DDT | 21.4 | 3,615 | 5920.1 |
| 25-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0205-SedChem-BI | In Cap | Total DDX | 361.2 | 3,615 | 99923.2 |
| 25-Month | 2 | 2 | 5-7 | Sample | In Cap | QT25-2-0507-SedChem | In Cap | 2,4′-DDD | 0.85 | 280 | |
| 25-Month | 2 | 2 | 5-7 | Sample | In Cap | QT25-2-0507-SedChem | In Cap | 2,4′-DDE | 0.34 | 280 | |
| 25-Month | 2 | 2 | 5-7 | Sample | In Cap | QT25-2-0507-SedChem | In Cap | 2,4′-DDT | <0.06 | 280 | |
| 25-Month | 2 | 2 | 5-7 | Sample | In Cap | QT25-2-0507-SedChem | In Cap | 4,4′-DDD | 3.51 | 280 | |
| 25-Month | 2 | 2 | 5-7 | Sample | In Cap | QT25-2-0507-SedChem | In Cap | 4,4′-DDE | 0.54 | 280 | |
| 25-Month | 2 | 2 | 5-7 | Sample | In Cap | QT25-2-0507-SedChem | In Cap | 4,4′-DDT | 0.18 | 280 | |
| 25-Month | 2 | 2 | 5-7 | Sample | In Cap | QT25-2-0507-SedChem | In Cap | Total DDX | 5.42 | 280 | |
| 25-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0507-SedChem-BI | In Cap | 2,4′-DDD | 25.5 | 2,583 | 9871.8 |
| 25-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0507-SedChem-BI | In Cap | 2,4′-DDE | 31.6 | 2,583 | 12233.3 |
| 25-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0507-SedChem-BI | In Cap | 2,4′-DDT | 1.32 | 2,583 | 511.0 |
| 25-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0507-SedChem-BI | In Cap | 4,4′-DDD | 2570 | 2,583 | 994920.8 |
| 25-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0507-SedChem-BI | In Cap | 4,4′-DDE | 17.3 | 2,583 | 6697.3 |
| 25-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0507-SedChem-BI | In Cap | 4,4′-DDT | 47.5 | 2,583 | 18388.6 |
| 25-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0507-SedChem-BI | In Cap | Total DDX | 2693.22 | 2,583 | 1042622.8 |
| 25-Month | 3 | 3 | 0-2 | Sample | In Cap | QT25-3-0002-SedChem | In Cap | 2,4′-DDD | 11.2 | 3,382 | 3311.3 |
| 25-Month | 3 | 3 | 0-2 | Sample | In Cap | QT25-3-0002-SedChem | In Cap | 2,4′-DDE | 2.63 | 3,382 | 777.6 |
| 25-Month | 3 | 3 | 0-2 | Sample | In Cap | QT25-3-0002-SedChem | In Cap | 2,4′-DDT | 0.55 | 3,382 | 162.6 |
| 25-Month | 3 | 3 | 0-2 | Sample | In Cap | QT25-3-0002-SedChem | In Cap | 4,4′-DDD | 59 | 3,382 | 17443.5 |
| 25-Month | 3 | 3 | 0-2 | Sample | In Cap | QT25-3-0002-SedChem | In Cap | 4,4′-DDE | 10.3 | 3,382 | 3045.2 |
| 25-Month | 3 | 3 | 0-2 | Sample | In Cap | QT25-3-0002-SedChem | In Cap | 4,4′-DDT | 20.4 | 3,382 | 6031.3 |
| 25-Month | 3 | 3 | 0-2 | Sample | In Cap | QT25-3-0002-SedChem | In Cap | Total DDX | 104.08 | 3,382 | 30771.5 |
| 25-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-3-0002-SedChem-AI | In Cap | 2,4′-DDD | 2.32 | 167 | |
| 25-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-3-0002-SedChem-AI | In Cap | 2,4′-DDE | 0.96 | 167 | |
| 25-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-3-0002-SedChem-AI | In Cap | 2,4′-DDT | <0.06 | 167 | |
| 25-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-3-0002-SedChem-AI | In Cap | 4,4′-DDD | 7.55 | 167 | |
| 25-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-3-0002-SedChem-AI | In Cap | 4,4′-DDE | 1.49 | 167 | |
| 25-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-3-0002-SedChem-AI | In Cap | 4,4′-DDT | 0.44 | 167 | |
| 25-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-3-0002-SedChem-AI | In Cap | Total DDX | 12.76 | 167 | |
| 25-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0002-SedChem-BI | In Cap | 2,4′-DDD | 65.1 | 678 | |
| 25-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0002-SedChem-BI | In Cap | 2,4′-DDE | 18.7 | 678 | |
| 25-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0002-SedChem-BI | In Cap | 2,4′-DDT | 0.99 | 678 | |
| 25-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0002-SedChem-BI | In Cap | 4,4′-DDD | 399 | 678 | |
| 25-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0002-SedChem-BI | In Cap | 4,4′-DDE | 19.8 | 678 | |
| 25-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0002-SedChem-BI | In Cap | 4,4′-DDT | 27 | 678 | |
| 25-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0002-SedChem-BI | In Cap | Total DDX | 530.59 | 678 | |
| 25-Month | 3 | 3 | 2-5 | Sample | In Cap | QT25-3-0205-SedChem | In Cap | 2,4′-DDD | 10.8 | 1,992 | |
| 25-Month | 3 | 3 | 2-5 | Sample | In Cap | QT25-3-0205-SedChem | In Cap | 2,4′-DDE | 4.98 | 1,992 | |
| 25-Month | 3 | 3 | 2-5 | Sample | In Cap | QT25-3-0205-SedChem | In Cap | 2,4′-DDT | 0.25 | 1,992 | |
| 25-Month | 3 | 3 | 2-5 | Sample | In Cap | QT25-3-0205-SedChem | In Cap | 4,4′-DDD | 52.1 | 1,992 | |
| 25-Month | 3 | 3 | 2-5 | Sample | In Cap | QT25-3-0205-SedChem | In Cap | 4,4′-DDE | 11.1 | 1,992 | |
| 25-Month | 3 | 3 | 2-5 | Sample | In Cap | QT25-3-0205-SedChem | In Cap | 4,4′-DDT | 4.07 | 1,992 | |
| 25-Month | 3 | 3 | 2-5 | Sample | In Cap | QT25-3-0205-SedChem | In Cap | Total DDX | 83.3 | 1,992 | |
| 25-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0205-SedChem-BI | In Cap | 2,4′-DDD | 31.2 | 868 | |
| 25-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0205-SedChem-BI | In Cap | 2,4′-DDE | 9.9 | 868 | |
| 25-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0205-SedChem-BI | In Cap | 2,4′-DDT | 0.14 | 868 | |

**Table 1. Compilation of Sediment DDX and Total Organic Carbon Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval (cm)[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (µg/kg dw; ND=<DL) | TOC (mg/kg dw) | Result (µg/kg OC; DDx ND=<0.5 DL)[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 25-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0205-SedChem-BI | In Cap | 4,4′-DDD | 158 | 868 | |
| 25-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0205-SedChem-BI | In Cap | 4,4′-DDE | 16.8 | 868 | |
| 25-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0205-SedChem-BI | In Cap | 4,4′-DDT | 3.27 | 868 | |
| 25-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0205-SedChem-BI | In Cap | Total DDX | 219.31 | 868 | |
| 25-Month | 3 | 3 | 5-7 | Sample | In Cap | QT25-3-0507-SedChem | In Cap | 2,4′-DDD | 21.1 | 2,141 | 9855.7 |
| 25-Month | 3 | 3 | 5-7 | Sample | In Cap | QT25-3-0507-SedChem | In Cap | 2,4′-DDE | 4.77 | 2,141 | 2228.1 |
| 25-Month | 3 | 3 | 5-7 | Sample | In Cap | QT25-3-0507-SedChem | In Cap | 2,4′-DDT | 0.28 | 2,141 | 130.8 |
| 25-Month | 3 | 3 | 5-7 | Sample | In Cap | QT25-3-0507-SedChem | In Cap | 4,4′-DDD | 98.2 | 2,141 | 45868.9 |
| 25-Month | 3 | 3 | 5-7 | Sample | In Cap | QT25-3-0507-SedChem | In Cap | 4,4′-DDE | 17.6 | 2,141 | 8220.9 |
| 25-Month | 3 | 3 | 5-7 | Sample | In Cap | QT25-3-0507-SedChem | In Cap | 4,4′-DDT | 2.89 | 2,141 | 1349.9 |
| 25-Month | 3 | 3 | 5-7 | Sample | In Cap | QT25-3-0507-SedChem | In Cap | Total DDX | 144.84 | 2,141 | 67654.3 |
| 25-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0507-SedChem-BI | In Cap | 2,4′-DDD | 27.8 | 2,235 | 12440.9 |
| 25-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0507-SedChem-BI | In Cap | 2,4′-DDE | 13.4 | 2,235 | 5996.7 |
| 25-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0507-SedChem-BI | In Cap | 2,4′-DDT | 0.42 | 2,235 | 188.0 |
| 25-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0507-SedChem-BI | In Cap | 4,4′-DDD | 109 | 2,235 | 48779.0 |
| 25-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0507-SedChem-BI | In Cap | 4,4′-DDE | 25.2 | 2,235 | 11277.3 |
| 25-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0507-SedChem-BI | In Cap | 4,4′-DDT | 5.54 | 2,235 | 2479.2 |
| 25-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0507-SedChem-BI | In Cap | Total DDX | 181.36 | 2,235 | 81161.1 |
| 25-Month | 4 | 4 | 0-2 | Sample | In Cap | QT25-4-0002-SedChem | In Cap | 2,4′-DDD | 4.72 | 720 | |
| 25-Month | 4 | 4 | 0-2 | Sample | In Cap | QT25-4-0002-SedChem | In Cap | 2,4′-DDE | 1.43 | 720 | |
| 25-Month | 4 | 4 | 0-2 | Sample | In Cap | QT25-4-0002-SedChem | In Cap | 2,4′-DDT | <0.06 | 720 | |
| 25-Month | 4 | 4 | 0-2 | Sample | In Cap | QT25-4-0002-SedChem | In Cap | 4,4′-DDD | 19.1 | 720 | |
| 25-Month | 4 | 4 | 0-2 | Sample | In Cap | QT25-4-0002-SedChem | In Cap | 4,4′-DDE | 3.61 | 720 | |
| 25-Month | 4 | 4 | 0-2 | Sample | In Cap | QT25-4-0002-SedChem | In Cap | 4,4′-DDT | 0.51 | 720 | |
| 25-Month | 4 | 4 | 0-2 | Sample | In Cap | QT25-4-0002-SedChem | In Cap | Total DDX | 29.37 | 720 | |
| 25-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-4-0002-SedChem-AI | In Cap | 2,4′-DDD | 1.11 | 187 | |
| 25-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-4-0002-SedChem-AI | In Cap | 2,4′-DDE | 0.57 | 187 | |
| 25-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-4-0002-SedChem-AI | In Cap | 2,4′-DDT | <0.06 | 187 | |
| 25-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-4-0002-SedChem-AI | In Cap | 4,4′-DDD | 4.08 | 187 | |
| 25-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-4-0002-SedChem-AI | In Cap | 4,4′-DDE | 0.92 | 187 | |
| 25-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-4-0002-SedChem-AI | In Cap | 4,4′-DDT | 0.15 | 187 | |
| 25-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-4-0002-SedChem-AI | In Cap | Total DDX | 6.83 | 187 | |
| 25-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0002-SedChem-BI | In Cap | 2,4′-DDD | 18.5 | 4,193 | 4412.1 |
| 25-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0002-SedChem-BI | In Cap | 2,4′-DDE | 5.55 | 4,193 | 1323.6 |
| 25-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0002-SedChem-BI | In Cap | 2,4′-DDT | 0.35 | 4,193 | 83.5 |
| 25-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0002-SedChem-BI | In Cap | 4,4′-DDD | 84 | 4,193 | 20033.2 |
| 25-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0002-SedChem-BI | In Cap | 4,4′-DDE | 20.3 | 4,193 | 4841.4 |
| 25-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0002-SedChem-BI | In Cap | 4,4′-DDT | 3.31 | 4,193 | 789.4 |
| 25-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0002-SedChem-BI | In Cap | Total DDX | 132.01 | 4,193 | 31483.1 |
| 25-Month | 4 | 4 | 2-5 | Sample | In Cap | QT25-4-0205-SedChem | In Cap | 2,4′-DDD | 6.47 | 937 | |
| 25-Month | 4 | 4 | 2-5 | Sample | In Cap | QT25-4-0205-SedChem | In Cap | 2,4′-DDE | 1.79 | 937 | |
| 25-Month | 4 | 4 | 2-5 | Sample | In Cap | QT25-4-0205-SedChem | In Cap | 2,4′-DDT | 0.09 | 937 | |
| 25-Month | 4 | 4 | 2-5 | Sample | In Cap | QT25-4-0205-SedChem | In Cap | 4,4′-DDD | 22.4 | 937 | |
| 25-Month | 4 | 4 | 2-5 | Sample | In Cap | QT25-4-0205-SedChem | In Cap | 4,4′-DDE | 9.85 | 937 | |
| 25-Month | 4 | 4 | 2-5 | Sample | In Cap | QT25-4-0205-SedChem | In Cap | 4,4′-DDT | 0.65 | 937 | |
| 25-Month | 4 | 4 | 2-5 | Sample | In Cap | QT25-4-0205-SedChem | In Cap | Total DDX | 41.25 | 937 | |
| 25-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0205-SedChem-BI | In Cap | 2,4′-DDD | 11.7 | 7,621 | 1535.3 |
| 25-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0205-SedChem-BI | In Cap | 2,4′-DDE | 4.73 | 7,621 | 620.7 |
| 25-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0205-SedChem-BI | In Cap | 2,4′-DDT | 0.33 | 7,621 | 43.3 |
| 25-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0205-SedChem-BI | In Cap | 4,4′-DDD | 72.9 | 7,621 | 9565.8 |
| 25-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0205-SedChem-BI | In Cap | 4,4′-DDE | 26.2 | 7,621 | 3437.9 |
| 25-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0205-SedChem-BI | In Cap | 4,4′-DDT | 5.47 | 7,621 | 717.8 |
| 25-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0205-SedChem-BI | In Cap | Total DDX | 121.33 | 7,621 | 15920.7 |

**Table 1. Compilation of Sediment DDX and Total Organic Carbon Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval (cm)[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (µg/kg dw; ND=<DL) | TOC (mg/kg dw) | Result (µg/kg OC; DDx ND=<0.5 DL)[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 25-Month | 4 | 4 | 5-7 | Sample | In Cap | QT25-4-0507-SedChem | In Cap | 2,4′-DDD | 4.69 | 447 | |
| 25-Month | 4 | 4 | 5-7 | Sample | In Cap | QT25-4-0507-SedChem | In Cap | 2,4′-DDE | 1.26 | 447 | |
| 25-Month | 4 | 4 | 5-7 | Sample | In Cap | QT25-4-0507-SedChem | In Cap | 2,4′-DDT | 0.06 | 447 | |
| 25-Month | 4 | 4 | 5-7 | Sample | In Cap | QT25-4-0507-SedChem | In Cap | 4,4′-DDD | 18.1 | 447 | |
| 25-Month | 4 | 4 | 5-7 | Sample | In Cap | QT25-4-0507-SedChem | In Cap | 4,4′-DDE | 3.37 | 447 | |
| 25-Month | 4 | 4 | 5-7 | Sample | In Cap | QT25-4-0507-SedChem | In Cap | 4,4′-DDT | 0.58 | 447 | |
| 25-Month | 4 | 4 | 5-7 | Sample | In Cap | QT25-4-0507-SedChem | In Cap | Total DDX | 28.06 | 447 | |
| 25-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0507-SedChem-BI | In Cap | 2,4′-DDD | 12.9 | 8,740 | 1476.0 |
| 25-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0507-SedChem-BI | In Cap | 2,4′-DDE | 4.52 | 8,740 | 517.2 |
| 25-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0507-SedChem-BI | In Cap | 2,4′-DDT | 1.22 | 8,740 | 139.6 |
| 25-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0507-SedChem-BI | In Cap | 4,4′-DDD | 80.6 | 8,740 | 9222.3 |
| 25-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0507-SedChem-BI | In Cap | 4,4′-DDE | 36.4 | 8,740 | 4164.9 |
| 25-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0507-SedChem-BI | In Cap | 4,4′-DDT | 7.48 | 8,740 | 855.9 |
| 25-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0507-SedChem-BI | In Cap | Total DDX | 143.12 | 8,740 | 16375.9 |
| 25-Month | 5 | 5 | 0-2 | Primary | In Cap | QT25-5-0002-SedChem | In Cap | 2,4′-DDD | 0.23 | 433 | |
| 25-Month | 5 | 5 | 0-2 | Primary | In Cap | QT25-5-0002-SedChem | In Cap | 2,4′-DDE | 0.07 | 433 | |
| 25-Month | 5 | 5 | 0-2 | Primary | In Cap | QT25-5-0002-SedChem | In Cap | 2,4′-DDT | <0.06 | 433 | |
| 25-Month | 5 | 5 | 0-2 | Primary | In Cap | QT25-5-0002-SedChem | In Cap | 4,4′-DDD | 0.86 | 433 | |
| 25-Month | 5 | 5 | 0-2 | Primary | In Cap | QT25-5-0002-SedChem | In Cap | 4,4′-DDE | 0.37 | 433 | |
| 25-Month | 5 | 5 | 0-2 | Primary | In Cap | QT25-5-0002-SedChem | In Cap | 4,4′-DDT | 0.06 | 433 | |
| 25-Month | 5 | 5 | 0-2 | Primary | In Cap | QT25-5-0002-SedChem | In Cap | Total DDX | 1.59 | 433 | |
| 25-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT25-5-0002-SedChem-AI | In Cap | 2,4′-DDD | 0.29 | 163 | |
| 25-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT25-5-0002-SedChem-AI | In Cap | 2,4′-DDE | 0.14 | 163 | |
| 25-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT25-5-0002-SedChem-AI | In Cap | 2,4′-DDT | <0.06 | 163 | |
| 25-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT25-5-0002-SedChem-AI | In Cap | 4,4′-DDD | 1.05 | 163 | |
| 25-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT25-5-0002-SedChem-AI | In Cap | 4,4′-DDE | 0.26 | 163 | |
| 25-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT25-5-0002-SedChem-AI | In Cap | 4,4′-DDT | 0.06 | 163 | |
| 25-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT25-5-0002-SedChem-AI | In Cap | Total DDX | 1.8 | 163 | |
| 25-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-5-0002-SedChem-AI-Avg | In Cap | 2,4′-DDD | 0.16 | 147 | |
| 25-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-5-0002-SedChem-AI-Avg | In Cap | 2,4′-DDE | 0.085 | 147 | |
| 25-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-5-0002-SedChem-AI-Avg | In Cap | 2,4′-DDT | <0.06 | 147 | |
| 25-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-5-0002-SedChem-AI-Avg | In Cap | 4,4′-DDD | 0.58 | 147 | |
| 25-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-5-0002-SedChem-AI-Avg | In Cap | 4,4′-DDE | 0.145 | 147 | |
| 25-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-5-0002-SedChem-AI-Avg | In Cap | 4,4′-DDT | 0.045 | 147 | |
| 25-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-5-0002-SedChem-AI-Avg | In Cap | Total DDX | 1.015 | 147 | |
| 25-Month | 5 | 5 | 0-2 | Sample | In Cap | QT25-5-0002-SedChem-Avg | In Cap | 2,4′-DDD | 0.255 | 550 | |
| 25-Month | 5 | 5 | 0-2 | Sample | In Cap | QT25-5-0002-SedChem-Avg | In Cap | 2,4′-DDE | 0.1 | 550 | |
| 25-Month | 5 | 5 | 0-2 | Sample | In Cap | QT25-5-0002-SedChem-Avg | In Cap | 2,4′-DDT | <0.06 | 550 | |
| 25-Month | 5 | 5 | 0-2 | Sample | In Cap | QT25-5-0002-SedChem-Avg | In Cap | 4,4′-DDD | 1.005 | 550 | |
| 25-Month | 5 | 5 | 0-2 | Sample | In Cap | QT25-5-0002-SedChem-Avg | In Cap | 4,4′-DDE | 0.41 | 550 | |
| 25-Month | 5 | 5 | 0-2 | Sample | In Cap | QT25-5-0002-SedChem-Avg | In Cap | 4,4′-DDT | 0.065 | 550 | |
| 25-Month | 5 | 5 | 0-2 | Sample | In Cap | QT25-5-0002-SedChem-Avg | In Cap | Total DDX | 1.835 | 550 | |
| 25-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0002-SedChem-BI | In Cap | 2,4′-DDD | 17.9 | 3,571 | 5012.0 |
| 25-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0002-SedChem-BI | In Cap | 2,4′-DDE | 8.29 | 3,571 | 2321.2 |
| 25-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0002-SedChem-BI | In Cap | 2,4′-DDT | 0.45 | 3,571 | 126.0 |
| 25-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0002-SedChem-BI | In Cap | 4,4′-DDD | 81.5 | 3,571 | 22820.0 |
| 25-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0002-SedChem-BI | In Cap | 4,4′-DDE | 20.2 | 3,571 | 5656.0 |
| 25-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0002-SedChem-BI | In Cap | 4,4′-DDT | 3.43 | 3,571 | 960.4 |
| 25-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0002-SedChem-BI | In Cap | Total DDX | 131.77 | 3,571 | 36895.6 |
| 25-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0002-SedChem-BI-Avg | In Cap | 2,4′-DDD | 21.7 | 3,140 | 7213.7 |
| 25-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0002-SedChem-BI-Avg | In Cap | 2,4′-DDE | 11.195 | 3,140 | 3763.7 |
| 25-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0002-SedChem-BI-Avg | In Cap | 2,4′-DDT | 0.48 | 3,140 | 157.2 |
| 25-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0002-SedChem-BI-Avg | In Cap | 4,4′-DDD | 110.75 | 3,140 | 37256.2 |

**Table 1. Compilation of Sediment DDX and Total Organic Carbon Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval (cm)[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (µg/kg dw; ND=<DL) | TOC (mg/kg dw) | Result (µg/kg OC; DDx ND=<0.5 DL)[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 25-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0002-SedChem-BI-Avg | In Cap | 4,4′-DDE | 23.95 | 3,140 | 7941.8 |
| 25-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0002-SedChem-BI-Avg | In Cap | 4,4′-DDT | 8.665 | 3,140 | 3046.4 |
| 25-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0002-SedChem-BI-Avg | In Cap | Total DDX | 176.74 | 3,140 | 59378.9 |
| 25-Month | 5 | 5 | 2-5 | Primary | In Cap | QT25-5-0205-SedChem | In Cap | 2,4′-DDD | 0.38 | 255 | |
| 25-Month | 5 | 5 | 2-5 | Primary | In Cap | QT25-5-0205-SedChem | In Cap | 2,4′-DDE | 0.21 | 255 | |
| 25-Month | 5 | 5 | 2-5 | Primary | In Cap | QT25-5-0205-SedChem | In Cap | 2,4′-DDT | <0.06 | 255 | |
| 25-Month | 5 | 5 | 2-5 | Primary | In Cap | QT25-5-0205-SedChem | In Cap | 4,4′-DDD | 1.7 | 255 | |
| 25-Month | 5 | 5 | 2-5 | Primary | In Cap | QT25-5-0205-SedChem | In Cap | 4,4′-DDE | 0.93 | 255 | |
| 25-Month | 5 | 5 | 2-5 | Primary | In Cap | QT25-5-0205-SedChem | In Cap | 4,4′-DDT | 0.27 | 255 | |
| 25-Month | 5 | 5 | 2-5 | Primary | In Cap | QT25-5-0205-SedChem | In Cap | Total DDX | 3.49 | 255 | |
| 25-Month | 5 | 5 | 2-5 | Sample | In Cap | QT25-5-0205-SedChem-Avg | In Cap | 2,4′-DDD | 0.325 | 325 | |
| 25-Month | 5 | 5 | 2-5 | Sample | In Cap | QT25-5-0205-SedChem-Avg | In Cap | 2,4′-DDE | 0.165 | 325 | |
| 25-Month | 5 | 5 | 2-5 | Sample | In Cap | QT25-5-0205-SedChem-Avg | In Cap | 2,4′-DDT | <0.06 | 325 | |
| 25-Month | 5 | 5 | 2-5 | Sample | In Cap | QT25-5-0205-SedChem-Avg | In Cap | 4,4′-DDD | 1.37 | 325 | |
| 25-Month | 5 | 5 | 2-5 | Sample | In Cap | QT25-5-0205-SedChem-Avg | In Cap | 4,4′-DDE | 0.705 | 325 | |
| 25-Month | 5 | 5 | 2-5 | Sample | In Cap | QT25-5-0205-SedChem-Avg | In Cap | 4,4′-DDT | 0.165 | 325 | |
| 25-Month | 5 | 5 | 2-5 | Sample | In Cap | QT25-5-0205-SedChem-Avg | In Cap | Total DDX | 2.73 | 325 | |
| 25-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0205-SedChem-BI | In Cap | 2,4′-DDD | 62.2 | 4,558 | 13645.3 |
| 25-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0205-SedChem-BI | In Cap | 2,4′-DDE | 35.9 | 4,558 | 7875.6 |
| 25-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0205-SedChem-BI | In Cap | 2,4′-DDT | 1.16 | 4,558 | 254.5 |
| 25-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0205-SedChem-BI | In Cap | 4,4′-DDD | 286 | 4,558 | 62741.9 |
| 25-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0205-SedChem-BI | In Cap | 4,4′-DDE | 61.6 | 4,558 | 13513.6 |
| 25-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0205-SedChem-BI | In Cap | 4,4′-DDT | 15.6 | 4,558 | 3422.3 |
| 25-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0205-SedChem-BI | In Cap | Total DDX | 462.46 | 4,558 | 101453.2 |
| 25-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0205-SedChem-BI-Avg | In Cap | 2,4′-DDD | 60 | 4,441 | 13508.3 |
| 25-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0205-SedChem-BI-Avg | In Cap | 2,4′-DDE | 32.4 | 4,441 | 7280.7 |
| 25-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0205-SedChem-BI-Avg | In Cap | 2,4′-DDT | 0.915 | 4,441 | 204.7 |
| 25-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0205-SedChem-BI-Avg | In Cap | 4,4′-DDD | 271.5 | 4,441 | 61097.9 |
| 25-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0205-SedChem-BI-Avg | In Cap | 4,4′-DDE | 61.25 | 4,441 | 13801.1 |
| 25-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0205-SedChem-BI-Avg | In Cap | 4,4′-DDT | 12.79 | 4,441 | 2865.5 |
| 25-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0205-SedChem-BI-Avg | In Cap | Total DDX | 438.855 | 4,441 | 98758.1 |
| 25-Month | 5 | 5 | 5-7 | Primary | In Cap | QT25-5-0507-SedChem | In Cap | 2,4′-DDD | 0.2 | 218 | |
| 25-Month | 5 | 5 | 5-7 | Primary | In Cap | QT25-5-0507-SedChem | In Cap | 2,4′-DDE | 0.09 | 218 | |
| 25-Month | 5 | 5 | 5-7 | Primary | In Cap | QT25-5-0507-SedChem | In Cap | 2,4′-DDT | <0.06 | 218 | |
| 25-Month | 5 | 5 | 5-7 | Primary | In Cap | QT25-5-0507-SedChem | In Cap | 4,4′-DDD | 0.82 | 218 | |
| 25-Month | 5 | 5 | 5-7 | Primary | In Cap | QT25-5-0507-SedChem | In Cap | 4,4′-DDE | 0.41 | 218 | |
| 25-Month | 5 | 5 | 5-7 | Primary | In Cap | QT25-5-0507-SedChem | In Cap | 4,4′-DDT | 0.09 | 218 | |
| 25-Month | 5 | 5 | 5-7 | Primary | In Cap | QT25-5-0507-SedChem | In Cap | Total DDX | 1.61 | 218 | |
| 25-Month | 5 | 5 | 5-7 | Sample | In Cap | QT25-5-0507-SedChem-Avg | In Cap | 2,4′-DDD | 0.19 | 242 | |
| 25-Month | 5 | 5 | 5-7 | Sample | In Cap | QT25-5-0507-SedChem-Avg | In Cap | 2,4′-DDE | 0.09 | 242 | |
| 25-Month | 5 | 5 | 5-7 | Sample | In Cap | QT25-5-0507-SedChem-Avg | In Cap | 2,4′-DDT | <0.06 | 242 | |
| 25-Month | 5 | 5 | 5-7 | Sample | In Cap | QT25-5-0507-SedChem-Avg | In Cap | 4,4′-DDD | 0.765 | 242 | |
| 25-Month | 5 | 5 | 5-7 | Sample | In Cap | QT25-5-0507-SedChem-Avg | In Cap | 4,4′-DDE | 0.435 | 242 | |
| 25-Month | 5 | 5 | 5-7 | Sample | In Cap | QT25-5-0507-SedChem-Avg | In Cap | 4,4′-DDT | 0.085 | 242 | |
| 25-Month | 5 | 5 | 5-7 | Sample | In Cap | QT25-5-0507-SedChem-Avg | In Cap | Total DDX | 1.565 | 242 | |
| 25-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0507-SedChem-BI | In Cap | 2,4′-DDD | 30 | 4,241 | 7074.6 |
| 25-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0507-SedChem-BI | In Cap | 2,4′-DDE | 21.7 | 4,241 | 5117.3 |
| 25-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0507-SedChem-BI | In Cap | 2,4′-DDT | 0.47 | 4,241 | 110.8 |
| 25-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0507-SedChem-BI | In Cap | 4,4′-DDD | 205 | 4,241 | 48343.3 |
| 25-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0507-SedChem-BI | In Cap | 4,4′-DDE | 49.9 | 4,241 | 11767.5 |
| 25-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0507-SedChem-BI | In Cap | 4,4′-DDT | 8.45 | 4,241 | 1992.7 |
| 25-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0507-SedChem-BI | In Cap | Total DDX | 315.52 | 4,241 | 74406.2 |
| 25-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0507-SedChem-BI-Avg | In Cap | 2,4′-DDD | 33.4 | 3,991 | 8454.2 |

**Table 1. Compilation of Sediment DDX and Total Organic Carbon Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval (cm)[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (µg/kg dw; ND=<DL) | TOC (mg/kg dw) | Result (µg/kg OC; DDx ND=<0.5 DL)[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 25-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0507-SedChem-BI-Avg | In Cap | 2,4′-DDE | 24.4 | 3,991 | 6179.5 |
| 25-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0507-SedChem-BI-Avg | In Cap | 2,4′-DDT | 0.565 | 3,991 | 143.6 |
| 25-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0507-SedChem-BI-Avg | In Cap | 4,4′-DDD | 214 | 3,991 | 53966.7 |
| 25-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0507-SedChem-BI-Avg | In Cap | 4,4′-DDE | 47.6 | 3,991 | 11936.3 |
| 25-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0507-SedChem-BI-Avg | In Cap | 4,4′-DDT | 9.625 | 3,991 | 2439.3 |
| 25-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0507-SedChem-BI-Avg | In Cap | Total DDX | 329.59 | 3,991 | 83119.5 |
| 25-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT25-5DUP-0002-SedChem | In Cap | 2,4′-DDD | 0.28 | 667 | |
| 25-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT25-5DUP-0002-SedChem | In Cap | 2,4′-DDE | 0.13 | 667 | |
| 25-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT25-5DUP-0002-SedChem | In Cap | 2,4′-DDT | <0.06 | 667 | |
| 25-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT25-5DUP-0002-SedChem | In Cap | 4,4′-DDD | 1.15 | 667 | |
| 25-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT25-5DUP-0002-SedChem | In Cap | 4,4′-DDE | 0.45 | 667 | |
| 25-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT25-5DUP-0002-SedChem | In Cap | 4,4′-DDT | 0.07 | 667 | |
| 25-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT25-5DUP-0002-SedChem | In Cap | Total DDX | 2.08 | 667 | |
| 25-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT25-5DUP-0002-SedChem-AI | In Cap | 2,4′-DDD | <0.06 | 131 | |
| 25-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT25-5DUP-0002-SedChem-AI | In Cap | 2,4′-DDE | <0.06 | 131 | |
| 25-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT25-5DUP-0002-SedChem-AI | In Cap | 2,4′-DDT | <0.06 | 131 | |
| 25-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT25-5DUP-0002-SedChem-AI | In Cap | 4,4′-DDD | 0.11 | 131 | |
| 25-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT25-5DUP-0002-SedChem-AI | In Cap | 4,4′-DDE | <0.06 | 131 | |
| 25-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT25-5DUP-0002-SedChem-AI | In Cap | 4,4′-DDT | <0.06 | 131 | |
| 25-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT25-5DUP-0002-SedChem-AI | In Cap | Total DDX | 0.11 | 131 | |
| 25-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0002-SedChem-BI | In Cap | 2,4′-DDD | 25.5 | 2,708 | 9415.4 |
| 25-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0002-SedChem-BI | In Cap | 2,4′-DDE | 14.1 | 2,708 | 5206.2 |
| 25-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0002-SedChem-BI | In Cap | 2,4′-DDT | 0.51 | 2,708 | 188.3 |
| 25-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0002-SedChem-BI | In Cap | 4,4′-DDD | 140 | 2,708 | 51692.3 |
| 25-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0002-SedChem-BI | In Cap | 4,4′-DDE | 27.7 | 2,708 | 10227.7 |
| 25-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0002-SedChem-BI | In Cap | 4,4′-DDT | 13.9 | 2,708 | 5132.3 |
| 25-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0002-SedChem-BI | In Cap | Total DDX | 221.71 | 2,708 | 81862.2 |
| 25-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT25-5DUP-0205-SedChem | In Cap | 2,4′-DDD | 0.27 | 395 | |
| 25-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT25-5DUP-0205-SedChem | In Cap | 2,4′-DDE | 0.12 | 395 | |
| 25-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT25-5DUP-0205-SedChem | In Cap | 2,4′-DDT | <0.06 | 395 | |
| 25-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT25-5DUP-0205-SedChem | In Cap | 4,4′-DDD | 1.04 | 395 | |
| 25-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT25-5DUP-0205-SedChem | In Cap | 4,4′-DDE | 0.48 | 395 | |
| 25-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT25-5DUP-0205-SedChem | In Cap | 4,4′-DDT | 0.06 | 395 | |
| 25-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT25-5DUP-0205-SedChem | In Cap | Total DDX | 1.97 | 395 | |
| 25-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0205-SedChem-BI | In Cap | 2,4′-DDD | 57.8 | 4,323 | 13371.3 |
| 25-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0205-SedChem-BI | In Cap | 2,4′-DDE | 28.9 | 4,323 | 6685.7 |
| 25-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0205-SedChem-BI | In Cap | 2,4′-DDT | 0.67 | 4,323 | 155.0 |
| 25-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0205-SedChem-BI | In Cap | 4,4′-DDD | 257 | 4,323 | 59453.9 |
| 25-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0205-SedChem-BI | In Cap | 4,4′-DDE | 60.9 | 4,323 | 14088.5 |
| 25-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0205-SedChem-BI | In Cap | 4,4′-DDT | 9.98 | 4,323 | 2308.8 |
| 25-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0205-SedChem-BI | In Cap | Total DDX | 415.25 | 4,323 | 96063.1 |
| 25-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT25-5DUP-0507-SedChem | In Cap | 2,4′-DDD | 0.18 | 266 | |
| 25-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT25-5DUP-0507-SedChem | In Cap | 2,4′-DDE | 0.09 | 266 | |
| 25-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT25-5DUP-0507-SedChem | In Cap | 2,4′-DDT | <0.06 | 266 | |
| 25-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT25-5DUP-0507-SedChem | In Cap | 4,4′-DDD | 0.71 | 266 | |
| 25-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT25-5DUP-0507-SedChem | In Cap | 4,4′-DDE | 0.46 | 266 | |
| 25-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT25-5DUP-0507-SedChem | In Cap | 4,4′-DDT | 0.08 | 266 | |
| 25-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT25-5DUP-0507-SedChem | In Cap | Total DDX | 1.52 | 266 | |
| 25-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0507-SedChem-BI | In Cap | 2,4′-DDD | 36.8 | 3,742 | 9833.7 |
| 25-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0507-SedChem-BI | In Cap | 2,4′-DDE | 27.1 | 3,742 | 7241.7 |
| 25-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0507-SedChem-BI | In Cap | 2,4′-DDT | 0.66 | 3,742 | 176.4 |
| 25-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0507-SedChem-BI | In Cap | 4,4′-DDD | 223 | 3,742 | 59590.0 |
| 25-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0507-SedChem-BI | In Cap | 4,4′-DDE | 45.3 | 3,742 | 12105.1 |

**Table 1. Compilation of Sediment DDX and Total Organic Carbon Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval (cm)[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (µg/kg dw; ND=<DL) | TOC (mg/kg dw) | Result (µg/kg OC; DDx ND=<0.5 DL)[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 25-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0507-SedChem-BI | In Cap | 4,4′-DDT | 10.8 | 3,742 | 2886.0 |
| 25-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0507-SedChem-BI | In Cap | Total DDX | 343.66 | 3,742 | 91832.8 |
| 25-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT25-6-GRAB-SedChem | Off Cap | 2,4′-DDD | 2.43 | 7,008 | 346.8 |
| 25-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT25-6-GRAB-SedChem | Off Cap | 2,4′-DDE | 1.06 | 7,008 | 151.3 |
| 25-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT25-6-GRAB-SedChem | Off Cap | 2,4′-DDT | 0.16 | 7,008 | 22.8 |
| 25-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT25-6-GRAB-SedChem | Off Cap | 4,4′-DDD | 12.4 | 7,008 | 1769.5 |
| 25-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT25-6-GRAB-SedChem | Off Cap | 4,4′-DDE | 5.61 | 7,008 | 800.6 |
| 25-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT25-6-GRAB-SedChem | Off Cap | 4,4′-DDT | 0.81 | 7,008 | 115.6 |
| 25-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT25-6-GRAB-SedChem | Off Cap | Total DDX | 22.47 | 7,008 | 3206.5 |
| 25-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT25-7-GRAB-SedChem | Off Cap | 2,4′-DDD | 2.08 | 13,090 | 158.9 |
| 25-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT25-7-GRAB-SedChem | Off Cap | 2,4′-DDE | 0.77 | 13,090 | 58.8 |
| 25-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT25-7-GRAB-SedChem | Off Cap | 2,4′-DDT | 1.94 | 13,090 | 148.2 |
| 25-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT25-7-GRAB-SedChem | Off Cap | 4,4′-DDD | 7.91 | 13,090 | 604.3 |
| 25-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT25-7-GRAB-SedChem | Off Cap | 4,4′-DDE | 5.15 | 13,090 | 393.4 |
| 25-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT25-7-GRAB-SedChem | Off Cap | 4,4′-DDT | 0.73 | 13,090 | 55.8 |
| 25-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT25-7-GRAB-SedChem | Off Cap | Total DDX | 18.58 | 13,090 | 1419.4 |

**Notes:**

1. Sample collections dates: Baseline 2 (May, 2009), Baseline 3 (October, 2012), 2-Month (September, 2014), 14-Month (September, 2015) and 25-Month (August, 2016)
2. Comparison Station IDs align Baseline 2 IDs with subsequent events for analysis purposes.
3. Sample Interval measured relative to sediment water interface or cap-native sediment interface, Above Interface (AI) and Below Interface (BI), as stated in Sample Interface Column.
4. Sample ID's with -Avg suffix represented an average of primary and duplicate samples.
5. Total DDX represents the sum of detected congeners.
6. If DDX is ND, organic carbon basis is reported as < 0.5*DL divided by TOC. Organic carbon normalized DDX concentrations not calculated if TOC < 2,000 mg/kg.

AI: above cap-native sediment interface
BI: below cap-native sediment interface
cm: centimeter(s)
DL: detection limit
dw: dry weight
ND: not detected
T(OC): total (organic carbon)
µg/kg: microgram(s) per kilogram
mg/kg: milligram(s) per Kilogram

**Table 2. Compilation of Sediment Grain Size Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Type | Within Cap Footprint? | Sample Interval (cm)[3] | Sample ID[4] | Fines (%)[5] | Sand (%) | Gravel (%) |
|---|---|---|---|---|---|---|---|---|---|
| Baseline 2 | CAP3 | 2 | Sample | On Cap | 0-2 | B2-CAP3-0002 | 16.0 | 84.0 | 0.0 |
| Baseline 2 | CAP3 | 2 | Sample | On Cap | 2-5 | B2-CAP3-0205 | 14.0 | 86.0 | 0.0 |
| Baseline 2 | CAP3 | 2 | Sample | On Cap | 5-7 | B2-CAP3-0507 | 24.6 | 75.4 | 0.0 |
| Baseline 2 | CAP2 | 3 | Sample | On Cap | 0-2 | B2-CAP2-0002 | 32.7 | 67.3 | 0.0 |
| Baseline 2 | CAP2 | 3 | Sample | On Cap | 2-5 | B2-CAP2-0205 | 29.0 | 71.0 | 0.0 |
| Baseline 2 | CAP2 | 3 | Sample | On Cap | 5-7 | B2-CAP2-0507 | 25.3 | 74.7 | 0.0 |
| Baseline 2 | CAP1 | 5 | Sample | On Cap | 0-2 | B2-0-2-Avg | 52.5 | 47.6 | 0.0 |
| Baseline 2 | CAP1 | 5 | Sample | On Cap | 2-5 | B2-2-5-Avg | 63.2 | 36.8 | 0.0 |
| Baseline 2 | CAP1 | 5 | Sample | On Cap | 5-7 | B2-5-7-Avg | 61.5 | 38.5 | 0.0 |
| Baseline 2 | CAP1 | 5 | Primary | On Cap | 0-2 | B2-CAP1-0002 | 45.5 | 54.5 | 0.0 |
| Baseline 2 | CAP1 | 5 | Primary | On Cap | 2-5 | B2-CAP1-0205 | 60.7 | 39.3 | 0.0 |
| Baseline 2 | CAP1 | 5 | Primary | On Cap | 5-7 | B2-CAP1-0507 | 54.1 | 45.9 | 0.0 |
| Baseline 2 | CAP1 | 5 | Duplicate | On Cap | 0-2 | B2-CAPX-0002 | 59.4 | 40.6 | 0.0 |
| Baseline 2 | CAP1 | 5 | Duplicate | On Cap | 2-5 | B2-CAPX-0205 | 65.7 | 34.3 | 0.0 |
| Baseline 2 | CAP1 | 5 | Duplicate | On Cap | 5-7 | B2-CAPX-0507 | 68.9 | 31.1 | 0.0 |
| Baseline 2 | OFF CAP2 | 6 | Sample | Off Cap | 0-10 | B2-OFF2-GRAB | 49.1 | 50.9 | 0.0 |
| Baseline 2 | OFF CAP1 | 7 | Sample | Off Cap | 0-10 | B2-OFF1-GRAB | 76.9 | 23.1 | 0.0 |
| 2-Month | 1 | 1 | Sample | On Cap | 2-5 | QT2-1-0205-GS | 3.1 | 96.2 | 0.7 |
| 2-Month | 1 | 1 | Sample | On Cap | 5-7 | QT2-1-0507-GS | 5.0 | 95.0 | 0.0 |
| 2-Month | 1 | 1 | Sample | On Cap | 0-2 | QT2-1-0002-GS | 3.1 | 96.9 | 0.0 |
| 2-Month | 1 | 1 | Sample | On Cap | 0-2 AI | QT2-1-0002-GS-AI | 1.9 | 96.3 | 1.8 |
| 2-Month | 1 | 1 | Sample | On Cap | 0-2 BI | QT2-1-0002-GS-BI | 9.7 | 90.3 | 0.0 |
| 2-Month | 1 | 1 | Sample | On Cap | 2-5 BI | QT2-1-0205-GS-BI | 24.4 | 75.6 | 0.0 |
| 2-Month | 1 | 1 | Sample | On Cap | 5-7 BI | QT2-1-0507-GS-BI | 29.5 | 70.5 | 0.0 |
| 2-Month | 2 | 2 | Sample | On Cap | 2-5 | QT2-2-0205-GS | 2.5 | 92.5 | 5.0 |
| 2-Month | 2 | 2 | Sample | On Cap | 5-7 | QT2-2-0507-GS | 2.8 | 89.9 | 7.3 |
| 2-Month | 2 | 2 | Sample | On Cap | 0-2 | QT2-2-0002-GS | 2.6 | 93.4 | 4.0 |
| 2-Month | 2 | 2 | Sample | On Cap | 0-2 AI | QT2-2-0002-GS-AI | 1.4 | 95.1 | 3.5 |
| 2-Month | 2 | 2 | Sample | On Cap | 0-2 BI | QT2-2-0002-GS-BI | 22.0 | 74.8 | 3.2 |
| 2-Month | 2 | 2 | Sample | On Cap | 2-5 BI | QT2-2-0205-GS-BI | 21.9 | 75.8 | 2.3 |
| 2-Month | 2 | 2 | Sample | On Cap | 5-7 BI | QT2-2-0507-GS-BI | 15.4 | 83.3 | 1.3 |
| 2-Month | 3 | 3 | Sample | On Cap | 2-5 | QT2-3-0205-GS | 1.8 | 96.8 | 1.4 |

**Table 2. Compilation of Sediment Grain Size Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Type | Within Cap Footprint? | Sample Interval (cm)[3] | Sample ID[4] | Fines (%)[5] | Sand (%) | Gravel (%) |
|---|---|---|---|---|---|---|---|---|---|
| 2-Month | 3 | 3 | Sample | On Cap | 5-7 | QT2-3-0507-GS | 9.6 | 89.1 | 1.3 |
| 2-Month | 3 | 3 | Sample | On Cap | 0-2 | QT2-3-0002-GS | 5.2 | 94.8 | 0.0 |
| 2-Month | 3 | 3 | Sample | On Cap | 0-2 AI | QT2-3-0002-GS-AI | 5.2 | 92.1 | 2.7 |
| 2-Month | 3 | 3 | Sample | On Cap | 0-2 BI | QT2-3-0002-GS-BI | 5.6 | 94.4 | 0.0 |
| 2-Month | 3 | 3 | Sample | On Cap | 2-5 BI | QT2-3-0205-GS-BI | 10.8 | 88.7 | 0.5 |
| 2-Month | 3 | 3 | Sample | On Cap | 5-7 BI | QT2-3-0507-GS-BI | 8.7 | 91.3 | 0.0 |
| 2-Month | 4 | 4 | Sample | On Cap | 2-5 | QT2-4-0205-GS | 2.1 | 93.3 | 4.6 |
| 2-Month | 4 | 4 | Sample | On Cap | 5-7 | QT2-4-0507-GS | 8.5 | 90.3 | 1.2 |
| 2-Month | 4 | 4 | Sample | On Cap | 0-2 | QT2-4-0002-GS | 0.5 | 94.2 | 5.3 |
| 2-Month | 4 | 4 | Sample | On Cap | 0-2 AI | QT2-4-0002-GS-AI | 0.8 | 95.4 | 3.8 |
| 2-Month | 4 | 4 | Sample | On Cap | 0-2 BI | QT2-4-0002-GS-BI | 48.8 | 51.2 | 0.0 |
| 2-Month | 4 | 4 | Sample | On Cap | 2-5 BI | QT2-4-0205-GS-BI | 60.7 | 39.3 | 0.0 |
| 2-Month | 4 | 4 | Sample | On Cap | 5-7 BI | QT2-4-0507-GS-BI | 70.7 | 29.3 | 0.0 |
| 2-Month | 5 | 5 | Sample | On Cap | 2-5 | QT2-2-5-Avg | 9.8 | 88.8 | 1.5 |
| 2-Month | 5 | 5 | Primary | On Cap | 2-5 | QT2-5-0205-GS | 5.7 | 92.4 | 1.9 |
| 2-Month | 5 | 5 | Duplicate | On Cap | 2-5 | QT2-5DUP-0205-GS | 13.9 | 85.1 | 1.0 |
| 2-Month | 5 | 5 | Primary | On Cap | 5-7 | QT2-5-0507-GS | 7.2 | 92.8 | 0.0 |
| 2-Month | 5 | 5 | Sample | On Cap | 5-7 | QT2-5-7-Avg | 20.1 | 78.9 | 1.0 |
| 2-Month | 5 | 5 | Duplicate | On Cap | 5-7 | QT2-5DUP-0507-GS | 33.0 | 65.0 | 2.0 |
| 2-Month | 5 | 5 | Sample | On Cap | 0-2 | QT2-0-2-Avg | 4.9 | 95.1 | 0.0 |
| 2-Month | 5 | 5 | Primary | On Cap | 0-2 | QT2-5-0002-GS | 4.3 | 95.7 | 0.0 |
| 2-Month | 5 | 5 | Duplicate | On Cap | 0-2 | QT2-5DUP-0002-GS | 5.5 | 94.5 | 0.0 |
| 2-Month | 5 | 5 | Sample | On Cap | 0-2 AI | QT2-0-2 AI-Avg | 3.9 | 96.1 | 0.0 |
| 2-Month | 5 | 5 | Primary | On Cap | 0-2 AI | QT2-5-0002-GS-AI | 1.3 | 98.7 | 0.0 |
| 2-Month | 5 | 5 | Duplicate | On Cap | 0-2 AI | QT2-5DUP-0002-GS-AI | 6.5 | 93.5 | 0.0 |
| 2-Month | 5 | 5 | Sample | On Cap | 0-2 BI | QT2-0-2 BI-Avg | 36.4 | 63.7 | 0.0 |
| 2-Month | 5 | 5 | Primary | On Cap | 0-2 BI | QT2-5-0002-GS-BI | 33.9 | 66.1 | 0.0 |
| 2-Month | 5 | 5 | Duplicate | On Cap | 0-2 BI | QT2-5DUP-0002-GS-BI | 38.8 | 61.2 | 0.0 |
| 2-Month | 5 | 5 | Sample | On Cap | 2-5 BI | QT2-2-5 BI-Avg | 48.9 | 51.1 | 0.0 |
| 2-Month | 5 | 5 | Primary | On Cap | 2-5 BI | QT2-5-0205-GS-BI | 50.5 | 49.5 | 0.0 |
| 2-Month | 5 | 5 | Duplicate | On Cap | 2-5 BI | QT2-5DUP-0205-GS-BI | 47.3 | 52.7 | 0.0 |
| 2-Month | 5 | 5 | Primary | On Cap | 5-7 BI | QT2-5-0507-GS-BI | 53.7 | 46.3 | 0.0 |

**Table 2. Compilation of Sediment Grain Size Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Type | Within Cap Footprint? | Sample Interval (cm)[3] | Sample ID[4] | Fines (%)[5] | Sand (%) | Gravel (%) |
|---|---|---|---|---|---|---|---|---|---|
| 2-Month | 5 | 5 | Sample | On Cap | 5-7 BI | QT2-5-7 BI-Avg | 56.2 | 43.9 | 0.0 |
| 2-Month | 5 | 5 | Duplicate | On Cap | 5-7 BI | QT2-5DUP-0507-GS-BI | 58.6 | 41.4 | 0.0 |
| 2-Month | 6 | 6 | Sample | Off Cap | 0-10 | QT2-6-GRAB-GS | 46.3 | 51.5 | 2.2 |
| 2-Month | 7 | 7 | Sample | Off Cap | 0-10 | QT2-7-GRAB-GS | 54.9 | 45.1 | 0.0 |
| 14-Month | 1 | 1 | Sample | On Cap | 2-5 | QT12-1-0205-GS | 0.3 | 98.1 | 1.6 |
| 14-Month | 1 | 1 | Sample | On Cap | 5-7 | QT12-1-0507-GS | 0.2 | 96.5 | 3.3 |
| 14-Month | 1 | 1 | Sample | On Cap | 0-2 | QT12-1-0002-GS | 3.3 | 94.5 | 2.2 |
| 14-Month | 1 | 1 | Sample | On Cap | 0-2 AI | QT12-1-0002-GS-AI | 0.9 | 96.2 | 2.9 |
| 14-Month | 1 | 1 | Sample | On Cap | 0-2 BI | QT12-1-0002-GS-BI | 6.7 | 92.7 | 0.6 |
| 14-Month | 1 | 1 | Sample | On Cap | 2-5 BI | QT12-1-0205-GS-BI | 12.5 | 87.0 | 0.5 |
| 14-Month | 1 | 1 | Sample | On Cap | 5-7 BI | QT12-1-0507-GS-BI | 9.7 | 90.3 | 0.0 |
| 14-Month | 2 | 2 | Sample | On Cap | 2-5 | QT12-2-0205-GS | 1.5 | 97.5 | 1.0 |
| 14-Month | 2 | 2 | Sample | On Cap | 5-7 | QT12-2-0507-GS | 1.4 | 97.4 | 1.2 |
| 14-Month | 2 | 2 | Sample | On Cap | 0-2 | QT12-2-0002-GS | 1.6 | 95.4 | 3.0 |
| 14-Month | 2 | 2 | Sample | On Cap | 0-2 AI | QT12-2-0002-GS-AI | 1.1 | 98.5 | 0.4 |
| 14-Month | 2 | 2 | Sample | On Cap | 0-2 BI | QT12-2-0002-GS-BI | 12.1 | 86.5 | 1.4 |
| 14-Month | 2 | 2 | Sample | On Cap | 2-5 BI | QT12-2-0205-GS-BI | 13.9 | 77.8 | 8.3 |
| 14-Month | 2 | 2 | Sample | On Cap | 5-7 BI | QT12-2-0507-GS-BI | 1.8 | 96.3 | 1.9 |
| 14-Month | 3 | 3 | Sample | On Cap | 2-5 | QT12-3-0205-GS | 22.6 | 76.2 | 1.2 |
| 14-Month | 3 | 3 | Sample | On Cap | 5-7 | QT12-3-0507-GS | 5.1 | 93.1 | 1.8 |
| 14-Month | 3 | 3 | Sample | On Cap | 0-2 | QT12-3-0002-GS | 3.5 | 96.5 | 0.0 |
| 14-Month | 3 | 3 | Sample | On Cap | 0-2 AI | QT12-3-0002-GS-AI | 1.8 | 95.1 | 3.1 |
| 14-Month | 3 | 3 | Sample | On Cap | 0-2 BI | QT12-3-0002-GS-BI | 4.1 | 95.9 | 0.0 |
| 14-Month | 3 | 3 | Sample | On Cap | 2-5 BI | QT12-3-0205-GS-BI | 10.5 | 89.2 | 0.3 |
| 14-Month | 3 | 3 | Sample | On Cap | 5-7 BI | QT12-3-0507-GS-BI | 30.5 | 69 | 0.5 |
| 14-Month | 4 | 4 | Sample | On Cap | 2-5 | QT12-4-0205-GS | 1.8 | 95.7 | 2.5 |
| 14-Month | 4 | 4 | Sample | On Cap | 5-7 | QT12-4-0507-GS | 1.4 | 94.6 | 4.0 |
| 14-Month | 4 | 4 | Sample | On Cap | 0-2 | QT12-4-0002-GS | 0.4 | 96.2 | 3.4 |
| 14-Month | 4 | 4 | Sample | On Cap | 0-2 AI | QT12-4-0002-GS-AI | 1.0 | 95.6 | 3.4 |
| 14-Month | 4 | 4 | Sample | On Cap | 0-2 BI | QT12-4-0205-GS-BI | 54.0 | 45.5 | 0.5 |
| 14-Month | 4 | 4 | Sample | On Cap | 2-5 BI | QT12-4-0507-GS-BI | 49.0 | 51.0 | 0.0 |
| 14-Month | 4 | 4 | Sample | On Cap | 5-7 BI | QT12-4-0002-GS-BI | 35.7 | 63.2 | 1.1 |
| 14-Month | 5 | 5 | Primary | On Cap | 2-5 | QT12-5-0205-GS | 2.2 | 95.9 | 1.9 |

**Table 2. Compilation of Sediment Grain Size Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Type | Within Cap Footprint? | Sample Interval (cm)[3] | Sample ID[4] | Fines (%)[5] | Sand (%) | Gravel (%) |
|---|---|---|---|---|---|---|---|---|---|
| 14-Month | 5 | 5 | Duplicate | On Cap | 2-5 | QT12-5DUP-0205-GS | 3.1 | 96.2 | 0.7 |
| 14-Month | 5 | 5 | Sample | On Cap | 2-5 | QT14-2-5-Avg | 2.7 | 96.1 | 1.3 |
| 14-Month | 5 | 5 | Primary | On Cap | 5-7 | QT12-5-0507-GS | 1.4 | 97.9 | 0.7 |
| 14-Month | 5 | 5 | Duplicate | On Cap | 5-7 | QT12-5DUP-0507-GS | 0.9 | 99.1 | 0.0 |
| 14-Month | 5 | 5 | Sample | On Cap | 5-7 | QT14-5-7-Avg | 1.2 | 98.5 | 0.4 |
| 14-Month | 5 | 5 | Primary | On Cap | 0-2 | QT12-5-0002-GS | 0.5 | 99.5 | 0.0 |
| 14-Month | 5 | 5 | Duplicate | On Cap | 0-2 | QT12-5DUP-0002-GS | 1.1 | 98.9 | 0.0 |
| 14-Month | 5 | 5 | Sample | On Cap | 0-2 | QT14-0-2-Avg | 0.8 | 99.2 | 0.0 |
| 14-Month | 5 | 5 | Primary | On Cap | 0-2 AI | QT12-5-0002-GS-AI | 2.7 | 97.3 | 0.0 |
| 14-Month | 5 | 5 | Duplicate | On Cap | 0-2 AI | QT12-5DUP-0002-GS-AI | 1.5 | 98.5 | 0.0 |
| 14-Month | 5 | 5 | Sample | On Cap | 0-2 AI | QT14-0-2 AI-Avg | 2.1 | 97.9 | 0.0 |
| 14-Month | 5 | 5 | Primary | On Cap | 0-2 BI | QT12-5-0002-GS-BI | 41.3 | 58.7 | 0.0 |
| 14-Month | 5 | 5 | Duplicate | On Cap | 0-2 BI | QT12-5DUP-0002-GS-BI | 42.8 | 57.2 | 0.0 |
| 14-Month | 5 | 5 | Sample | On Cap | 0-2 BI | QT14-0-2 BI-Avg | 42.1 | 58.0 | 0.0 |
| 14-Month | 5 | 5 | Primary | On Cap | 2-5 BI | QT12-5-0205-GS-BI | 45.4 | 54.6 | 0.0 |
| 14-Month | 5 | 5 | Duplicate | On Cap | 2-5 BI | QT12-5DUP-0205-GS-BI | 48.0 | 52.0 | 0.0 |
| 14-Month | 5 | 5 | Sample | On Cap | 2-5 BI | QT14-2-5 BI-Avg | 46.7 | 53.3 | 0.0 |
| 14-Month | 5 | 5 | Primary | On Cap | 5-7 BI | QT12-5-0507-GS-BI | 35.1 | 64.9 | 0.0 |
| 14-Month | 5 | 5 | Duplicate | On Cap | 5-7 BI | QT12-5DUP-0507-GS-BI | 39.1 | 60.9 | 0.0 |
| 14-Month | 5 | 5 | Sample | On Cap | 5-7 BI | QT14-5-7 BI-Avg | 37.1 | 62.9 | 0.0 |
| 14-Month | 6 | 6 | Sample | Off Cap | 0-10 | QT12-6-GRAB-GS | 51.9 | 46.8 | 1.3 |
| 14-Month | 7 | 7 | Sample | Off Cap | 0-10 | QT12-7-GRAB-GS | 83.5 | 16.5 | 0.0 |
| 25-Month | 1 | 1 | Sample | On Cap | 2-5 | QT25-1-0205-GS | 19.1 | 80.3 | 0.7 |
| 25-Month | 1 | 1 | Sample | On Cap | 5-7 | QT25-1-0507-GS | 13.2 | 86.8 | 0.0 |
| 25-Month | 1 | 1 | Sample | On Cap | 0-2 | QT25-1-0002-GS | 11.6 | 88.0 | 0.5 |
| 25-Month | 1 | 1 | Sample | On Cap | 0-2 AI | QT25-1-0002-GS-AI | 1.8 | 97.6 | 0.6 |
| 25-Month | 1 | 1 | Sample | On Cap | 0-2 BI | QT25-1-0002-GS-BI | 13.2 | 86.8 | 0.0 |
| 25-Month | 1 | 1 | Sample | On Cap | 2-5 BI | QT25-1-0205-GS-BI | 17.4 | 82.6 | 0.0 |
| 25-Month | 1 | 1 | Sample | On Cap | 5-7 BI | QT25-1-0507-GS-BI | 22.8 | 73.3 | 3.9 |
| 25-Month | 2 | 2 | Sample | On Cap | 2-5 | QT25-2-0205-GS | 1.5 | 94.5 | 4.0 |
| 25-Month | 2 | 2 | Sample | On Cap | 5-7 | QT25-2-0507-GS | 1.5 | 93.8 | 4.6 |
| 25-Month | 2 | 2 | Sample | On Cap | 0-2 | QT25-2-0002-GS | 2.2 | 93.5 | 4.3 |

**Table 2. Compilation of Sediment Grain Size Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Type | Within Cap Footprint? | Sample Interval (cm)[3] | Sample ID[4] | Fines (%)[5] | Sand (%) | Gravel (%) |
|---|---|---|---|---|---|---|---|---|---|
| 25-Month | 2 | 2 | Sample | On Cap | 0-2 AI | QT25-2-0002-GS-AI | 0.5 | 91.4 | 8.1 |
| 25-Month | 2 | 2 | Sample | On Cap | 0-2 BI | QT25-2-0002-GS-BI | 9.2 | 86.7 | 4.2 |
| 25-Month | 2 | 2 | Sample | On Cap | 2-5 BI | QT25-2-0205-GS-BI | 16.4 | 83.3 | 0.3 |
| 25-Month | 2 | 2 | Sample | On Cap | 5-7 BI | QT25-2-0507-GS-BI | 16.3 | 82.8 | 0.9 |
| 25-Month | 3 | 3 | Sample | On Cap | 2-5 | QT25-3-0205-GS | 12.0 | 79.6 | 8.4 |
| 25-Month | 3 | 3 | Sample | On Cap | 5-7 | QT25-3-0507-GS | 14.1 | 83.2 | 2.6 |
| 25-Month | 3 | 3 | Sample | On Cap | 0-2 | QT25-3-0002-GS | 21.6 | 67.6 | 10.8 |
| 25-Month | 3 | 3 | Sample | On Cap | 0-2 AI | QT25-3-0002-GS-AI | 0.9 | 96.4 | 2.7 |
| 25-Month | 3 | 3 | Sample | On Cap | 0-2 BI | QT25-3-0002-GS-BI | 16.8 | 80.4 | 2.8 |
| 25-Month | 3 | 3 | Sample | On Cap | 2-5 BI | QT25-3-0205-GS-BI | 19.7 | 79.2 | 1.1 |
| 25-Month | 3 | 3 | Sample | On Cap | 5-7 BI | QT25-3-0507-GS-BI | 15.7 | 81.8 | 2.5 |
| 25-Month | 4 | 4 | Sample | On Cap | 2-5 | QT25-4-0205-GS | 4.5 | 93.2 | 2.3 |
| 25-Month | 4 | 4 | Sample | On Cap | 5-7 | QT25-4-0507-GS | 2.9 | 95.3 | 1.8 |
| 25-Month | 4 | 4 | Sample | On Cap | 0-2 | QT25-4-0002-GS | 5.3 | 93.3 | 1.4 |
| 25-Month | 4 | 4 | Sample | On Cap | 0-2 AI | QT25-4-0002-GS-AI | 1.1 | 97.3 | 1.6 |
| 25-Month | 4 | 4 | Sample | On Cap | 0-2 BI | QT25-4-0002-GS-BI | 32.8 | 65.6 | 1.5 |
| 25-Month | 4 | 4 | Sample | On Cap | 2-5 BI | QT25-4-0205-GS-BI | 69.7 | 30.3 | 0.0 |
| 25-Month | 4 | 4 | Sample | On Cap | 5-7 BI | QT25-4-0507-GS-BI | 80.7 | 19.3 | 0.0 |
| 25-Month | 5 | 5 | Sample | On Cap | 2-5 | QT25-2-5-Avg | 1.5 | 96.4 | 2.1 |
| 25-Month | 5 | 5 | Primary | On Cap | 2-5 | QT25-5-0205-GS | 1.1 | 97.4 | 1.5 |
| 25-Month | 5 | 5 | Duplicate | On Cap | 2-5 | QT25-5DUP-0205-GS | 1.9 | 95.4 | 2.7 |
| 25-Month | 5 | 5 | Primary | On Cap | 5-7 | QT25-5-0507-GS | 1.9 | 95.9 | 2.1 |
| 25-Month | 5 | 5 | Sample | On Cap | 5-7 | QT25-5-7-Avg | 1.6 | 96.0 | 2.5 |
| 25-Month | 5 | 5 | Duplicate | On Cap | 5-7 | QT25-5DUP-0507-GS | 1.2 | 96.0 | 2.8 |
| 25-Month | 5 | 5 | Sample | On Cap | 0-2 | QT25-0-2-Avg | 2.4 | 95.9 | 1.7 |
| 25-Month | 5 | 5 | Primary | On Cap | 0-2 | QT25-5-0002-GS | 2.5 | 96.3 | 1.2 |
| 25-Month | 5 | 5 | Duplicate | On Cap | 0-2 | QT25-5DUP-0002-GS | 2.3 | 95.5 | 2.2 |
| 25-Month | 5 | 5 | Sample | On Cap | 0-2 AI | QT25-0-2 AI-Avg | 0.6 | 98.4 | 1.0 |
| 25-Month | 5 | 5 | Primary | On Cap | 0-2 AI | QT25-5-0002-GS-AI | 0.9 | 98.0 | 1.1 |
| 25-Month | 5 | 5 | Duplicate | On Cap | 0-2 AI | QT25-5DUP-0002-GS-AI | 0.3 | 98.8 | 0.9 |
| 25-Month | 5 | 5 | Sample | On Cap | 0-2 BI | QT25-0-2 BI-Avg | 27.2 | 70.5 | 2.3 |
| 25-Month | 5 | 5 | Primary | On Cap | 0-2 BI | QT25-5-0002-GS-BI | 27.8 | 69.8 | 2.4 |

**Table 2. Compilation of Sediment Grain Size Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Type | Within Cap Footprint? | Sample Interval (cm)[3] | Sample ID[4] | Fines (%)[5] | Sand (%) | Gravel (%) |
|---|---|---|---|---|---|---|---|---|---|
| 25-Month | 5 | 5 | Duplicate | On Cap | 0-2 BI | QT25-5DUP-0002-GS-BI | 26.6 | 71.3 | 2.1 |
| 25-Month | 5 | 5 | Sample | On Cap | 2-5 BI | QT25-2-5 BI-Avg | 51.5 | 48.5 | 0.1 |
| 25-Month | 5 | 5 | Primary | On Cap | 2-5 BI | QT25-5-0205-GS-BI | 49.3 | 50.6 | 0.1 |
| 25-Month | 5 | 5 | Duplicate | On Cap | 2-5 BI | QT25-5DUP-0205-GS-BI | 53.7 | 46.3 | 0.0 |
| 25-Month | 5 | 5 | Primary | On Cap | 5-7 BI | QT25-5-0507-GS-BI | 68.1 | 31.6 | 0.4 |
| 25-Month | 5 | 5 | Sample | On Cap | 5-7 BI | QT25-5-7 BI-Avg | 65.4 | 34.4 | 0.2 |
| 25-Month | 5 | 5 | Duplicate | On Cap | 5-7 BI | QT25-5DUP-0507-GS-BI | 62.8 | 37.2 | 0.0 |
| 25-Month | 6 | 6 | Sample | Off Cap | 0-10 | QT25-6-GRAB-GS | 64.2 | 35.1 | 0.7 |
| 25-Month | 7 | 7 | Sample | Off Cap | 0-10 | QT25-7-GRAB-GS | 91.6 | 8.4 | 0.0 |

Notes:
1. Sample collections dates: Baseline 2 (May, 2009), 2-Month (September, 2014), 14-Month (September, 2015) and 25-Month (August, 2016).
2. Comparison Station IDs align Baseline 2 IDs with subsequent events for analysis purposes.
3. Sample Interval measured relative to sediment water interface or cap-native sediment interface, Above Interface (AI) and Below Interface (BI).
4. Sample ID's with -Avg suffix represented an average of primary and duplicate samples.
5. Percent fines is summation of percent clay and silt.

AI: above cap-native sediment interface
BI: below cap-native sediment interface
cm: centimeter(s)

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**Project Client:** NAVY SPACE + NAVAL WARFARE SYSTS COMMAND
**Project Name:** SPAWAR Quantico Embayment EMNR - Sediment Samples
**Project Number:** CG898574-0001

| Client ID | B2-CAP1-0002 | B2-CAP1-0205 | B2-CAP1-0507 | B2-CAPX-0002 |
|---|---|---|---|---|
| Battelle ID | Q7988-P | Q7989-P | Q7990-P | Q7991-P |
| Sample Type | SA | SA | SA | SA |
| Collection Date | 09/10/09 | 09/10/09 | 09/10/09 | 09/10/09 |
| Extraction Date | 09/15/09 | 09/15/09 | 09/15/09 | 09/15/09 |
| Analysis Date | 10/16/09 | 10/16/09 | 10/16/09 | 10/16/09 |
| Analytical Instrument | MS | MS | MS | MS |
| % Moisture | 53.22 | 50 | 48.21 | 50.66 |
| % Lipid | NA | NA | NA | NA |
| Matrix | SEDIMENT | SEDIMENT | SEDIMENT | SEDIMENT |
| Sample Size | 4.78 | 5.87 | 6.00 | 5.50 |
| Size Unit-Basis | G_DRY | G_DRY | G_DRY | G_DRY |
| Units | NG/G_DRY | NG/G_DRY | NG/G_DRY | NG/G_DRY |
| 2,4'-DDE | 11.83 | 3.69 | 4.13 | 4.04 |
| 4,4'-DDE | 60.78 D | 43.68 D | 38.31 D | 39.97 |
| 2,4'-DDD | 40.94 D | 33.22 D | 24 D | 25.71 |
| 4,4'-DDD | 201.01 D | 149.73 D | 96.73 D | 149.35 |
| 2,4'-DDT | 13.07 | 15.63 | 6.92 | 9.36 |
| 4,4'-DDT | 18.15 | 9.94 | 13.48 | 255.92 |

***Surrogate Recoveries (%)***

| | | | | |
|---|---|---|---|---|
| Cl3(34) | 63 | 60 | 59 | 61 |
| Cl6(152) | 74 | 75 | 81 | 79 |

Not Surrogate Corrected

Analyzed by Thorn, Jonathan

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**Project Client:** NAVY SPACE + NAVAL WARFARE SYSTS COMMAND
**Project Name:** SPAWAR Quantico Embayment EMNR - Sediment Samples
**Project Number:** CG898574-0001

| Client ID | | B2-CAPX-0205 | | B2-CAPX-0507 | | B2-CAP2-0002 | |
|---|---|---|---|---|---|---|---|
| Battelle ID | | Q7992-P | | Q7993-P | | Q7994-P | |
| Sample Type | | SA | | SA | | SA | |
| Collection Date | | 09/10/09 | | 09/10/09 | | 09/10/09 | |
| Extraction Date | | 09/15/09 | | 09/15/09 | | 09/15/09 | |
| Analysis Date | | 10/16/09 | | 10/16/09 | | 10/19/09 | |
| Analytical Instrument | | MS | | MS | | MS | |
| % Moisture | | 49.38 | | 48.29 | | 40.2 | |
| % Lipid | | NA | | NA | | NA | |
| Matrix | | SEDIMENT | | SEDIMENT | | SEDIMENT | |
| Sample Size | | 5.14 | | 4.96 | | 7.47 | |
| Size Unit-Basis | | G_DRY | | G_DRY | | G_DRY | |
| Units | | NG/G_DRY | | NG/G_DRY | | NG/G_DRY | |
| 2,4'-DDE | | 2.96 | | 4.73 | | 3.39 | |
| 4,4'-DDE | D | 34.98 | D | 55.93 | D | 47.4 | D |
| 2,4'-DDD | D | 24.54 | D | 32.41 | D | 36.79 | D |
| 4,4'-DDD | D | 91.87 | D | 161.75 | D | 1091.85 | D |
| 2,4'-DDT | | 0.23 | U | 5.36 | | 8.81 | |
| 4,4'-DDT | D | 9.36 | | 121.83 | D | 48.02 | D |

***Surrogate Recoveries (%)***

| | | | |
|---|---|---|---|
| Cl3(34) | 71 | 66 | 69 |
| Cl6(152) | 75 | 70 | 92 |

Not Surrogate Corrected

Analyzed by Thorn, Jonathan

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**Project Client:** NAVY SPACE + NAVAL WARFARE SYSTS COMMAND
**Project Name:** SPAWAR Quantico Embayment EMNR - Sediment Samples
**Project Number:** CG898574-0001

| Client ID | B2-CAP2-0205 | B2-CAP2-0507 | B2-CAP3-0002 | B2-CAP3-0205 |
|---|---|---|---|---|
| Battelle ID | Q7995-P | Q7996-P | Q7997-P | Q7998-P |
| Sample Type | SA | SA | SA | SA |
| Collection Date | 09/10/09 | 09/10/09 | 09/10/09 | 09/10/09 |
| Extraction Date | 09/15/09 | 09/15/09 | 09/15/09 | 09/15/09 |
| Analysis Date | 10/19/09 | 10/19/09 | 10/19/09 | 10/19/09 |
| Analytical Instrument | MS | MS | MS | MS |
| % Moisture | 35.49 | 32.75 | 27.68 | 24.97 |
| % Lipid | NA | NA | NA | NA |
| Matrix | SEDIMENT | SEDIMENT | SEDIMENT | SEDIMENT |
| Sample Size | 7.37 | 7.91 | 8.58 | 8.59 |
| Size Unit-Basis | G_DRY | G_DRY | G_DRY | G_DRY |
| Units | NG/G_DRY | NG/G_DRY | NG/G_DRY | NG/G_DRY |
| 2,4'-DDE | 2.45 | 3.13 | 1.46 | 0.96 |
| 4,4'-DDE | 31.85 D | 38.15 D | 20.85 D | 17.36 |
| 2,4'-DDD | 34.97 D | 47.79 D | 21.54 D | 18.18 |
| 4,4'-DDD | 112.62 D | 5902.16 D | 93.66 D | 48.85 |
| 2,4'-DDT | 3.12 | 6.17 | 1.15 | 0.23 |
| 4,4'-DDT | 8.05 | 70.12 D | 29.92 D | 3.92 |

***Surrogate Recoveries (%)***

| | | | | |
|---|---|---|---|---|
| Cl3(34) | 62 | 62 | 63 | 66 |
| Cl6(152) | 89 | 83 | 75 | 86 |

Not Surrogate Corrected

Analyzed by Thorn, Jonathan

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**Project Client:** NAVY SPACE + NAVAL WARFARE SYSTS COMMAND
**Project Name:** SPAWAR Quantico Embayment EMNR - Sediment Samples
**Project Number:** CG898574-0001

| Client ID | | B2-CAP3-0507 | | B2-CAP1-GRAB | | B2-CAP2-GRAB | |
|---|---|---|---|---|---|---|---|
| Battelle ID | | Q7999-P | | Q8000-P | | Q8001-P | |
| Sample Type | | SA | | SA | | SA | |
| Collection Date | | 09/10/09 | | 09/10/09 | | 09/10/09 | |
| Extraction Date | | 09/15/09 | | 09/15/09 | | 09/15/09 | |
| Analysis Date | | 10/19/09 | | 10/19/09 | | 10/19/09 | |
| Analytical Instrument | | MS | | MS | | MS | |
| % Moisture | | 25.34 | | 55.35 | | 38.34 | |
| % Lipid | | NA | | NA | | NA | |
| Matrix | | SEDIMENT | | SEDIMENT | | SEDIMENT | |
| Sample Size | | 10.09 | | 5.20 | | 6.49 | |
| Size Unit-Basis | | G_DRY | | G_DRY | | G_DRY | |
| Units | | NG/G_DRY | | NG/G_DRY | | NG/G_DRY | |
| 2,4'-DDE | | 1.29 | | 3.8 | | 3.79 | |
| 4,4'-DDE | | 18.45 | | 35 | D | 50.8 | D |
| 2,4'-DDD | | 17.35 | | 26.7 | | 40.33 | D |
| 4,4'-DDD | D | 43.64 | D | 80.18 | D | 143.2 | D |
| 2,4'-DDT | U | 1.67 | | 4.42 | | 5.01 | |
| 4,4'-DDT | | 6.92 | | 13.47 | | 11.67 | |

***Surrogate Recoveries (%)***

| | | | |
|---|---|---|---|
| Cl3(34) | 66 | 68 | 57 |
| Cl6(152) | 92 | 80 | 80 |

Not Surrogate Corrected

Analyzed by Thorn, Jonathan

Battelle
The Business of Innovation

**Project Client:** NAVY SPACE + NAVAL WARFARE SYSTS COMMAND
**Project Name:** SPAWAR Quantico Embayment EMNR - Sediment Samples
**Project Number:** CG898574-0001

| Client ID | B2-CAP3-GRAB | B2-OFF1-GRAB | B2-OFF2-GRAB |
|---|---|---|---|
| Battelle ID | Q8002-P | Q8003-P | Q8004-P |
| Sample Type | SA | SA | SA |
| Collection Date | 09/10/09 | 09/10/09 | 09/10/09 |
| Extraction Date | 09/15/09 | 09/15/09 | 09/15/09 |
| Analysis Date | 10/19/09 | 10/19/09 | 10/19/09 |
| Analytical Instrument | MS | MS | MS |
| % Moisture | 26.14 | 61.93 | 49.27 |
| % Lipid | NA | NA | NA |
| Matrix | SEDIMENT | SEDIMENT | SEDIMENT |
| Sample Size | 7.56 | 4.18 | 5.94 |
| Size Unit-Basis | G_DRY | G_DRY | G_DRY |
| Units | NG/G_DRY | NG/G_DRY | NG/G_DRY |
| 2,4'-DDE | 0.73 | 0.08 U | 0.08 U |
| 4,4'-DDE | 17.5 | 12.57 | 5.77 |
| 2,4'-DDD | 13.69 | 5.79 | 3.48 |
| 4,4'-DDD | 58.22 D | 21.14 | 14.5 |
| 2,4'-DDT | 1.83 | 0.23 U | 1.93 |
| 4,4'-DDT | 6.18 | 3.32 | 3.72 |

***Surrogate Recoveries (%)***

| | | | |
|---|---|---|---|
| Cl3(34) | 69 | 79 | 71 |
| Cl6(152) | 86 | 86 | 78 |

Not Surrogate Corrected

Analyzed by Thorn, Jonathan

Battelle
The Business of Innovation

**Project Client:** NAVY SPACE + NAVAL WARFARE SYSTS COMMAND
**Project Name:** SPAWAR Quantico Embayment EMNR - Sediment Samples
**Project Number:** CG898574-0001

| | | |
|---|---|---|
| Client ID | Procedural Blank | |
| Battelle ID | BN285PB-P | |
| Sample Type | PB | |
| Collection Date | 09/15/09 | |
| Extraction Date | 09/15/09 | |
| Analysis Date | 10/16/09 | |
| Analytical Instrument | MS | |
| % Moisture | 42.19 | |
| % Lipid | NA | |
| Matrix | SEDIMENT | |
| Sample Size | 5.86 | |
| Size Unit-Basis | G_DRY | |
| Units | NG/G_DRY | |
| 2,4'-DDE | 0.08 | U |
| 4,4'-DDE | 0.09 | U |
| 2,4'-DDD | 0.18 | U |
| 4,4'-DDD | 0.2 | U |
| 2,4'-DDT | 0.23 | U |
| 4,4'-DDT | 0.14 | U |

***Surrogate Recoveries (%)***

| | |
|---|---|
| Cl3(34) | 63 |
| Cl6(152) | 75 |

Not Surrogate Corrected

Analyzed by Thorn, Jonathan

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The Business of Innovation

**Project Client:** NAVY SPACE + NAVAL WARFARE SYSTS COMMAND
**Project Name:** SPAWAR Quantico Embayment EMNR - Sediment Samples
**Project Number:** CG898574-0001

| | | | | |
|---|---|---|---|---|
| Client ID | 090306-01: Sand, White Quartz | | | |
| Battelle ID | BN286LCS-P | | | |
| Sample Type | LCS | | | |
| Collection Date | 09/15/09 | | | |
| Extraction Date | 09/15/09 | | | |
| Analysis Date | 10/16/09 | | | |
| Analytical Instrument | MS | | | |
| % Moisture | NA | | | |
| % Lipid | NA | | | |
| Matrix | SEDIMENT | | | |
| Sample Size | 9.86 | | | |
| Size Unit-Basis | G_DRY | | | |
| Units | NG/G_DRY | Target | % Recovery | Qualifier |
| 2,4'-DDE | 3.11 | 3.82 | 81 | |
| 4,4'-DDE | 3.43 | 3.80 | 90 | |
| 2,4'-DDD | 3.41 | 3.81 | 90 | |
| 4,4'-DDD | 3.58 | 3.81 | 94 | |
| 2,4'-DDT | 3.34 | 3.82 | 87 | |
| 4,4'-DDT | 3.32 | 3.81 | 87 | |

***Surrogate Recoveries (%)***

| | |
|---|---|
| Cl3(34) | 75 |
| Cl6(152) | 78 |

Not Surrogate Corrected

Analyzed by Thorn, Jonathan

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**Project Client:** NAVY SPACE + NAVAL WARFARE SYSTS COMMAND
**Project Name:** SPAWAR Quantico Embayment EMNR - Sediment Samples
**Project Number:** CG898574-0001

| | | | | | | |
|---|---|---|---|---|---|---|
| Client ID | B2-CAP3-GRAB | | B2-CAP3-GRAB | | | |
| Battelle ID | Q8002-P | | Q8002DUP-P | | | |
| Sample Type | SA | | QADU | | | |
| Collection Date | 09/10/09 | | 9/10/2009 | | | |
| Extraction Date | 09/15/09 | | 9/15/2009 | | | |
| Analysis Date | 10/19/09 | | 10/19/2009 | | | |
| Analytical Instrument | MS | | MS | | | |
| % Moisture | 26.14 | | 25.79 | | | |
| % Lipid | NA | | NA | | | |
| Matrix | SEDIMENT | | SEDIMENT | | | |
| Sample Size | 7.56 | | 7.55 | | | |
| Size Unit-Basis | G_DRY | | G_DRY | | | |
| Units | NG/G_DRY | | NG/G_DRY | | RPD | Qualifier |
| 2,4'-DDE | 0.73 | | 0.82 | | 11.6 | |
| 4,4'-DDE | 17.5 | | 19.04 | | 8.4 | |
| 2,4'-DDD | 13.69 | | 14.95 | | 8.8 | |
| 4,4'-DDD | 58.22 | D | 45.78 | D | 23.9 | |
| 2,4'-DDT | 1.83 | | 1.39 | | 27.3 | |
| 4,4'-DDT | 6.18 | | 4.59 | | 29.5 | |

***Surrogate Recoveries (%)***

| | | |
|---|---|---|
| Cl3(34) | 69 | 74 |
| Cl6(152) | 86 | 86 |

Not Surrogate Corrected

Analyzed by Thorn, Jonathan

Battelle
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**Project Client:** NAVY SPACE + NAVAL WARFARE SYSTS COMMAND
**Project Name:** SPAWAR Quantico Embayment EMNR - Sediment Samples
**Project Number:** CG898574-0001

| Client ID | B2-OFF1-GRAB | B2-OFF1-GRAB | | | |
|---|---|---|---|---|---|
| Battelle ID | Q8003-P | Q8003MS-P | | | |
| Sample Type | SA | MS | | | |
| Collection Date | 09/10/09 | 9/10/2009 | | | |
| Extraction Date | 09/15/09 | 9/15/2009 | | | |
| Analysis Date | 10/19/09 | 10/19/2009 | | | |
| Analytical Instrument | MS | MS | | | |
| % Moisture | 61.93 | 61.93 | | | |
| % Lipid | NA | NA | | | |
| Matrix | SEDIMENT | SEDIMENT | | | |
| Sample Size | 4.18 | 1.9 | | | |
| Size Unit-Basis | G_DRY | G_DRY | | | |
| Units | NG/G_DRY | NG/G_DRY | Target | % Recovery | Qualifier |
| 2,4'-DDE | 0.08 U | 18.25 | 19.83 | 92 | |
| 4,4'-DDE | 12.57 | 28.39 | 19.75 | 80 | |
| 2,4'-DDD | 5.79 | 21.37 | 19.77 | 79 | |
| 4,4'-DDD | 21.14 | 35.82 | 19.75 | 74 | |
| 2,4'-DDT | 0.23 U | 19.78 | 19.83 | 100 | |
| 4,4'-DDT | 3.32 | 21.81 | 19.75 | 94 | |

***Surrogate Recoveries (%)***

| | | |
|---|---|---|
| Cl3(34) | 79 | 78 |
| Cl6(152) | 86 | 87 |

Not Surrogate Corrected

Analyzed by Thorn, Jonathan

Battelle
The Business of Innovation

**Project Client:** NAVY SPACE + NAVAL WARFARE SYSTS COMMAND
**Project Name:** SPAWAR Quantico Embayment EMNR - Sediment Samples
**Project Number:** CG898574-0001

| Client ID | B2-OFF1-GRAB | | | | | |
|---|---|---|---|---|---|---|
| Battelle ID | Q8003MSD-P | | | | | |
| Sample Type | MSD | | | | | |
| Collection Date | 9/10/2009 | | | | | |
| Extraction Date | 9/15/2009 | | | | | |
| Analysis Date | 10/19/2009 | | | | | |
| Analytical Instrument | MS | | | | | |
| % Moisture | 61.24 | | | | | |
| % Lipid | NA | | | | | |
| Matrix | SEDIMENT | | | | | |
| Sample Size | 1.91 | | | | | |
| Size Unit-Basis | G_DRY | | | | | |
| Units | NG/G_DRY | Target | % Recovery | Qualifier | RPD (%) | Qualifier |
| 2,4'-DDE | 15.67 | 19.73 | 79 | | 15.2 | |
| 4,4'-DDE | 27.51 | 19.64 | 76 | | 5.1 | |
| 2,4'-DDD | 21.72 | 19.67 | 81 | | 2.5 | |
| 4,4'-DDD | 35.7 | 19.65 | 74 | | 0.0 | |
| 2,4'-DDT | 18.26 | 19.72 | 93 | | 7.3 | |
| 4,4'-DDT | 18.9 | 19.64 | 79 | | 17.3 | |

***Surrogate Recoveries (%)***

| | |
|---|---|
| Cl3(34) | 79 |
| Cl6(152) | 98 |

Not Surrogate Corrected

Analyzed by Thorn, Jonathan

# Aqua Survey, Inc.

**Technical Report on the Physical Analysis of Sediment**

**Battelle Project Name: SPAWAR – Quantico Embayment**
**EMNR – CG898574-0001**

**Prepared for:**

**Battelle**
**397 Washington Street**
**Duxbury, MA 02332-4546**

**December 3, 2009**

**ASI Job No. 29-197**

469 Point Breeze Road
Flemington, NJ 08822
Phone: 908-788-8700
Fax: 908-788-9165
mail@aquasurvey.com
www.aquasurvey.com

Aqua Survey, Inc.

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## Volume I



## Tables and Figures



## Appendices

# Information Page

**Technical Report on the Physical Analysis of Sediment**

**Battelle Project Name: SPAWAR – Quantico Embayment**
**EMNR – CG898574-0001**

**STUDY INITIATION DATE**

**September 10, 2009**

**STUDY COMPLETION DATE**

**December 3, 2009**

**PERFORMING LABORATORY**

**Aqua Survey, Inc.**
**469 Point Breeze Road**
**Flemington, New Jersey 08822**

**SPONSOR**

**Battelle**
**397 Washington Street**
**Duxbury, MA 02332-4546**

**LABORATORY PROJECT ID**

**ASI STUDY No. 29-197**

# Signature Page

**Technical Report on the Physical Analysis of Sediment**

**Battelle Project Name: SPAWAR – Quantico Embayment**
**EMNR – CG898574-0001**

**Prepared for**

**Battelle**
**397 Washington Street**
**Duxbury, MA 02332-4546**

This report, as well as all records and raw data were audited and found to be an accurate reflection of the study. Copies of raw data will be maintained by Aqua Survey, Inc, 469 Point Breeze Road, Flemington, New Jersey, 08822.

12-3-09

Robert M. Fristrom
Quality Assurance Officer

Date

for

12-3-09

Michelle Thomas
Laboratory Manager

Date

12-3-09

Jon Doi, Ph.D.
Executive Vice President

Date

## I. INTRODUCTION

The objective of this project was to conduct TOC analysis and grain size distribution for 20 sediment samples and moisture content and natural density for 12 sediment samples. Aqua Survey, Inc. (ASI) performed the TOC analysis and grain size distribution; Schnabel Engineering performed the moisture content and natural density analyses.

## II. TEST ADMINISTRATION

### A. Sponsor

Battelle
397 Washington Street
Duxbury, MA 02332-4546

### B. Testing Facilities

Aqua Survey, Inc.
469 Point Breeze Road
Flemington, NJ 08822

Schnabel Engineering, LLC
510 East Gay Street
West Chester, PA 19380

### C. Dates of Experimentation

| | |
|---|---|
| Date of Study Initiation: | September 10, 2009 |
| Date of Study Completion: | December 3, 2009 |

### D. Study Participants

| | |
|---|---|
| Jon Doi, Ph.D. | Executive Vice President |
| Robert Fristrom | Quality Assurance Officer |
| Liz Horn | Staff Scientist |
| G. Stephen Hornberger | Project Scientist |
| Michelle Thomas | Laboratory Manager |

## III. MATERIALS AND METHODS

### A. Sample Receipt

Seventeen sediment samples were received at ASI on September 16, 2009; three sediment samples were received at ASI on October 14, 2009. All sediment samples were assigned unique ASI sample numbers and stored at 2-4° C prior to testing. Four cores were received at Schnabel Engineering on September 9, 2009. These cores were to be sectioned at varying depths for analysis; instructions for sectioning the cores can be found on the Chain of Custody, which are provided in Appendix A.

### B. Homogenizing

Each sediment sample was carefully homogenized by manually mixing with a spoon. This procedure followed the specific guidelines found in ASI's standard operating procedure SOP/PRP/008. Samples were mixed until uniform in color and texture.

### C. Grain Size Analysis

Sub-samples of each sediment sample were analyzed by ASI for grain size distribution in accordance with the *Standard Test Method for Particle Size Analysis* (ASTM D422-63, Reapproved 2002). See Appendix B for the grain size distribution raw data, calculations and graphs.

### D. TOC Analysis

Total Organic Carbon (TOC) was also determined at ASI based on the guidance from EPA Office of Solids Waste and Emergency Response SW-846 Method No. 9060 (Volume IC, Chapter 5, Revision 0, 9/86). The instrument for this analysis was the Dohrmann TOC Boat Sampler, Model 183 (Serial number 98202003), which was connected to the Dohrmann Apollo 9000 TOC Analyzer. Appendix C provides the TOC raw data and Standard Reference Material control chart.

### E. Natural Density and Moisture Content

Natural density and moisture content were determined by Schnabel Engineering based on ASTM D7263. The method requested was ASTM D2937 but the sampling method used did not pertain to that specification.

## IV. PHYSICAL ANALYSIS RESULTS

The sample identification numbers, TOC analysis and grain size distribution results are shown in Table 1. The results of the moisture content and bulk density analysis are provided in Table 2.

**Table 1** **Sample Identification, Grain Size Distribution and TOC**

| Sample Name | ASI Sample ID | % Gravel | % Sand | % Silt | % Clay | TOC (ppm) | TOC % dry weight |
|---|---|---|---|---|---|---|---|
| B2-CAP1-0002 | 20091222 | 0.0 | 54.5 | 34.4 | 11.1 | 50,280 | 5.03 |
| B2-CAP1-0205 | 20091223 | 0.0 | 39.3 | 43.8 | 16.9 | 44,450 | 4.45 |
| B2-CAP1-0507 | 20091224 | 0.0 | 45.9 | 39.5 | 14.6 | 65,988 | 6.60 |
| B2-CAPX-0002 | 20091225 | 0.0 | 40.6 | 43.6 | 15.8 | 65,430 | 6.54 |
| B2-CAPX-0205 | 20091226 | 0.0 | 34.3 | 49.5 | 16.2 | 54,131 | 5.41 |
| B2-CAPX-0507 | 20091227 | 0.0 | 31.1 | 50.2 | 18.7 | 53,288 | 5.33 |
| B2-CAP2-0002 | 20091228 | 0.0 | 67.3 | 24.8 | 7.9 | 67,084 | 6.71 |
| B2-CAP2-0205 | 20091229 | 0.0 | 71.0 | 22.9 | 6.1 | 40,727 | 4.07 |
| B2-CAP2-0507 | 20091230 | 0.0 | 74.7 | 20.0 | 5.3 | 43,556 | 4.36 |
| B2-CAP3-0002 | 20091231 | 0.0 | 84.0 | 12.9 | 3.1 | 24,410 | 2.44 |
| B2-CAP3-0205 | 20091232 | 0.0 | 86.0 | 11.3 | 2.7 | 9,331 | 0.93 |
| B2-CAP3-0507 | 20091233 | 0.0 | 75.4 | 19.1 | 5.5 | 15,332 | 1.53 |
| B2-CAP3-0507 | 20091233 dup | 0.0 | 77.8 | 17.5 | 4.7 | | |
| B2-CAP3-0507 | 20091233 trip | 0.0 | 78.7 | 17.2 | 4.1 | | |
| B2-CAP1-GRAB | 20091234 | 0.0 | 31.3 | 53.1 | 15.6 | 59,154 | 5.92 |
| B2-CAP2-GRAB | 20091235 | 0.0 | 62.7 | 29.6 | 7.7 | 90,193 | 9.02 |
| B2-CAP3-GRAB | 20091236 | 0.0 | 83.4 | 12.1 | 4.5 | 17,100 | 1.71 |
| B2-CAP3-GRAB | 20091236 dup | 0.0 | 83.2 | 12.6 | 4.2 | | |
| B2-CAP3-GRAB | 20091236 trip | 0.0 | 79.3 | 17.1 | 3.6 | | |
| B2-OFF1-GRAB | 20091237 | 0.0 | 23.1 | 54.8 | 22.1 | 31,755 | 3.18 |
| B2-OFF2-GRAB | 20091238 | 0.0 | 50.9 | 33.5 | 15.6 | 20,535 | 2.05 |
| B2-CAP1-TRAP | 20091255 | 0.0 | 11.8 | 48.6 | 39.6 | 45,750 | 4.57 |
| B2-CAP2-TRAP | 20091256 | 0.0 | 15.8 | 53.0 | 31.2 | 56,711 | 5.67 |
| B2-CAP3-TRAP | 20091257 | 0.0 | 4.6 | 54.2 | 41.2 | 47,275 | 4.73 |

**Table 2** **Natural Density and Moisture Content**

## SUMMARY OF LABORATORY DATA

| | | | GRAIN SIZE DISTRIBUTION | | | PLASTICITY | | | | | VOLUMETRIC | | | | COMPACTION DATA | | | | | | SHEAR STRENGTH | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE ID | DEPTH (ft) | SOIL GROUP SYMBOL | GRAVEL % | SAND % | SILT/CLAY % | LIQUID LIMIT $w_l$ | PLASTIC LIMIT $w_p$ | PLASTICITY INDEX $I_P$ | LIQUIDITY INDEX $I_L$ | MOISTURE CONTENT w % | NATURAL DENSITY (pcf) | DRY UNIT WEIGHT (pcf) | VOID RATIO (e) | DEGREE OF SATURATION % | MAXIMUM DRY DENSITY (pcf) | OPTIMUM MOISTURE CONTENT % | STANDARD/MODIFIED | PERMEABILITY (E-6 CM/SEC) | FALLING/CONSTANT HEAD | CALIFORNIA BEARING RATIO (CBR) % | UNCONFINED COMPRESSIVE STRENGTH (tsf) | COHESION (tsf) | AXIAL STRAIN (%) |
| B2-CAP1-0002 | | | | | | | | | | 122.3 | 79.3 | 35.7 | | | | | | | | | | | |
| B2-CAP1-0205 | | | | | | | | | | 93.9 | 84.3 | 43.5 | | | | | | | | | | | |
| B2-CAP1-0507 | | | | | | | | | | 76.0 | 88.8 | 50.4 | | | - | | | | | | | | |
| B2-CAPX-0002 | | | | | | | | | | 139.6 | 76.8 | 32.1 | | | | | | | | | | | |
| B2-CAPX-0205 | | | | | | | | | | 124.8 | 78.9 | 35.1 | | | | | | | | | | | |
| B2-CAPX-0507 | | | | | | | | | | 110.6 | 81.4 | 38.7 | | | | | | | | | | | |
| B2-CAP2-0002 | | | | | | | | | | 90.6 | 84.4 | 44.3 | | | | | | | | | | | |
| B2-CAP2-0205 | | | | | | | | | | 58.3 | 95.0 | 60.0 | | | | | | | | | | | |
| B2-CAP2-0507 | | | | | | | | | | 51.9 | 97.2 | 64.0 | | | Contained a 1.5" shell fragment | | | | | | | | |
| B2-CAP3-0002 | | | | | | | | | | 38.4 | 105.2 | 76.0 | | | | | | | | | | | |
| B2-CAP3-0205 | | | | | | | | | | 35.6 | 109.4 | 80.7 | | | | | | | | | | | |
| B2-CAP3-0507 | | | | | | | | | | 27.4 | 116.7 | 91.6 | | | | | | | | | | | |

Schnabel Engineering

| DRAWN BY: | DATE: | PROJECT: | JOB No.: |
|---|---|---|---|
| LG | 9/16/2009 | Aqua Survey Lab Testing | 09150057 |
| CHECKED BY: | DATE: | LOCATION: | |
| MFN | 9/17/2009 | | |

# APPENDICES

# Appendix A

# Chains of Custody

29 - 197

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# Chain of Custody

**Shipment No: SHP-090915-01**

| Proj. No: | Proj. Name: |
|---|---|
| CG898574-0001 | SPAWAR - Quantico Embayment EMNR - CG898574-0001 |

SAMPLERS: Singature

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

| DATE/TIME | BATTELLE ID | CLIENT ID | FIELD LOC ASI Sample # | MATRIX | OIL CODE | TOC | GS | Total No of Containers |
|---|---|---|---|---|---|---|---|---|
| 09/10/09 14:15 | Q7988 | B2-CAP1-0002 | 2009 1222 | SEDIMENT | | | | 1 |
| 09/10/09 14:15 | Q7989 | B2-CAP1-0205 | 1223 | SEDIMENT | | | | 1 |
| 09/10/09 14:15 | Q7990 | B2-CAP1-0507 | 1224 | SEDIMENT | | | | 1 |
| 09/10/09 14:45 | Q7991 | B2-CAPX-0002 | 1225 | SEDIMENT | | | | 1 |
| 09/10/09 14:45 | Q7992 | B2-CAPX-0205 | 1226 | SEDIMENT | | | | 1 |
| 09/10/09 14:45 | Q7993 | B2-CAPX-0507 | 1227 | SEDIMENT | | | | 1 |
| 09/10/09 15:15 | Q7994 | B2-CAP2-0002 | 1228 | SEDIMENT | | | | 1 |
| 09/10/09 15:15 | Q7995 | B2-CAP2-0205 | 1229 | SEDIMENT | | | | 1 |
| 09/10/09 15:15 | Q7996 | B2-CAP2-0507 | 1230 | SEDIMENT | | | | 1 |
| 09/10/09 15:44 | Q7997 | B2-CAP3-0002 | 1231 | SEDIMENT | | | | 1 |
| 09/10/09 15:44 | Q7998 | B2-CAP3-0205 | 1232 | SEDIMENT | | | | 1 |
| 09/10/09 15:44 | Q7999 | B2-CAP3-0507 | 1233 | SEDIMENT | | | | 1 |
| 09/10/09 13:15 | Q8000 | B2-CAP1-GRAB | 1234 | SEDIMENT | | | | 1 |
| 09/10/09 13:15 | Q8001 | B2-CAP2-GRAB | 1235 | SEDIMENT | | | | 1 |
| 09/10/09 10:15 | Q8002 | B2-CAP3-GRAB | 1236 | SEDIMENT | | | | 1 |
| 09/10/09 16:10 | Q8003 | B2-OFF1-GRAB | 1237 | SEDIMENT | | | | 1 |
| 09/10/09 16:10 | Q8004 | B2-OFF2-GRAB | 1238 | SEDIMENT | | | | 1 |
| ~~06/27/02 0:00~~ | ~~V6876~~ | ~~04-02-01-SM006B-TIS-01-S~~ | | ~~TISSUE~~ | | | | ~~1~~ |

① ① NA JA 9/15/09

| Relinquished by: | Date/Time: | | Received by: | Date/Time: | |
|---|---|---|---|---|---|
| Joanne Arsenault JA | 9/15/2009 | 2:50 PM | A. Homby ASI | 9/16/09 | 11:00 |
| Relinquished by: | Date/Time: | | Received by: | Date/Time: | |
| | | | | | |

Comments:

Printed on 9/15/2009

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# Chain of Custody

**Shipment No: SHP-091013-01**

| Proj. No: CG898574-0001 | Proj. Name: SPAWAR - Quantico Embayment EMNR - CG898574-0001 | | | | |
|---|---|---|---|---|---|
| SAMPLERS: Singature | | | | ANALYSIS REQUESTED → "NUMBER OF CONTAINERS" | |

| DATE/TIME | BATTELLE ID | CLIENT ID | FIELD LOC | MATRIX | OIL CODE | | | | | | | | | | | Total No of Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 09/27/09 11:05 | Q8291 | B2-CAP1-TRAP | | SEDIMENT TRAP | | ☒ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 1 |
| 09/27/09 10:42 | Q8292 | B2-CAP2-TRAP | | SEDIMENT TRAP | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 1 |
| 09/27/09 10:25 | Q8293 | B2-CAP3-TRAP | | SEDIMENT TRAP | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 1 |

| Relinquished by: | Date/Time: | | Received by: | Date/Time: | |
|---|---|---|---|---|---|
| Jeannine Seyfert [signature] | 10/13/2009 | 11:11 AM | S. Hornberger [signature] | 10/14/09 | 1015 |
| Relinquished by: | Date/Time: | | Received by: | Date/Time: | |
| | | | | | |

Comments:

Printed on 10/13/2009

397 Washington Street
Duxbury, MA 02332
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**Battelle**
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# Chain of Custody

| Proj. No | Proj. Name |
|---|---|
| | Quantico Baseline 2 |

SAMPLERS: Signature: Jason Wells

ANALYSIS REQUESTED →
"NUMBER OF CONTAINERS"

Bulk Density ASTM 2937

| DATE | TIME | BATTELLE ID | CLIENT ID | SAMPLE DESCRIPTION | ~~PEST~~ | PCB | TPH FINGERPRINT | PAH | VOA | TBT | METALS | OTHER | ACIDIFIED | PRESERVED | Total Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9/9/09 | 1007 | | B2-CAP1 | Core for Bulk density ASTM 2937 | X | | | | | | | | | | 1 |
| | 1430 | | B2-CAP2 | " | \| | | | | | | | | | | 1 |
| | 1659 | | B2-CAP3 | " | \| | | | | | | | | | | 1 |
| | 1100 | | B2-CAPX | " | \| | | | | | | | | | | 1 |
| | | | | cores to be sectioned @ 0-2 cm | | | | | | | | | | | |
| | | | | 2-5 cm | | | | | | | | | | | |
| | | | | 5-7 cm | | | | | | | | | | | |
| | | | | for bulk density - | | | | | | | | | | | |
| | | | | please see accompanying instructions | | | | | | | | | | | |

| Relinquished by: | Date/Time | | Received by: | Date/Time | |
|---|---|---|---|---|---|
| Jason Wells (signature: Jason Wells) | 9/10/09 | 1700 | | | |
| Relinquished by: | Date/Time | | Received by: | Date/Time | |
| | | | | | |

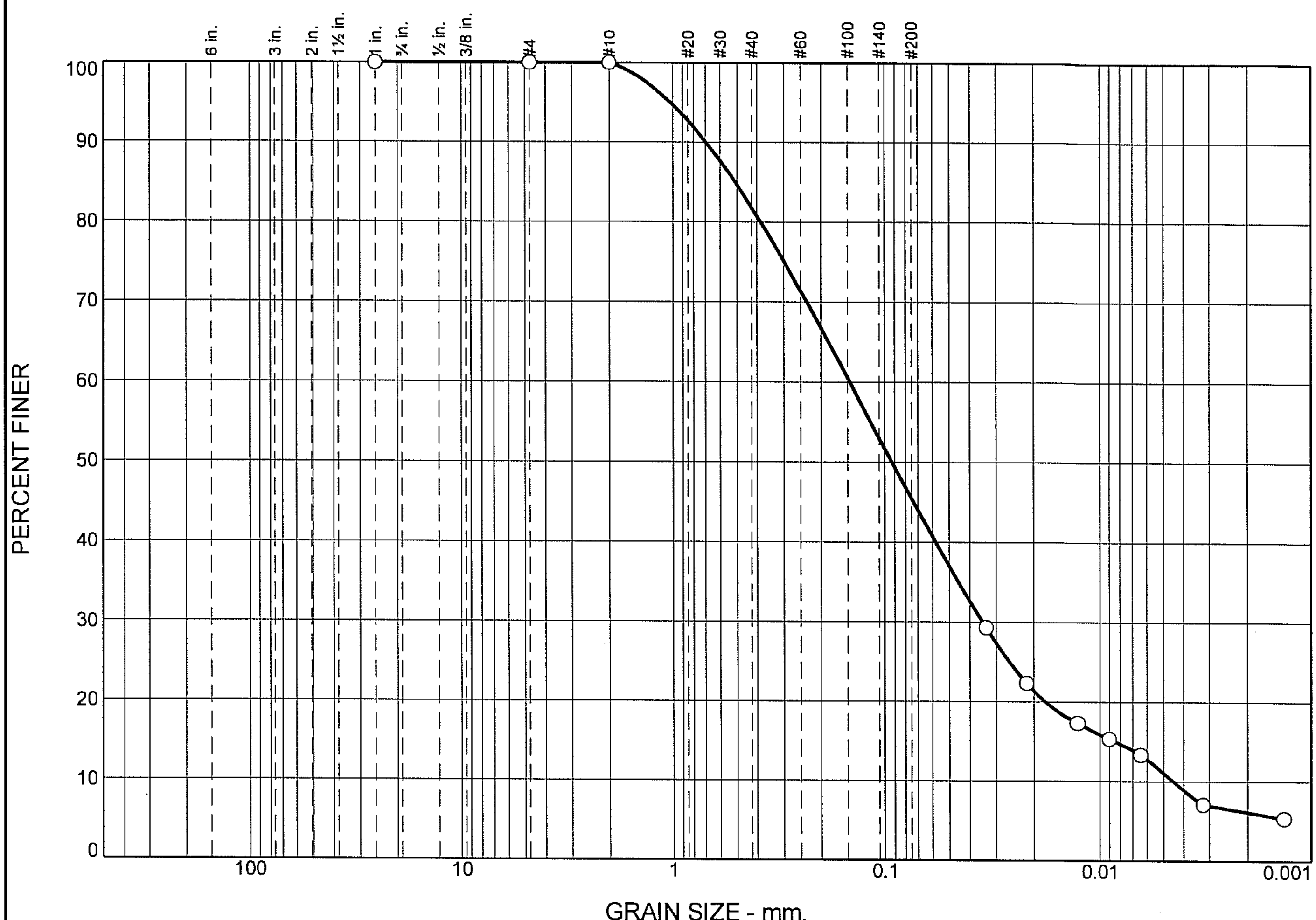
Comments: Contact: Jason Conder @ jconder@environcorp.com
949-798-3618
Jason Wells @ jwells@environcorp.com
734-277-1163

ORIGINAL

# Appendix B

# Grain Size Distribution Raw Data, Calculations and Graphs

# Particle Size Distribution Report




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 0.0 | 0.0 | 0.0 | 0.0 | 18.2 | 36.3 | 34.4 | 11.1 |
| | | | | | | | | |
| | | | | | | | | |

| | LL | PL | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | | | 0.5094 | 0.1462 | 0.0926 | 0.0348 | 0.0085 | 0.0045 | 1.85 | 32.61 |
| | | | | | | | | | | |
| | | | | | | | | | | |

| Material Description | USCS | AASHTO |
|---|---|---|
| ○ Sediment | | |

**Project No.** 29-197 **Client:** Battelle

**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001

○ **Source of Sample:** B2-CAP1-0002 **Sample Number:** 20091222

**Remarks:**

**Aqua Survey, Inc.**

**Flemington, NJ**

**Figure**

**Tested By:** S. Hornberger **Checked By:** R. Fristrom

## GRAIN SIZE DISTRIBUTION TEST DATA

12/1/2009

**Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001
**Project Number:** 29-197
**Location:** B2-CAP1-0002
**Sample Number:** 20091222
**Material Description:** Sediment
**Tested by:** S. Hornberger **Checked by:** R. Fristrom

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer |
|---|---|---|---|---|---|
| 43.33 | 12.70 | 1 | 12.70 | 12.70 | 100.0 |
| | | #4 | 12.70 | 12.70 | 100.0 |
| | | #10 | 12.70 | 12.70 | 100.0 |

### Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =50.0
Automatic temperature correction
Composite correction (fluid density and meniscus height) at 20 deg. C = -6
Meniscus correction only = 0.0
Specific gravity of solids = 2.65
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.0 | 20.0 | 14.7 | 0.0132 | 20.0 | 13.0 | 0.0336 | 29.3 |
| 5.00 | 23.0 | 16.5 | 11.2 | 0.0132 | 16.5 | 13.6 | 0.0217 | 22.3 |
| 15.00 | 23.0 | 14.0 | 8.7 | 0.0132 | 14.0 | 14.0 | 0.0127 | 17.3 |
| 30.00 | 23.0 | 13.0 | 7.7 | 0.0132 | 13.0 | 14.2 | 0.0090 | 15.3 |
| 60.00 | 23.0 | 12.0 | 6.7 | 0.0132 | 12.0 | 14.3 | 0.0064 | 13.3 |
| 250.00 | 22.5 | 9.0 | 3.5 | 0.0132 | 9.0 | 14.8 | 0.0032 | 7.1 |
| 1440.00 | 23.0 | 8.0 | 2.7 | 0.0132 | 8.0 | 15.0 | 0.0013 | 5.3 |

### Fractional Components

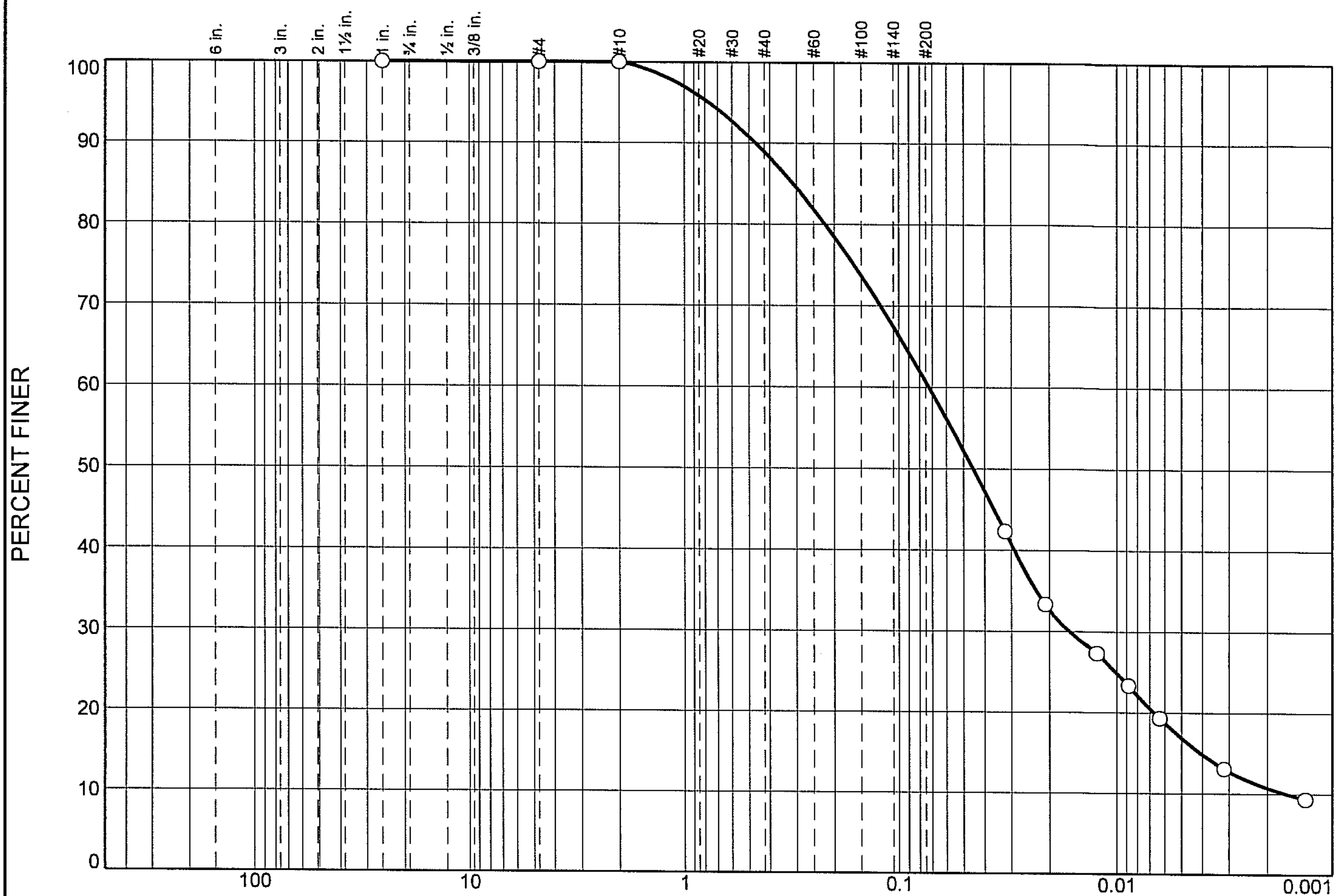
| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 18.2 | 36.3 | 54.5 | 34.4 | 11.1 | 45.5 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| 0.0045 | 0.0085 | 0.0177 | 0.0348 | 0.0926 | 0.1462 | 0.3853 | 0.5094 | 0.6977 | 1.0256 |

| Fineness Modulus | $C_u$ | $C_c$ |
|---|---|---|
| 0.80 | 32.61 | 1.85 |

RF

# Particle Size Distribution Report




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| o | 0.0 | 0.0 | 0.0 | 0.0 | 11.0 | 28.3 | 43.8 | 16.9 |
| | | | | | | | | |
| | | | | | | | | |

| | LL | PL | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| o | | | 0.3115 | 0.0725 | 0.0452 | 0.0161 | 0.0041 | 0.0016 | 2.20 | 44.29 |
| | | | | | | | | | | |
| | | | | | | | | | | |

| Material Description | USCS | AASHTO |
|---|---|---|
| o Sediment | | |

**Project No.** 29-197 **Client:** Battelle

**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001

o **Source of Sample:** B2-CAP1-0205 **Sample Number:** 20091223

**Remarks:**

RF

**Aqua Survey, Inc.**

**Flemington, NJ**

**Figure**

**Tested By:** S. Hornberger **Checked By:** R. Fristrom

## GRAIN SIZE DISTRIBUTION TEST DATA

12/1/2009

**Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001
**Project Number:** 29-197
**Location:** B2-CAP1-0205
**Sample Number:** 20091223
**Material Description:** Sediment
**Tested by:** S. Hornberger **Checked by:** R. Fristrom

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer |
|---|---|---|---|---|---|
| 63.58 | 12.61 | 1 | 12.61 | 12.61 | 100.0 |
| | | #4 | 12.61 | 12.61 | 100.0 |
| | | #10 | 12.61 | 12.61 | 100.0 |

### Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =50.0
Automatic temperature correction
Composite correction (fluid density and meniscus height) at 20 deg. C = -6
Meniscus correction only = 0.0
Specific gravity of solids = 2.65
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.0 | 26.5 | 21.2 | 0.0132 | 26.5 | 11.9 | 0.0322 | 42.3 |
| 5.00 | 23.0 | 22.0 | 16.7 | 0.0132 | 22.0 | 12.7 | 0.0210 | 33.3 |
| 15.00 | 23.0 | 19.0 | 13.7 | 0.0132 | 19.0 | 13.2 | 0.0123 | 27.3 |
| 30.00 | 23.0 | 17.0 | 11.7 | 0.0132 | 17.0 | 13.5 | 0.0088 | 23.3 |
| 60.00 | 23.0 | 15.0 | 9.7 | 0.0132 | 15.0 | 13.8 | 0.0063 | 19.3 |
| 250.00 | 22.5 | 12.0 | 6.5 | 0.0132 | 12.0 | 14.3 | 0.0032 | 13.1 |
| 1440.00 | 23.0 | 10.0 | 4.7 | 0.0132 | 10.0 | 14.7 | 0.0013 | 9.3 |

### Fractional Components

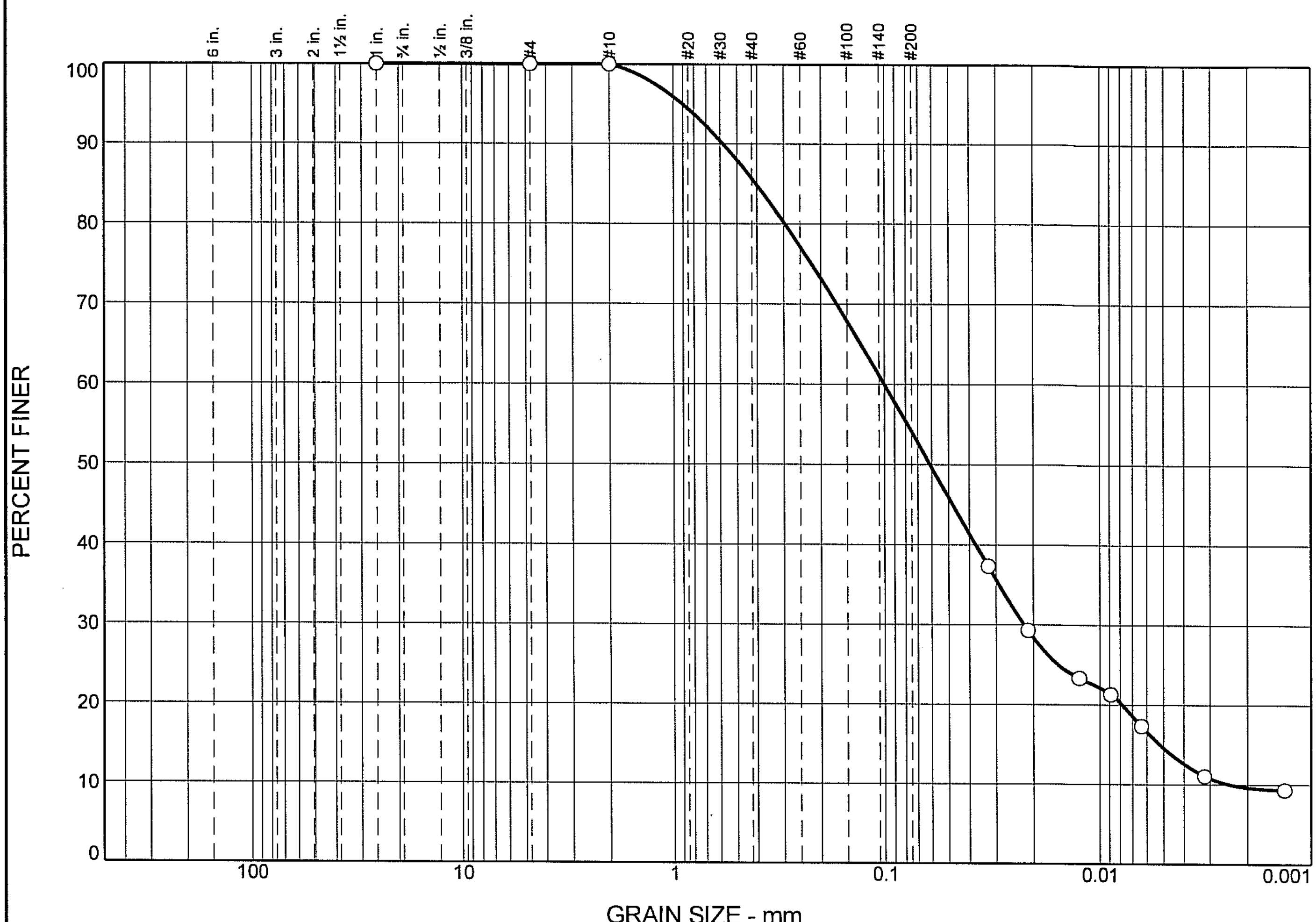
| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 11.0 | 28.3 | 39.3 | 43.8 | 16.9 | 60.7 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| 0.0016 | 0.0041 | 0.0067 | 0.0161 | 0.0452 | 0.0725 | 0.2207 | 0.3115 | 0.4642 | 0.7685 |

| Fineness Modulus | $C_u$ | $C_c$ |
|---|---|---|
| 0.51 | 44.29 | 2.20 |

RF

# Particle Size Distribution Report




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| o | 0.0 | 0.0 | 0.0 | 0.0 | 14.3 | 31.6 | 39.5 | 14.6 |
| | | | | | | | | |
| | | | | | | | | |

| | LL | PL | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| o | | | 0.4056 | 0.1004 | 0.0612 | 0.0221 | 0.0052 | 0.0024 | 2.01 | 41.41 |
| | | | | | | | | | | |
| | | | | | | | | | | |

| Material Description | USCS | AASHTO |
|---|---|---|
| o Sediment | | |

**Project No.** 29-197 **Client:** Battelle

**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001

o **Source of Sample:** B2-CAP1-0507 **Sample Number:** 20091224

**Aqua Survey, Inc.**

**Flemington, NJ**

**Remarks:**

RF

**Figure**

**Tested By:** S. Hornberger **Checked By:** R. Fristrom

# GRAIN SIZE DISTRIBUTION TEST DATA

12/1/2009

**Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001
**Project Number:** 29-197
**Location:** B2-CAP1-0507
**Sample Number:** 20091224
**Material Description:** Sediment
**Tested by:** S. Hornberger  **Checked by:** R. Fristrom

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer |
|---|---|---|---|---|---|
| 69.60 | 12.75 | 1 | 12.75 | 12.75 | 100.0 |
| | | #4 | 12.75 | 12.75 | 100.0 |
| | | #10 | 12.75 | 12.75 | 100.0 |

## Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =50.0
Automatic temperature correction
  Composite correction (fluid density and meniscus height) at 20 deg. C = -6
Meniscus correction only = 0.0
Specific gravity of solids = 2.65
Hydrometer type = 152H
  Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.0 | 24.0 | 18.7 | 0.0132 | 24.0 | 12.4 | 0.0327 | 37.3 |
| 5.00 | 23.0 | 20.0 | 14.7 | 0.0132 | 20.0 | 13.0 | 0.0212 | 29.3 |
| 15.00 | 23.0 | 17.0 | 11.7 | 0.0132 | 17.0 | 13.5 | 0.0125 | 23.3 |
| 30.00 | 23.0 | 16.0 | 10.7 | 0.0132 | 16.0 | 13.7 | 0.0089 | 21.3 |
| 60.00 | 23.0 | 14.0 | 8.7 | 0.0132 | 14.0 | 14.0 | 0.0064 | 17.3 |
| 250.00 | 22.5 | 11.0 | 5.5 | 0.0132 | 11.0 | 14.5 | 0.0032 | 11.1 |
| 1440.00 | 23.0 | 10.0 | 4.7 | 0.0132 | 10.0 | 14.7 | 0.0013 | 9.3 |

## Fractional Components

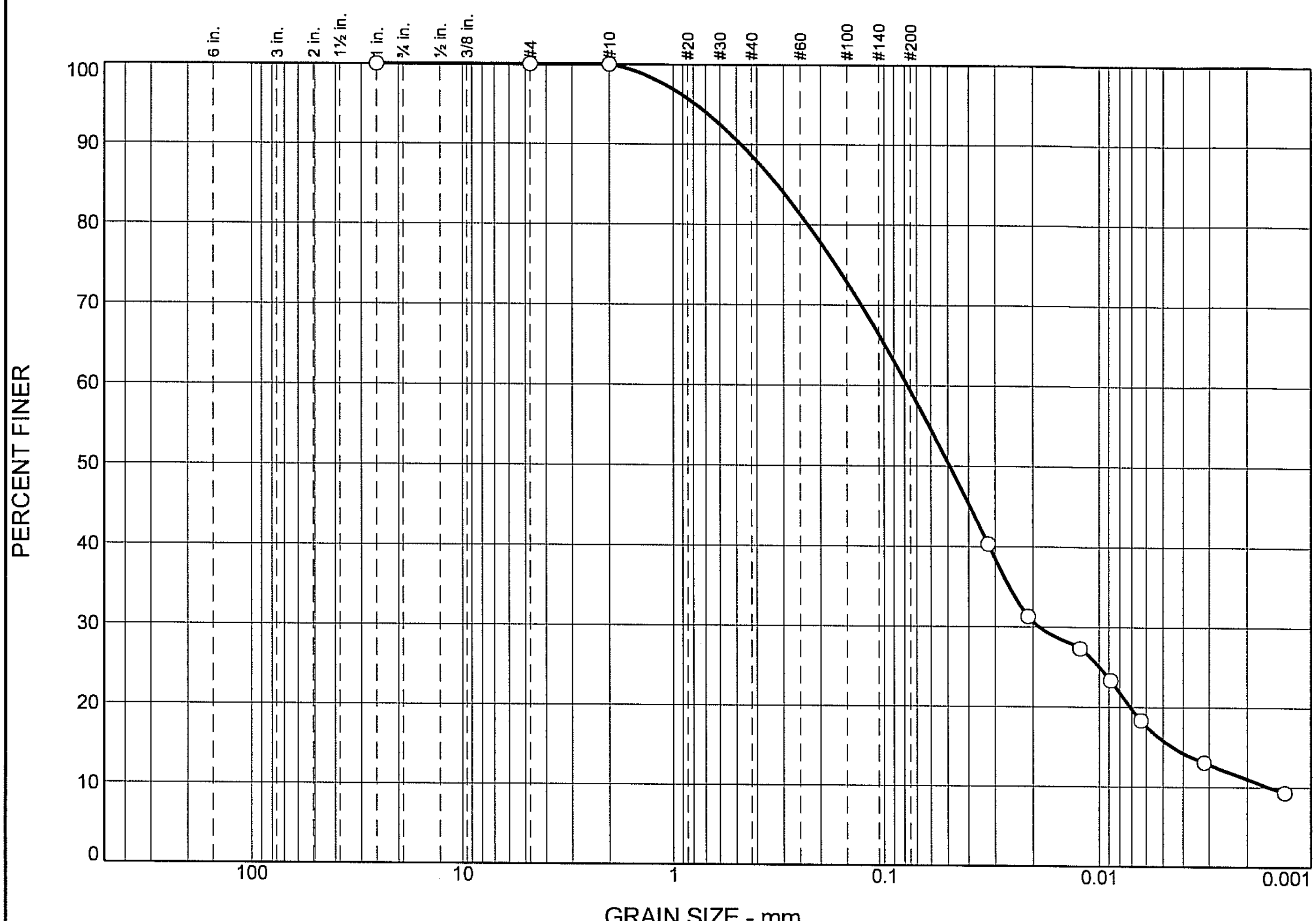
| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 14.3 | 31.6 | 45.9 | 39.5 | 14.6 | 54.1 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| 0.0024 | 0.0052 | 0.0078 | 0.0221 | 0.0612 | 0.1004 | 0.2956 | 0.4056 | 0.5807 | 0.9042 |

| Fineness Modulus | $C_u$ | $C_c$ |
|---|---|---|
| 0.64 | 41.41 | 2.01 |

RF

# Particle Size Distribution Report




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 0.0 | 0.0 | 0.0 | 0.0 | 11.3 | 29.3 | 43.6 | 15.8 |
| | | | | | | | | |
| | | | | | | | | |

| ╳ | LL | PL | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | | | 0.3214 | 0.0774 | 0.0489 | 0.0188 | 0.0045 | 0.0016 | 2.91 | 49.57 |
| | | | | | | | | | | |
| | | | | | | | | | | |

| Material Description | USCS | AASHTO |
|---|---|---|
| ○ Sediment | | |

**Project No.** 29-197 **Client:** Battelle

**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001

○ **Source of Sample:** B2-CAPX-0002 **Sample Number:** 20091225

**Aqua Survey, Inc.**

**Flemington, NJ**

**Remarks:**

**Figure**

**Tested By:** S. Hornberger **Checked By:** R. Fristrom

## GRAIN SIZE DISTRIBUTION TEST DATA

12/2/2009

**Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001
**Project Number:** 29-197
**Location:** B2-CAPX-0002
**Sample Number:** 20091225
**Material Description:** Sediment
**Tested by:** S. Hornberger **Checked by:** R. Fristrom

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer |
|---|---|---|---|---|---|
| 62.59 | 12.72 | 1 | 12.72 | 12.72 | 100.0 |
| | | #4 | 12.72 | 12.72 | 100.0 |
| | | #10 | 12.72 | 12.72 | 100.0 |

### Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =50.0
Automatic temperature correction
Composite correction (fluid density and meniscus height) at 20 deg. C = -6
Meniscus correction only = 0.0
Specific gravity of solids = 2.65
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.0 | 25.5 | 20.2 | 0.0132 | 25.5 | 12.1 | 0.0324 | 40.3 |
| 5.00 | 23.0 | 21.0 | 15.7 | 0.0132 | 21.0 | 12.9 | 0.0211 | 31.3 |
| 15.00 | 23.0 | 19.0 | 13.7 | 0.0132 | 19.0 | 13.2 | 0.0123 | 27.3 |
| 30.00 | 23.0 | 17.0 | 11.7 | 0.0132 | 17.0 | 13.5 | 0.0088 | 23.3 |
| 60.00 | 23.0 | 14.5 | 9.2 | 0.0132 | 14.5 | 13.9 | 0.0063 | 18.3 |
| 250.00 | 22.5 | 12.0 | 6.5 | 0.0132 | 12.0 | 14.3 | 0.0032 | 13.1 |
| 1440.00 | 23.0 | 10.0 | 4.7 | 0.0132 | 10.0 | 14.7 | 0.0013 | 9.3 |

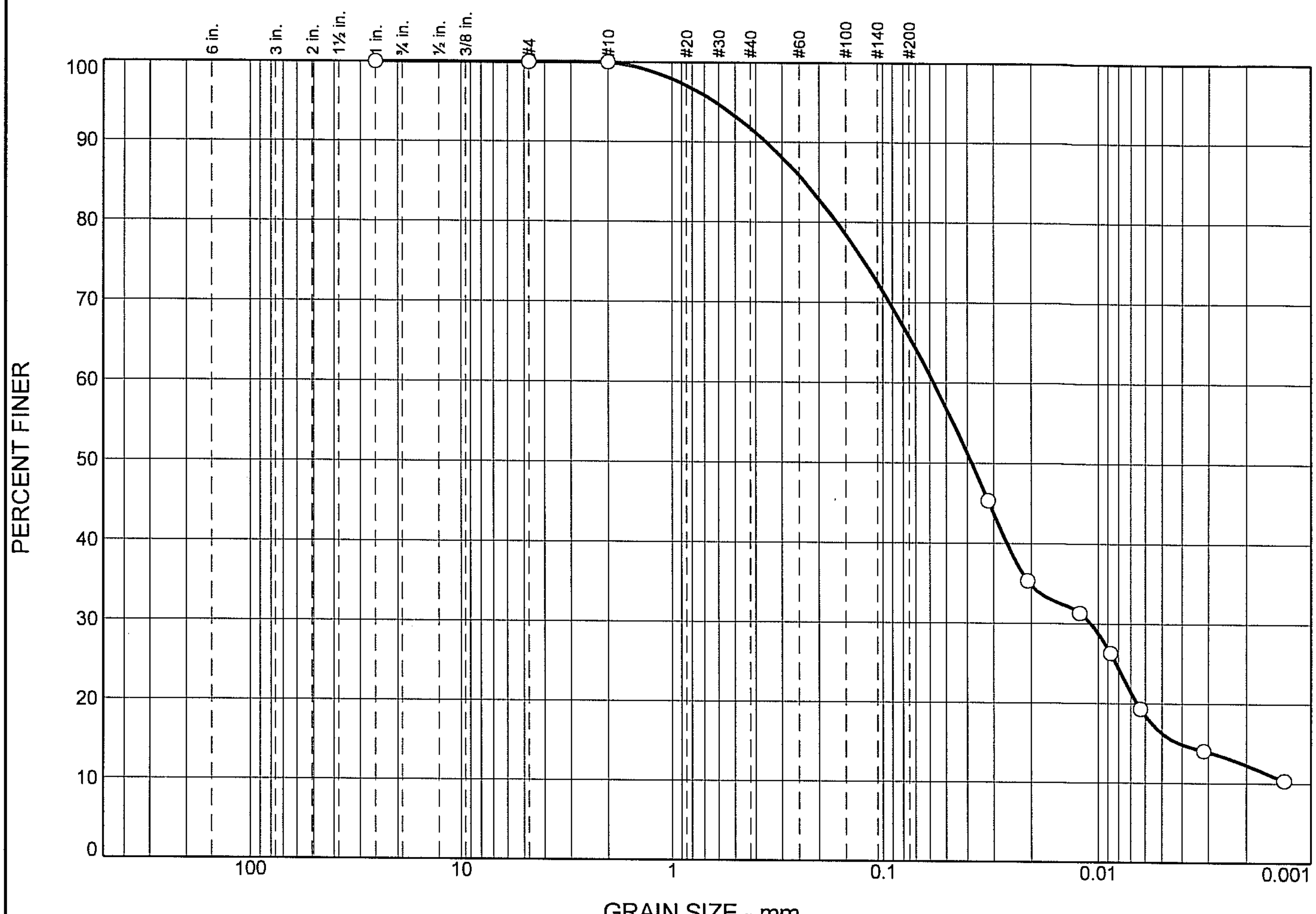
### Fractional Components

| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 11.3 | 29.3 | 40.6 | 43.6 | 15.8 | 59.4 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| 0.0016 | 0.0045 | 0.0071 | 0.0188 | 0.0489 | 0.0774 | 0.2294 | 0.3214 | 0.4754 | 0.7805 |

| Fineness Modulus | $C_u$ | $C_c$ |
|---|---|---|
| 0.53 | 49.57 | 2.91 |

# Particle Size Distribution Report




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 0.0 | 0.0 | 0.0 | 0.0 | 8.2 | 26.1 | 49.5 | 16.2 |
| | | | | | | | | |
| | | | | | | | | |

| | LL | PL | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | | | 0.2343 | 0.0575 | 0.0380 | 0.0108 | 0.0041 | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

| Material Description | USCS | AASHTO |
|---|---|---|
| ○ Sediment | | |

**Project No.** 29-197 **Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001

○ **Source of Sample:** B2-CAPX-0205 **Sample Number:** 20091226

**Remarks:**

**Aqua Survey, Inc.**

**Flemington, NJ**

**Figure**

**Tested By:** S. Hornberger **Checked By:** R. Fristrom

## GRAIN SIZE DISTRIBUTION TEST DATA

12/2/2009

**Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001
**Project Number:** 29-197
**Location:** B2-CAPX-0205
**Sample Number:** 20091226
**Material Description:** Sediment
**Tested by:** S. Hornberger **Checked by:** R. Fristrom

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer |
|---|---|---|---|---|---|
| 78.79 | 12.73 | 1 | 12.73 | 12.73 | 100.0 |
| | | #4 | 12.73 | 12.73 | 100.0 |
| | | #10 | 12.73 | 12.73 | 100.0 |

### Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =50.0
Automatic temperature correction
Composite correction (fluid density and meniscus height) at 20 deg. C = -6
Meniscus correction only = 0.0
Specific gravity of solids = 2.65
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.0 | 28.0 | 22.7 | 0.0132 | 28.0 | 11.7 | 0.0318 | 45.3 |
| 5.00 | 23.0 | 23.0 | 17.7 | 0.0132 | 23.0 | 12.5 | 0.0208 | 35.3 |
| 15.00 | 23.0 | 21.0 | 15.7 | 0.0132 | 21.0 | 12.9 | 0.0122 | 31.3 |
| 30.00 | 23.0 | 18.5 | 13.2 | 0.0132 | 18.5 | 13.3 | 0.0087 | 26.3 |
| 60.00 | 23.0 | 15.0 | 9.7 | 0.0132 | 15.0 | 13.8 | 0.0063 | 19.3 |
| 250.00 | 22.5 | 12.5 | 7.0 | 0.0132 | 12.5 | 14.2 | 0.0032 | 14.1 |
| 1440.00 | 23.0 | 10.5 | 5.2 | 0.0132 | 10.5 | 14.6 | 0.0013 | 10.3 |

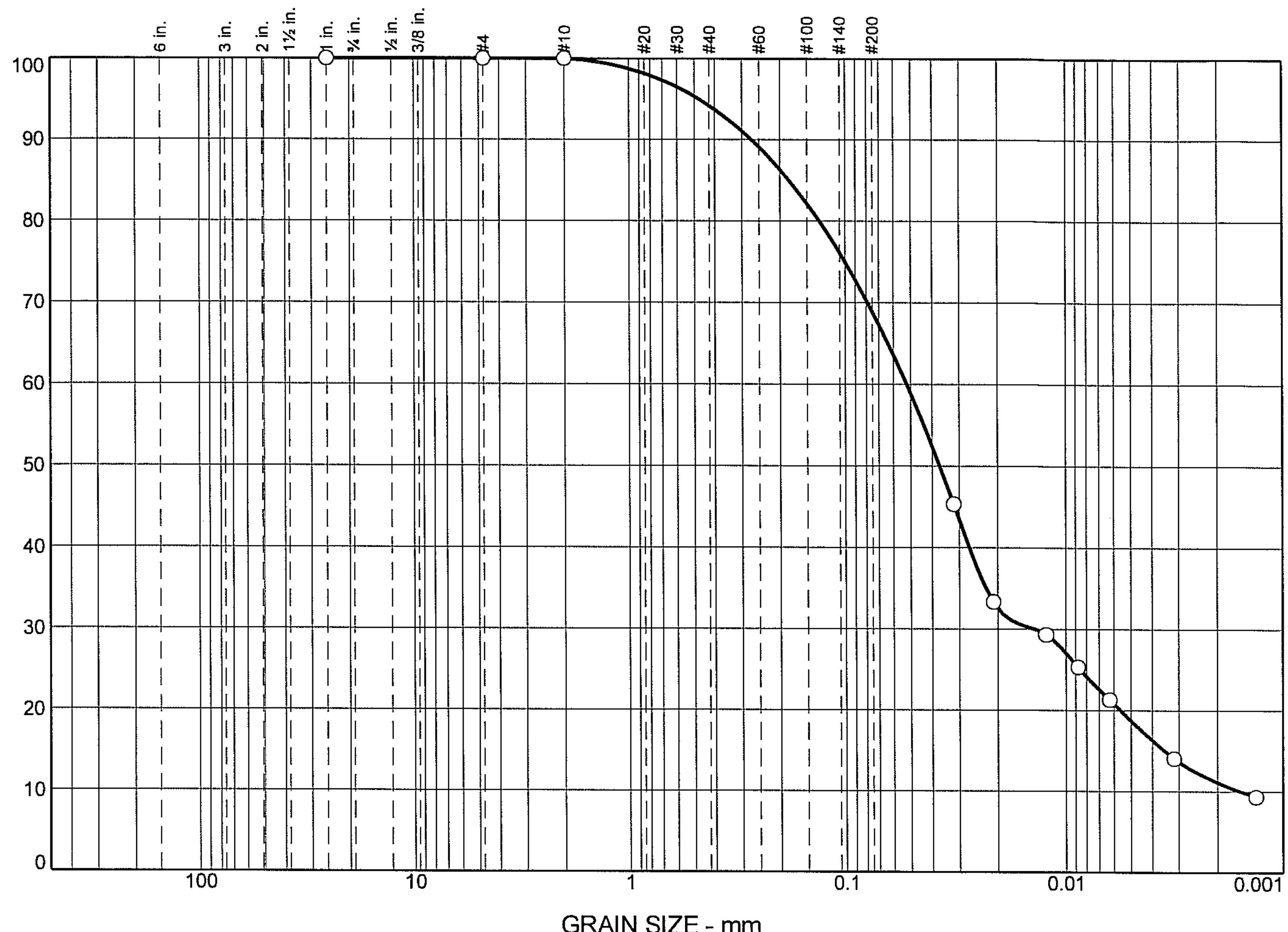
### Fractional Components

| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 8.2 | 26.1 | 34.3 | 49.5 | 16.2 | 65.7 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0041 | 0.0065 | 0.0108 | 0.0380 | 0.0575 | 0.1652 | 0.2343 | 0.3565 | 0.6210 |

| Fineness Modulus |
|---|
| 0.40 |

# Particle Size Distribution Report




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 0.0 | 0.0 | 0.0 | 0.0 | 5.8 | 25.3 | 50.2 | 18.7 |
| | | | | | | | | |
| | | | | | | | | |

| | LL | PL | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | | | 0.1817 | 0.0523 | 0.0369 | 0.0137 | 0.0035 | 0.0016 | 2.31 | 33.37 |
| | | | | | | | | | | |
| | | | | | | | | | | |

| Material Description | USCS | AASHTO |
|---|---|---|
| ○ Sediment | | |

**Project No.** 29-197 **Client:** Battelle

**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001

○ **Source of Sample:** B2-CAPX-0507 **Sample Number:** 20091227

**Aqua Survey, Inc.**

**Flemington, NJ**

**Remarks:**

**Figure**

**Tested By:** S. Hornberger **Checked By:** R. Fristrom

## GRAIN SIZE DISTRIBUTION TEST DATA

12/2/2009

**Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001
**Project Number:** 29-197
**Location:** B2-CAPX-0507
**Sample Number:** 20091227
**Material Description:** Sediment
**Tested by:** S. Hornberger **Checked by:** R. Fristrom

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer |
|---|---|---|---|---|---|
| 99.67 | 10.94 | 1 | 10.94 | 10.94 | 100.0 |
| | | #4 | 10.94 | 10.94 | 100.0 |
| | | #10 | 10.94 | 10.94 | 100.0 |

### Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =50.0
Automatic temperature correction
Composite correction (fluid density and meniscus height) at 20 deg. C = -6
Meniscus correction only = 0.0
Specific gravity of solids = 2.65
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.0 | 28.0 | 22.7 | 0.0132 | 28.0 | 11.7 | 0.0318 | 45.3 |
| 5.00 | 23.0 | 22.0 | 16.7 | 0.0132 | 22.0 | 12.7 | 0.0210 | 33.3 |
| 15.00 | 23.0 | 20.0 | 14.7 | 0.0132 | 20.0 | 13.0 | 0.0123 | 29.3 |
| 30.00 | 23.0 | 18.0 | 12.7 | 0.0132 | 18.0 | 13.3 | 0.0088 | 25.3 |
| 60.00 | 23.0 | 16.0 | 10.7 | 0.0132 | 16.0 | 13.7 | 0.0063 | 21.3 |
| 250.00 | 22.5 | 12.5 | 7.0 | 0.0132 | 12.5 | 14.2 | 0.0032 | 14.1 |
| 1440.00 | 23.0 | 10.0 | 4.7 | 0.0132 | 10.0 | 14.7 | 0.0013 | 9.3 |

### Fractional Components

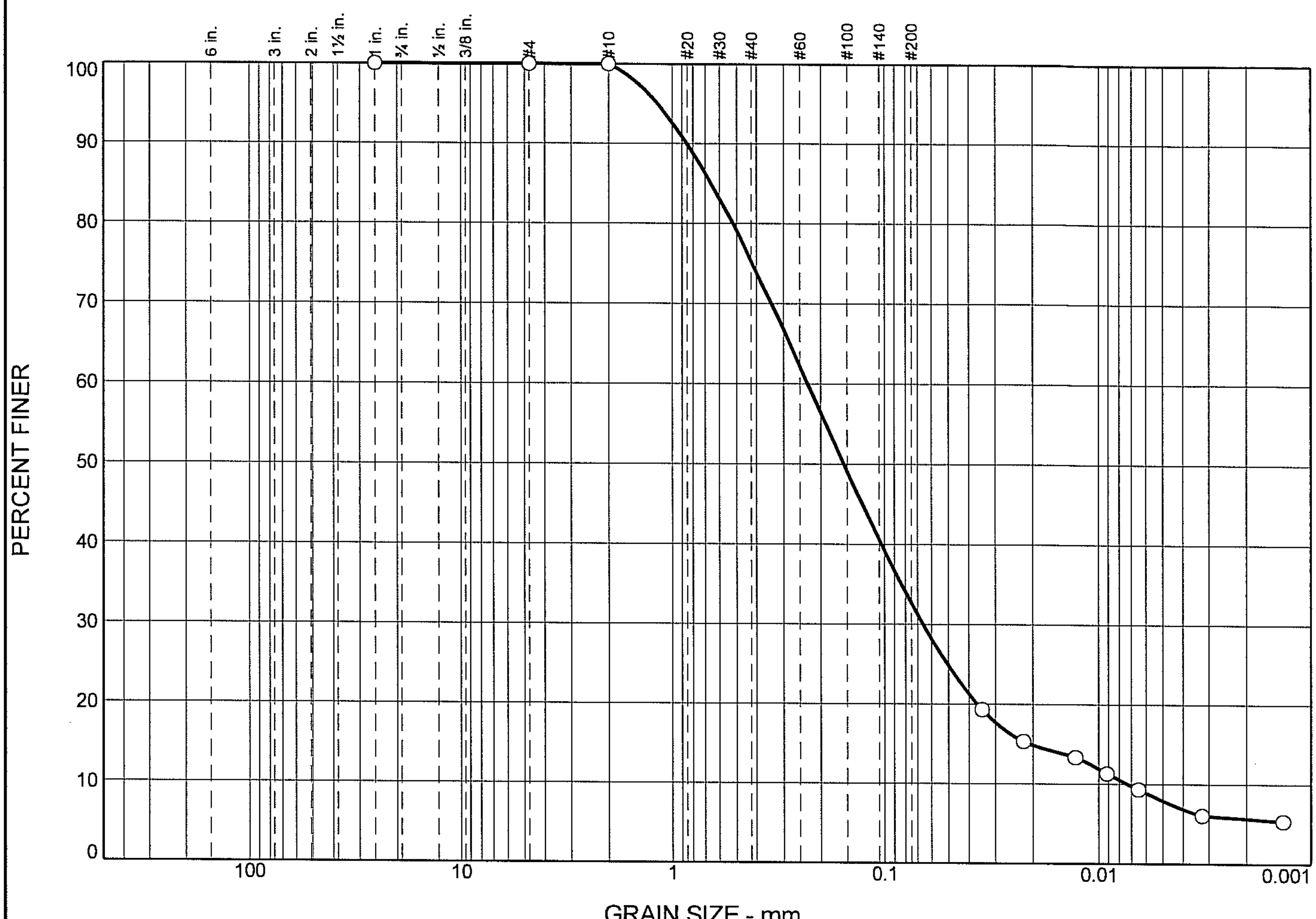
| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.8 | 25.3 | 31.1 | 50.2 | 18.7 | 68.9 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| 0.0016 | 0.0035 | 0.0056 | 0.0137 | 0.0369 | 0.0523 | 0.1317 | 0.1817 | 0.2712 | 0.4745 |

| Fineness Modulus | $C_u$ | $C_c$ |
|---|---|---|
| 0.31 | 33.37 | 2.31 |

RF

# Particle Size Distribution Report




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 0.0 | 0.0 | 0.0 | 0.0 | 24.7 | 42.6 | 24.8 | 7.9 |
| | | | | | | | | |
| | | | | | | | | |

| | LL | PL | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | | | 0.6572 | 0.2298 | 0.1555 | 0.0659 | 0.0207 | 0.0073 | 2.58 | 31.40 |
| | | | | | | | | | | |
| | | | | | | | | | | |

| Material Description | USCS | AASHTO |
|---|---|---|
| ○ Sediment | | |

**Project No.** 29-197 **Client:** Battelle

**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001

○ **Source of Sample:** B2-CAP2-0002 **Sample Number:** 20091228

**Aqua Survey, Inc.**

**Flemington, NJ**

**Remarks:**

**Figure**

**Tested By:** S. Hornberger **Checked By:** R. Fristrom

## GRAIN SIZE DISTRIBUTION TEST DATA

12/2/2009

**Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001
**Project Number:** 29-197
**Location:** B2-CAP2-0002
**Sample Number:** 20091228
**Material Description:** Sediment
**Tested by:** S. Hornberger **Checked by:** R. Fristrom

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer |
|---|---|---|---|---|---|
| 54.67 | 12.82 | 1 | 12.82 | 12.82 | 100.0 |
| | | #4 | 12.82 | 12.82 | 100.0 |
| | | #10 | 12.82 | 12.82 | 100.0 |

### Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =50.0
Automatic temperature correction
Composite correction (fluid density and meniscus height) at 20 deg. C = -6
Meniscus correction only = 0.0
Specific gravity of solids = 2.65
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.0 | 15.0 | 9.7 | 0.0132 | 15.0 | 13.8 | 0.0346 | 19.3 |
| 5.00 | 23.0 | 13.0 | 7.7 | 0.0132 | 13.0 | 14.2 | 0.0221 | 15.3 |
| 15.00 | 23.0 | 12.0 | 6.7 | 0.0132 | 12.0 | 14.3 | 0.0129 | 13.3 |
| 30.00 | 23.0 | 11.0 | 5.7 | 0.0132 | 11.0 | 14.5 | 0.0091 | 11.3 |
| 60.00 | 23.0 | 10.0 | 4.7 | 0.0132 | 10.0 | 14.7 | 0.0065 | 9.3 |
| 250.00 | 22.5 | 8.5 | 3.0 | 0.0132 | 8.5 | 14.9 | 0.0032 | 6.1 |
| 1440.00 | 23.0 | 8.0 | 2.7 | 0.0132 | 8.0 | 15.0 | 0.0013 | 5.3 |

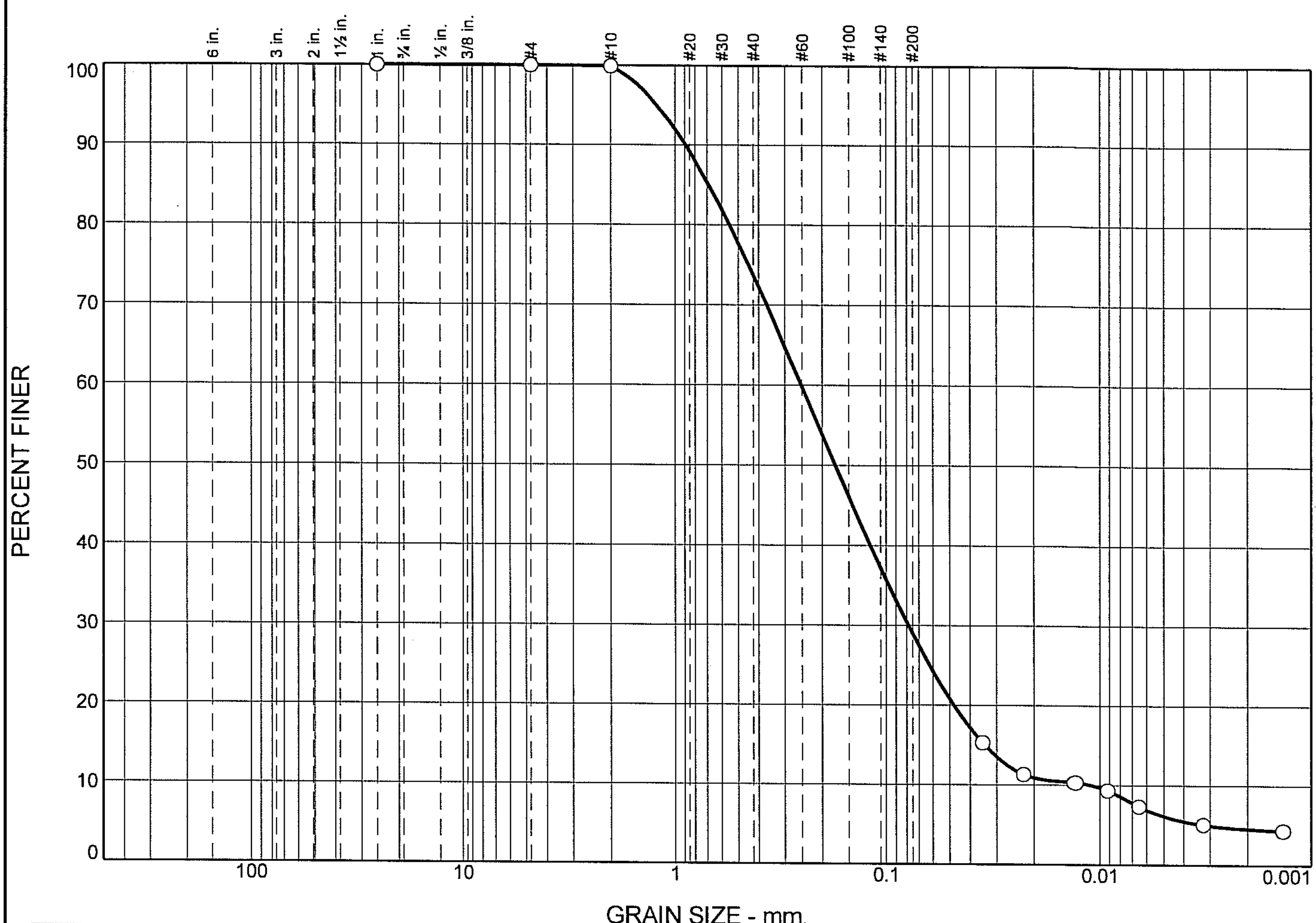
### Fractional Components

| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 24.7 | 42.6 | 67.3 | 24.8 | 7.9 | 32.7 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| 0.0073 | 0.0207 | 0.0365 | 0.0659 | 0.1555 | 0.2298 | 0.5202 | 0.6572 | 0.8543 | 1.1755 |

| Fineness Modulus | $C_u$ | $C_c$ |
|---|---|---|
| 1.06 | 31.40 | 2.58 |

# Particle Size Distribution Report




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 0.0 | 0.0 | 0.0 | 0.1 | 26.1 | 44.8 | 22.9 | 6.1 |
| | | | | | | | | |
| | | | | | | | | |

| | LL | PL | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | | | 0.6902 | 0.2513 | 0.1735 | 0.0785 | 0.0341 | 0.0110 | 2.22 | 22.76 |
| | | | | | | | | | | |
| | | | | | | | | | | |

| Material Description | USCS | AASHTO |
|---|---|---|
| ○ Sediment | | |

**Project No.** 29-197 **Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001

○ **Source of Sample:** B2-CAP2-0205 **Sample Number:** 20091229

**Aqua Survey, Inc.**

**Flemington, NJ**

**Remarks:**

**Figure**

**Tested By:** S. Hornberger **Checked By:** R. Fristrom

## GRAIN SIZE DISTRIBUTION TEST DATA

12/2/2009

**Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001
**Project Number:** 29-197
**Location:** B2-CAP2-0205
**Sample Number:** 20091229
**Material Description:** Sediment
**Tested by:** S. Hornberger **Checked by:** R. Fristrom

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer |
|---|---|---|---|---|---|
| 89.86 | 10.84 | 1 | 10.84 | 10.84 | 100.0 |
| | | #4 | 10.84 | 10.84 | 100.0 |
| | | #10 | 10.93 | 10.84 | 99.9 |

### Hydrometer Test Data

**Hydrometer test uses material passing** #10
**Percent passing #10 based upon complete sample =** 99.9
**Weight of hydrometer sample =**50.0
**Automatic temperature correction**
**Composite correction (fluid density and meniscus height) at 20 deg. C =** -6
**Meniscus correction only =** 0.0
**Specific gravity of solids =** 2.65
**Hydrometer type =** 152H
**Hydrometer effective depth equation: L =** 16.294964 - 0.164 **x Rm**

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.0 | 13.0 | 7.7 | 0.0132 | 13.0 | 14.2 | 0.0350 | 15.3 |
| 5.00 | 23.0 | 11.0 | 5.7 | 0.0132 | 11.0 | 14.5 | 0.0224 | 11.3 |
| 15.00 | 23.0 | 10.5 | 5.2 | 0.0132 | 10.5 | 14.6 | 0.0130 | 10.3 |
| 30.00 | 23.0 | 10.0 | 4.7 | 0.0132 | 10.0 | 14.7 | 0.0092 | 9.3 |
| 60.00 | 23.0 | 9.0 | 3.7 | 0.0132 | 9.0 | 14.8 | 0.0065 | 7.3 |
| 250.00 | 22.5 | 8.0 | 2.5 | 0.0132 | 8.0 | 15.0 | 0.0032 | 5.1 |
| 1440.00 | 23.0 | 7.5 | 2.2 | 0.0132 | 7.5 | 15.1 | 0.0013 | 4.3 |

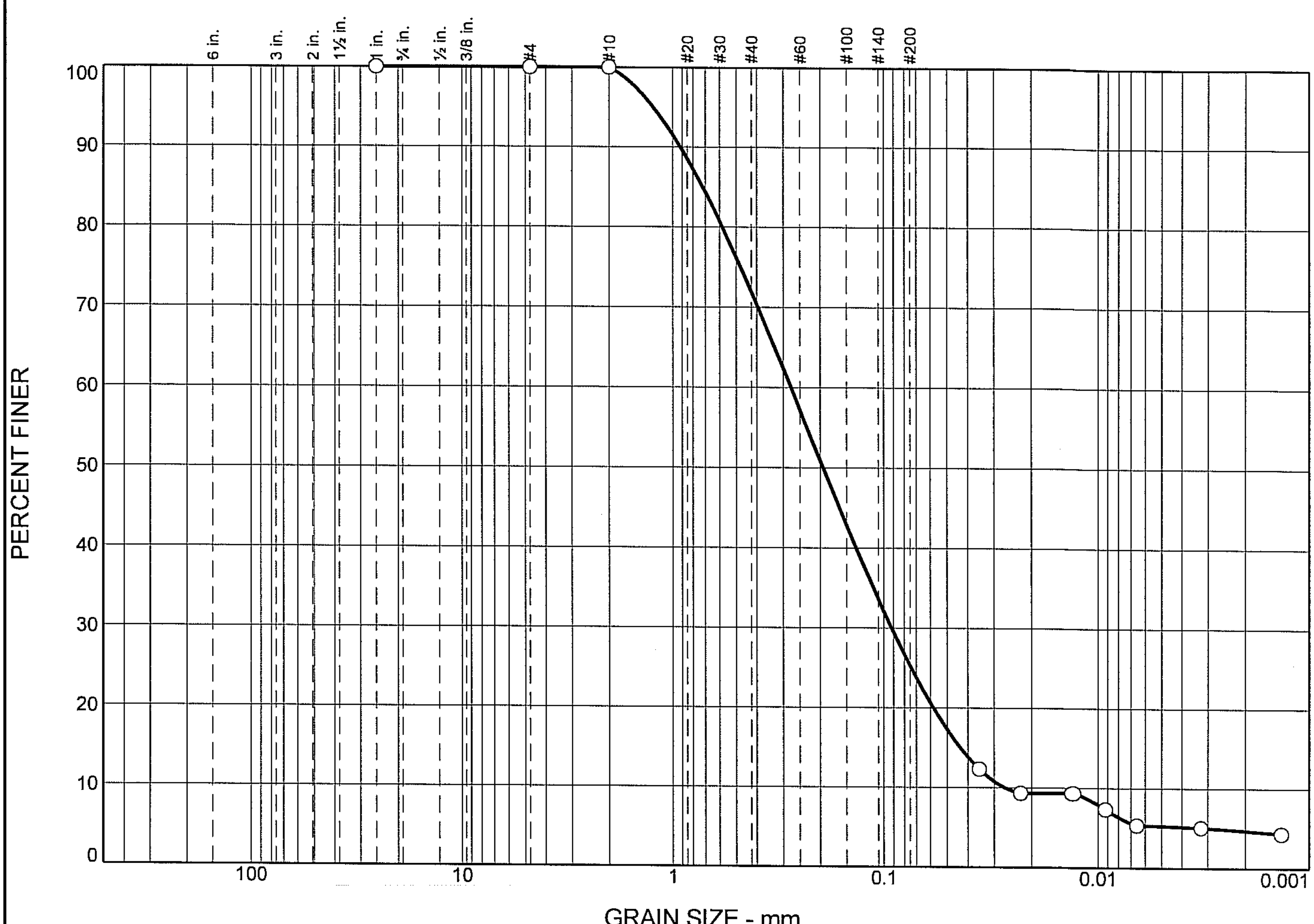
### Fractional Components

| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 26.1 | 44.8 | 71.0 | 22.9 | 6.1 | 29.0 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| 0.0110 | 0.0341 | 0.0478 | 0.0785 | 0.1735 | 0.2513 | 0.5507 | 0.6902 | 0.8899 | 1.2133 |

| Fineness Modulus | $C_u$ | $C_c$ |
|---|---|---|
| 1.13 | 22.76 | 2.22 |

# Particle Size Distribution Report




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| o | 0.0 | 0.0 | 0.0 | 0.0 | 28.0 | 46.7 | 20.0 | 5.3 |

| | LL | PL | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| o | | | 0.7210 | 0.2754 | 0.1937 | 0.0918 | 0.0434 | 0.0269 | 1.14 | 10.24 |

| Material Description | USCS | AASHTO |
|---|---|---|
| o Sediment | | |

**Project No.** 29-197 **Client:** Battelle

**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001

o **Source of Sample:** B2-CAP2-0507 **Sample Number:** 20091230

**Aqua Survey, Inc.**

**Flemington, NJ**

**Remarks:**

**Figure**

**Tested By:** S. Hornberger **Checked By:** R. Fristrom

## GRAIN SIZE DISTRIBUTION TEST DATA

12/3/2009

**Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001
**Project Number:** 29-197
**Location:** B2-CAP2-0507
**Sample Number:** 20091230
**Material Description:** Sediment
**Tested by:** S. Hornberger **Checked by:** R. Fristrom

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer |
|---|---|---|---|---|---|
| 104.89 | 12.74 | 1 | 12.74 | 12.74 | 100.0 |
| | | #4 | 12.74 | 12.74 | 100.0 |
| | | #10 | 12.74 | 12.74 | 100.0 |

### Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =50
Automatic temperature correction
Composite correction (fluid density and meniscus height) at 20 deg. C = -6
Meniscus correction only = 0.0
Specific gravity of solids = 2.65
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.0 | 11.5 | 6.2 | 0.0132 | 11.5 | 14.4 | 0.0353 | 12.3 |
| 5.00 | 23.0 | 10.0 | 4.7 | 0.0132 | 10.0 | 14.7 | 0.0225 | 9.3 |
| 15.00 | 23.0 | 10.0 | 4.7 | 0.0132 | 10.0 | 14.7 | 0.0130 | 9.3 |
| 30.00 | 23.0 | 9.0 | 3.7 | 0.0132 | 9.0 | 14.8 | 0.0092 | 7.3 |
| 60.00 | 23.0 | 8.0 | 2.7 | 0.0132 | 8.0 | 15.0 | 0.0066 | 5.3 |
| 250.00 | 22.5 | 8.0 | 2.5 | 0.0132 | 8.0 | 15.0 | 0.0032 | 5.1 |
| 1440.00 | 23.0 | 7.5 | 2.2 | 0.0132 | 7.5 | 15.1 | 0.0013 | 4.3 |

### Fractional Components

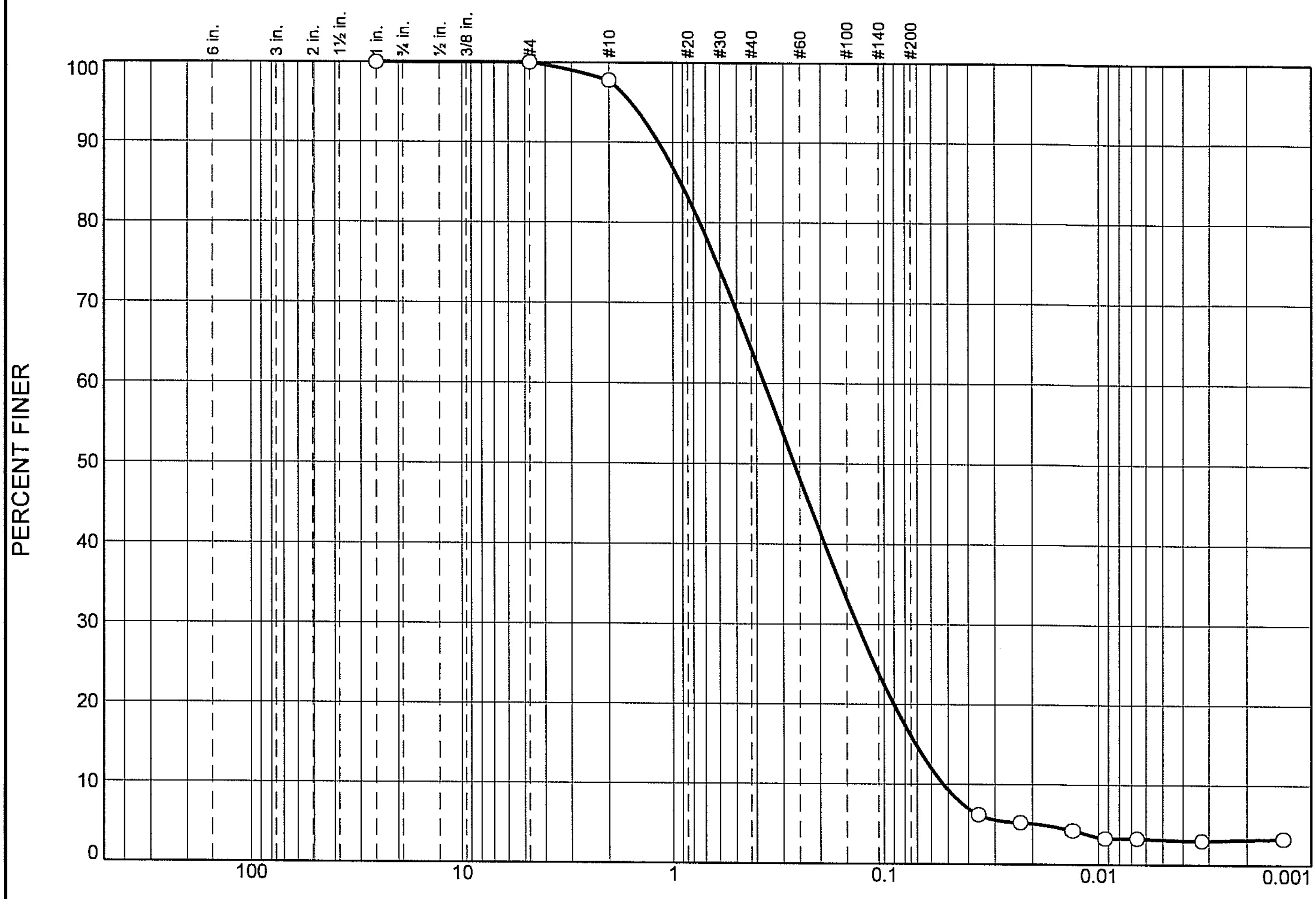
| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 28.0 | 46.7 | 74.7 | 20.0 | 5.3 | 25.3 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| 0.0269 | 0.0434 | 0.0581 | 0.0918 | 0.1937 | 0.2754 | 0.5814 | 0.7210 | 0.9184 | 1.2329 |

| Fineness Modulus | $C_u$ | $C_c$ |
|---|---|---|
| 1.20 | 10.24 | 1.14 |

RF

# Particle Size Distribution Report




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 0.0 | 0.0 | 0.0 | 2.2 | 33.5 | 48.3 | 12.9 | 3.1 |

| | LL | PL | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | | | 0.9200 | 0.3684 | 0.2654 | 0.1342 | 0.0711 | 0.0528 | 0.93 | 6.98 |

| Material Description | USCS | AASHTO |
|---|---|---|
| ○ Sediment | | |

**Project No.** 29-197 **Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001

○ **Source of Sample:** B2-CAP3-0002 **Sample Number:** 20091231

**Aqua Survey, Inc.**

**Flemington, NJ**

**Remarks:**
○ material retained on #10 sieve contained shell fragment

**Figure**

**Tested By:** S. Hornberger **Checked By:** R. Fristrom

## GRAIN SIZE DISTRIBUTION TEST DATA

12/2/2009

**Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001
**Project Number:** 29-197
**Location:** B2-CAP3-0002
**Sample Number:** 20091231
**Material Description:** Sediment
**Testing Remarks:** material retained on #10 sieve contained shell fragment
**Tested by:** S. Hornberger **Checked by:** R. Fristrom

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer |
|---|---|---|---|---|---|
| 116.35 | 12.62 | 1 | 12.62 | 12.62 | 100.0 |
| | | #4 | 12.62 | 12.62 | 100.0 |
| | | #10 | 14.94 | 12.62 | 97.8 |

### Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 97.8
Weight of hydrometer sample =50.0
Automatic temperature correction
Composite correction (fluid density and meniscus height) at 20 deg. C = -6
Meniscus correction only = 0.0
Specific gravity of solids = 2.65
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.0 | 8.5 | 3.2 | 0.0132 | 8.5 | 14.9 | 0.0359 | 6.2 |
| 5.00 | 23.0 | 8.0 | 2.7 | 0.0132 | 8.0 | 15.0 | 0.0228 | 5.2 |
| 15.00 | 23.0 | 7.5 | 2.2 | 0.0132 | 7.5 | 15.1 | 0.0132 | 4.2 |
| 30.00 | 23.0 | 7.0 | 1.7 | 0.0132 | 7.0 | 15.1 | 0.0093 | 3.3 |
| 60.00 | 23.0 | 7.0 | 1.7 | 0.0132 | 7.0 | 15.1 | 0.0066 | 3.3 |
| 250.00 | 22.5 | 7.0 | 1.5 | 0.0132 | 7.0 | 15.1 | 0.0033 | 3.0 |
| 1440.00 | 23.0 | 7.0 | 1.7 | 0.0132 | 7.0 | 15.1 | 0.0013 | 3.3 |

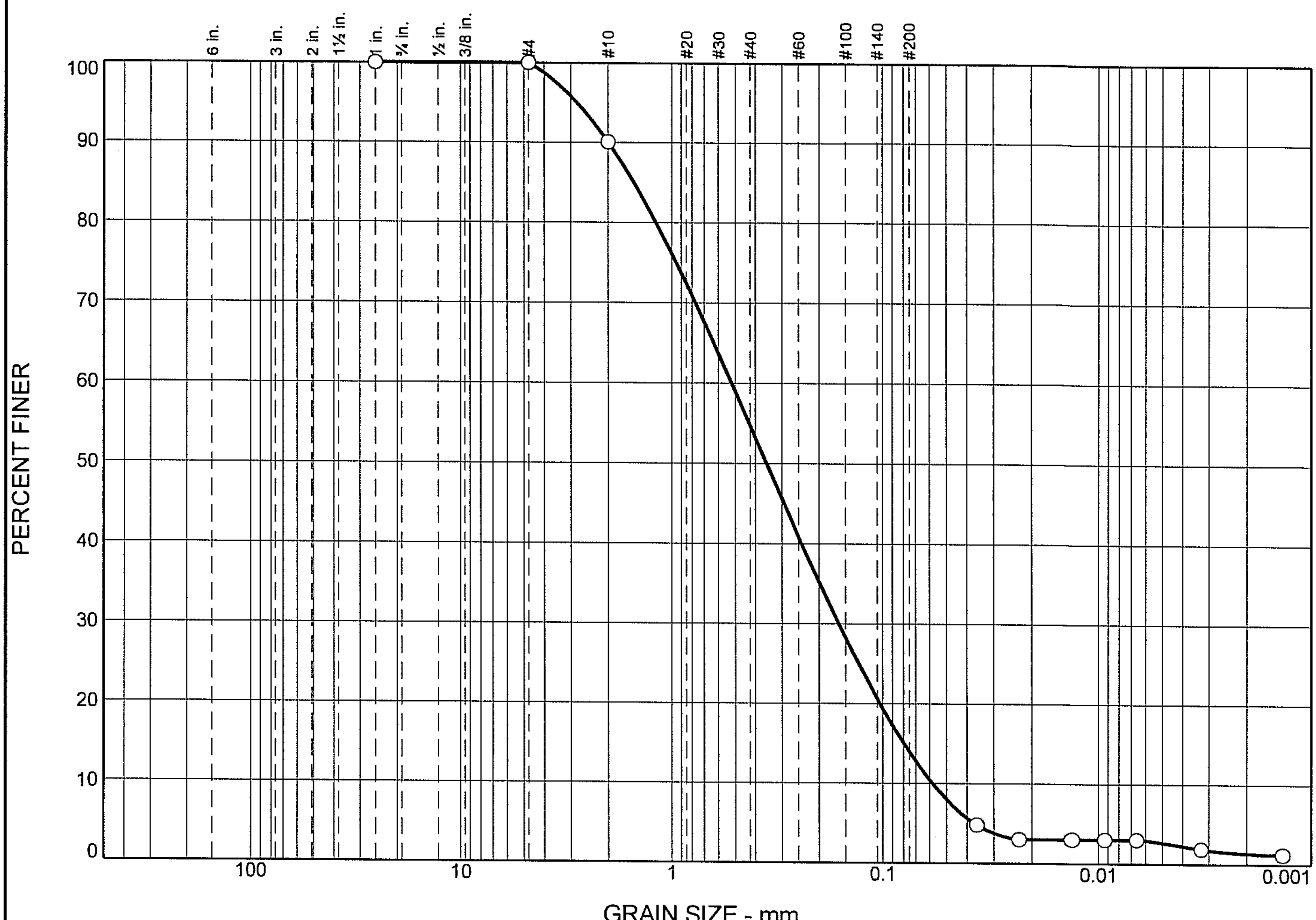
### Fractional Components

| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 2.2 | 33.5 | 48.3 | 84.0 | 12.9 | 3.1 | 16.0 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| 0.0528 | 0.0711 | 0.0902 | 0.1342 | 0.2654 | 0.3684 | 0.7477 | 0.9200 | 1.1660 | 1.5725 |

| Fineness Modulus | $C_u$ | $C_c$ |
|---|---|---|
| 1.50 | 6.98 | 0.93 |

# Particle Size Distribution Report




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| o | 0.0 | 0.0 | 0.0 | 9.9 | 35.3 | 40.8 | 11.3 | 2.7 |
| | | | | | | | | |
| | | | | | | | | |

| | LL | PL | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| o | | | 1.5103 | 0.5189 | 0.3543 | 0.1614 | 0.0794 | 0.0583 | 0.86 | 8.91 |
| | | | | | | | | | | |
| | | | | | | | | | | |

| Material Description | USCS | AASHTO |
|---|---|---|
| o Sediment | | |

**Project No.** 29-197 **Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001

o **Source of Sample:** B2-CAP3-0205 **Sample Number:** 20091232

**Aqua Survey, Inc.**

**Flemington, NJ**

**Remarks:**

**Figure**

**Tested By:** S. Hornberger **Checked By:** R. Fristrom

## GRAIN SIZE DISTRIBUTION TEST DATA

12/3/2009

**Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001
**Project Number:** 29-197
**Location:** B2-CAP3-0205
**Sample Number:** 20091232
**Material Description:** Sediment
**Tested by:** S. Hornberger **Checked by:** R. Fristrom

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer |
|---|---|---|---|---|---|
| 84.65 | 12.61 | 1 | 12.61 | 12.61 | 100.0 |
| | | #4 | 12.61 | 12.61 | 100.0 |
| | | #10 | 19.76 | 12.61 | 90.1 |

### Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 90.1
Weight of hydrometer sample =50.0
Automatic temperature correction
Composite correction (fluid density and meniscus height) at 20 deg. C = -6
Meniscus correction only = 0.0
Specific gravity of solids = 2.65
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.0 | 8.0 | 2.7 | 0.0132 | 8.0 | 15.0 | 0.0360 | 4.8 |
| 5.00 | 23.0 | 7.0 | 1.7 | 0.0132 | 7.0 | 15.1 | 0.0229 | 3.0 |
| 15.00 | 23.0 | 7.0 | 1.7 | 0.0132 | 7.0 | 15.1 | 0.0132 | 3.0 |
| 30.00 | 23.0 | 7.0 | 1.7 | 0.0132 | 7.0 | 15.1 | 0.0093 | 3.0 |
| 60.00 | 23.0 | 7.0 | 1.7 | 0.0132 | 7.0 | 15.1 | 0.0066 | 3.0 |
| 250.00 | 22.5 | 6.5 | 1.0 | 0.0132 | 6.5 | 15.2 | 0.0033 | 1.9 |
| 1440.00 | 23.0 | 6.0 | 0.7 | 0.0132 | 6.0 | 15.3 | 0.0014 | 1.2 |

### Fractional Components

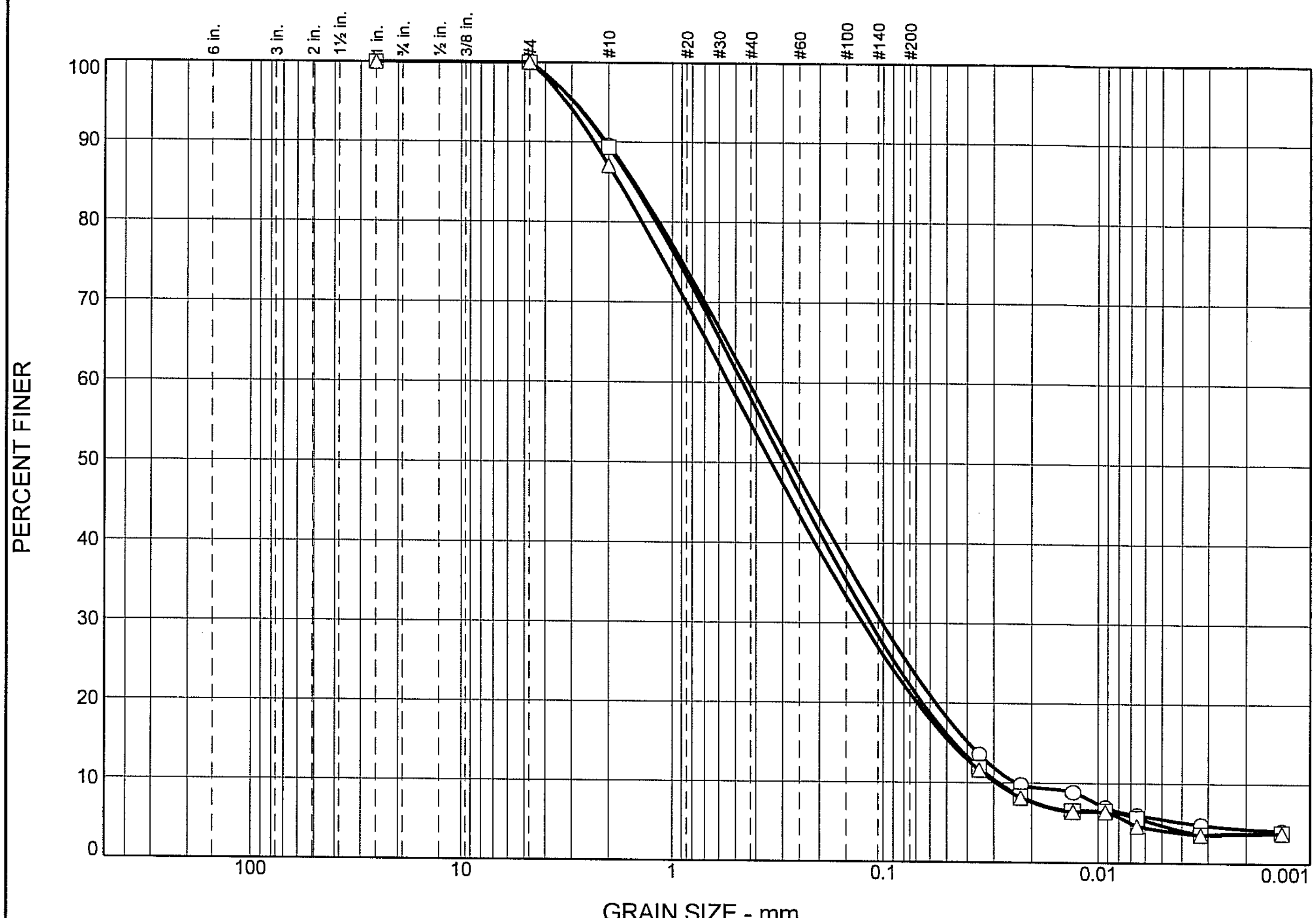
| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 9.9 | 35.3 | 40.8 | 86.0 | 11.3 | 2.7 | 14.0 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| 0.0583 | 0.0794 | 0.1030 | 0.1614 | 0.3543 | 0.5189 | 1.1853 | 1.5103 | 1.9910 | 2.8067 |

| Fineness Modulus | $C_u$ | $C_c$ |
|---|---|---|
| 1.90 | 8.91 | 0.86 |

Aqua Survey, Inc.

# Particle Size Distribution Report




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 0.0 | 0.0 | 0.0 | 10.4 | 30.0 | 35.0 | 19.1 | 5.5 |
| □ | 0.0 | 0.0 | 0.0 | 10.7 | 31.3 | 35.8 | 17.5 | 4.7 |
| △ | 0.0 | 0.0 | 0.0 | 12.9 | 32.2 | 33.6 | 17.2 | 4.1 |

| | LL | PL | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | | | 1.5199 | 0.4332 | 0.2718 | 0.1015 | 0.0395 | 0.0235 | 1.01 | 18.42 |
| □ | | | 1.5538 | 0.4640 | 0.2966 | 0.1151 | 0.0460 | 0.0286 | 1.00 | 16.24 |
| △ | | | 1.7932 | 0.5390 | 0.3391 | 0.1255 | 0.0479 | 0.0294 | 0.99 | 18.33 |

| Material Description | USCS | AASHTO |
|---|---|---|
| ○ Sediment | | |
| □ Sediment | | |
| △ Sediment | | |

**Project No.** 29-197 **Client:** Battelle

**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001

○ **Source of Sample:** B2-CAP3-0507 **Sample Number:** 20091233

□ **Source of Sample:** B2-CAP3-0507 **Sample Number:** 20091233 dup

△ **Source of Sample:** B2-CAP3-0507 **Sample Number:** 20091233 trip

**Aqua Survey, Inc.**

**Flemington, NJ**

**Remarks:**

**Figure**

**Tested By:** S. Hornberger **Checked By:** R. Fristrom

## GRAIN SIZE DISTRIBUTION TEST DATA

12/2/2009

**Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001
**Project Number:** 29-197
**Location:** B2-CAP3-0507
**Sample Number:** 20091233
**Material Description:** Sediment
**Tested by:** S. Hornberger **Checked by:** R. Fristrom

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer |
|---|---|---|---|---|---|
| 66.17 | 12.79 | 1 | 12.79 | 12.79 | 100.0 |
| | | #4 | 12.79 | 12.79 | 100.0 |
| | | #10 | 18.36 | 12.79 | 89.6 |

### Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 89.6
Weight of hydrometer sample =47.28
Automatic temperature correction
Composite correction (fluid density and meniscus height) at 20 deg. C = -6
Meniscus correction only = 0.0
Specific gravity of solids = 2.65
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.0 | 12.5 | 7.2 | 0.0132 | 12.5 | 14.2 | 0.0351 | 13.6 |
| 5.00 | 23.0 | 10.5 | 5.2 | 0.0132 | 10.5 | 14.6 | 0.0225 | 9.8 |
| 15.00 | 23.0 | 10.0 | 4.7 | 0.0132 | 10.0 | 14.7 | 0.0130 | 8.8 |
| 30.00 | 23.0 | 9.0 | 3.7 | 0.0132 | 9.0 | 14.8 | 0.0092 | 6.9 |
| 60.00 | 23.0 | 8.5 | 3.2 | 0.0132 | 8.5 | 14.9 | 0.0066 | 6.0 |
| 250.00 | 22.5 | 8.0 | 2.5 | 0.0132 | 8.0 | 15.0 | 0.0032 | 4.8 |
| 1440.00 | 23.0 | 7.5 | 2.2 | 0.0132 | 7.5 | 15.1 | 0.0013 | 4.1 |

### Fractional Components

| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 10.4 | 30.0 | 35.0 | 75.4 | 19.1 | 5.5 | 24.6 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| 0.0235 | 0.0395 | 0.0565 | 0.1015 | 0.2718 | 0.4332 | 1.1542 | 1.5199 | 2.0548 | 2.9141 |

| Fineness Modulus | $C_u$ | $C_c$ |
|---|---|---|
| 1.71 | 18.42 | 1.01 |

RF

## GRAIN SIZE DISTRIBUTION TEST DATA

12/2/2009

**Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001
**Project Number:** 29-197
**Location:** B2-CAP3-0507
**Sample Number:** 20091233 dup
**Material Description:** Sediment
**Tested by:** S. Hornberger **Checked by:** R. Fristrom

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer |
|---|---|---|---|---|---|
| 81.45 | 12.63 | 1 | 12.63 | 12.63 | 100.0 |
| | | #4 | 12.63 | 12.63 | 100.0 |
| | | #10 | 19.96 | 12.63 | 89.3 |

### Hydrometer Test Data

**Hydrometer test uses material passing** #10
**Percent passing #10 based upon complete sample =** 89.3
**Weight of hydrometer sample =**50.0
**Automatic temperature correction**
**Composite correction (fluid density and meniscus height) at 20 deg. C =** -6
**Meniscus correction only =** 0.0
**Specific gravity of solids =** 2.65
**Hydrometer type =** 152H
**Hydrometer effective depth equation: L =** 16.294964 - 0.164 **x Rm**

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.0 | 12.0 | 6.7 | 0.0132 | 12.0 | 14.3 | 0.0352 | 11.9 |
| 5.00 | 23.0 | 10.0 | 4.7 | 0.0132 | 10.0 | 14.7 | 0.0225 | 8.3 |
| 15.00 | 23.0 | 9.0 | 3.7 | 0.0132 | 9.0 | 14.8 | 0.0131 | 6.5 |
| 30.00 | 23.0 | 9.0 | 3.7 | 0.0132 | 9.0 | 14.8 | 0.0092 | 6.5 |
| 60.00 | 23.0 | 8.5 | 3.2 | 0.0132 | 8.5 | 14.9 | 0.0066 | 5.7 |
| 250.00 | 22.5 | 7.5 | 2.0 | 0.0132 | 7.5 | 15.1 | 0.0032 | 3.6 |
| 1440.00 | 23.0 | 7.5 | 2.2 | 0.0132 | 7.5 | 15.1 | 0.0013 | 3.9 |

### Fractional Components

| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 10.7 | 31.3 | 35.8 | 77.8 | 17.5 | 4.7 | 22.2 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| 0.0286 | 0.0460 | 0.0653 | 0.1151 | 0.2966 | 0.4640 | 1.1908 | 1.5538 | 2.0829 | 2.9334 |

| Fineness Modulus | $C_u$ | $C_c$ |
|---|---|---|
| 1.77 | 16.24 | 1.00 |

## GRAIN SIZE DISTRIBUTION TEST DATA

12/2/2009

**Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001
**Project Number:** 29-197
**Location:** B2-CAP3-0507
**Sample Number:** 20091233 trip
**Material Description:** Sediment
**Tested by:** S. Hornberger **Checked by:** R. Fristrom

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer |
|---|---|---|---|---|---|
| 77.68 | 12.71 | 1 | 12.71 | 12.71 | 100.0 |
| | | #4 | 12.71 | 12.71 | 100.0 |
| | | #10 | 21.11 | 12.71 | 87.1 |

### Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 87.1
Weight of hydrometer sample =50.0
Automatic temperature correction
Composite correction (fluid density and meniscus height) at 20 deg. C = -6
Meniscus correction only = 0.0
Specific gravity of solids = 2.65
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.0 | 12.0 | 6.7 | 0.0132 | 12.0 | 14.3 | 0.0352 | 11.6 |
| 5.00 | 23.0 | 10.0 | 4.7 | 0.0132 | 10.0 | 14.7 | 0.0225 | 8.1 |
| 15.00 | 23.0 | 9.0 | 3.7 | 0.0132 | 9.0 | 14.8 | 0.0131 | 6.4 |
| 30.00 | 23.0 | 9.0 | 3.7 | 0.0132 | 9.0 | 14.8 | 0.0092 | 6.4 |
| 60.00 | 23.0 | 8.0 | 2.7 | 0.0132 | 8.0 | 15.0 | 0.0066 | 4.6 |
| 250.00 | 22.5 | 7.5 | 2.0 | 0.0132 | 7.5 | 15.1 | 0.0032 | 3.5 |
| 1440.00 | 23.0 | 7.5 | 2.2 | 0.0132 | 7.5 | 15.1 | 0.0013 | 3.8 |

### Fractional Components

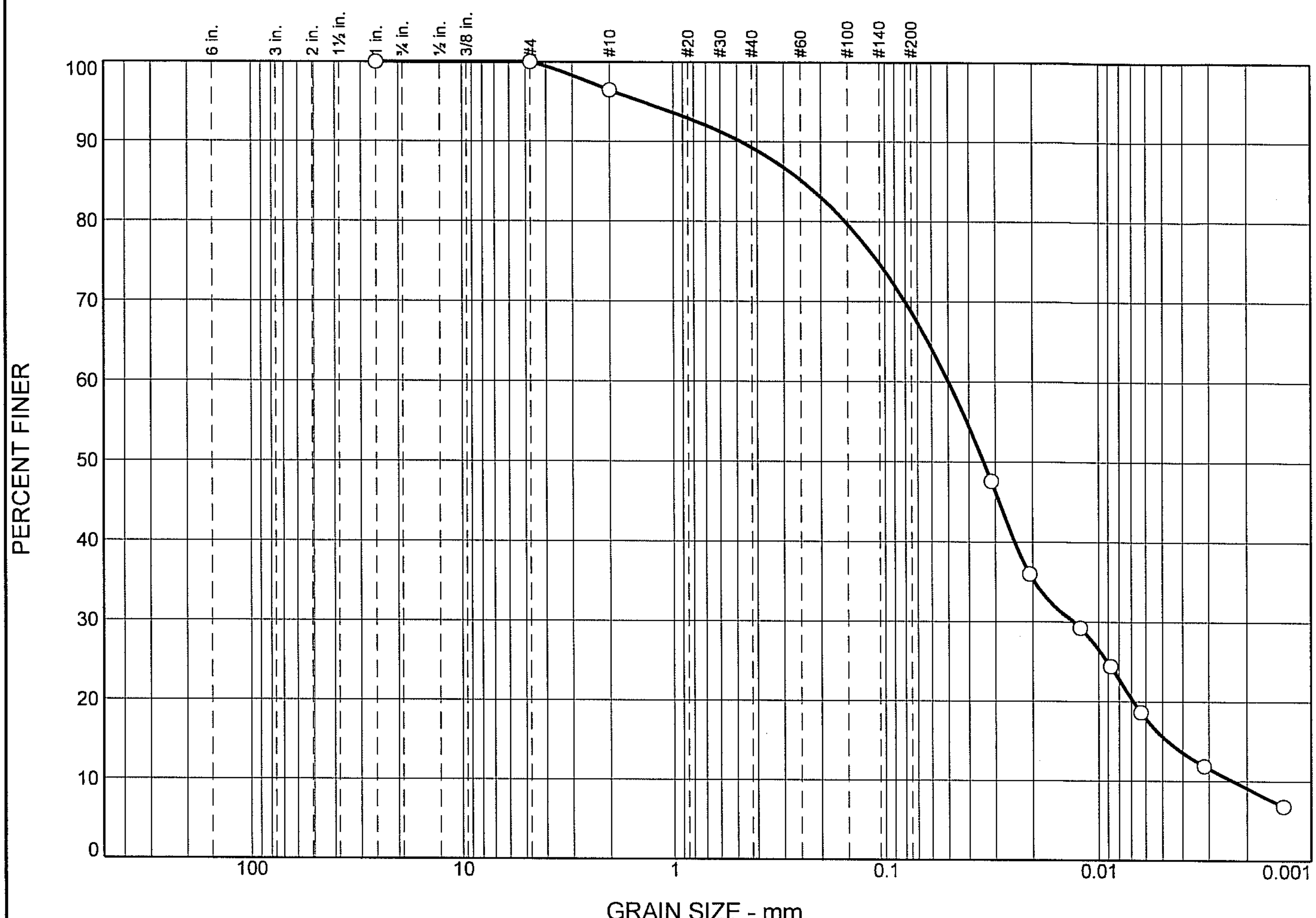
| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 12.9 | 32.2 | 33.6 | 78.7 | 17.2 | 4.1 | 21.3 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| 0.0294 | 0.0479 | 0.0691 | 0.1255 | 0.3391 | 0.5390 | 1.3898 | 1.7932 | 2.3490 | 3.1788 |

| Fineness Modulus | $C_u$ | $C_c$ |
|---|---|---|
| 1.90 | 18.33 | 0.99 |

RF

# Particle Size Distribution Report




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 0.0 | 0.0 | 0.0 | 3.5 | 7.2 | 20.6 | 53.1 | 15.6 |
| | | | | | | | | |
| | | | | | | | | |

| X | LL | PL | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | | | 0.2443 | 0.0499 | 0.0341 | 0.0131 | 0.0047 | 0.0023 | 1.47 | 21.45 |
| | | | | | | | | | | |
| | | | | | | | | | | |

| Material Description | USCS | AASHTO |
|---|---|---|
| ○ Sediment | | |

**Project No.** 29-197 **Client:** Battelle

**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001

○ **Source of Sample:** B2-CAP1-GRAB **Sample Number:** 20091234

**Aqua Survey, Inc.**

**Flemington, NJ**

**Remarks:**

Figure

**Tested By:** S. Hornberger **Checked By:** R. Fristrom

# GRAIN SIZE DISTRIBUTION TEST DATA

12/2/2009

**Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001
**Project Number:** 29-197
**Location:** B2-CAP1-GRAB
**Sample Number:** 20091234
**Material Description:** Sediment
**Tested by:** S. Hornberger **Checked by:** R. Fristrom

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer |
|---|---|---|---|---|---|
| 80.76 | 12.64 | 1 | 12.64 | 12.64 | 100.0 |
| | | #4 | 12.64 | 12.64 | 100.0 |
| | | #10 | 15.04 | 12.64 | 96.5 |

## Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 96.5
Weight of hydrometer sample =50.0
Automatic temperature correction
  Composite correction (fluid density and meniscus height) at 20 deg. C = -6
Meniscus correction only = 0.0
Specific gravity of solids = 2.65
Hydrometer type = 152H
  Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.0 | 30.0 | 24.7 | 0.0132 | 30.0 | 11.4 | 0.0314 | 47.6 |
| 5.00 | 23.0 | 24.0 | 18.7 | 0.0132 | 24.0 | 12.4 | 0.0207 | 36.0 |
| 15.00 | 23.0 | 20.5 | 15.2 | 0.0132 | 20.5 | 12.9 | 0.0122 | 29.3 |
| 30.00 | 23.0 | 18.0 | 12.7 | 0.0132 | 18.0 | 13.3 | 0.0088 | 24.4 |
| 60.00 | 23.0 | 15.0 | 9.7 | 0.0132 | 15.0 | 13.8 | 0.0063 | 18.6 |
| 250.00 | 23.0 | 11.5 | 6.2 | 0.0132 | 11.5 | 14.4 | 0.0032 | 11.9 |
| 1440.00 | 22.5 | 9.0 | 3.5 | 0.0132 | 9.0 | 14.8 | 0.0013 | 6.8 |

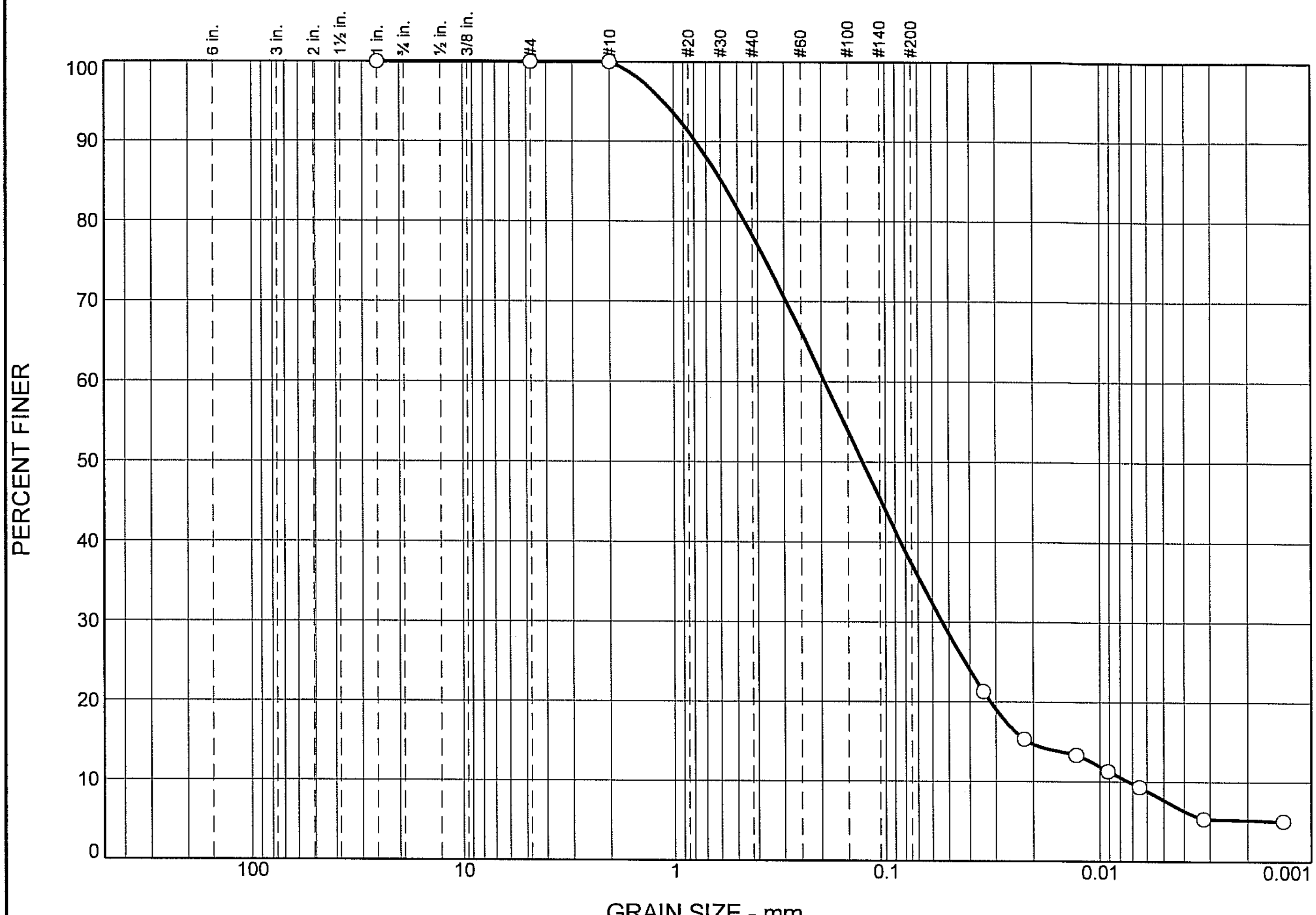
## Fractional Components

| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 3.5 | 7.2 | 20.6 | 31.3 | 53.1 | 15.6 | 68.7 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| 0.0023 | 0.0047 | 0.0069 | 0.0131 | 0.0341 | 0.0499 | 0.1540 | 0.2443 | 0.4776 | 1.4060 |

| Fineness Modulus | $C_u$ | $C_c$ |
|---|---|---|
| 0.51 | 21.45 | 1.47 |

# Particle Size Distribution Report




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 0.0 | 0.0 | 0.0 | 0.0 | 21.7 | 41.0 | 29.6 | 7.7 |
| | | | | | | | | |
| | | | | | | | | |

| ☒ | LL | PL | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | | | 0.5920 | 0.1928 | 0.1281 | 0.0538 | 0.0212 | 0.0073 | 2.06 | 26.44 |
| | | | | | | | | | | |
| | | | | | | | | | | |

| Material Description | USCS | AASHTO |
|---|---|---|
| ○ Sediment | | |

**Project No.** 29-197 **Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001

○ **Source of Sample:** B2-CAP2-GRAB **Sample Number:** 20091235

**Aqua Survey, Inc.**

**Flemington, NJ**

**Remarks:**

**Figure**

**Tested By:** S. Hornberger **Checked By:** R. Fristrom

## GRAIN SIZE DISTRIBUTION TEST DATA

12/2/2009

**Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001
**Project Number:** 29-197
**Location:** B2-CAP2-GRAB
**Sample Number:** 20091235
**Material Description:** Sediment
**Tested by:** S. Hornberger **Checked by:** R. Fristrom

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer |
|---|---|---|---|---|---|
| 77.65 | 12.72 | 1 | 12.72 | 12.72 | 100.0 |
| | | #4 | 12.72 | 12.72 | 100.0 |
| | | #10 | 12.72 | 12.72 | 100.0 |

### Hydrometer Test Data

**Hydrometer test uses material passing** #10
**Percent passing #10 based upon complete sample =** 100.0
**Weight of hydrometer sample =**50.0
**Automatic temperature correction**
**Composite correction (fluid density and meniscus height) at 20 deg. C =** -6
**Meniscus correction only =** 0.0
**Specific gravity of solids =** 2.65
**Hydrometer type =** 152H
**Hydrometer effective depth equation: L =** 16.294964 - 0.164 **x Rm**

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.0 | 16.0 | 10.7 | 0.0132 | 16.0 | 13.7 | 0.0344 | 21.3 |
| 5.00 | 23.0 | 13.0 | 7.7 | 0.0132 | 13.0 | 14.2 | 0.0221 | 15.3 |
| 15.00 | 23.0 | 12.0 | 6.7 | 0.0132 | 12.0 | 14.3 | 0.0129 | 13.3 |
| 30.00 | 23.0 | 11.0 | 5.7 | 0.0132 | 11.0 | 14.5 | 0.0091 | 11.3 |
| 60.00 | 23.0 | 10.0 | 4.7 | 0.0132 | 10.0 | 14.7 | 0.0065 | 9.3 |
| 250.00 | 23.0 | 8.0 | 2.7 | 0.0132 | 8.0 | 15.0 | 0.0032 | 5.3 |
| 1440.00 | 22.5 | 8.0 | 2.5 | 0.0132 | 8.0 | 15.0 | 0.0013 | 5.1 |

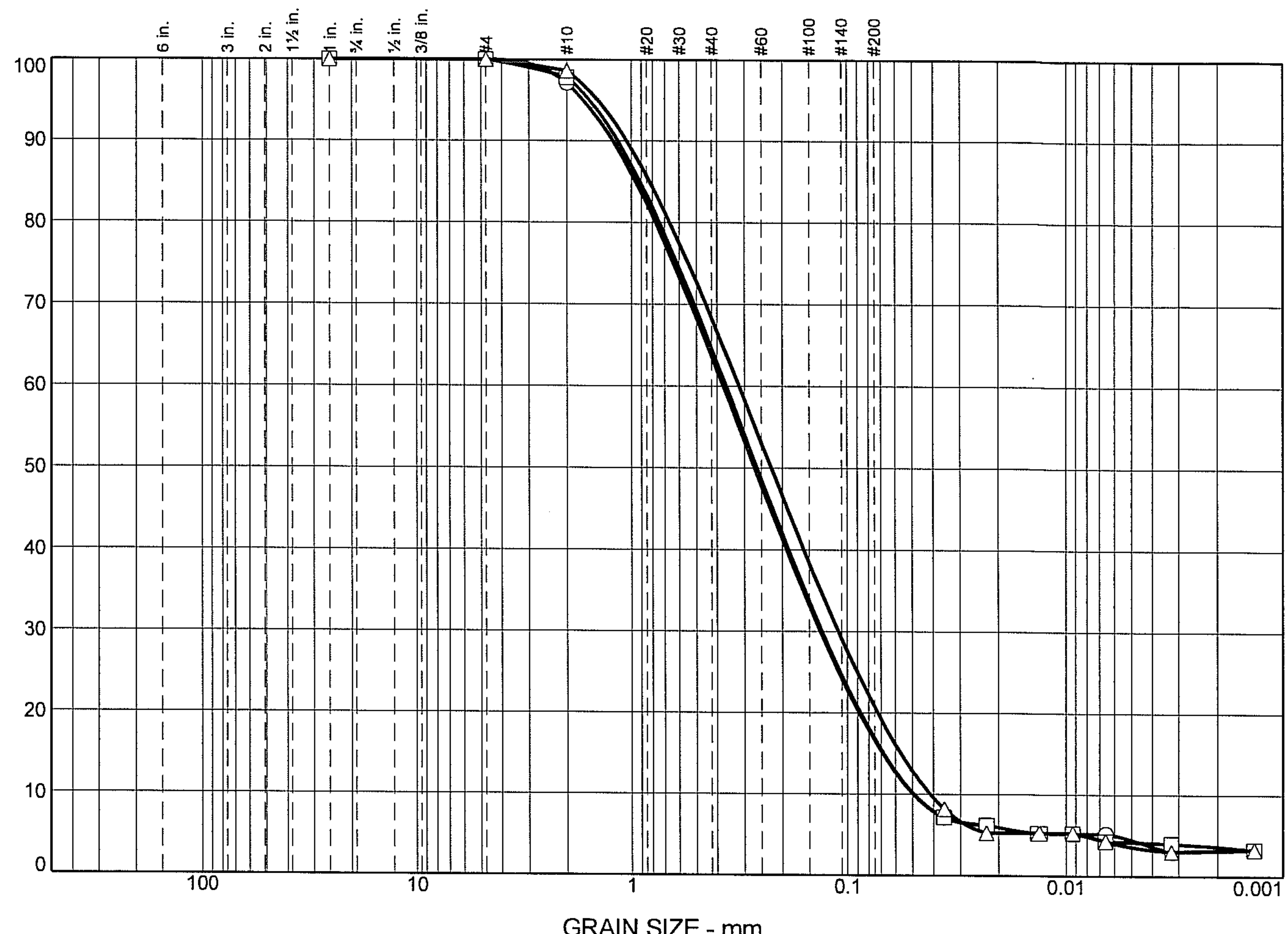
### Fractional Components

| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 21.7 | 41.0 | 62.7 | 29.6 | 7.7 | 37.3 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| 0.0073 | 0.0212 | 0.0318 | 0.0538 | 0.1281 | 0.1928 | 0.4605 | 0.5920 | 0.7857 | 1.1107 |

| Fineness Modulus | $C_u$ | $C_c$ |
|---|---|---|
| 0.95 | 26.44 | 2.06 |

# Particle Size Distribution Report




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 0.0 | 0.0 | 0.0 | 2.9 | 33.4 | 47.1 | 12.1 | 4.5 |
| □ | 0.0 | 0.0 | 0.0 | 2.2 | 33.2 | 47.8 | 12.6 | 4.2 |
| △ | 0.0 | 0.0 | 0.0 | 1.4 | 30.3 | 47.6 | 17.1 | 3.6 |

| | LL | PL | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | | | 0.9565 | 0.3752 | 0.2683 | 0.1333 | 0.0688 | 0.0496 | 0.95 | 7.56 |
| □ | | | 0.9127 | 0.3639 | 0.2615 | 0.1311 | 0.0682 | 0.0493 | 0.96 | 7.39 |
| △ | | | 0.8236 | 0.3169 | 0.2248 | 0.1100 | 0.0566 | 0.0414 | 0.92 | 7.65 |

| Material Description | USCS | AASHTO |
|---|---|---|
| ○ Sediment | | |
| □ Sediment | | |
| △ Sediment | | |

**Project No.** 29-197 **Client:** Battelle

**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001

○ **Source of Sample:** B2-CAP3-GRAB **Sample Number:** 20091236

□ **Source of Sample:** B2-CAP3-GRAB **Sample Number:** 20091236 dup

△ **Source of Sample:** B2-CAP3-GRAB **Sample Number:** 20091236 trip

**Aqua Survey, Inc.**

**Flemington, NJ**

**Remarks:**

RF

**Figure**

**Tested By:** S. Hornberger **Checked By:** R. Fristrom

# GRAIN SIZE DISTRIBUTION TEST DATA

12/2/2009

**Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001
**Project Number:** 29-197
**Location:** B2-CAP3-GRAB
**Sample Number:** 20091236
**Material Description:** Sediment
**Tested by:** S. Hornberger **Checked by:** R. Fristrom

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer |
|---|---|---|---|---|---|
| 65.72 | 12.85 | 1 | 12.85 | 12.85 | 100.0 |
| | | #4 | 12.85 | 12.85 | 100.0 |
| | | #10 | 14.38 | 12.85 | 97.1 |

## Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 97.1
Weight of hydrometer sample =50.0
Automatic temperature correction
Composite correction (fluid density and meniscus height) at 20 deg. C = -6
Meniscus correction only = 0.0
Specific gravity of solids = 2.65
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.0 | 9.0 | 3.7 | 0.0132 | 9.0 | 14.8 | 0.0358 | 7.1 |
| 5.00 | 23.0 | 8.5 | 3.2 | 0.0132 | 8.5 | 14.9 | 0.0227 | 6.1 |
| 15.00 | 23.0 | 8.0 | 2.7 | 0.0132 | 8.0 | 15.0 | 0.0131 | 5.2 |
| 30.00 | 23.0 | 8.0 | 2.7 | 0.0132 | 8.0 | 15.0 | 0.0093 | 5.2 |
| 60.00 | 23.0 | 8.0 | 2.7 | 0.0132 | 8.0 | 15.0 | 0.0066 | 5.2 |
| 250.00 | 22.5 | 7.0 | 1.5 | 0.0132 | 7.0 | 15.1 | 0.0033 | 3.0 |
| 1440.00 | 23.0 | 7.0 | 1.7 | 0.0132 | 7.0 | 15.1 | 0.0013 | 3.2 |

## Fractional Components

| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 2.9 | 33.4 | 47.1 | 83.4 | 12.1 | 4.5 | 16.6 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| 0.0496 | 0.0688 | 0.0883 | 0.1333 | 0.2683 | 0.3752 | 0.7733 | 0.9565 | 1.2204 | 1.6660 |

| Fineness Modulus | $C_u$ | $C_c$ |
|---|---|---|
| 1.52 | 7.56 | 0.95 |

# GRAIN SIZE DISTRIBUTION TEST DATA

12/2/2009

**Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001
**Project Number:** 29-197
**Location:** B2-CAP3-GRAB
**Sample Number:** 20091236 dup
**Material Description:** Sediment
**Tested by:** S. Hornberger **Checked by:** R. Fristrom

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer |
|---|---|---|---|---|---|
| 70.13 | 12.73 | 1 | 12.73 | 12.73 | 100.0 |
| | | #4 | 12.73 | 12.73 | 100.0 |
| | | #10 | 13.98 | 12.73 | 97.8 |

## Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 97.8
Weight of hydrometer sample =50.0
Automatic temperature correction
Composite correction (fluid density and meniscus height) at 20 deg. C = -6
Meniscus correction only = 0.0
Specific gravity of solids = 2.65
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.0 | 9.0 | 3.7 | 0.0132 | 9.0 | 14.8 | 0.0358 | 7.2 |
| 5.00 | 23.0 | 8.5 | 3.2 | 0.0132 | 8.5 | 14.9 | 0.0227 | 6.2 |
| 15.00 | 23.0 | 8.0 | 2.7 | 0.0132 | 8.0 | 15.0 | 0.0131 | 5.2 |
| 30.00 | 23.0 | 8.0 | 2.7 | 0.0132 | 8.0 | 15.0 | 0.0093 | 5.2 |
| 60.00 | 23.0 | 7.5 | 2.2 | 0.0132 | 7.5 | 15.1 | 0.0066 | 4.2 |
| 250.00 | 22.5 | 7.5 | 2.0 | 0.0132 | 7.5 | 15.1 | 0.0032 | 4.0 |
| 1440.00 | 23.0 | 7.0 | 1.7 | 0.0132 | 7.0 | 15.1 | 0.0013 | 3.3 |

## Fractional Components

| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 2.2 | 33.2 | 47.8 | 83.2 | 12.6 | 4.2 | 16.8 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| 0.0493 | 0.0682 | 0.0872 | 0.1311 | 0.2615 | 0.3639 | 0.7412 | 0.9127 | 1.1574 | 1.5615 |

| Fineness Modulus | $C_u$ | $C_c$ |
|---|---|---|
| 1.49 | 7.39 | 0.96 |

## GRAIN SIZE DISTRIBUTION TEST DATA

12/2/2009

**Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001
**Project Number:** 29-197
**Location:** B2-CAP3-GRAB
**Sample Number:** 20091236 trip
**Material Description:** Sediment
**Tested by:** S. Hornberger **Checked by:** R. Fristrom

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer |
|---|---|---|---|---|---|
| 79.49 | 12.73 | 1 | 12.73 | 12.73 | 100.0 |
| | | #4 | 12.73 | 12.73 | 100.0 |
| | | #10 | 13.67 | 12.73 | 98.6 |

### Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 98.6
Weight of hydrometer sample =50.0
Automatic temperature correction
Composite correction (fluid density and meniscus height) at 20 deg. C = -6
Meniscus correction only = 0.0
Specific gravity of solids = 2.65
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.0 | 9.5 | 4.2 | 0.0132 | 9.5 | 14.7 | 0.0357 | 8.2 |
| 5.00 | 23.0 | 8.0 | 2.7 | 0.0132 | 8.0 | 15.0 | 0.0228 | 5.3 |
| 15.00 | 23.0 | 8.0 | 2.7 | 0.0132 | 8.0 | 15.0 | 0.0131 | 5.3 |
| 30.00 | 23.0 | 8.0 | 2.7 | 0.0132 | 8.0 | 15.0 | 0.0093 | 5.3 |
| 60.00 | 23.0 | 7.5 | 2.2 | 0.0132 | 7.5 | 15.1 | 0.0066 | 4.3 |
| 250.00 | 22.5 | 7.0 | 1.5 | 0.0132 | 7.0 | 15.1 | 0.0033 | 3.0 |
| 1440.00 | 23.0 | 7.0 | 1.7 | 0.0132 | 7.0 | 15.1 | 0.0013 | 3.3 |

### Fractional Components

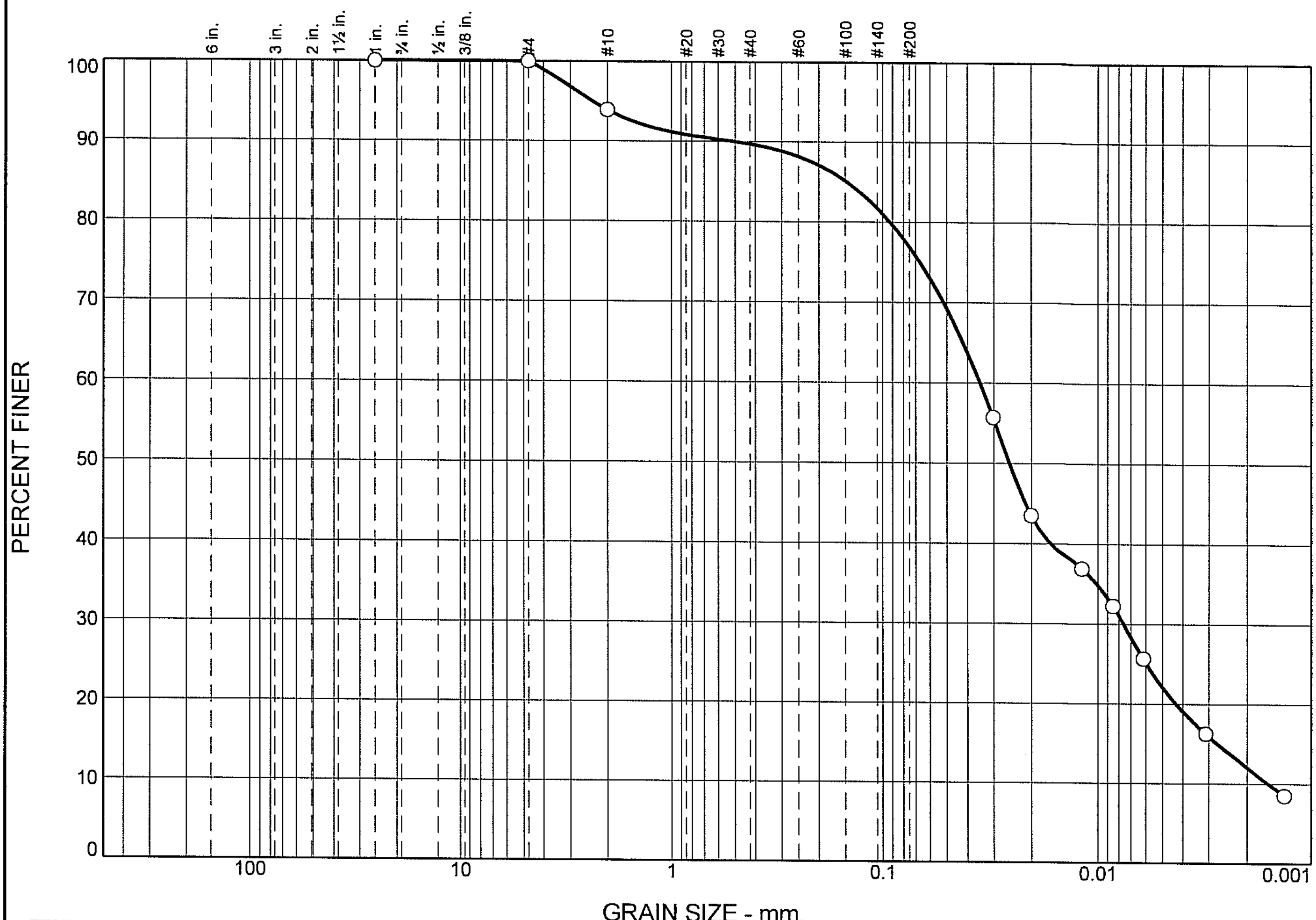
| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 1.4 | 30.3 | 47.6 | 79.3 | 17.1 | 3.6 | 20.7 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| 0.0414 | 0.0566 | 0.0725 | 0.1100 | 0.2248 | 0.3169 | 0.6638 | 0.8236 | 1.0526 | 1.4292 |

| Fineness Modulus | $C_u$ | $C_c$ |
|---|---|---|
| 1.35 | 7.65 | 0.92 |

RF

# Particle Size Distribution Report




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 0.0 | 0.0 | 0.0 | 6.1 | 4.2 | 12.8 | 54.8 | 22.1 |
| | | | | | | | | |
| | | | | | | | | |

| X | LL | PL | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | | | 0.1477 | 0.0348 | 0.0253 | 0.0076 | 0.0027 | 0.0016 | 1.05 | 21.97 |
| | | | | | | | | | | |
| | | | | | | | | | | |

| Material Description | USCS | AASHTO |
|---|---|---|
| ○ Sediment | | |

**Project No.** 29-197 **Client:** Battelle

**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001

○ **Source of Sample:** B2-OFF1-GRAB **Sample Number:** 20091237

**Aqua Survey, Inc.**

**Flemington, NJ**

**Remarks:**

○ material retained on #10 sieve contained shell fragment

**Figure**

**Tested By:** S. Hornberger **Checked By:** R. Fristrom

# GRAIN SIZE DISTRIBUTION TEST DATA

12/2/2009

**Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001
**Project Number:** 29-197
**Location:** B2-OFF1-GRAB
**Sample Number:** 20091237
**Material Description:** Sediment
**Testing Remarks:** material retained on #10 sieve contained shell fragment
**Tested by:** S. Hornberger **Checked by:** R. Fristrom

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer |
|---|---|---|---|---|---|
| 75.99 | 12.70 | 1 | 12.70 | 12.70 | 100.0 |
| | | #4 | 12.70 | 12.70 | 100.0 |
| | | #10 | 16.55 | 12.70 | 93.9 |

## Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 93.9
Weight of hydrometer sample =50.0
Automatic temperature correction
Composite correction (fluid density and meniscus height) at 20 deg. C = -6
Meniscus correction only = 0.0
Specific gravity of solids = 2.65
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.0 | 35.0 | 29.7 | 0.0132 | 35.0 | 10.6 | 0.0302 | 55.7 |
| 5.00 | 23.0 | 28.5 | 23.2 | 0.0132 | 28.5 | 11.6 | 0.0201 | 43.5 |
| 15.00 | 23.0 | 25.0 | 19.7 | 0.0132 | 25.0 | 12.2 | 0.0119 | 36.9 |
| 30.00 | 23.0 | 22.5 | 17.2 | 0.0132 | 22.5 | 12.6 | 0.0085 | 32.2 |
| 60.00 | 23.0 | 19.0 | 13.7 | 0.0132 | 19.0 | 13.2 | 0.0062 | 25.7 |
| 250.00 | 23.0 | 14.0 | 8.7 | 0.0132 | 14.0 | 14.0 | 0.0031 | 16.3 |
| 1440.00 | 22.5 | 10.0 | 4.5 | 0.0132 | 10.0 | 14.7 | 0.0013 | 8.5 |

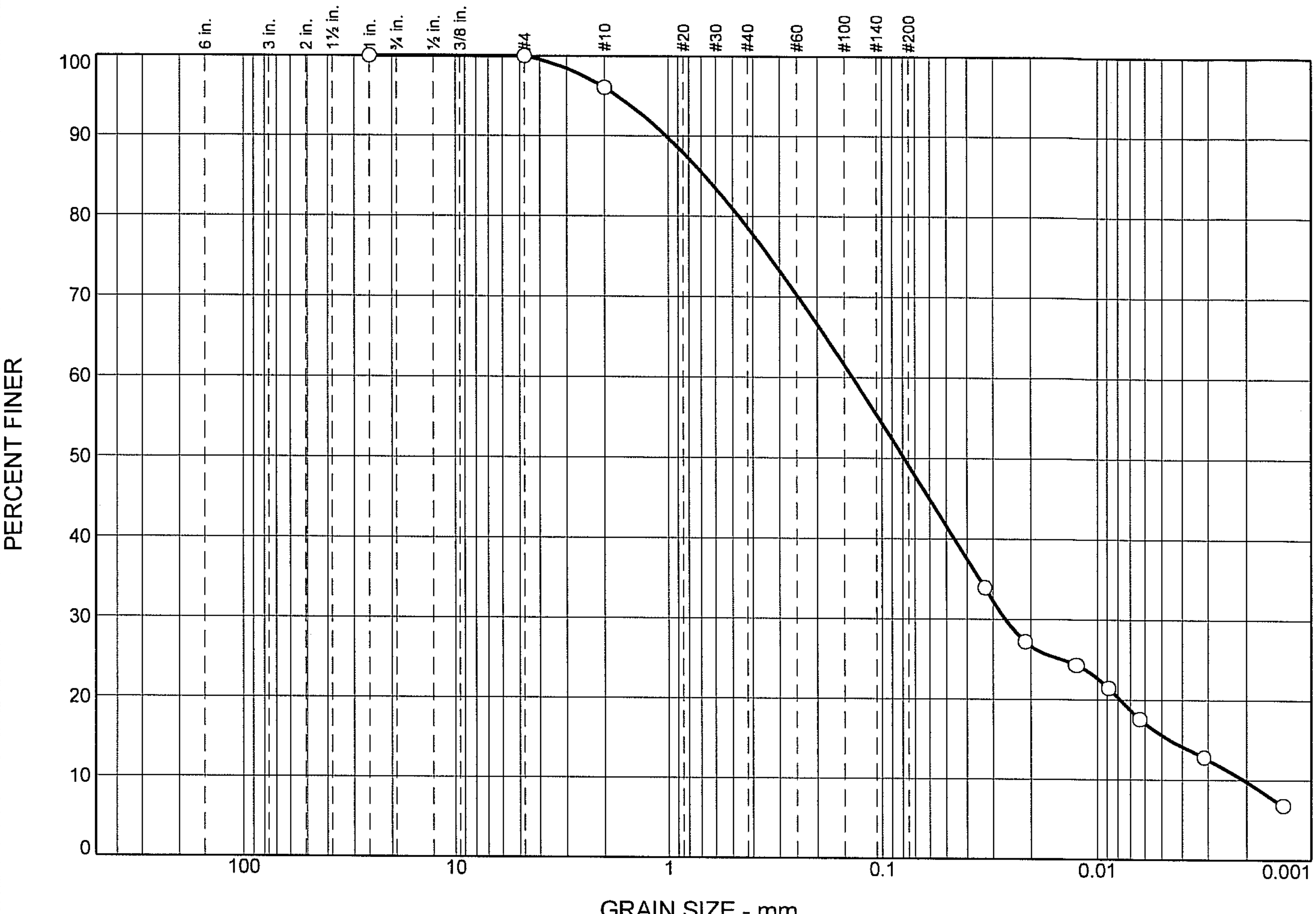
## Fractional Components

| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 6.1 | 4.2 | 12.8 | 23.1 | 54.8 | 22.1 | 76.9 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| 0.0016 | 0.0027 | 0.0043 | 0.0076 | 0.0253 | 0.0348 | 0.0923 | 0.1477 | 0.5062 | 2.3542 |

| Fineness Modulus | $C_u$ | $C_c$ |
|---|---|---|
| 0.49 | 21.97 | 1.05 |

# Particle Size Distribution Report




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 0.0 | 0.0 | 0.0 | 3.9 | 17.5 | 29.5 | 33.5 | 15.6 |

| | LL | PL | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| ○ | | | 0.6727 | 0.1370 | 0.0788 | 0.0263 | 0.0046 | 0.0021 | 2.44 | 66.48 |

| Material Description | USCS | AASHTO |
|---|---|---|
| ○ Sediment | | |

**Project No.** 29-197 **Client:** Battelle

**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001

○ **Source of Sample:** B2-OFF2-GRAB **Sample Number:** 20091238

**Remarks:**

○ material retained on #10 sieve contained shell fragment

**Aqua Survey, Inc.**

**Flemington, NJ**

**Figure**

**Tested By:** S. Hornberger **Checked By:** R. Fristrom

## GRAIN SIZE DISTRIBUTION TEST DATA

12/2/2009

**Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001
**Project Number:** 29-197
**Location:** B2-OFF2-GRAB
**Sample Number:** 20091238
**Material Description:** Sediment
**Testing Remarks:** material retained on #10 sieve contained shell fragment
**Tested by:** S. Hornberger **Checked by:** R. Fristrom

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer |
|---|---|---|---|---|---|
| 75.71 | 12.59 | 1 | 12.59 | 12.59 | 100.0 |
| | | #4 | 12.59 | 12.59 | 100.0 |
| | | #10 | 15.08 | 12.59 | 96.1 |

### Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 96.1
Weight of hydrometer sample =50.0
Automatic temperature correction
Composite correction (fluid density and meniscus height) at 20 deg. C = -6
Meniscus correction only = 0.0
Specific gravity of solids = 2.65
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.0 | 23.0 | 17.7 | 0.0132 | 23.0 | 12.5 | 0.0329 | 33.9 |
| 5.00 | 23.0 | 19.5 | 14.2 | 0.0132 | 19.5 | 13.1 | 0.0213 | 27.2 |
| 15.00 | 23.0 | 18.0 | 12.7 | 0.0132 | 18.0 | 13.3 | 0.0124 | 24.3 |
| 30.00 | 23.0 | 16.5 | 11.2 | 0.0132 | 16.5 | 13.6 | 0.0089 | 21.4 |
| 60.00 | 23.0 | 14.5 | 9.2 | 0.0132 | 14.5 | 13.9 | 0.0063 | 17.6 |
| 250.00 | 23.0 | 12.0 | 6.7 | 0.0132 | 12.0 | 14.3 | 0.0031 | 12.8 |
| 1440.00 | 22.5 | 9.0 | 3.5 | 0.0132 | 9.0 | 14.8 | 0.0013 | 6.8 |

### Fractional Components

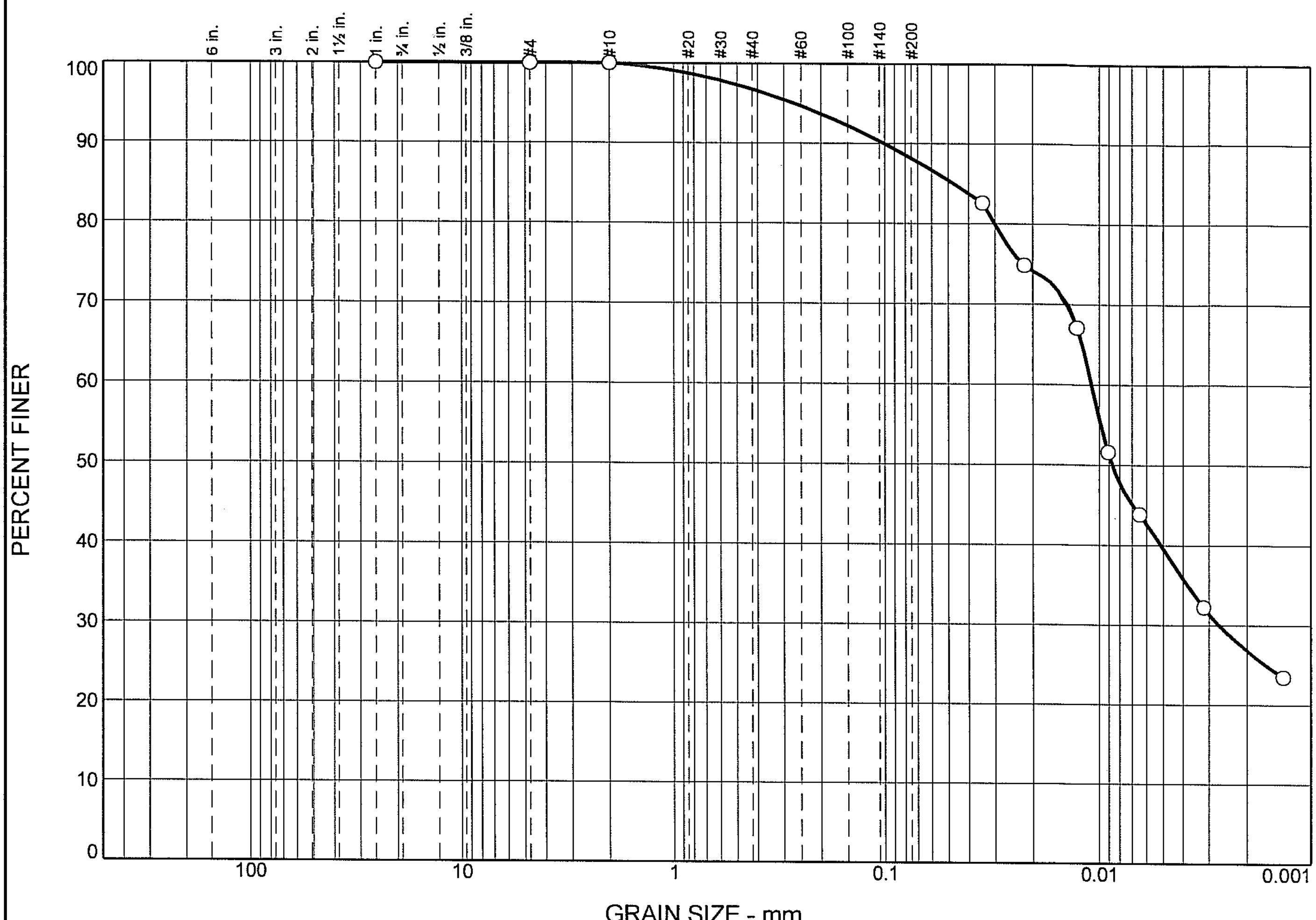
| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 3.9 | 17.5 | 29.5 | 50.9 | 33.5 | 15.6 | 49.1 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| 0.0021 | 0.0046 | 0.0078 | 0.0263 | 0.0788 | 0.1370 | 0.4670 | 0.6727 | 1.0224 | 1.7354 |

| Fineness Modulus | $C_u$ | $C_c$ |
|---|---|---|
| 0.93 | 66.48 | 2.44 |

Aqua Survey, Inc.

# Particle Size Distribution Report




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| o | 0.0 | 0.0 | 0.0 | 0.0 | 3.3 | 8.5 | 48.6 | 39.6 |
| | | | | | | | | |
| | | | | | | | | |

| X | LL | PL | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| o | | | 0.0474 | 0.0109 | 0.0087 | 0.0027 | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

| Material Description | USCS | AASHTO |
|---|---|---|
| o Sediment | | |

**Project No.** 29-197 **Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001

o **Source of Sample:** B2-CAP1-TRAP **Sample Number:** 20091255

**Remarks:**
o less than 50 grams in hydrometer

RF

**Aqua Survey, Inc.**

**Flemington, NJ**

**Figure**

**Tested By:** S. Hornberger **Checked By:** R. Fristrom

## GRAIN SIZE DISTRIBUTION TEST DATA

12/2/2009

**Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001
**Project Number:** 29-197
**Location:** B2-CAP1-TRAP
**Sample Number:** 20091255
**Material Description:** Sediment
**Testing Remarks:** less than 50 grams in hydrometer
**Tested by:** S. Hornberger **Checked by:** R. Fristrom

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer |
|---|---|---|---|---|---|
| 25.81 | 12.78 | 1 | 12.78 | 12.78 | 100.0 |
| | | #4 | 12.78 | 12.78 | 100.0 |
| | | #10 | 12.78 | 12.78 | 100.0 |

### Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =12.913
Automatic temperature correction
Composite correction (fluid density and meniscus height) at 20 deg. C = -6
Meniscus correction only = 0.0
Specific gravity of solids = 2.65
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.0 | 16.0 | 10.7 | 0.0132 | 16.0 | 13.7 | 0.0344 | 82.6 |
| 5.00 | 23.0 | 15.0 | 9.7 | 0.0132 | 15.0 | 13.8 | 0.0219 | 74.8 |
| 15.00 | 23.0 | 14.0 | 8.7 | 0.0132 | 14.0 | 14.0 | 0.0127 | 67.1 |
| 30.00 | 23.0 | 12.0 | 6.7 | 0.0132 | 12.0 | 14.3 | 0.0091 | 51.6 |
| 60.00 | 23.0 | 11.0 | 5.7 | 0.0132 | 11.0 | 14.5 | 0.0065 | 43.9 |
| 250.00 | 23.0 | 9.5 | 4.2 | 0.0132 | 9.5 | 14.7 | 0.0032 | 32.2 |
| 1440.00 | 22.5 | 8.5 | 3.0 | 0.0132 | 8.5 | 14.9 | 0.0013 | 23.5 |

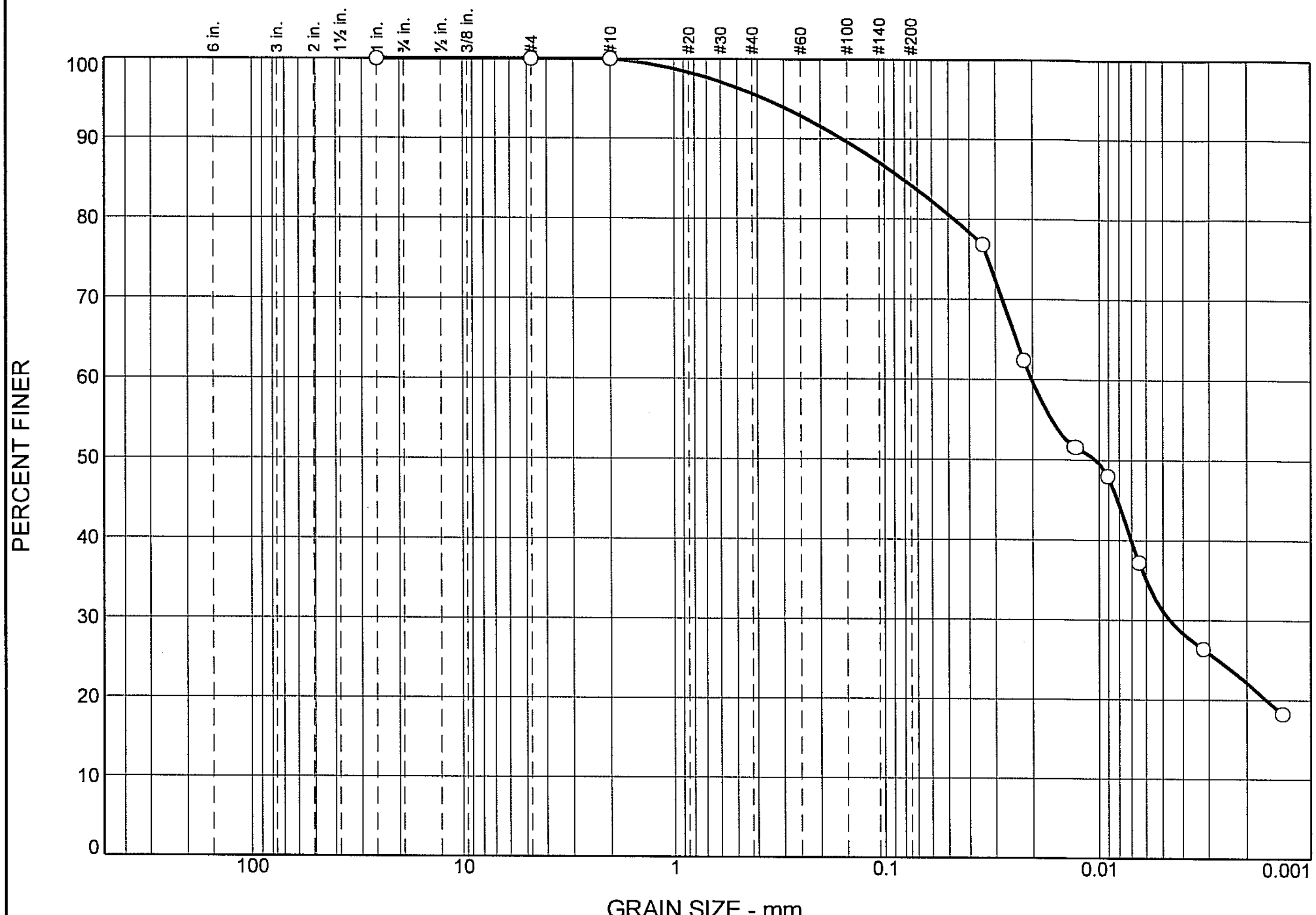
### Fractional Components

| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.3 | 8.5 | 11.8 | 48.6 | 39.6 | 88.2 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| | | | 0.0027 | 0.0087 | 0.0109 | 0.0302 | 0.0474 | 0.1010 | 0.2696 |

| Fineness Modulus |
|---|
| 0.15 |

# Particle Size Distribution Report




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| o | 0.0 | 0.0 | 0.0 | 0.0 | 4.3 | 11.5 | 53.0 | 31.2 |
| | | | | | | | | |
| | | | | | | | | |

| | LL | PL | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| o | | | 0.0821 | 0.0202 | 0.0104 | 0.0046 | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

| Material Description | USCS | AASHTO |
|---|---|---|
| o Sediment | | |

**Project No.** 29-197 **Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001

o **Source of Sample:** B2-CAP2-TRAP **Sample Number:** 20091256

**Aqua Survey, Inc.**

**Flemington, NJ**

**Remarks:**
o less than 50 grams in hydrometer

**Figure**

**Tested By:** S. Hornberger **Checked By:** R. Fristrom

## GRAIN SIZE DISTRIBUTION TEST DATA

12/2/2009

**Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001
**Project Number:** 29-197
**Location:** B2-CAP2-TRAP
**Sample Number:** 20091256
**Material Description:** Sediment
**Testing Remarks:** less than 50 grams in hydrometer
**Tested by:** S. Hornberger **Checked by:** R. Fristrom

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer |
|---|---|---|---|---|---|
| 26.60 | 12.61 | 1 | 12.61 | 12.61 | 100.0 |
| | | #4 | 12.61 | 12.61 | 100.0 |
| | | #10 | 12.61 | 12.61 | 100.0 |

### Hydrometer Test Data

Hydrometer test uses material passing #10
Percent passing #10 based upon complete sample = 100.0
Weight of hydrometer sample =13.881
Automatic temperature correction
Composite correction (fluid density and meniscus height) at 20 deg. C = -6
Meniscus correction only = 0.0
Specific gravity of solids = 2.65
Hydrometer type = 152H
Hydrometer effective depth equation: L = 16.294964 - 0.164 x Rm

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.0 | 16.0 | 10.7 | 0.0132 | 16.0 | 13.7 | 0.0344 | 76.8 |
| 5.00 | 23.0 | 14.0 | 8.7 | 0.0132 | 14.0 | 14.0 | 0.0220 | 62.4 |
| 15.00 | 23.0 | 12.5 | 7.2 | 0.0132 | 12.5 | 14.2 | 0.0128 | 51.6 |
| 30.00 | 23.0 | 12.0 | 6.7 | 0.0132 | 12.0 | 14.3 | 0.0091 | 48.0 |
| 60.00 | 23.0 | 10.5 | 5.2 | 0.0132 | 10.5 | 14.6 | 0.0065 | 37.2 |
| 250.00 | 23.0 | 9.0 | 3.7 | 0.0132 | 9.0 | 14.8 | 0.0032 | 26.4 |
| 1440.00 | 22.5 | 8.0 | 2.5 | 0.0132 | 8.0 | 15.0 | 0.0013 | 18.2 |

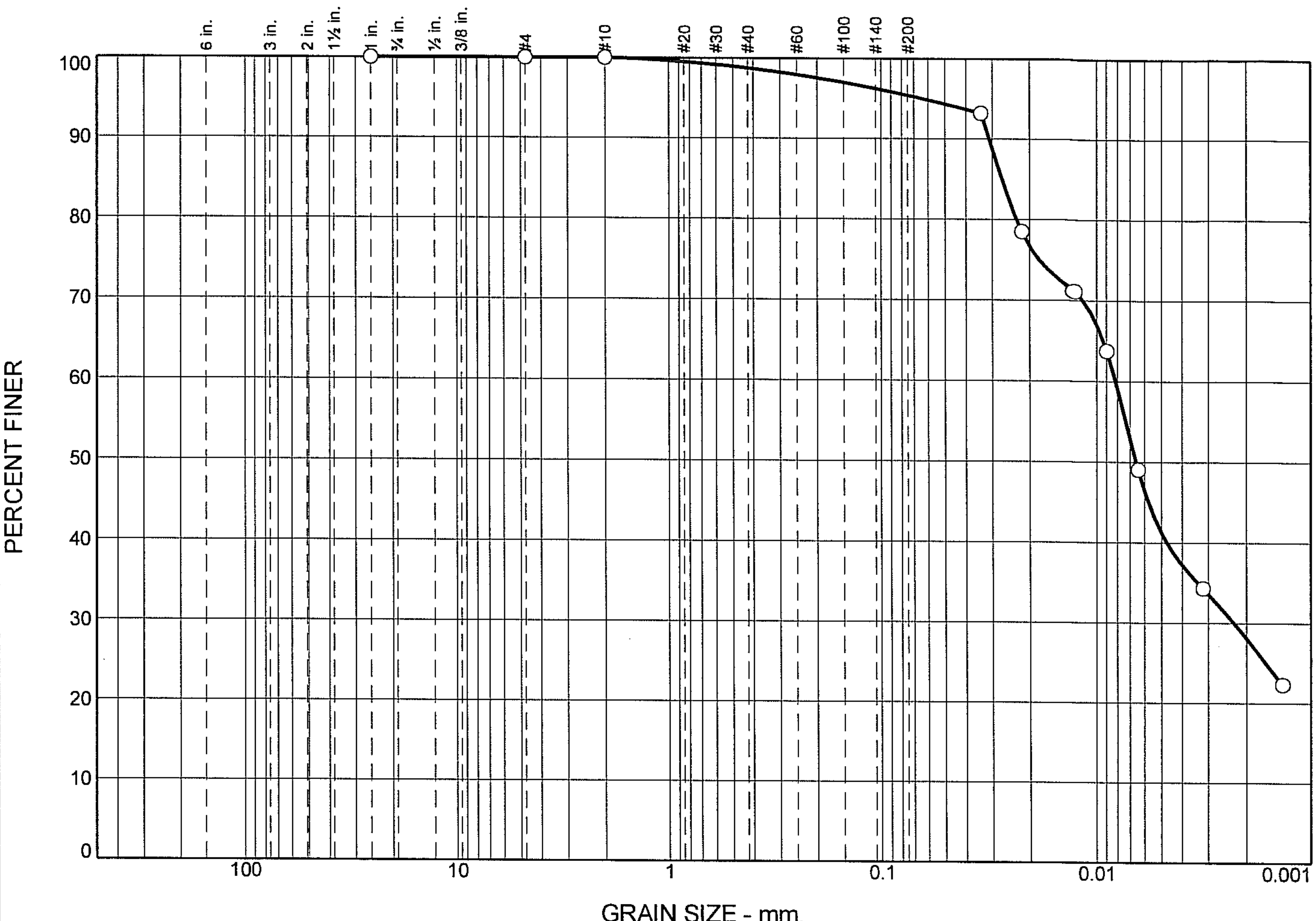
### Fractional Components

| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.3 | 11.5 | 15.8 | 53.0 | 31.2 | 84.2 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| | | 0.0016 | 0.0046 | 0.0104 | 0.0202 | 0.0472 | 0.0821 | 0.1579 | 0.3688 |

| Fineness Modulus |
|---|
| 0.20 |

# Particle Size Distribution Report




| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| o | 0.0 | 0.0 | 0.0 | 0.0 | 1.3 | 3.3 | 54.2 | 41.2 |
| | | | | | | | | |
| | | | | | | | | |

| X | LL | PL | $D_{85}$ | $D_{60}$ | $D_{50}$ | $D_{30}$ | $D_{15}$ | $D_{10}$ | $C_c$ | $C_u$ |
|---|---|---|---|---|---|---|---|---|---|---|
| o | | | 0.0270 | 0.0082 | 0.0066 | 0.0023 | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

| Material Description | USCS | AASHTO |
|---|---|---|
| o Sediment | | |

**Project No.** 29-197 **Client:** Battelle

**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001

o **Source of Sample:** B2-CAP3-TRAP **Sample Number:** 20091257

**Aqua Survey, Inc.**

**Flemington, NJ**

**Remarks:**

o less than 50 grams in hydrometer

**Figure**

**Tested By:** S. Hornberger **Checked By:** R. Fristrom

## GRAIN SIZE DISTRIBUTION TEST DATA

12/2/2009

**Client:** Battelle
**Project:** SPAWAR Quantico Embayment EMNR CG898574-0001
**Project Number:** 29-197
**Location:** B2-CAP3-TRAP
**Sample Number:** 20091257
**Material Description:** Sediment
**Testing Remarks:** less than 50 grams in hydrometer
**Tested by:** S. Hornberger **Checked by:** R. Fristrom

### Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer |
|---|---|---|---|---|---|
| 26.52 | 12.80 | 1 | 12.80 | 12.80 | 100.0 |
| | | #4 | 12.80 | 12.80 | 100.0 |
| | | #10 | 12.80 | 12.80 | 100.0 |

### Hydrometer Test Data

**Hydrometer test uses material passing** #10
**Percent passing #10 based upon complete sample =** 100.0
**Weight of hydrometer sample =**13.588
**Automatic temperature correction**
**Composite correction (fluid density and meniscus height) at 20 deg. C =** -6
**Meniscus correction only =** 0.0
**Specific gravity of solids =** 2.65
**Hydrometer type =** 152H
**Hydrometer effective depth equation: L =** 16.294964 - 0.164 **x Rm**

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K | Rm | Eff. Depth | Diameter (mm.) | Percent Finer |
|---|---|---|---|---|---|---|---|---|
| 2.00 | 23.0 | 18.0 | 12.7 | 0.0132 | 18.0 | 13.3 | 0.0340 | 93.2 |
| 5.00 | 23.0 | 16.0 | 10.7 | 0.0132 | 16.0 | 13.7 | 0.0217 | 78.5 |
| 15.00 | 23.0 | 15.0 | 9.7 | 0.0132 | 15.0 | 13.8 | 0.0126 | 71.1 |
| 30.00 | 23.0 | 14.0 | 8.7 | 0.0132 | 14.0 | 14.0 | 0.0090 | 63.8 |
| 60.00 | 23.0 | 12.0 | 6.7 | 0.0132 | 12.0 | 14.3 | 0.0064 | 49.0 |
| 250.00 | 23.0 | 10.0 | 4.7 | 0.0132 | 10.0 | 14.7 | 0.0032 | 34.3 |
| 1440.00 | 22.5 | 8.5 | 3.0 | 0.0132 | 8.5 | 14.9 | 0.0013 | 22.3 |

### Fractional Components

| Cobbles | Gravel | | | Sand | | | | Fines | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt | Clay | Total |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.3 | 3.3 | 4.6 | 54.2 | 41.2 | 95.4 |

| $D_{10}$ | $D_{15}$ | $D_{20}$ | $D_{30}$ | $D_{50}$ | $D_{60}$ | $D_{80}$ | $D_{85}$ | $D_{90}$ | $D_{95}$ |
|---|---|---|---|---|---|---|---|---|---|
| | | | 0.0023 | 0.0066 | 0.0082 | 0.0230 | 0.0270 | 0.0310 | 0.0641 |

| Fineness Modulus |
|---|
| 0.06 |

RF

Aqua Survey, Inc.

# AQUA SURVEY, INC

## PARTICLE SIZE BENCHSHEET

**JOB #:** 29-197

**CLIENT:** Battelle

**Balance:** Sart

**Calibration: YES** ✓ **NO** ____

| Sample ID | Container Mass (g) A | Sample and Container (g) B | Gravel Retained on #4 (4.75mm) and Container (g) C | Coarse Sand Retained on #10 (2.0mm) and Container (g) D | ~~% Gravel~~ Mass g to hydrometer |
|---|---|---|---|---|---|
| 2009 1222 | 12.695 | 43.328 | 12.695 | 12.695 | |
| 1223 | 12.614 | 63.577 | 12.614 | 12.614 | |
| 1224 | 12.746 | 69.596 | 12.746 | 12.746 | |
| 1225 | 12.720 | 62.590 | 12.720 | 12.720 | |
| 1226 | 12.729 | 78.788 | 12.729 | 12.729 | |
| 1227 | 10.936 | 99.670 | 10.936 | 10.936 | |
| 1228 | 12.818 | 54.670 | 12.818 | 12.818 | |
| 1229 | 10.842 | 89.860 | 10.842 | 10.928 | |
| 1230 | 12.736 | 104.893 | 12.736 | 12.736 | |
| 1231 | 12.616 | 116.347 | 12.616 | 14.935 * | |
| 1232 | 12.614 | 84.650 | 12.614 | 19.764 | |
| 1233 | 12.790 | 66.169 | 12.790 | 18.355 | |
| Dup 1233 | 12.627 | 81.452 | 12.627 | 19.962 | |
| Trip 1233 | 12.705 | 77.679 | 12.705 | 21.110 | |
| | | | | | |
| | | | | | |
| | | | | | |
| Date/ 10/26 Initials MM KM | | | | | |

**% Gravel = (C-A/B-A) * 100**

* shell

## HYDROMETRIC READINGS FOR GRAIN SIZE ANALYSIS

Job #: 29-197

Client: BAT

Water Temp: 23, 22.5, 23

Sample: 20091222 Grams Used: 30.49 DC: 6

| Clock Time | T | $R_h$ | Initials/Date |
|---|---|---|---|
| 9:00 | 0 | XXXX | AM 10/27 |
| 9:02 | 2 | 20 | |
| 9:05 | 5 | 16.5 | |
| 9:15 | 15 | 14 | |
| 9:30 | 30 | 13 | |
| 10:00 | 60 | 12 | |
| 1:10 | 250 | ~~9~~ 10 AM | |
| 9:00 | 1440 | 8 | AM 10/28 |

Sample: 1225 Grams Used: 49.56 DC: 6

| Clock Time | T | $R_h$ | Initials/Date |
|---|---|---|---|
| 9:12 | 0 | XXXX | AM 10/27 |
| 9:14 | 2 | 25.5 | |
| 9:17 | 5 | 21 | |
| 9:27 | 15 | 19 | |
| 9:42 | 30 | 17 | |
| 10:12 | 60 | 14.5 | |
| 1:22 | 250 | 12 | |
| 9:12 | 1440 | 10 | AM 10/28 |

Sample: 1223 Grams Used: 50.0 DC: 6

| Clock Time | T | $R_h$ | Initials/Date |
|---|---|---|---|
| 9:04 | 0 | XXXX | AM 10/27 |
| 9:06 | 2 | 26.5 | |
| 9:09 | 5 | 22 | |
| 9:19 | 15 | 19 | |
| 9:34 | 30 | 17 | |
| 10:04 | 60 | 15 | |
| 1:14 | 250 | 12 | |
| 9:04 | 1440 | 10 | AM 10/28 |

Sample: 1226 Grams Used: 50.0 DC: 6

| Clock Time | T | $R_h$ | Initials/Date |
|---|---|---|---|
| 9:16 | 0 | XXXX | AM 10/27 |
| 9:18 | 2 | 28 | |
| 9:21 | 5 | 23 | |
| 9:31 | 15 | 21 | |
| 9:46 | 30 | 18.5 | |
| 10:16 | 60 | 15 | |
| 1:26 | 250 | 12.5 | |
| 9:16 | 1440 | 10.5 | AM 10/28 |

Sample: 1224 Grams Used: 50.0 DC: 6

| Clock Time | T | $R_h$ | Initials/Date |
|---|---|---|---|
| 9:08 | 0 | XXXX | AM 10/27 |
| 9:10 | 2 | 24 | |
| 9:13 | 5 | 20 | |
| 9:23 | 15 | 17 | |
| 9:38 | 30 | 16 | |
| 10:08 | 60 | 14 | |
| 1:18 | 250 | 11 | |
| 9:08 | 1440 | 10 | AM 10/28 |

DC= Dispersant Constant T= Time in minutes after initial mixing $R_h$= Hydrometer Reading

# HYDROMETRIC READINGS FOR GRAIN SIZE ANALYSIS

Job #: 29-197

Client: BAT

Water Temp: 23, 22.5, 23.0

Sample: 1227 Grams Used: 50.0 DC: 6

| Clock Time | T | $R_h$ | Initials/Date |
|---|---|---|---|
| 9:36 | 0 | XXXX | AA 10/27 |
| 9:38 | 2 | 28 | |
| 9:41 | 5 | 22 | |
| 9:51 | 15 | 20 | |
| 10:06 | 30 | 18 | |
| 10:36 | 60 | 16 | |
| 1:46 | 250 | 12.5 | |
| 9:36 | 1440 | 10 | AA 10/28 |

Sample: 1230 Grams Used: 50.0 DC: 6

| Clock Time | T | $R_h$ | Initials/Date |
|---|---|---|---|
| 9:48 | 0 | XXXX | AA 10/27 |
| 9:50 | 2 | 11.5 | |
| 9:53 | 5 | 10 | |
| 10:03 | 15 | 10 | |
| 10:18 | 30 | 9 | |
| 10:48 | 60 | 8 | |
| 1:58 | 250 | 8 | |
| 9:48 | 1440 | 7.5 | AA 10/28 |

Sample: 1228 Grams Used: 41.61 DC: 6

| Clock Time | T | $R_h$ | Initials/Date |
|---|---|---|---|
| 9:40 | 0 | XXXX | AA 10/27 |
| 9:42 | 2 | 15 | |
| 9:45 | 5 | 13 | |
| 9:55 | 15 | 12 | |
| 10:10 | 30 | 11 | |
| 10:40 | 60 | 10 | |
| 1:50 | 250 | 8.5 | |
| 9:40 | 1440 | 8 | AA 10/28 |

Sample: 1231 Grams Used: 50.0 DC: 6

| Clock Time | T | $R_h$ | Initials/Date |
|---|---|---|---|
| 9:52 | 0 | XXXX | AA 10/27 |
| 9:54 | 2 | 8.5 | |
| 9:57 | 5 | 8 | |
| 10:07 | 15 | 7.5 | |
| 10:22 | 30 | 7 | |
| 10:52 | 60 | 7 | |
| 2:02 | 250 | 7 | |
| 9:52 | 1440 | 7 | AA 10/28 |

Sample: 1229 Grams Used: 50.0 DC: 6

| Clock Time | T | $R_h$ | Initials/Date |
|---|---|---|---|
| 9:44 | 0 | XXXX | AA 10/27 |
| 9:46 | 2 | 13 | |
| 9:49 | 5 | 11 | |
| 9:59 | 15 | 10.5 | |
| 10:14 | 30 | 10 | |
| 10:44 | 60 | 9 | |
| 1:54 | 250 | 8 | |
| 9:44 | 1440 | 7.5 | AA 10/28 |

DC= Dispersant Constant T= Time in minutes after initial mixing $R_h$= Hydrometer Reading

## HYDROMETRIC READINGS FOR GRAIN SIZE ANALYSIS

Job #: 29-197

Client: Bat.

Water Temp: 23, 22.5, 23.0

Sample: 1232 Grams Used: 50.0 DC: 6

| Clock Time | T | $R_h$ | Initials/Date |
|---|---|---|---|
| 10:12 | 0 | XXXX | JW 10/27 |
| 10:14 | 2 | 8 | |
| 10:17 | 5 | 7 | |
| 10:27 | 15 | 7 | |
| 10:42 | 30 | 7 | |
| 11:12 | 60 | 7 | |
| 2:22 | 250 | 6.5 | |
| 10:12 | 1440 | 6 | |

Sample: Trp 1233 Grams Used: 50.0 DC: 6

| Clock Time | T | $R_h$ | Initials/Date |
|---|---|---|---|
| 10:24 | 0 | XXXX | JW 10/27 |
| 10:26 | 2 | 12 | |
| 10:29 | 5 | 10 | |
| 10:39 | 15 | 9 | |
| 10:54 | 30 | 9 | |
| 11:24 | 60 | 8 | |
| 2:34 | 250 | 7.5 | |
| 10:24 | 1440 | 7.5 | |

Sample: 1233 Grams Used: 47.28 DC: 6

| Clock Time | T | $R_h$ | Initials/Date |
|---|---|---|---|
| 10:16 | 0 | XXXX | JW 10/27 |
| 10:18 | 2 | 12.5 | |
| 10:21 | 5 | 10.5 | |
| 10:31 | 15 | 10 | |
| 10:46 | 30 | 9 | |
| 11:16 | 60 | 8.5 | |
| 2:26 | 250 | 8 | |
| 10:16 | 1440 | 7.5 | |

Sample: Grams Used: DC:

| Clock Time | T | $R_h$ | Initials/Date |
|---|---|---|---|
| 10:28 | 0 | XXXX | |
| 10:30 | 2 | | |
| 10:33 | 5 | | |
| 10:43 | 15 | | |
| 10:58 | 30 | | |
| 11:28 | 60 | | |
| 2:38 | 250 | | |
| 10:28 | 1440 | | |

Sample: Dup 1233 Grams Used: 50.0 DC: 6

| Clock Time | T | $R_h$ | Initials/Date |
|---|---|---|---|
| 10:20 | 0 | XXXX | JW 10/27 |
| 10:22 | 2 | 12 | |
| 10:25 | 5 | 10 | |
| 10:35 | 15 | 9 | |
| 10:50 | 30 | 9 | |
| 11:20 | 60 | 8.5 | |
| 2:30 | 250 | 7.5 | |
| 10:20 | 1440 | 7.5 | |

DC= Dispersant Constant T= Time in minutes after initial mixing $R_h$= Hydrometer Reading

**AQUA SURVEY, INC**

**PARTICLE SIZE BENCHSHEET**

**JOB #:** 29-197

**CLIENT:** Battelle

**Balance:** Sart.

**Calibration: YES** ✓ **NO** ____

| Sample ID | Container Mass (g) A | Sample and Container (g) B | Gravel Retained on #4 (4.75mm) and Container (g) C | Coarse Sand Retained on #10 (2.0mm) and Container (g) D | % Gravel mass g to hydrometer |
|---|---|---|---|---|---|
| 2009 1234 | 12.639 | 80.762 | 12.639 | ~~12~~ 15.044 | 50.0 |
| 1235 | 12.721 | 77.647 | 12.721 | 12.721 | 50.0 |
| 1236 | 12.846 | 65.716 | 12.846 | 14.385 | 50.0 |
| Dup 1236 | 12.735 | 70.128 | 12.735 | 13.979 | 50.0 |
| Trp 1236 | 12.731 | 79.488 | 12.731 | 13.668 | 50.0 |
| 1237 | 12.695 | 75.988 | 12.695 | 16.553 * | 50.0 |
| 1238 | 12.591 | 75.708 | 12.591 | 15.078 * | 50.0 |
| 1255 | 12.782 | 25.805 | 12.782 | 12.782 | 12.913 |
| 1256 | 12.613 | 26.600 | 12.613 | 12.613 | 13.881 |
| 1257 | 12.805 | 26.524 | 12.805 | 12.805 | 13.588 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| Date/ 10/26 Initials KM | | | | | |

**% Gravel = (C-A/B-A) * 100**

* shell

# HYDROMETRIC READINGS FOR GRAIN SIZE ANALYSIS

Job #: 29-197

Client: BAT

Water Temp: 23, 23, 22.5

Sample: 1234 Grams Used: 50 DC: 6

| Clock Time | T | $R_h$ | Initials/Date |
|---|---|---|---|
| 9:00 | 0 | XXXX | AA 10/28 |
| 9:02 | 2 | 30 | |
| 9:05 | 5 | 24 | |
| 9:15 | 15 | 20.5 | |
| 9:30 | 30 | 18 | |
| 10:00 | 60 | 15 | |
| 1:10 | 250 | 11.5 | |
| 9:00 | 1440 | 9 | AA 10/29 |

Sample: Dup 1236 Grams Used: 50 DC: 6

| Clock Time | T | $R_h$ | Initials/Date |
|---|---|---|---|
| 9:12 | 0 | XXXX | AA 10/28 |
| 9:14 | 2 | ~~8.5~~ 9 | AA |
| 9:17 | 5 | 8.5 | |
| 9:27 | 15 | 8 | |
| 9:42 | 30 | 8 | |
| 10:12 | 60 | ~~8~~ 7.5 AA | |
| 1:22 | 250 | 7.5 | |
| 9:12 | 1440 | 7 | AA 10/29 |

Sample: 1235 Grams Used: 50 DC: 6

| Clock Time | T | $R_h$ | Initials/Date |
|---|---|---|---|
| 9:04 | 0 | XXXX | AA 10/28 |
| 9:06 | 2 | 16 | |
| 9:09 | 5 | 13 | |
| 9:19 | 15 | 12 | |
| 9:34 | 30 | 11 | |
| 10:04 | 60 | 10 | |
| 1:14 | 250 | 8 | |
| 9:04 | 1440 | 8 | AA 10/29 |

Sample: Trip 1236 Grams Used: 50 DC: 6

| Clock Time | T | $R_h$ | Initials/Date |
|---|---|---|---|
| 9:16 | 0 | XXXX | AA 10/28 |
| 9:18 | 2 | 9.5 | |
| 9:21 | 5 | 8 | |
| 9:31 | 15 | 8 | |
| 9:46 | 30 | 8 | |
| 10:16 | 60 | 7.5 | |
| 1:26 | 250 | 7 | |
| 9:16 | 1440 | 7 | AA 10/29 |

Sample: 1236 Grams Used: 50 DC: 6

| Clock Time | T | $R_h$ | Initials/Date |
|---|---|---|---|
| 9:08 | 0 | XXXX | AA 10/28 |
| 9:10 | 2 | 9 | |
| 9:13 | 5 | 8.5 | |
| 9:23 | 15 | 8 | |
| 9:38 | 30 | 8 | |
| 10:08 | 60 | 8 | |
| 1:18 | 250 | 7 | |
| 9:08 | 1440 | 7 | AA 10/29 |

DC= Dispersant Constant T= Time in minutes after initial mixing $R_h$= Hydrometer Reading

# HYDROMETRIC READINGS FOR GRAIN SIZE ANALYSIS

Job #: 29-197

Client: BAT

Water Temp: 23, 23, 22.5

Sample: 1237 Grams Used: 50 DC: 6

| Clock Time | T | $R_h$ | Initials/Date |
|---|---|---|---|
| 9:36 | 0 | XXXX | SW 10/28 |
| 9:38 | 2 | 35 | |
| 9:41 | 5 | 28.5 | |
| 9:51 | 15 | 25 | |
| 10:06 | 30 | 22.5 | |
| 10:36 | 60 | 19 | |
| 1:46 | 250 | 14 | |
| 9:36 | 1440 | 10 | SW 10/29 |

Sample: 1256 Grams Used: 13.881 DC: 6

| Clock Time | T | $R_h$ | Initials/Date |
|---|---|---|---|
| 9:48 | 0 | XXXX | SW 10/28 |
| 9:50 | 2 | 16 | |
| 9:53 | 5 | 14 | |
| 10:03 | 15 | 12.5 | |
| 10:18 | 30 | 12 | |
| 10:48 | 60 | 10.5 | |
| 1:58 | 250 | 9 | |
| 9:48 | 1440 | 8 | SW 10/29 |

Sample: 1238 Grams Used: 50 DC: 6

| Clock Time | T | $R_h$ | Initials/Date |
|---|---|---|---|
| 9:40 | 0 | XXXX | SW 10/28 |
| 9:42 | 2 | 23 | |
| 9:45 | 5 | 19.5 | |
| 9:55 | 15 | 18 | |
| 10:10 | 30 | 16.5 | |
| 10:40 | 60 | 14.5 | |
| 1:50 | 250 | 12 | |
| 9:40 | 1440 | 9 | SW 10/29 |

Sample: 1257 Grams Used: ~~50~~ SW 13.588 DC: 6

| Clock Time | T | $R_h$ | Initials/Date |
|---|---|---|---|
| 9:52 | 0 | XXXX | SW 10/28 |
| 9:54 | 2 | 18 | |
| 9:57 | 5 | 16 | |
| 10:07 | 15 | 15 | |
| 10:22 | 30 | 14 | |
| 10:52 | 60 | 12 | |
| 2:02 | 250 | 10 | |
| 9:52 | 1440 | 8.5 | SW 10/29 |

Sample: 1255 Grams Used: ~~50~~ SW 12.913 DC: 6

| Clock Time | T | $R_h$ | Initials/Date |
|---|---|---|---|
| 9:44 | 0 | XXXX | SW 10/28 |
| 9:46 | 2 | 16 | |
| 9:49 | 5 | 15 | |
| 9:59 | 15 | 14 | |
| 10:14 | 30 | 12 | |
| 10:44 | 60 | 11 | |
| 1:54 | 250 | 9.5 | |
| 9:44 | 1440 | 8.5 | SW 10/29 |

DC= Dispersant Constant T= Time in minutes after initial mixing $R_h$= Hydrometer Reading

# Appendix C

# TOC Raw Data
# and SRM Control Chart

Detailed Analysis Report   Print Date/Time: 2009/10/07 16:13:12

29-732
197
10/8/09

| | | | | | | |
|---|---|---|---|---|---|---|
| Sample ID: | 3000 | | | Mode: | TOC | |
| Method: | Boat Sampler | | | Filename: | 10070928 | |
| Cal. Curve: | 100709 | | | Timestamp: | 2009/10/07 09:43 | |
| Operator ID: | JH | | | Sample Type: | TOC Standard | |

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | | | 23151864 | 5.488 | 6.488 | 204 |
| 2 | | | 23278464 | 5.743 | 6.743 | 188 |

<<<Statistics>>> Mean: 23215164 Std Dev: 89520 RSD: 0.39

| | | | | | | |
|---|---|---|---|---|---|---|
| Sample ID: | 2000 | | | Mode: | TOC | |
| Method: | Boat Sampler | | | Filename: | 10070945 | |
| Cal. Curve: | 100709 | | | Timestamp: | 2009/10/07 09:57 | |
| Operator ID: | JH | | | Sample Type: | TOC Standard | |

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | | | 15504476 | 5.779 | 6.777 | 165 |
| 2 | | | 15528536 | 5.681 | 6.679 | 174 |

<<<Statistics>>> Mean: 15516506 Std Dev: 17013 RSD: 0.11

| | | | | | | |
|---|---|---|---|---|---|---|
| Sample ID: | 1000 | | | Mode: | TOC | |
| Method: | Boat Sampler | | | Filename: | 10070959 | |
| Cal. Curve: | 100709 | | | Timestamp: | 2009/10/07 10:11 | |
| Operator ID: | JH | | | Sample Type: | TOC Standard | |

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | | | 7865046 | 5.662 | 6.660 | 149 |
| 2 | | | 7916773 | 5.555 | 6.553 | 148 |

<<<Statistics>>> Mean: 7890910 Std Dev: 36577 RSD: 0.46

| | | | | | | |
|---|---|---|---|---|---|---|
| Sample ID: | 500 | | | Mode: | TOC | |
| Method: | Boat Sampler | | | Filename: | 10071016 | |
| Cal. Curve: | 100709 | | | Timestamp: | 2009/10/07 10:27 | |
| Operator ID: | JH | | | Sample Type: | TOC Standard | |

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | | | 3952946 | 5.354 | 6.352 | 130 |
| 2 | | | 3992299 | 5.313 | 6.311 | 132 |

<<<Statistics>>> Mean: 3972622 Std Dev: 27827 RSD: 0.70

| | | | | | | |
|---|---|---|---|---|---|---|
| Sample ID: | USGS | | | Mode: | TOC | |
| Method: | Boat Sampler | | | Filename: | 10071032 | |
| Cal. Curve: | 100709 | | | Timestamp: | 2009/10/07 11:14 | |
| Operator ID: | JH | | | Sample Type: | Sample | |

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | 91663.4766 | 78.8306 | 15145370 | 5.545 | 6.545 | 185 |
| 2 | 96364.5391 | 83.8372 | 16107257 | 5.375 | 6.374 | 197 |
| 3 | 92706.1562 | 87.1438 | 16742546 | 5.299 | 6.298 | 193 |

<<<Statistics>>> Mean: 93578.0625 Std Dev: 2468.8369 RSD: 2.64

Sample ID: ICV 1000 | Mode: TOC
Method: Boat Sampler | Filename: 10071118
Cal. Curve: 100709 | Timestamp: 2009/10/07 11:27
Operator ID: JH | Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 1088.5048 | 43.5402 | 8365182 | 5.257 | 6.256 | 148 |

Sample ID: blank with acid | Mode: TOC
Method: Boat Sampler | Filename: 10071142
Cal. Curve: 100709 | Timestamp: 2009/10/07 12:00
Operator ID: JH | Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 34.9280 | 1.3971 | 268422 | 5.215 | 6.212 | 79 |
| 2 | 21.8975 | 0.8759 | 168283 | 5.202 | 6.200 | 73 |
| 3 | 48.0563 | 1.9223 | 369314 | 5.206 | 6.203 | 83 |

<<<Statistics>>> Mean: 34.9606 Std Dev: 13.0794 RSD: 37.41

Sample ID: 20091122 Comp CM6a 29-132 | Mode: TOC
Method: Boat Sampler | Filename: 10071220
Cal. Curve: 100709 | Timestamp: 2009/10/07 12:51
Operator ID: JH | Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 46334.8555 | 78.7693 | 15133585 | 4.968 | 5.966 | 213 |
| 2 | 44299.3203 | 69.9929 | 13447428 | 4.850 | 5.848 | 207 |
| 3 | 48251.0742 | 56.9363 | 10938911 | 4.644 | 5.641 | 212 |

<<<Statistics>>> Mean: 46295.0820 Std Dev: 1976.1771 RSD: 4.27

Sample ID: 20091122 SPIKE | Mode: TOC
Method: Boat Sampler | Filename: 10071255
Cal. Curve: 100709 | Timestamp: 2009/10/07 13:20
Operator ID: JH | Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 65240.6758 | 66.5455 | 12785087 | 4.473 | 5.472 | 224 |
| 2 | 59395.8672 | 80.1844 | 15405474 | 4.630 | 5.629 | 206 |
| 3 | 62433.2734 | 116.1259 | 22310748 | 4.928 | 5.925 | 218 |

<<<Statistics>>> Mean: 62356.6055 Std Dev: 2923.1584 RSD: 4.69

Sample ID: ICV 1000 | Mode: TOC
Method: Boat Sampler | Filename: 10071433

Cal. Curve: 100709
Operator ID: JH

Timestamp: 2009/10/07 14:38
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 1050.6368 | 42.0255 | 8074166 | 4.794 | 5.790 | 148 |

===========================================================================

Sample ID: 20091222 B2-CAP1-0002
Method: Boat Sampler
Cal. Curve: 100709
Operator ID: JH

Mode: TOC
Filename: 10071440
Timestamp: 2009/10/07 15:10
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 57193.1523 | 83.5020 | 16042867 | 4.912 | 5.910 | 215 |
| 2 | 47912.2578 | 93.9080 | 18042130 | 5.108 | 6.104 | 223 |
| 3 | 45733.5625 | 74.5457 | 14322133 | 5.423 | 6.419 | 218 |

<<<Statistics>>> Mean: 50279.6562 Std Dev: 6085.5557 RSD: 12.10

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Sample ID: 20091223 B2-CAP1-0205
Method: Boat Sampler
Cal. Curve: 100709
Operator ID: JH

Mode: TOC
Filename: 10071523
Timestamp: 2009/10/07 15:44
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 41458.9805 | 68.4073 | 13142793 | 5.957 | 6.951 | 213 |
| 2 | 48142.5859 | 90.9895 | 17481404 | 6.008 | 7.007 | 233 |
| 3 | 43748.8438 | 73.4981 | 14120853 | 6.272 | 7.269 | 210 |

<<<Statistics>>> Mean: 44450.1367 Std Dev: 3396.5430 RSD: 7.64

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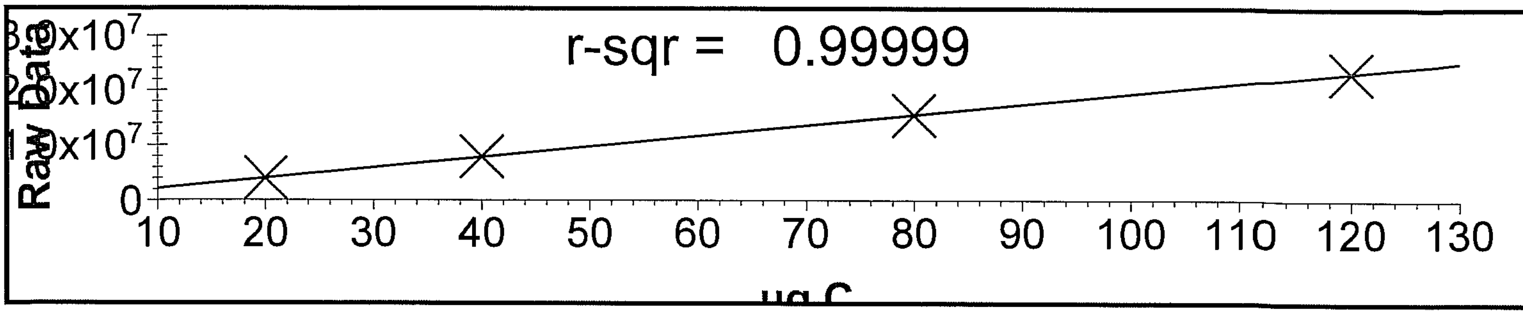
Sample ID: ICV
1000
Mode: TOC
Method: Boat Sampler
Cal. Curve: 100709
Operator ID: JH

Filename: 10071545
Timestamp: 2009/10/07 16:08
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 1058.8923 | 42.3557 | 8137610 | 6.074 | 7.073 | 154 |
| 2 | 1062.7926 | 42.5117 | 8167584 | 5.872 | 6.869 | 158 |
| 3 | 1067.0770 | 42.6831 | 8200510 | 5.942 | 6.939 | 179 |

<<<Statistics>>> Mean: 1062.9208 Std Dev: 4.0938 RSD: 0.39

===========================================================================


r-sqr = 0.99999
Raw Data
3.0x10^7
2.0x10^7
1.0x10^7
0
10
20
30
40
50
60
70
80
90
100
110
120
130
µg C

Calibration Report Print Date/Time: 2009/10/07 10:28:23

Cal. Curve ID: 100709
Created: 2009/10/07 10:28
Calibration Factor (m): 1.921e+05
Y Intercept (b): 160642
r-squared: 0.99999

| Standard ID | Y Raw Data | X Expected ug C | Measured ug C | Message | Date & Time |
|---|---|---|---|---|---|
| 3000 | 23215164 | 120.000 | 119.997 | | 2009/10/07 09:43 |
| 2000 | 15516506 | 80.000 | 79.926 | | 2009/10/07 09:57 |
| 1000 | 7890910 | 40.000 | 40.236 | | 2009/10/07 10:11 |
| 500 | 3972623 | 20.000 | 19.841 | | 2009/10/07 10:27 |

Detailed Analysis Report   Print Date/Time:  2009/10/12 17:25:20

29-197

| | | | |
|---|---|---|---|
| Sample ID: | 3000 | Mode: | TOC |
| Method: | Boat Sampler | Filename: | 10120820 |
| Cal. Curve: | 101209 | Timestamp: | 2009/10/12 08:35 |
| Operator ID: | LH | Sample Type: | TOC Standard |

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | | | 22538478 | 3.269 | 4.269 | 211 |
| 2 | | | 22996816 | 3.475 | 4.474 | 204 |

<<<Statistics>>>   Mean: 22767648   Std Dev:   324094   RSD: 1.42

| | | | |
|---|---|---|---|
| Sample ID: | 2000 | Mode: | TOC |
| Method: | Boat Sampler | Filename: | 10120837 |
| Cal. Curve: | 101209 | Timestamp: | 2009/10/12 08:48 |
| Operator ID: | LH | Sample Type: | TOC Standard |

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | | | 15694690 | 3.682 | 4.679 | 183 |
| 2 | | | 15728611 | 3.466 | 4.465 | 192 |

<<<Statistics>>>   Mean: 15711650   Std Dev:   23986   RSD: 0.15

| | | | |
|---|---|---|---|
| Sample ID: | 1000 | Mode: | TOC |
| Method: | Boat Sampler | Filename: | 10120849 |
| Cal. Curve: | 101209 | Timestamp: | 2009/10/12 09:12 |
| Operator ID: | LH | Sample Type: | TOC Standard |

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | | | 7925933 | 3.438 | 4.437 | 168 |
| 2 | | | 8227498 | 3.468 | 4.468 | 191 |

<<<Statistics>>>   Mean:  8076716   Std Dev:   213239   RSD: 2.64

| | | | |
|---|---|---|---|
| Sample ID: | 500 | Mode: | TOC |
| Method: | Boat Sampler | Filename: | 10120924 |
| Cal. Curve: | 101209 | Timestamp: | 2009/10/12 09:38 |
| Operator ID: | LH | Sample Type: | TOC Standard |

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | | | 4123731 | 4.204 | 5.201 | 153 |
| 2 | | | 4251282 | 4.545 | 5.543 | 146 |

<<<Statistics>>>   Mean:  4187506   Std Dev:   90192   RSD: 2.15

| | | | |
|---|---|---|---|
| Sample ID: | USGS | Mode: | TOC |
| Method: | Boat Sampler | Filename: | 10120948 |
| Cal. Curve: | 101209 | Timestamp: | 2009/10/12 10:26 |
| Operator ID: | LH | Sample Type: | Sample |

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 100305.3203 | 111.3389 | 20711668 | 4.773 | 5.770 | 213 |
| 2 | 99887.2578 | 96.8906 | 18023948 | 4.730 | 5.728 | 206 |
| 3 | 96552.6953 | 72.4145 | 13470811 | 4.865 | 5.863 | 191 |

<<<Statistics>>> Mean: 98915.0938 Std Dev: 2056.5457 RSD: 2.08

Sample ID: ICV 1000
Method: Boat Sampler
Cal. Curve: 101209
Operator ID: LH
Mode: TOC
Filename: 10121042
Timestamp: 2009/10/12 10:48
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 978.9281 | 39.1571 | 7284150 | 4.791 | 5.789 | 162 |

Sample ID: Blank with acid
Method: Boat Sampler
Cal. Curve: 101209
Operator ID: LH
Mode: TOC
Filename: 10121107
Timestamp: 2009/10/12 11:21
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 8.5710 | 0.3428 | 63777 | 4.699 | 5.691 | 61 |
| 2 | 19.5132 | 0.7805 | 145197 | 4.711 | 5.708 | 70 |
| 3 | 9.9151 | 0.3966 | 73778 | 4.748 | 5.745 | 63 |

<<<Statistics>>> Mean: 12.6664 Std Dev: 5.9674 RSD: 47.11

Sample ID: ~20091224 B2-CAP1-0507 29-197
Method: Boat Sampler
Cal. Curve: 101209
Operator ID: LH
Mode: TOC
Filename: 10121124
Timestamp: ALT 2009/10/12 11:29
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 52636.9492 | 102.1157 | 18995928 | 4.786 | 5.783 | 231 |

---------> Sample was Altered <---------

Sample ID: 20091224 B2-CAP1-0507 29-197
Method: Boat Sampler
Cal. Curve: 101209
Operator ID: LH
Mode: TOC
Filename: 10121217
Timestamp: 2009/10/12 12:34
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 75516.0703 | 61.9232 | 11519174 | 4.532 | 5.527 | 221 |
| 2 | 80534.3281 | 74.0916 | 13782785 | 4.516 | 5.515 | 251 |

<<<Statistics>>> Mean: 78025.2031 Std Dev: 3548.4441 RSD: 4.55

AVG.
~~69562~~ RJ
~~65844~~ RJ
Average of 5
65,988
RJ 10/19/09

Sample ID: 20091224 B2-CAP1-0507 29-197
Method: Boat Sampler
Cal. Curve: 101209
Operator ID: LH
Mode: TOC
Filename: 10121248
Timestamp: 2009/10/12 12:54
Sample Type: Sample

RJ

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 54689.5859 | 42.1110 | 7833637 | 4.963 | 5.959 | 212 |

Sample ID: 20091224 B2-CAP1-0507 29-197
Method: Boat Sampler
Cal. Curve: 101209
Operator ID: LH
Mode: TOC
Filename: 10121315
Timestamp: 2009/10/12 13:21
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 66564.2891 | 95.1869 | 17707020 | 4.807 | 5.803 | 233 |

Sample ID: ~20091224 SPK 29-197
Method: Boat Sampler
Cal. Curve: 101209
Operator ID: LH
Mode: TOC
Filename: 10121334
Timestamp: ALT 2009/10/12 13:52
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 80370.6094 | 119.7522 | 22276740 | 4.737 | 5.735 | 254 |
| 2 | 68535.8672 | 60.3116 | 11219375 | 4.756 | 5.754 | 199 |

---------> Sample was Altered <---------
<<<Statistics>>> Mean: 74453.2344 Std Dev: 8368.4268 RSD: 11.24

Sample ID: 20091224 SPK 29-197
Method: Boat Sampler
Cal. Curve: 101209
Operator ID: LH
Mode: TOC
Filename: 10121418
Timestamp: 2009/10/12 14:23
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 77473.8906 | 93.7434 | 17438488 | 4.868 | 5.865 | 216 |

Sample ID: ICV 1000
Method: Boat Sampler
Cal. Curve: 101209
Operator ID: LH
Mode: TOC
Filename: 10121433
Timestamp: 2009/10/12 14:39
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 1009.5315 | 40.3813 | 7511869 | 4.576 | 5.572 | 166 |

Sample ID: 20091225 B2-CAPX-0002 29-197
Method: Boat Sampler
Cal. Curve: 101209
Operator ID: LH
Mode: TOC
Filename: 10121445
Timestamp: 2009/10/12 15:19
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 69239.5000 | 76.1635 | 14168201 | 4.490 | 5.489 | 237 |
| 2 | 85891.5781 | 42.0869 | 7829153 | 4.836 | 5.834 | 273 |
| 3 | 41159.3789 | 68.7362 | 12786550 | 4.653 | 5.651 | 220 |

<<<Statistics>>> Mean: 65430.1523 Std Dev: 22608.0898 RSD: 34.55

Sample ID: 20091226 B2-CAPX-0205 29-197
Method: Boat Sampler
Cal. Curve: 101209
Operator ID: LH

Mode: TOC
Filename: 10121556
Timestamp: 2009/10/12 16:20
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 49416.1484 | 36.5679 | 6802502 | 4.681 | 5.678 | 196 |
| 2 | 53333.8945 | 48.0005 | 8929228 | 4.834 | 5.834 | 211 |
| 3 | 59643.8555 | 74.5548 | 13868958 | 4.867 | 5.865 | 228 |

<<<Statistics>>> Mean: 54131.3008 Std Dev: 5160.2700 RSD: 9.53

Sample ID: 20091227 B2-CAPX-0507 29-197
Method: Boat Sampler
Cal. Curve: 101209
Operator ID: LH

Mode: TOC
Filename: 10121633
Timestamp: 2009/10/12 16:54
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 61800.4727 | 94.5547 | 17589412 | 5.109 | 6.106 | 271 |
| 2 | 46069.2227 | 63.1148 | 11740851 | 5.389 | 6.387 | 226 |
| 3 | 51995.4297 | 65.5142 | 12187196 | 5.570 | 6.568 | 220 |

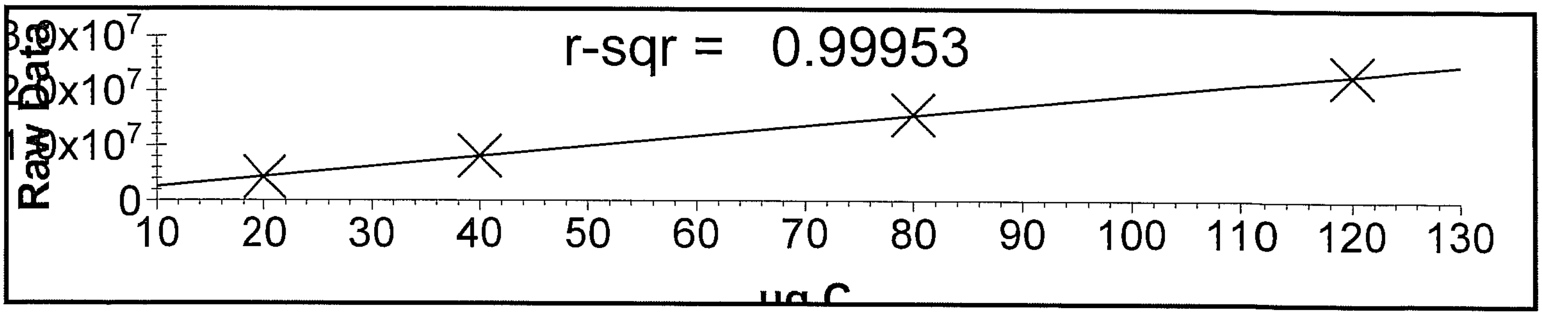
<<<Statistics>>> Mean: 53288.3750 Std Dev: 7944.9253 RSD: 14.91

Sample ID: ICV 1000
Method: Boat Sampler
Cal. Curve: 101209
Operator ID: LH

Mode: TOC
Filename: 10121710
Timestamp: 2009/10/12 17:25
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 941.5720 | 37.6629 | 7006185 | 5.394 | 6.393 | 159 |
| 2 | 1018.3219 | 40.7329 | 7577277 | 5.468 | 6.466 | 158 |
| 3 | 1114.5419 | 44.5817 | 8293245 | 5.442 | 6.441 | 163 |

<<<Statistics>>> Mean: 1024.8119 Std Dev: 86.6674 RSD: 8.46


r-sqr = 0.99953
Raw Data
3.0x10$^7$
2.0x10$^7$
1.0x10$^7$
0
10
20
30
40
50
60
70
80
90
100
110
120
130
µg C

Calibration Report    Print Date/Time:  2009/10/12 17:25:30

Cal. Curve ID: 101209
Created: 2009/10/12 09:38
Calibration Factor (m): 1.860e+05
Y Intercept (b): 594345
r-squared: 0.99953

| Standard ID | Y Raw Data | X Expected ug C | Measured ug C | Message | Date & Time |
|---|---|---|---|---|---|
| 3000 | 22767646 | 120.000 | 119.196 | | 2009/10/12 08:35 |
| 2000 | 15711651 | 80.000 | 81.266 | | 2009/10/12 08:48 |
| 1000 | 8076716 | 40.000 | 40.223 | | 2009/10/12 09:12 |
| 500 | 4187506 | 20.000 | 19.316 | | 2009/10/12 09:38 |

Detailed Analysis Report   Print Date/Time: 2009/10/13 17:13:45

29-197

Sample ID: 3000 | Mode: TOC
Method: Boat Sampler | Filename: 10130805
Cal. Curve: 101309 | Timestamp: 2009/10/13 08:21
Operator ID: LH | Sample Type: TOC Standard

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | | | 23133212 | 3.072 | 4.069 | 235 |
| 2 | | | 23130424 | 3.449 | 4.448 | 234 |

<<<Statistics>>> Mean: 23131818 Std Dev: 1971 RSD: 0.01

Sample ID: 2000 | Mode: TOC
Method: Boat Sampler | Filename: 10130823
Cal. Curve: 101309 | Timestamp: 2009/10/13 08:34
Operator ID: LH | Sample Type: TOC Standard

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | | | 15780698 | 3.892 | 4.890 | 213 |
| 2 | | | 16044803 | 4.165 | 5.162 | 210 |

<<<Statistics>>> Mean: 15912750 Std Dev: 186750 RSD: 1.17

Sample ID: 1000 | Mode: TOC
Method: Boat Sampler | Filename: 10130835
Cal. Curve: 101309 | Timestamp: 2009/10/13 08:58
Operator ID: LH | Sample Type: TOC Standard

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | | | 7997111 | 4.290 | 5.290 | 171 |
| 2 | | | 8042750 | 4.198 | 5.196 | 186 |

<<<Statistics>>> Mean: 8019930 Std Dev: 32272 RSD: 0.40

Sample ID: 500 | Mode: TOC
Method: Boat Sampler | Filename: 10130859
Cal. Curve: 101309 | Timestamp: 2009/10/13 09:09
Operator ID: LH | Sample Type: TOC Standard

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | | | 3943386 | 4.449 | 5.447 | 155 |
| 2 | | | 3868334 | 4.706 | 5.704 | 141 |

<<<Statistics>>> Mean: 3905860 Std Dev: 53070 RSD: 1.36

Sample ID: USGS | Mode: TOC
Method: Boat Sampler | Filename: 10130925
Cal. Curve: 101309 | Timestamp: 2009/10/13 10:05
Operator ID: LH | Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|

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| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | 98121.7734 | 107.9340 | 20757706 | 4.660 | 5.660 | 241 |
| 2 | 97339.8984 | 55.4837 | 10670555 | 4.929 | 5.928 | 194 |
| 3 | 96746.7422 | 82.2347 | 15815268 | 5.171 | 6.171 | 214 |

<<<Statistics>>> Mean: 97402.8047 Std Dev: 689.6707 RSD: 0.71

Sample ID: ICV 1000 | Mode: TOC
Method: Boat Sampler | Filename: 10131014
Cal. Curve: 101309 | Timestamp: 2009/10/13 10:21
Operator ID: LH | Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 1085.2625 | 43.4105 | 8348647 | 5.316 | 6.314 | 182 |

Sample ID: Blank with acid | Mode: TOC
Method: Boat Sampler | Filename: 10131041
Cal. Curve: 101309 | Timestamp: 2009/10/13 10:57
Operator ID: LH | Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 10.4322 | 0.4173 | 80252 | 5.519 | 6.513 | 65 |
| 2 | 6.9574 | 0.2783 | 53521 | 5.722 | 5.620 | 120 |
| 3 | 6.0906 | 0.2436 | 46853 | 5.729 | 5.650 | 120 |

Last Message: Low Sample Detected
<<<Statistics>>> Mean: 7.8267 Std Dev: 2.2976 RSD: 29.36

Sample ID: 20091228 B2-CAP2-0002 29-197 | Mode: TOC
Method: Boat Sampler | Filename: 10131059
Cal. Curve: 101309 | Timestamp: 2009/10/13 11:31
Operator ID: LH | Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 61101.6016 | 62.3236 | 11985994 | 5.834 | 6.831 | 215 |
| 2 | 70133.3750 | 67.3280 | 12948434 | 5.842 | 6.840 | 225 |
| 3 | 70017.2266 | 94.5233 | 18178580 | 5.825 | 6.824 | 236 |

<<<Statistics>>> Mean: 67084.0625 Std Dev: 5181.2930 RSD: 7.72

Sample ID: 20091228 SPK 29-197 | Mode: TOC
Method: Boat Sampler | Filename: 10131139
Cal. Curve: 101309 | Timestamp: 2009/10/13 11:58
Operator ID: LH | Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 101464.9531 | 74.0694 | 14244926 | 5.798 | 6.795 | 231 |
| 2 | 77161.7812 | 54.7849 | 10536148 | 5.941 | 6.940 | 204 |
| 3 | 54179.5625 | 55.8049 | 10732329 | 6.043 | 7.042 | 216 |

<<<Statistics>>> Mean: 77602.1016 Std Dev: 23645.7695 RSD: 30.47

Sample ID: ICV 1000 | Mode: TOC

Method: Boat Sampler
Cal. Curve: 101309
Operator ID: LH

Filename: 10131317
Timestamp: 2009/10/13 13:22
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 1097.5581 | 43.9023 | 8443234 | 4.703 | 5.702 | 186 |

Sample ID: ~20091229 B2-CAP2-0205 29-197
Method: Boat Sampler
Cal. Curve: 101309
Operator ID: LH

Mode: TOC
Filename: 10131342
Timestamp: ALT 2009/10/13 14:10
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 41582.3516 | 29.1076 | 5597941 | 5.592 | 6.587 | 196 |
| 2 | 39085.1055 | 52.3740 | 10072502 | 5.688 | 6.686 | 211 |

---------> Sample was Altered <---------
<<<Statistics>>> Mean: 40333.7266 Std Dev: 1765.8197 RSD: 4.38

AVG. 40,726

Sample ID: 20091229 B2-CAP2-0205 29-197
Method: Boat Sampler
Cal. Curve: 101309
Operator ID: LH

Mode: TOC
Filename: 10131415
Timestamp: 2009/10/13 14:21
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 41512.2539 | 52.3054 | 10059309 | 5.691 | 6.689 | 212 |

Sample ID: 20091230 B2-CAP2-0507 29-197
Method: Boat Sampler
Cal. Curve: 101309
Operator ID: LH

Mode: TOC
Filename: 10131427
Timestamp: 2009/10/13 14:53
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 47792.9648 | 53.0502 | 10202538 | 5.822 | 6.819 | 202 |
| 2 | 40311.1484 | 62.0792 | 11938979 | 6.010 | 7.008 | 213 |
| 3 | 42563.3242 | 66.3988 | 12769721 | 5.846 | 6.844 | 226 |

<<<Statistics>>> Mean: 43555.8125 Std Dev: 3838.3811 RSD: 8.81

Sample ID: ~20091231 B2-CAP3-0002 29-197
Method: Boat Sampler
Cal. Curve: 101309
Operator ID: LH

Mode: TOC
Filename: 10131503
Timestamp: ALT 2009/10/13 15:26
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 22744.0762 | 44.3509 | 8529512 | 5.773 | 6.771 | 215 |
| 2 | 26908.3379 | 31.7518 | 6106469 | 5.993 | 6.990 | 203 |

---------> Sample was Altered <---------
<<<Statistics>>> Mean: 24826.2070 Std Dev: 2944.5776 RSD: 11.86

AVG. 24410

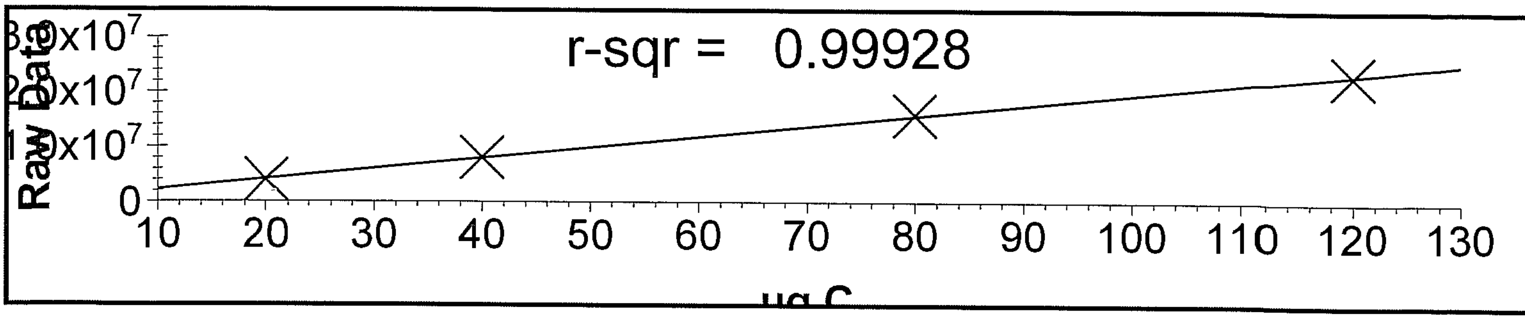
RL

```
Sample ID:     20091231 B2-CAP3-0002 29-197       Mode:          TOC
Method:        Boat Sampler                        Filename:      10131542
Cal. Curve:    101309                              Timestamp:     2009/10/13 15:48
Operator ID: LH                                    Sample Type: Sample

Rep #      ppm C      ug C     Raw Data       Beginning    Ending      Integration
                                              Baseline     Baseline        Time
  1   23576.9648    51.8693   9975435          5.996        6.994         224
==============================================================================


Sample ID:     ~20091232 B2-CAP3-0205 29-197      Mode:          TOC
Method:        Boat Sampler                        Filename:      10131555
Cal. Curve:    101309                              Timestamp:     ALT 2009/10/13 16:10
Operator ID: LH                                    Sample Type: Sample

Rep #      ppm C      ug C     Raw Data       Beginning    Ending      Integration
                                              Baseline     Baseline        Time
  1   10883.4160    51.2609   9858422          5.984        6.983         206
  2    8455.1162    20.2077   3886322          5.923        6.917         176
------------------------------------------------------------------------------
---------> Sample was Altered <---------
<<<Statistics>>>    Mean: 9669.2656    Std Dev: 1717.0673    RSD: 17.76
==============================================================================
```

> AVG. 9331

```
Sample ID:     20091232 B2-CAP3-0205 29-197       Mode:          TOC
Method:        Boat Sampler                        Filename:      10131626
Cal. Curve:    101309                              Timestamp:     2009/10/13 16:32
Operator ID: LH                                    Sample Type: Sample

Rep #      ppm C      ug C     Raw Data       Beginning    Ending      Integration
                                              Baseline     Baseline        Time
  1    8654.4707    52.4461  10086359          5.924        6.921         258
==============================================================================


Sample ID:     ~ICV 1000                           Mode:          TOC
Method:        Boat Sampler                        Filename:      10131649
Cal. Curve:    101309                              Timestamp:     ALT 2009/10/13 17:08
Operator ID: LH                                    Sample Type: Sample

Rep #      ppm C      ug C     Raw Data       Beginning    Ending      Integration
                                              Baseline     Baseline        Time
  1    1099.0983    43.9639   8455081          6.067        7.065         174
  2    1076.2787    43.0511   8279537          6.214        7.213         177
------------------------------------------------------------------------------
---------> Sample was Altered <---------
<<<Statistics>>>    Mean: 1087.6885    Std Dev:  16.1359    RSD: 1.48
==============================================================================


Sample ID:     ICV 1000                            Mode:          TOC
Method:        Boat Sampler                        Filename:      10131709
Cal. Curve:    101309                              Timestamp:     2009/10/13 17:13
Operator ID: LH                                    Sample Type: Sample

Rep #      ppm C      ug C     Raw Data       Beginning    Ending      Integration
                                              Baseline     Baseline        Time
  1    1052.0323    42.0813   8093016          6.411        7.409         163
==============================================================================
```

RJ



r-sqr = 0.99928
Raw Data
3.0x10^7
2.0x10^7
1.0x10^7
0
10
20
30
40
50
60
70
80
90
100
110
120
130
µg C

# Calibration Report   Print Date/Time: 2009/10/13 17:13:53

Cal. Curve ID: 101309
Created: 2009/10/13 09:09
Calibration Factor (m): 1.923e+05
Y Intercept (b): 241881
r-squared: 0.99928

| Standard ID | Y Raw Data | X Expected ug C | Measured ug C | Message | Date & Time |
|---|---|---|---|---|---|
| 3000 | 23131820 | 120.000 | 119.021 | | 2009/10/13 08:21 |
| 2000 | 15912750 | 80.000 | 81.484 | | 2009/10/13 08:34 |
| 1000 | 8019930 | 40.000 | 40.444 | | 2009/10/13 08:58 |
| 500 | 3905860 | 20.000 | 19.052 | | 2009/10/13 09:09 |

Detailed Analysis Report   Print Date/Time:  2009/10/14 16:49:55

29-197

| | | | | | | |
|---|---|---|---|---|---|---|
| Sample ID: 3000 | | | | Mode: TOC | | |
| Method: Boat Sampler | | | | Filename: 10140832 | | |
| Cal. Curve: 101409 | | | | Timestamp: 2009/10/14 08:46 | | |
| Operator ID: | | | | Sample Type: TOC Standard | | |

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | | | 23095292 | 2.787 | 3.787 | 248 |
| 2 | | | 23558642 | 3.068 | 4.067 | 232 |

<<<Statistics>>>   Mean: 23326968   Std Dev: 327638   RSD: 1.40

| | |
|---|---|
| Sample ID: 2000 | Mode: TOC |
| Method: Boat Sampler | Filename: 10140847 |
| Cal. Curve: 101409 | Timestamp: 2009/10/14 09:00 |
| Operator ID: | Sample Type: TOC Standard |

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | | | 16099799 | 3.383 | 4.381 | 202 |
| 2 | | | 16025378 | 3.372 | 4.372 | 209 |

<<<Statistics>>>   Mean: 16062588   Std Dev: 52624   RSD: 0.33

| | |
|---|---|
| Sample ID: 1000 | Mode: TOC |
| Method: Boat Sampler | Filename: 10140901 |
| Cal. Curve: 101409 | Timestamp: 2009/10/14 09:12 |
| Operator ID: | Sample Type: TOC Standard |

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | | | 8009236 | 3.507 | 4.506 | 170 |
| 2 | | | 8012114 | 3.650 | 4.647 | 171 |

<<<Statistics>>>   Mean: 8010675   Std Dev: 2035   RSD: 0.03

| | |
|---|---|
| Sample ID: 500 | Mode: TOC |
| Method: Boat Sampler | Filename: 10140912 |
| Cal. Curve: 101409 | Timestamp: 2009/10/14 09:24 |
| Operator ID: | Sample Type: TOC Standard |

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | | | 3995207 | 3.515 | 4.514 | 142 |
| 2 | | | 3999484 | 3.575 | 4.573 | 148 |

<<<Statistics>>>   Mean: 3997346   Std Dev: 3024   RSD: 0.08

| | |
|---|---|
| Sample ID: USGS | Mode: TOC |
| Method: Boat Sampler | Filename: 10140936 |
| Cal. Curve: 101409 | Timestamp: 2009/10/14 10:13 |
| Operator ID: | Sample Type: Sample |

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | 96177.7344 | 33.6622 | 6525757 | 4.083 | 5.081 | 171 |
| 2 | 91916.8125 | 64.3418 | 12473299 | 4.245 | 5.242 | 198 |
| 3 | 91734.7031 | 76.1398 | 14760467 | 4.285 | 5.284 | 206 |

<<<Statistics>>> Mean: 93276.4141 Std Dev: 2514.2642 RSD: 2.70

Sample ID: ICV 1000
Method: Boat Sampler
Cal. Curve: 101409
Operator ID:
Mode: TOC
Filename: 10141017
Timestamp: 2009/10/14 10:22
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 1048.9143 | 41.9566 | 8133703 | 4.356 | 5.355 | 172 |

Sample ID: Blank with Acid
Method: Boat Sampler
Cal. Curve: 101409
Operator ID:
Mode: TOC
Filename: 10141038
Timestamp: 2009/10/14 10:55
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 7.1275 | 0.2851 | 55269 | 4.418 | 4.366 | 120 |
| 2 | 7.4160 | 0.2966 | 57507 | 4.576 | 5.576 | 61 |
| 3 | 6.9133 | 0.2765 | 53609 | 4.875 | 4.901 | 120 |

Last Message: Low Sample Detected
<<<Statistics>>> Mean: 7.1523 Std Dev: 0.2523 RSD: 3.53

Sample ID: 20091233 B2-CAP3-0507
Method: Boat Sampler
Cal. Curve: 101409
Operator ID:
Mode: TOC
Filename: 10141134
Timestamp: 2009/10/14 11:59
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 20381.3535 | 48.7114 | 9443202 | 5.867 | 6.865 | 203 |
| 2 | 11042.7539 | 51.5697 | 9997298 | 5.555 | 6.553 | 227 |
| 3 | 14572.6074 | 76.2147 | 14774994 | 5.505 | 6.504 | 214 |

<<<Statistics>>> Mean: 15332.2383 Std Dev: 4715.4150 RSD: 30.75

Sample ID: 20091233 SPK 29-197
Method: Boat Sampler
Cal. Curve: 101409
Operator ID:
Mode: TOC
Filename: 10141325
Timestamp: 2009/10/14 13:55
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 26075.3574 | 26.8576 | 5206620 | 4.457 | 5.456 | 171 |
| 2 | 16825.8145 | 44.5884 | 8643912 | 4.766 | 5.763 | 187 |
| 3 | 32538.9590 | 84.2759 | 16337732 | 4.615 | 5.615 | 225 |

<<<Statistics>>> Mean: 25146.7109 Std Dev: 7897.6274 RSD: 31.41

Sample ID: ICV 1000
Mode: TOC

Method: Boat Sampler
Cal. Curve: 101409
Operator ID:

Filename: 10141404
Timestamp: 2009/10/14 14:10
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 1048.2850 | 41.9314 | 8128824 | 4.914 | 5.912 | 165 |

==========================================================================

Sample ID: 20091234 B2-CAP1-GRAB 29-197
Method: Boat Sampler
Cal. Curve: 101409
Operator ID:

Mode: TOC
Filename: 10141411
Timestamp: 2009/10/14 14:40
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 51856.9648 | 89.1940 | 17291150 | 4.920 | 5.918 | 233 |
| 2 | 58832.4414 | 45.8893 | 8896104 | 4.767 | 5.765 | 210 |
| 3 | 66771.1953 | 42.0659 | 8154889 | 5.067 | 6.066 | 191 |

<<<Statistics>>> Mean: 59153.5312 Std Dev: 7462.2983 RSD: 12.62

==========================================================================

Sample ID: 20091235 B2-CAP2-GRAB 29-197
Method: Boat Sampler
Cal. Curve: 101409
Operator ID:

Mode: TOC
Filename: 10141500
Timestamp: 2009/10/14 15:35
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 89861.4219 | 71.8891 | 13936432 | 5.668 | 6.666 | 217 |
| 2 | 74723.4844 | 53.0537 | 10284988 | 5.588 | 6.585 | 206 |
| 3 | 105993.2812 | 51.9367 | 10068453 | 5.663 | 6.662 | 201 |

<<<Statistics>>> Mean: 90192.7266 Std Dev: 15637.5312 RSD: 17.34

==========================================================================

Sample ID: 20091236 B2-CAP3-GRAB 29-197
Method: Boat Sampler
Cal. Curve: 101409
Operator ID:

Mode: TOC
Filename: 10141546
Timestamp: 2009/10/14 16:10
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 18580.9980 | 28.6147 | 5547255 | 5.498 | 6.496 | 187 |
| 2 | 18286.6660 | 47.3625 | 9181691 | 5.689 | 6.689 | 208 |
| 3 | 14432.6113 | 45.7514 | 8869365 | 5.846 | 6.845 | 226 |

<<<Statistics>>> Mean: 17100.0918 Std Dev: 2314.7888 RSD: 13.54

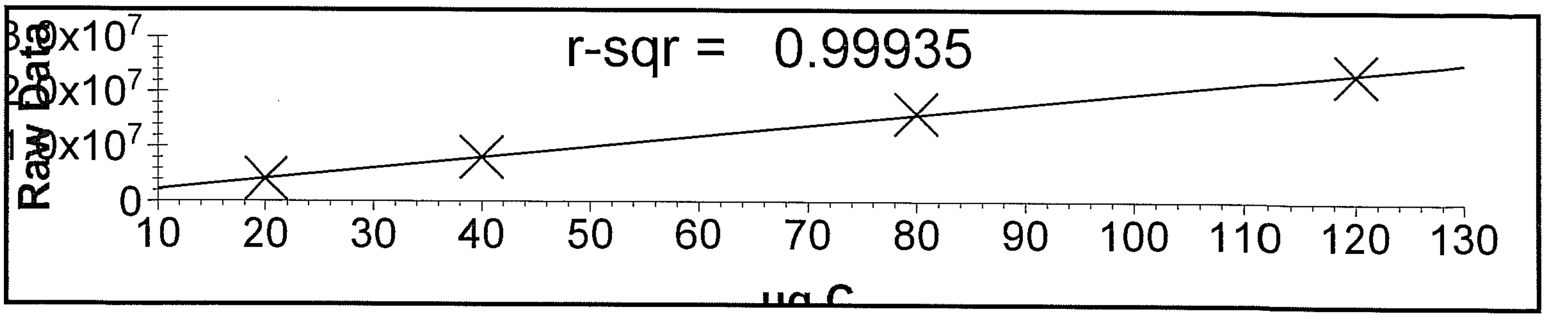
==========================================================================

Sample ID: ICV 1000
Method: Boat Sampler
Cal. Curve: 101409
Operator ID:

Mode: TOC
Filename: 10141632
Timestamp: 2009/10/14 16:49
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 1043.8409 | 41.7536 | 8094362 | 5.646 | 6.646 | 166 |
| 2 | 1039.4663 | 41.5787 | 8060440 | 5.623 | 6.623 | 165 |
| 3 | 1039.2166 | 41.5687 | 8058503 | 5.630 | 6.629 | 161 |

<<<Statistics>>> Mean: 1040.8412 Std Dev: 2.6008 RSD: 0.25


r-sqr = 0.99935
Raw Data
3.0x10^7
2.0x10^7
1.0x10^7
0
10
20
30
40
50
60
70
80
90
100
110
120
130
µg C

Calibration Report    Print Date/Time:  2009/10/14 16:50:06

Cal. Curve ID: 101409
Created: 2009/10/14 09:25
Calibration Factor (m): 1.939e+05
Y Intercept (b): 248490
r-squared: 0.99935

| Standard ID | Y Raw Data | X Expected ug C | Measured ug C | Message | Date & Time |
|---|---|---|---|---|---|
| 3000 | 23326966 | 120.000 | 119.047 | | 2009/10/14 08:46 |
| 2000 | 16062589 | 80.000 | 81.575 | | 2009/10/14 09:00 |
| 1000 | 8010675 | 40.000 | 40.040 | | 2009/10/14 09:12 |
| 500 | 3997346 | 20.000 | 19.338 | | 2009/10/14 09:24 |

Detailed Analysis Report   Print Date/Time: 2009/10/15 16:26:10

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Sample ID: 3000
Method: Boat Sampler
Cal. Curve: 101509
Operator ID: LH

Mode: TOC
Filename: 10150908
Timestamp: 2009/10/15 09:22
Sample Type: TOC Standard

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | | | 22751232 | 3.319 | 4.319 | 234 |
| 2 | | | 22910588 | 3.537 | 4.535 | 247 |

<<<Statistics>>> Mean: 22830910 Std Dev: 112682 RSD: 0.49

Sample ID: 2000
Method: Boat Sampler
Cal. Curve: 101509
Operator ID: LH

Mode: TOC
Filename: 10150922
Timestamp: 2009/10/15 09:35
Sample Type: TOC Standard

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | | | 15834637 | 3.947 | 4.946 | 214 |
| 2 | | | 15734003 | 4.030 | 5.029 | 216 |

<<<Statistics>>> Mean: 15784320 Std Dev: 71159 RSD: 0.45

Sample ID: 1000
Method: Boat Sampler
Cal. Curve: 101509
Operator ID: LH

Mode: TOC
Filename: 10150938
Timestamp: 2009/10/15 09:51
Sample Type: TOC Standard

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | | | 7883680 | 4.092 | 5.089 | 165 |
| 2 | | | 7929122 | 4.125 | 5.124 | 180 |

<<<Statistics>>> Mean: 7906401 Std Dev: 32132 RSD: 0.41

Sample ID: 500
Method: Boat Sampler
Cal. Curve: 101509
Operator ID: LH

Mode: TOC
Filename: 10150951
Timestamp: 2009/10/15 10:02
Sample Type: TOC Standard

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | | | 3903526 | 4.430 | 5.426 | 141 |
| 2 | | | 3913255 | 4.479 | 5.477 | 155 |

<<<Statistics>>> Mean: 3908390 Std Dev: 6879 RSD: 0.18

Sample ID: USGS
Method: Boat Sampler
Cal. Curve: 101509
Operator ID: LH

Mode: TOC
Filename: 10151013
Timestamp: 2009/10/15 10:46
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | 91082.0391 | 56.4709 | 10709628 | 4.586 | 5.585 | 188 |
| 2 | 90477.5000 | 75.0963 | 14241923 | 4.643 | 5.641 | 179 |
| 3 | 90110.2109 | 66.6816 | 12646072 | 4.600 | 5.599 | 176 |

<<<Statistics>>>   Mean: 90556.5859   Std Dev: 490.7169   RSD: 0.54

Sample ID: ICV 1000
Method: Boat Sampler
Cal. Curve: 101509
Operator ID: LH

Mode: TOC
Filename: 10151050
Timestamp: 2009/10/15 10:55
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 1058.5641 | 42.3426 | 8030213 | 4.657 | 5.655 | 151 |

Sample ID: Blank with Acid
Method: Boat Sampler
Cal. Curve: 101509
Operator ID: LH

Mode: TOC
Filename: 10151107
Timestamp: 2009/10/15 11:23
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 6.9789 | 0.2792 | 52942 | 4.625 | 5.621 | 61 |
| 2 | 12.3350 | 0.4934 | 93573 | 4.662 | 5.654 | 66 |
| 3 | 6.8463 | 0.2739 | 51936 | 4.906 | 5.903 | 58 |

<<<Statistics>>>   Mean: 8.7201   Std Dev: 3.1313   RSD: 35.91

Sample ID: 20091255 B2-CAP1-TRAP 29-197
Method: Boat Sampler
Cal. Curve: 101509
Operator ID: LH

Mode: TOC
Filename: 10151124
Timestamp: 2009/10/15 11:51
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 44892.7227 | 43.0970 | 8173294 | 5.022 | 6.021 | 170 |
| 2 | 46772.8477 | 39.7569 | 7539850 | 5.154 | 6.154 | 174 |
| 3 | 45583.6602 | 38.7461 | 7348151 | 5.246 | 6.245 | 166 |

<<<Statistics>>>   Mean: 45749.7461   Std Dev: 951.0023   RSD: 2.08

Sample ID: 20091255 spk 29-197
Method: Boat Sampler
Cal. Curve: 101509
Operator ID: LH

Mode: TOC
Filename: 10151304
Timestamp: 2009/10/15 13:30
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 52892.1797 | 83.0407 | 15748567 | 4.204 | 5.203 | 202 |
| 2 | 61622.8984 | 56.0768 | 10634901 | 4.656 | 5.655 | 175 |
| 3 | 58458.0000 | 30.9827 | 5875837 | 5.446 | 6.443 | 149 |

<<<Statistics>>>   Mean: 57657.6914   Std Dev: 4420.0376   RSD: 7.67

Sample ID: ICV 1000
Method: Boat Sampler

Mode: TOC
Filename: 10151344

```
Cal. Curve:  101509                         Timestamp:    2009/10/15 13:49
Operator ID: LH                             Sample Type: Sample

Rep #      ppm C      ug C     Raw Data      Beginning    Ending     Integration
                                             Baseline    Baseline       Time
  1   1060.0597    42.4024   8041559          4.961        5.958        153
==============================================================================


Sample ID:   20091256 B2-CAP2-TRAP 29-197       Mode:         TOC
Method:      Boat Sampler                       Filename:     10151351
Cal. Curve:  101509                             Timestamp:    2009/10/15 14:19
Operator ID: LH                                 Sample Type: Sample

Rep #      ppm C      ug C     Raw Data      Beginning    Ending     Integration
                                             Baseline    Baseline       Time
  1   53958.2500    93.3478  17703286          5.017       6.017        214
  2   56578.7852    72.9866  13841823          4.976       5.974        220
  3   59597.1016    75.6883  14354194          5.077       6.075        196
------------------------------------------------------------------------------
<<<Statistics>>>   Mean: 56711.3750   Std Dev: 2821.7632   RSD: 4.98
==============================================================================


Sample ID:   20091257 B2-CAP3-TRAP 29-197       Mode:         TOC
Method:      Boat Sampler                       Filename:     10151424
Cal. Curve:  101509                             Timestamp:    2009/10/15 14:58
Operator ID: LH                                 Sample Type: Sample

Rep #      ppm C      ug C     Raw Data      Beginning    Ending     Integration
                                             Baseline    Baseline       Time
  1   47259.7500    60.0199  11382695          4.889       5.888        181
  2   45394.2852    70.8151  13429992          4.696       5.694        187
  3   49171.4062    48.6797   9232042          4.825       5.823        171
------------------------------------------------------------------------------
<<<Statistics>>>   Mean: 47275.1445   Std Dev: 1888.6077   RSD: 3.99
==============================================================================


Sample ID:   2009123
7 B2-OFF1-GRAB 29-197     Mode:         TOC
Method:      Boat Sampler                       Filename:     10151502
Cal. Curve:  101509                             Timestamp:    2009/10/15 15:31
Operator ID: LH                                 Sample Type: Sample

Rep #      ppm C      ug C     Raw Data      Beginning    Ending     Integration
                                             Baseline    Baseline       Time
  1   32370.6602    62.7991  11909766          5.034       6.031        201
  2   29138.3848    39.6282   7515439          5.327       6.326        172
  3   33756.7109    41.8583   7938377          5.350       6.348        168
------------------------------------------------------------------------------
<<<Statistics>>>   Mean: 31755.2520   Std Dev: 2369.8691   RSD: 7.46
==============================================================================


Sample ID:   20091238 B2-OFF2-GRAB 29-197       Mode:         TOC
Method:      Boat Sampler                       Filename:     10151537
Cal. Curve:  101509                             Timestamp:    2009/10/15 15:56
Operator ID: LH                                 Sample Type: Sample

Rep #      ppm C      ug C     Raw Data      Beginning    Ending     Integration
                                             Baseline    Baseline       Time
  1   27007.2344    44.5619   8451115          6.089       7.086        182
  2   15420.1992    40.4009   7661984          5.623       6.622        178
  3   19176.6855    38.9287   7382773          5.603       6.600        185
------------------------------------------------------------------------------
```

<<<Statistics>>>   Mean: 20534.7051   Std Dev: 5911.6841   RSD: 28.79

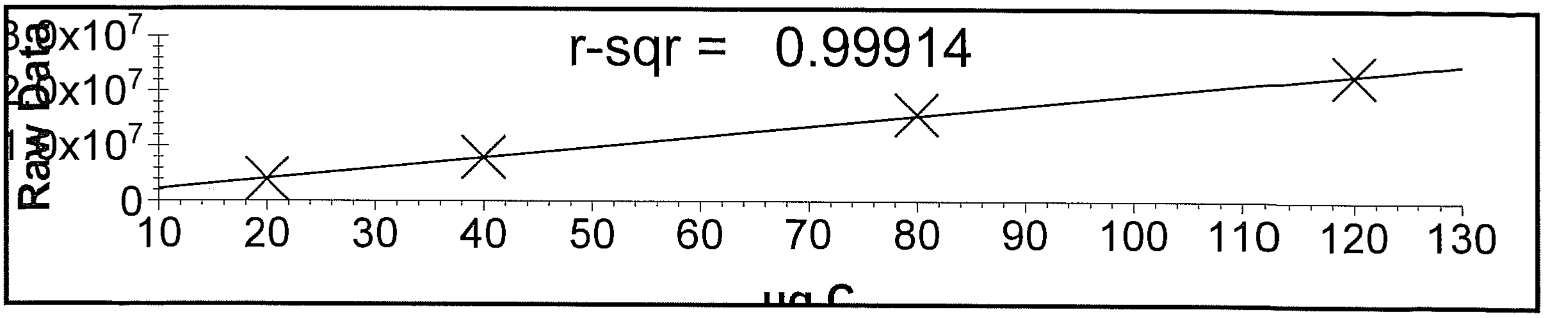
Sample ID: ICV 1000
Method: Boat Sampler
Cal. Curve: 101509
Operator ID: LH

Mode: TOC
Filename: 10151608
Timestamp: 2009/10/15 16:24
Sample Type: Sample

| Rep # | ppm C | ug C | Raw Data | Beginning Baseline | Ending Baseline | Integration Time |
|---|---|---|---|---|---|---|
| 1 | 1060.6521 | 42.4261 | 8046053 | 5.554 | 6.553 | 154 |
| 2 | 1051.0737 | 42.0429 | 7973392 | 5.641 | 6.637 | 152 |
| 3 | 1056.2777 | 42.2511 | 8012869 | 5.833 | 6.831 | 152 |

<<<Statistics>>>   Mean: 1056.0011   Std Dev: 4.7952   RSD: 0.45

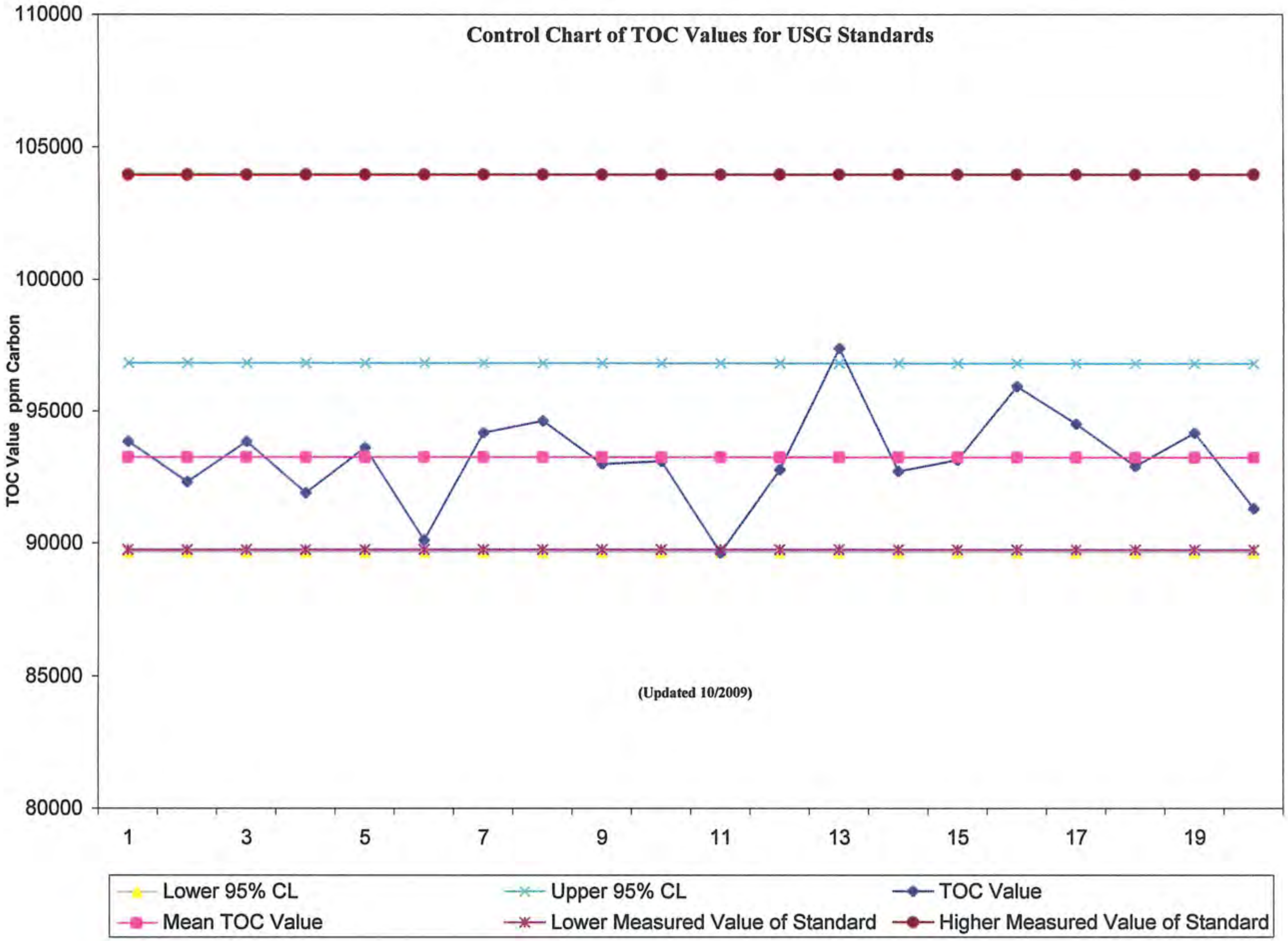
RJ


r-sqr = 0.99914
Raw Data
3.0x10^7
2.0x10^7
1.0x10^7
0
10
20
30
40
50
60
70
80
90
100
110
120
130

Calibration Report Print Date/Time: 2009/10/15 16:27:05

Cal. Curve ID: 101509
Created: 2009/10/15 10:03
Calibration Factor (m): 1.896e+05
Y Intercept (b): 280337
r-squared: 0.99914

| Standard ID | Y Raw Data | X Expected ug C | Measured ug C | Message | Date & Time |
|---|---|---|---|---|---|
| 3000 | 22830908 | 120.000 | 118.907 | | 2009/10/15 09:22 |
| 2000 | 15784320 | 80.000 | 81.751 | | 2009/10/15 09:35 |
| 1000 | 7906401 | 40.000 | 40.212 | | 2009/10/15 09:51 |
| 500 | 3908390 | 20.000 | 19.130 | | 2009/10/15 10:02 |



Control Chart of TOC Values for USG Standards
TOC Value ppm Carbon
110000
105000
100000
95000
90000
85000
80000
1
3
5
7
9
11
13
15
17
19
(Updated 10/2009)
Lower 95% CL
Upper 95% CL
TOC Value
Mean TOC Value
Lower Measured Value of Standard
Higher Measured Value of Standard

Table 1. Summary of constituent concentrations for USGS SDO-1 (CONTINUED)

| | Average: percent in sample, as received | | Average: ppm in sample, as received | | Range: ppm in sample as received |
|---|---|---|---|---|---|
| LOI | 21.7 ± 0.90 | B | 128 ± 11 | Ag | 0.094 - 0.17 |
| S | 5.35 ± 0.44 | Be | 3.3 ± 0.57 | Au | 0.002 - 0.0035 |
| $CO_2$ | 1.01 ± 0.21 | Cs | 6.9 ± 1.2 | Bi | 2 - <10 |
| $C_{TOT}$ | 9.95 ± 0.44 | Cu | 60.2 ± 9.6 | Br | 5 |
| $C_{org}$ measured | (range 8.98-10.4) | Er | 3.6 ± 0.55 | Cd | <2 - <10 |
| $C_{org}$ calculated | 9.68 ± 0.45 | F | 697 ± 88.5 | Ge | 1.3 |
| $H_2O^-$ moisture | 1.21 ± 0.50 | Gd | 7.4 ± 1.9 | In | <0.2 |
| $H_{TOT}$ | 1.34 ± 0.06 | Hf | 4.7 ± 0.75 | Sb | 4.1 - 4.8 |
| $N_{TOT}$ | 0.347 ± 0.043 | Hg | 0.19 ± 0.08 | Se | 1.9 - 6.8 |
| | | Ho | 1.2 ± 0.11 | Tl | 8.3 |
| | | Li | 28.6 ± 5.5 | W | 3.3 |
| | | Lu | 0.54 ± 0.14 | | |
| | | Pb | 27.9 ± 5.2 | | |
| | | Sn | 3.7 ± 1.2 | | |
| | | Ta | 1.1 ± 0.13 | | |
| | | Tb | 1.2 ± 0.24 | | |
| | | Tm | 0.45 ± 0.08 | | |

<u>Reference</u>

Kane, J.S., Arbogast, B.F., and Leventhal, J.S., 1990, Characterization of Devonian Ohio Shale SDO-1 as a USGS geochemical reference sample: Geostandards Newsletter, v. 14, p. 169-196.

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

10 January 2013

Gunther Rosen
Navy -- SPAWAR
Environmental Science and Applied System Branch, 536
San Diego, CA 92152

RE: Quantico

Enclosed are the results of analyses for samples received by the laboratory on 12-Oct-2012. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Patty Tuminello
Project Coordinator

# USACE ERDC-EP-C
# 3909 Halls Ferry Road
# Vicksburg, MS 39180-6199

| | | |
|---|---|---|
| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | **Reported:**<br>10-Jan-2013 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| QB1 | 2101204-01 | Soil/Sediment | 10-Oct-2012 | 12-Oct-2012 |
| QB2 | 2101204-02 | Soil/Sediment | 11-Oct-2012 | 12-Oct-2012 |
| QB3 | 2101204-03 | Soil/Sediment | 10-Oct-2012 | 12-Oct-2012 |
| QB4 | 2101204-04 | Soil/Sediment | 10-Oct-2012 | 12-Oct-2012 |
| QB5 | 2101204-05 | Soil/Sediment | 10-Oct-2012 | 12-Oct-2012 |
| QB6 | 2101204-06 | Soil/Sediment | 11-Oct-2012 | 12-Oct-2012 |
| QB0-Lv-1 | 2101204-07 | Tissue | 11-Oct-2012 | 12-Oct-2012 |
| QB0-Lv-2 | 2101204-08 | Tissue | 11-Oct-2012 | 12-Oct-2012 |
| QB0-Lv-3 | 2101204-09 | Tissue | 11-Oct-2012 | 12-Oct-2012 |
| QB0-Cf-1 | 2101204-10 | Tissue | 11-Oct-2012 | 12-Oct-2012 |
| QB0-Cf-2 | 2101204-11 | Tissue | 11-Oct-2012 | 12-Oct-2012 |
| QB0-Cf-3 | 2101204-12 | Tissue | 11-Oct-2012 | 12-Oct-2012 |

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|---|---|---|
| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | **Reported:**<br>10-Jan-2013 |

## QB1

**2101204-01 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **527** | 0.22 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **487** | 0.22 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4´-DDE** | **27.0** | 0.22 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **30.6** | 0.22 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4´-DDT** | **9.44** | 0.22 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4'-DDT [2C]** | **27.8** | 0.22 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *67.5 %* | *40-125* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *55.5 %* | *40-125* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *86.0 %* | *40-130* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *95.0 %* | *40-130* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| **Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring** | | | | | | | | |
| **Naphthalene** | **10.2** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **2-Methylnaphthalene** | **11.9** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **1-Methylnaphthalene** | **8.52** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Acenaphthylene** | **1.70** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Acenaphthene** | **3.41** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Fluorene** | **5.11** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Phenanthrene** | **15.3** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Anthracene** | **3.41** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Fluoranthene** | **56.2** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Pyrene** | **47.7** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (a) anthracene** | **32.4** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |

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|---|---|---|
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## QB1

### 2101204-01 (Soil/Sediment)

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring** | | | | | | | | |
| **Chrysene** | **42.6** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **20.4** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **30.7** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (a) pyrene** | **27.3** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Indeno (1,2,3-cd) pyrene** | **18.7** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **3.41** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Benzo (g,h,i) perylene** | **17.0** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| *Surrogate: 2-Fluorobiphenyl* | | *55.0 %* | *45-105* | | *19-Nov-2012* | *04-Dec-2012* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *81.0 %* | *30-145* | | *19-Nov-2012* | *04-Dec-2012* | *EPA 8270C* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **75.7** | 0.100 | % Solids | 1 | 27-Nov-2012 | 27-Nov-2012 | % Calculation | |

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## QB2

**2101204-02 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **122** | 0.22 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **114** | 0.22 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4´-DDE** | **22.9** | 0.22 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **25.0** | 0.22 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4´-DDT** | **8.40** | 0.22 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **23.8** | 0.22 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *65.5 %* | *40-125* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *62.0 %* | *40-125* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *94.5 %* | *40-130* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *95.5 %* | *40-130* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| **Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring** | | | | | | | | |
| **Naphthalene** | **10.5** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **2-Methylnaphthalene** | **12.3** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **1-Methylnaphthalene** | **8.78** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Acenaphthylene** | **1.76** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Acenaphthene** | **3.51** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Fluorene** | **5.27** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Phenanthrene** | **19.3** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Anthracene** | **3.51** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Fluoranthene** | **49.2** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Pyrene** | **35.1** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (a) anthracene** | **24.6** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |

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|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## QB2

**2101204-02 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring** | | | | | | | | |
| **Chrysene** | **33.4** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **17.6** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **24.6** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (a) pyrene** | **17.6** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Indeno (1,2,3-cd) pyrene** | **14.0** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **1.76** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Benzo (g,h,i) perylene** | **14.0** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| *Surrogate: 2-Fluorobiphenyl* | | *54.0 %* | *45-105* | | *19-Nov-2012* | *04-Dec-2012* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *71.5 %* | *30-145* | | *19-Nov-2012* | *04-Dec-2012* | *EPA 8270C* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **74.1** | 0.100 | % Solids | 1 | 27-Nov-2012 | 27-Nov-2012 | % Calculation | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | **Reported:**<br>10-Jan-2013 |

# QB3

## 2101204-03 (Soil/Sediment)

### ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **216** | 0.24 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **212** | 0.24 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4´-DDE** | **48.3** | 0.24 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **58.4** | 0.24 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4´-DDT** | **6.45** | 0.24 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **22.8** | 0.24 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *105 %* | *40-125* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *62.5 %* | *40-125* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *93.0 %* | *40-130* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *99.0 %* | *40-130* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| **Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring** | | | | | | | | |
| **Naphthalene** | **16.3** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **2-Methylnaphthalene** | **25.3** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **1-Methylnaphthalene** | **12.6** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Acenaphthylene** | **1.81** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Acenaphthene** | **5.42** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Fluorene** | **10.8** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Phenanthrene** | **56.0** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Anthracene** | **16.3** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Fluoranthene** | **444** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Pyrene** | **247** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (a) anthracene** | **199** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |

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|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

# QB3

## 2101204-03 (Soil/Sediment)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

### ERDC- EL-EP-C (Environmental Chemistry Branch)

### Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Chrysene** | **191** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **99.4** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **139** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (a) pyrene** | **123** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Indeno (1,2,3-cd) pyrene** | **81.3** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **10.8** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **56.0** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| *Surrogate: 2-Fluorobiphenyl* | | *41.0 %* | *45-105* | | *19-Nov-2012* | *04-Dec-2012* | *EPA 8270C* | *S-GC* |
| *Surrogate: Terphenyl-dl4* | | *90.0 %* | *30-145* | | *19-Nov-2012* | *04-Dec-2012* | *EPA 8270C* | |

### Classical Chemistry Parameters

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Solids** | **69.5** | 0.100 | % Solids | 1 | 27-Nov-2012 | 27-Nov-2012 | % Calculation | |

# USACE ERDC-EP-C
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| | | |
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| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | **Reported:**<br>10-Jan-2013 |

## QB4

**2101204-04 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **134** | 0.41 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **131** | 0.41 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4´-DDE** | **30.1** | 0.41 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **35.4** | 0.41 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4´-DDT** | **3.57** | 0.41 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **12.9** | 0.41 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *48.4 %* | *40-125* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *47.6 %* | *40-125* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *86.0 %* | *40-130* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *92.5 %* | *40-130* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| **Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring** | | | | | | | | |
| **Naphthalene** | **9.48** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **2-Methylnaphthalene** | **12.6** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **1-Methylnaphthalene** | **6.32** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| Acenaphthylene | ND | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | U |
| **Acenaphthene** | **3.16** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Fluorene** | **9.48** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Phenanthrene** | **28.4** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Anthracene** | **6.32** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Fluoranthene** | **123** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Pyrene** | **85.3** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (a) anthracene** | **34.7** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |

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## QB4

**2101204-04 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring** | | | | | | | | |
| **Chrysene** | **44.2** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **25.3** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **31.6** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (a) pyrene** | **19.0** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Indeno (1,2,3-cd) pyrene** | **19.0** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **3.16** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Benzo (g,h,i) perylene** | **15.8** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| *Surrogate: 2-Fluorobiphenyl* | | *35.5 %* | *45-105* | | *19-Nov-2012* | *04-Dec-2012* | *EPA 8270C* | *S-GC* |
| *Surrogate: Terphenyl-dl4* | | *67.5 %* | *30-145* | | *19-Nov-2012* | *04-Dec-2012* | *EPA 8270C* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **41.0** | 0.100 | % Solids | 1 | 27-Nov-2012 | 27-Nov-2012 | % Calculation | |

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## QB5

### 2101204-05 (Soil/Sediment)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **124** | 0.43 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **122** | 0.43 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4´-DDE** | **37.3** | 0.43 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **43.4** | 0.43 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4´-DDT** | **4.38** | 0.43 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **19.1** | 0.43 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *46.0 %* | *40-125* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *48.3 %* | *40-125* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *91.0 %* | *40-130* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *117 %* | *40-130* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |

**Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **17.3** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **2-Methylnaphthalene** | **24.2** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **1-Methylnaphthalene** | **13.9** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| Acenaphthylene | ND | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | U |
| **Acenaphthene** | **20.8** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Fluorene** | **27.7** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Phenanthrene** | **249** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Anthracene** | **86.6** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Fluoranthene** | **596** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Pyrene** | **409** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (a) anthracene** | **242** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

# QB5

## 2101204-05 (Soil/Sediment)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

### ERDC- EL-EP-C (Environmental Chemistry Branch)

**Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Chrysene** | **253** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **83.1** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **135** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (a) pyrene** | **100** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Indeno (1,2,3-cd) pyrene** | **48.5** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **6.93** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Benzo (g,h,i) perylene** | **38.1** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| *Surrogate: 2-Fluorobiphenyl* | | *42.0 %* | *45-105* | | *19-Nov-2012* | *04-Dec-2012* | *EPA 8270C* | *S-GC* |
| *Surrogate: Terphenyl-dl4* | | *86.0 %* | *30-145* | | *19-Nov-2012* | *04-Dec-2012* | *EPA 8270C* | |

**Classical Chemistry Parameters**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Solids** | **38.4** | 0.100 | % Solids | 1 | 27-Nov-2012 | 27-Nov-2012 | % Calculation | |

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## QB6

### 2101204-06 (Soil/Sediment)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **9.81** | 0.33 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **9.81** | 0.33 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4´-DDE** | **3.09** | 0.33 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **3.83** | 0.33 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.90** | 0.33 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **1.85** | 0.33 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *60.0 %* | *40-125* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *53.5 %* | *40-125* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *77.0 %* | *40-130* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *86.0 %* | *40-130* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |

**Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **2.57** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **2-Methylnaphthalene** | **5.14** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **1-Methylnaphthalene** | **2.57** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| Acenaphthylene | ND | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | U |
| **Acenaphthene** | **2.57** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Fluorene** | **5.14** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Phenanthrene** | **12.9** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Anthracene** | **5.14** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Fluoranthene** | **79.7** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Pyrene** | **56.6** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (a) anthracene** | **18.0** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## QB6

**2101204-06 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring** | | | | | | | | |
| **Chrysene** | **28.3** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **18.0** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **20.6** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (a) pyrene** | **20.6** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Indeno (1,2,3-cd) pyrene** | **12.9** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **2.57** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Benzo (g,h,i) perylene** | **10.3** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| *Surrogate: 2-Fluorobiphenyl* | | *43.5 %* | *45-105* | | *19-Nov-2012* | *04-Dec-2012* | *EPA 8270C* | *S-GC* |
| *Surrogate: Terphenyl-dl4* | | *108 %* | *30-145* | | *19-Nov-2012* | *04-Dec-2012* | *EPA 8270C* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **50.4** | 0.100 | % Solids | 1 | 27-Nov-2012 | 27-Nov-2012 | % Calculation | |

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## QB0-Lv-1

**2101204-07 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **35.0** | 0.274 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **33.1** | 0.274 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **13.9** | 0.274 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **15.0** | 0.274 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **1.66** | 0.274 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **5.35** | 0.274 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *50.2 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *77.5 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *102 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *104 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |

**Classical Chemistry Parameters**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **1.30** | | % by Weight | 1 | 17-Dec-2012 | 19-Dec-2012 | Gravimetric Determinatio n | |

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# QB0-Lv-2

## 2101204-08 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

### ERDC- EL-EP-C (Environmental Chemistry Branch)

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **7.98** | 0.255 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **7.51** | 0.255 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **5.12** | 0.255 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **4.29** | 0.255 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.174** | 0.255 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | J |
| **4,4'-DDT [2C]** | **0.822** | 0.255 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *45.3 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *46.0 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *84.2 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *78.5 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |

**Classical Chemistry Parameters**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **1.80** | | % by Weight | 1 | 17-Dec-2012 | 19-Dec-2012 | Gravimetric Determination | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

USACE ERDC-EP-C
3909 Halls Ferry Road
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| | | |
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| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br>Project Manager: Gunther Rosen | **Reported:**<br>10-Jan-2013 |

## QB0-Lv-3

### 2101204-09 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **13.1** | 0.229 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **11.3** | 0.229 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **5.07** | 0.229 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **5.18** | 0.229 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **2.29** | 0.229 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDT [2C]** | **2.89** | 0.229 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *57.2 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *80.2 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *105 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *96.0 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **1.20** | | % by Weight | 1 | 17-Dec-2012 | 19-Dec-2012 | Gravimetric Determination | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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# Vicksburg, MS 39180-6199

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| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | **Reported:**<br>10-Jan-2013 |

## QB0-Cf-1

### 2101204-10 (Tissue)

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **22.3** | 0.201 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **19.9** | 0.201 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **7.72** | 0.201 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **7.50** | 0.201 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.705** | 0.201 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDT [2C]** | **2.23** | 0.201 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *46.8 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *60.3 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *90.5 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *93.5 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.500** | | % by Weight | 1 | 17-Dec-2012 | 19-Dec-2012 | Gravimetric Determinatio n | |

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## QB0-Cf-2

**2101204-11 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **9.46** | 0.214 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **8.76** | 0.214 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **4.20** | 0.214 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **3.72** | 0.214 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.694** | 0.214 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDT [2C]** | **1.35** | 0.214 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *30.5 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *41.8 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *43.2 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *47.3 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.400** | | % by Weight | 1 | 17-Dec-2012 | 19-Dec-2012 | Gravimetric Determination | |

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**Vicksburg, MS 39180-6199**

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## QB0-Cf-3

**2101204-12 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

### Organochlorine Pesticides by EPA Method 8081A

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **1.14** | 0.233 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **0.973** | 0.233 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **1.04** | 0.233 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **0.973** | 0.233 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.103** | 0.233 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | J |
| **4,4'-DDT [2C]** | **0.290** | 0.233 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *5.75 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *10.5 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *12.3 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *13.4 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |

### Classical Chemistry Parameters

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **0.700** | | % by Weight | 1 | 17-Dec-2012 | 19-Dec-2012 | Gravimetric Determination | |

| | | |
|---|---|---|
| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | **Reported:**<br>10-Jan-2013 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B210094 - EPA 3545** | | | | | | | | | | |
| **Blank (B210094-BLK1)** | | | | Prepared: 24-Oct-2012 Analyzed: 29-Oct-2012 | | | | | | |
| 4,4´-DDD | ND | 0.17 | ug/kg wet | | | | | | | U |
| 4,4'-DDD [2C] | ND | 0.17 | ug/kg wet | | | | | | | U |
| 4,4´-DDE | ND | 0.17 | ug/kg wet | | | | | | | U |
| 4,4'-DDE [2C] | ND | 0.17 | ug/kg wet | | | | | | | U |
| 4,4´-DDT | ND | 0.17 | ug/kg wet | | | | | | | QR-05, U |
| 4,4'-DDT [2C] | ND | 0.17 | ug/kg wet | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *2.23* | | *ug/kg wet* | *2.667* | | *83.5* | *40-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *2.27* | | *ug/kg wet* | *2.667* | | *85.0* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.08* | | *ug/kg wet* | *2.667* | | *116* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *3.24* | | *ug/kg wet* | *2.667* | | *122* | *40-130* | | | |
| **LCS (B210094-BS1)** | | | | Prepared: 24-Oct-2012 Analyzed: 29-Oct-2012 | | | | | | |
| 4,4´-DDD | 1.6 | 0.17 | ug/kg wet | 2.667 | | 61.5 | 30-135 | | | |
| 4,4'-DDD [2C] | 1.7 | 0.17 | ug/kg wet | 2.667 | | 65.0 | 30-135 | | | |
| 4,4´-DDE | 2.2 | 0.17 | ug/kg wet | 2.667 | | 81.0 | 70-125 | | | |
| 4,4'-DDE [2C] | 2.3 | 0.17 | ug/kg wet | 2.667 | | 84.5 | 70-125 | | | |
| 4,4´-DDT | 1.5 | 0.17 | ug/kg wet | 2.667 | | 54.5 | 45-140 | | | QR-05 |
| 4,4'-DDT [2C] | 1.8 | 0.17 | ug/kg wet | 2.667 | | 67.0 | 45-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.85* | | *ug/kg wet* | *2.667* | | *69.5* | *40-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *1.96* | | *ug/kg wet* | *2.667* | | *73.5* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.80* | | *ug/kg wet* | *2.667* | | *105* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *2.81* | | *ug/kg wet* | *2.667* | | *106* | *40-130* | | | |
| **Duplicate (B210094-DUP1)** | | **Source: 2101204-03** | | Prepared: 24-Oct-2012 Analyzed: 29-Oct-2012 | | | | | | |
| 4,4´-DDD | 274 | 0.24 | ug/kg dry | | 216 | | | 23.8 | 30 | |
| 4,4'-DDD [2C] | 261 | 0.24 | ug/kg dry | | 212 | | | 20.7 | 30 | |
| 4,4´-DDE | 55.6 | 0.24 | ug/kg dry | | 48.3 | | | 14.0 | 30 | |
| 4,4'-DDE [2C] | 70.1 | 0.24 | ug/kg dry | | 58.4 | | | 18.2 | 30 | |
| 4,4´-DDT | 3.48 | 0.24 | ug/kg dry | | 6.45 | | | 59.8 | 30 | QR-05 |
| 4,4'-DDT [2C] | 16.6 | 0.24 | ug/kg dry | | 22.8 | | | 31.2 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *2.07* | | *ug/kg dry* | *3.760* | | *55.0* | *40-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *2.12* | | *ug/kg dry* | *3.760* | | *56.5* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.33* | | *ug/kg dry* | *3.760* | | *88.5* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *3.18* | | *ug/kg dry* | *3.760* | | *84.5* | *40-130* | | | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B210094 - EPA 3545** | | | | | | | | | | |
| **Matrix Spike (B210094-MS1)** | | **Source: 2101204-02** | | Prepared: 24-Oct-2012 Analyzed: 29-Oct-2012 | | | | | | |
| 4,4´-DDD | ND | 0.22 | ug/kg dry | 3.488 | 122 | NR | 30-135 | | | QM-02, U |
| 4,4'-DDD [2C] | ND | 0.22 | ug/kg dry | 3.488 | 114 | NR | 30-135 | | | QM-02, U |
| 4,4´-DDE | ND | 0.22 | ug/kg dry | 3.488 | 22.9 | NR | 70-125 | | | QM-02, U |
| 4,4'-DDE [2C] | ND | 0.22 | ug/kg dry | 3.488 | 25.0 | NR | 70-125 | | | QM-02, U |
| 4,4´-DDT | ND | 0.22 | ug/kg dry | 3.488 | 8.4 | NR | 45-140 | | | QM-02, U |
| 4,4'-DDT [2C] | ND | 0.22 | ug/kg dry | 3.488 | 23.8 | NR | 45-140 | | | QM-02, U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.90* | | *ug/kg dry* | *3.488* | | *54.5* | *40-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *1.88* | | *ug/kg dry* | *3.488* | | *54.0* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *1.90* | | *ug/kg dry* | *3.488* | | *54.5* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *1.88* | | *ug/kg dry* | *3.488* | | *54.0* | *40-130* | | | |
| **Matrix Spike Dup (B210094-MSD1)** | | **Source: 2101204-02** | | Prepared: 24-Oct-2012 Analyzed: 29-Oct-2012 | | | | | | |
| 4,4´-DDD | ND | 0.23 | ug/kg dry | 3.575 | 122 | NR | 30-135 | | 30 | QM-02, U |
| 4,4'-DDD [2C] | ND | 0.23 | ug/kg dry | 3.575 | 114 | NR | 30-135 | | 30 | QM-02, U |
| 4,4´-DDE | ND | 0.23 | ug/kg dry | 3.575 | 22.9 | NR | 70-125 | | 30 | QM-02, U |
| 4,4'-DDE [2C] | ND | 0.23 | ug/kg dry | 3.575 | 25.0 | NR | 70-125 | | 30 | QM-02, U |
| 4,4´-DDT | ND | 0.23 | ug/kg dry | 3.575 | 8.4 | NR | 45-140 | | 30 | QM-02, U |
| 4,4'-DDT [2C] | ND | 0.23 | ug/kg dry | 3.575 | 23.8 | NR | 45-140 | | 30 | QM-02, U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *2.11* | | *ug/kg dry* | *3.575* | | *59.0* | *40-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *2.11* | | *ug/kg dry* | *3.575* | | *59.0* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.57* | | *ug/kg dry* | *3.575* | | *72.0* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *2.75* | | *ug/kg dry* | *3.575* | | *77.0* | *40-130* | | | |
| **Batch B211024 - Sonication (probe or bath)** | | | | | | | | | | |
| **Blank (B211024-BLK1)** | | | | Prepared: 02-Nov-2012 Analyzed: 14-Nov-2012 | | | | | | |
| 4,4´-DDD | ND | 0.250 | ug/kg | | | | | | | U |
| 4,4'-DDD [2C] | ND | 0.250 | ug/kg | | | | | | | U |
| 4,4´-DDE | ND | 0.250 | ug/kg | | | | | | | U |
| 4,4'-DDE [2C] | ND | 0.250 | ug/kg | | | | | | | U |
| 4,4´-DDT | ND | 0.250 | ug/kg | | | | | | | U |
| 4,4'-DDT [2C] | ND | 0.250 | ug/kg | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *3.70* | | *ug/kg* | *8.000* | | *46.2* | *35-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *3.92* | | *ug/kg* | *8.000* | | *49.0* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *6.18* | | *ug/kg* | *8.000* | | *77.2* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *6.02* | | *ug/kg* | *8.000* | | *75.2* | *40-130* | | | |

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| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br>Project Manager: Gunther Rosen | Reported:<br>10-Jan-2013 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B211024 - Sonication (probe or bath)** | | | | | | | | | | |
| **LCS (B211024-BS1)** | | | | Prepared: 02-Nov-2012 Analyzed: 14-Nov-2012 | | | | | | |
| 4,4´-DDD | 4.42 | 0.250 | ug/kg | 8.000 | | 55.2 | 30-135 | | | |
| 4,4'-DDD [2C] | 4.24 | 0.250 | ug/kg | 8.000 | | 53.0 | 30-135 | | | |
| 4,4´-DDE | 5.64 | 0.250 | ug/kg | 8.000 | | 70.5 | 50-125 | | | |
| 4,4'-DDE [2C] | 5.56 | 0.250 | ug/kg | 8.000 | | 69.5 | 50-125 | | | |
| 4,4´-DDT | 4.02 | 0.250 | ug/kg | 8.000 | | 50.2 | 40-140 | | | |
| 4,4'-DDT [2C] | 3.34 | 0.250 | ug/kg | 8.000 | | 41.8 | 40-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *3.54* | | *ug/kg* | *8.000* | | *44.2* | *35-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *3.70* | | *ug/kg* | *8.000* | | *46.2* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *5.64* | | *ug/kg* | *8.000* | | *70.5* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *5.60* | | *ug/kg* | *8.000* | | *70.0* | *40-130* | | | |
| **LCS Dup (B211024-BSD1)** | | | | Prepared: 02-Nov-2012 Analyzed: 14-Nov-2012 | | | | | | |
| 4,4´-DDD | 4.36 | 0.250 | ug/kg | 8.000 | | 54.5 | 30-135 | 1.37 | 30 | |
| 4,4'-DDD [2C] | 3.56 | 0.250 | ug/kg | 8.000 | | 44.5 | 30-135 | 17.4 | 30 | |
| 4,4´-DDE | 5.38 | 0.250 | ug/kg | 8.000 | | 67.2 | 50-125 | 4.72 | 30 | |
| 4,4'-DDE [2C] | 5.02 | 0.250 | ug/kg | 8.000 | | 62.8 | 50-125 | 10.2 | 30 | |
| 4,4´-DDT | 3.98 | 0.250 | ug/kg | 8.000 | | 49.8 | 40-140 | 1.00 | 30 | |
| 4,4'-DDT [2C] | 3.58 | 0.250 | ug/kg | 8.000 | | 44.8 | 40-140 | 6.94 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *3.20* | | *ug/kg* | *8.000* | | *40.0* | *35-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *5.70* | | *ug/kg* | *8.000* | | *71.2* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *5.70* | | *ug/kg* | *8.000* | | *71.2* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *5.42* | | *ug/kg* | *8.000* | | *67.8* | *40-130* | | | |
| **Matrix Spike (B211024-MS1)** | **Source: 2102602-04** | | | Prepared: 02-Nov-2012 Analyzed: 14-Nov-2012 | | | | | | |
| 4,4´-DDD | 27.5 | 0.543 | ug/kg | 17.39 | | 158 | 30-135 | | | |
| 4,4'-DDD [2C] | 25.5 | 0.543 | ug/kg | 17.39 | | 146 | 30-135 | | | |
| 4,4´-DDE | 24.0 | 0.543 | ug/kg | 17.39 | | 138 | 60-125 | | | |
| 4,4'-DDE [2C] | 25.3 | 0.543 | ug/kg | 17.39 | | 146 | 60-125 | | | |
| 4,4´-DDT | 11.5 | 0.543 | ug/kg | 17.39 | | 66.0 | 40-140 | | | |
| 4,4'-DDT [2C] | 12.6 | 0.543 | ug/kg | 17.39 | | 72.3 | 40-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *9.57* | | *ug/kg* | *17.39* | | *55.0* | *35-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *11.0* | | *ug/kg* | *17.39* | | *63.5* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *17.1* | | *ug/kg* | *17.39* | | *98.5* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *16.8* | | *ug/kg* | *17.39* | | *96.8* | *40-130* | | | |

| | | |
|---|---|---|
| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | **Reported:**<br>10-Jan-2013 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B211024 - Sonication (probe or bath)** | | | | | | | | | | |
| **Matrix Spike Dup (B211024-MSD1)** | **Source: 2102602-04** | | Prepared: 02-Nov-2012 Analyzed: 14-Nov-2012 | | | | | | | |
| 4,4´-DDD | 31.8 | 0.594 | ug/kg | 19.02 | | 167 | 30-135 | 14.5 | 30 | |
| 4,4'-DDD [2C] | 27.7 | 0.594 | ug/kg | 19.02 | | 146 | 30-135 | 8.26 | 30 | |
| 4,4´-DDE | 26.6 | 0.594 | ug/kg | 19.02 | | 140 | 60-125 | 10.2 | 30 | |
| 4,4'-DDE [2C] | 28.6 | 0.594 | ug/kg | 19.02 | | 150 | 60-125 | 12.3 | 30 | |
| 4,4´-DDT | 11.9 | 0.594 | ug/kg | 19.02 | | 62.5 | 40-140 | 3.51 | 30 | |
| 4,4'-DDT [2C] | 12.3 | 0.594 | ug/kg | 19.02 | | 64.7 | 40-140 | 2.01 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *9.42* | | *ug/kg* | *19.02* | | *49.5* | *35-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *11.2* | | *ug/kg* | *19.02* | | *59.0* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *16.5* | | *ug/kg* | *19.02* | | *86.8* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *17.0* | | *ug/kg* | *19.02* | | *89.5* | *40-130* | | | |

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# Vicksburg, MS 39180-6199

| | | |
|---|---|---|
| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | **Reported:**<br>10-Jan-2013 |

## Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B211083 - EPA 3545** | | | | | | | | | | |
| **Blank (B211083-BLK1)** | | | | Prepared: 19-Nov-2012 Analyzed: 04-Dec-2012 | | | | | | |
| Naphthalene | ND | 3.40 | ug/kg wet | | | | | | | U |
| 2-Methylnaphthalene | ND | 3.40 | ug/kg wet | | | | | | | U |
| 1-Methylnaphthalene | ND | 3.40 | ug/kg wet | | | | | | | U |
| Acenaphthylene | ND | 3.40 | ug/kg wet | | | | | | | U |
| Acenaphthene | ND | 3.40 | ug/kg wet | | | | | | | U |
| Fluorene | ND | 3.40 | ug/kg wet | | | | | | | U |
| Phenanthrene | ND | 3.40 | ug/kg wet | | | | | | | U |
| Anthracene | ND | 3.40 | ug/kg wet | | | | | | | U |
| Fluoranthene | ND | 3.40 | ug/kg wet | | | | | | | U |
| Pyrene | 1.33 | 3.40 | ug/kg wet | | | | | | | J |
| Benzo (a) anthracene | 1.33 | 3.40 | ug/kg wet | | | | | | | J |
| Chrysene | 1.33 | 3.40 | ug/kg wet | | | | | | | J |
| Benzo (b) fluoranthene | ND | 3.40 | ug/kg wet | | | | | | | U |
| Benzo (k) fluoranthene | ND | 3.40 | ug/kg wet | | | | | | | U |
| Benzo (a) pyrene | ND | 3.40 | ug/kg wet | | | | | | | U |
| Indeno (1,2,3-cd) pyrene | ND | 3.40 | ug/kg wet | | | | | | | U |
| Dibenz (a,h) anthracene | ND | 3.40 | ug/kg wet | | | | | | | U |
| Benzo (g,h,i) perylene | ND | 3.40 | ug/kg wet | | | | | | | U |
| *Surrogate: 2-Fluorobiphenyl* | *200* | | *ug/kg wet* | *266.7* | | *75.0* | *45-105* | | | |
| *Surrogate: Terphenyl-dl4* | *260* | | *ug/kg wet* | *266.7* | | *96.5* | *30-145* | | | |
| **LCS (B211083-BS1)** | | | | Prepared: 19-Nov-2012 Analyzed: 04-Dec-2012 | | | | | | |
| Naphthalene | 212 | 3.40 | ug/kg wet | 266.7 | | 79.5 | 40-105 | | | |
| 2-Methylnaphthalene | 219 | 3.40 | ug/kg wet | 266.7 | | 82.0 | 0-200 | | | |
| 1-Methylnaphthalene | 219 | 3.40 | ug/kg wet | 266.7 | | 82.0 | 0-200 | | | |
| Acenaphthylene | 212 | 3.40 | ug/kg wet | 266.7 | | 79.5 | 45-105 | | | |
| Acenaphthene | 231 | 3.40 | ug/kg wet | 266.7 | | 86.5 | 45-110 | | | |
| Fluorene | 261 | 3.40 | ug/kg wet | 266.7 | | 98.0 | 50-110 | | | |
| Phenanthrene | 248 | 3.40 | ug/kg wet | 266.7 | | 93.0 | 50-110 | | | |
| Anthracene | 268 | 3.40 | ug/kg wet | 266.7 | | 100 | 55-105 | | | |
| Fluoranthene | 172 | 3.40 | ug/kg wet | 266.7 | | 64.5 | 55-120 | | | |
| Pyrene | 164 | 3.40 | ug/kg wet | 266.7 | | 61.5 | 45-125 | | | |
| Benzo (a) anthracene | 240 | 3.40 | ug/kg wet | 266.7 | | 90.0 | 50-120 | | | |
| Chrysene | 324 | 3.40 | ug/kg wet | 266.7 | | 122 | 55-120 | | | |
| Benzo (b) fluoranthene | 279 | 3.40 | ug/kg wet | 266.7 | | 104 | 45-115 | | | |
| Benzo (k) fluoranthene | 409 | 3.40 | ug/kg wet | 266.7 | | 154 | 45-125 | | | |
| Benzo (a) pyrene | 288 | 3.40 | ug/kg wet | 266.7 | | 108 | 50-110 | | | |
| Indeno (1,2,3-cd) pyrene | 287 | 3.40 | ug/kg wet | 266.7 | | 108 | 40-120 | | | |
| Dibenz (a,h) anthracene | 323 | 3.40 | ug/kg wet | 266.7 | | 121 | 40-125 | | | |
| Benzo (g,h,i) perylene | 289 | 3.40 | ug/kg wet | 266.7 | | 108 | 40-125 | | | |

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| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B211083 - EPA 3545** | | | | | | | | | | |
| **LCS (B211083-BS1)** | | | | Prepared: 19-Nov-2012 Analyzed: 04-Dec-2012 | | | | | | |
| *Surrogate: 2-Fluorobiphenyl* | *220* | | *ug/kg wet* | *266.7* | | *82.5* | *45-105* | | | |
| *Surrogate: Terphenyl-dl4* | *190* | | *ug/kg wet* | *266.7* | | *72.5* | *30-145* | | | |
| **Duplicate (B211083-DUP1)** | **Source: 2101204-03** | | | Prepared: 19-Nov-2012 Analyzed: 04-Dec-2012 | | | | | | |
| Naphthalene | 17.0 | 4.82 | ug/kg dry | | 16.3 | | | 4.63 | 40 | |
| 2-Methylnaphthalene | 20.8 | 4.82 | ug/kg dry | | 25.3 | | | 19.4 | 40 | |
| 1-Methylnaphthalene | 13.2 | 4.82 | ug/kg dry | | 12.6 | | | 4.63 | 40 | |
| Acenaphthylene | 1.89 | 4.82 | ug/kg dry | | 1.81 | | | 4.63 | 40 | J |
| Acenaphthene | 7.57 | 4.82 | ug/kg dry | | 5.42 | | | 33.1 | 40 | |
| Fluorene | 13.2 | 4.82 | ug/kg dry | | 10.8 | | | 20.0 | 40 | |
| Phenanthrene | 39.7 | 4.82 | ug/kg dry | | 56.0 | | | 34.0 | 40 | |
| Anthracene | 9.46 | 4.82 | ug/kg dry | | 16.3 | | | 52.9 | 40 | |
| Fluoranthene | 191 | 4.82 | ug/kg dry | | 444 | | | 79.7 | 40 | |
| Pyrene | 127 | 4.82 | ug/kg dry | | 247 | | | 64.5 | 40 | |
| Benzo (a) anthracene | 54.9 | 4.82 | ug/kg dry | | 199 | | | 113 | 40 | |
| Chrysene | 66.2 | 4.82 | ug/kg dry | | 191 | | | 97.2 | 40 | |
| Benzo (b) fluoranthene | 32.2 | 4.82 | ug/kg dry | | 99.4 | | | 102 | 40 | |
| Benzo (k) fluoranthene | 49.2 | 4.82 | ug/kg dry | | 139 | | | 95.5 | 40 | |
| Benzo (a) pyrene | 37.8 | 4.82 | ug/kg dry | | 123 | | | 106 | 40 | |
| Indeno (1,2,3-cd) pyrene | 32.2 | 4.82 | ug/kg dry | | 81.3 | | | 86.6 | 40 | |
| Dibenz (a,h) anthracene | 3.78 | 4.82 | ug/kg dry | | 10.8 | | | 96.5 | 40 | J |
| Benzo (g,h,i) perylene | 26.5 | 4.82 | ug/kg dry | | 56.0 | | | 71.6 | 40 | |
| *Surrogate: 2-Fluorobiphenyl* | *180* | | *ug/kg dry* | *378.4* | | *48.0* | *45-105* | | | |
| *Surrogate: Terphenyl-dl4* | *290* | | *ug/kg dry* | *378.4* | | *77.0* | *30-145* | | | |
| **Matrix Spike (B211083-MS1)** | **Source: 2101204-02** | | | Prepared: 19-Nov-2012 Analyzed: 04-Dec-2012 | | | | | | |
| Naphthalene | 194 | 4.46 | ug/kg dry | 349.4 | 10.5 | 52.5 | 40-105 | | | |
| 2-Methylnaphthalene | 259 | 4.46 | ug/kg dry | 349.4 | 12.3 | 70.5 | 0-200 | | | |
| 1-Methylnaphthalene | 266 | 4.46 | ug/kg dry | 349.4 | 8.78 | 73.5 | 0-200 | | | |
| Acenaphthylene | 171 | 4.46 | ug/kg dry | 349.4 | 1.76 | 48.5 | 45-105 | | | |
| Acenaphthene | 222 | 4.46 | ug/kg dry | 349.4 | 3.51 | 62.5 | 45-110 | | | |
| Fluorene | 278 | 4.46 | ug/kg dry | 349.4 | 5.27 | 78.0 | 50-110 | | | |
| Phenanthrene | 267 | 4.46 | ug/kg dry | 349.4 | 19.3 | 71.0 | 50-110 | | | |
| Anthracene | 262 | 4.46 | ug/kg dry | 349.4 | 3.51 | 74.0 | 55-105 | | | |
| Fluoranthene | 639 | 4.46 | ug/kg dry | 349.4 | 49.2 | 169 | 55-120 | | | QM-07 |
| Pyrene | 423 | 4.46 | ug/kg dry | 349.4 | 35.1 | 111 | 45-125 | | | |
| Benzo (a) anthracene | 274 | 4.46 | ug/kg dry | 349.4 | 24.6 | 71.5 | 50-120 | | | |
| Chrysene | 267 | 4.46 | ug/kg dry | 349.4 | 33.4 | 67.0 | 55-120 | | | |
| Benzo (b) fluoranthene | 185 | 4.46 | ug/kg dry | 349.4 | 17.6 | 48.0 | 45-115 | | | |
| Benzo (k) fluoranthene | 257 | 4.46 | ug/kg dry | 349.4 | 24.6 | 66.5 | 45-125 | | | |
| Benzo (a) pyrene | 192 | 4.46 | ug/kg dry | 349.4 | 17.6 | 50.0 | 50-110 | | | |

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## Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B211083 - EPA 3545** | | | | | | | | | | |
| **Matrix Spike (B211083-MS1)** | **Source: 2101204-02** | | Prepared: 19-Nov-2012 Analyzed: 04-Dec-2012 | | | | | | | |
| Indeno (1,2,3-cd) pyrene | 133 | 4.46 | ug/kg dry | 349.4 | 14.0 | 34.0 | 40-120 | | | QM-07 |
| Dibenz (a,h) anthracene | 114 | 4.46 | ug/kg dry | 349.4 | 1.76 | 32.0 | 40-125 | | | QM-07 |
| Benzo (g,h,i) perylene | 180 | 4.46 | ug/kg dry | 349.4 | 14.0 | 47.5 | 40-125 | | | |
| *Surrogate: 2-Fluorobiphenyl* | *200* | | *ug/kg dry* | *349.4* | | *58.0* | *45-105* | | | |
| *Surrogate: Terphenyl-dl4* | *320* | | *ug/kg dry* | *349.4* | | *91.0* | *30-145* | | | |
| **Matrix Spike Dup (B211083-MSD1)** | **Source: 2101204-02** | | Prepared: 19-Nov-2012 Analyzed: 04-Dec-2012 | | | | | | | |
| Naphthalene | 152 | 4.52 | ug/kg dry | 354.2 | 10.5 | 40.0 | 40-105 | 24.0 | 30 | |
| 2-Methylnaphthalene | 181 | 4.52 | ug/kg dry | 354.2 | 12.3 | 47.5 | 0-200 | 35.5 | 200 | |
| 1-Methylnaphthalene | 168 | 4.52 | ug/kg dry | 354.2 | 8.78 | 45.0 | 0-200 | 44.9 | 200 | |
| Acenaphthylene | 147 | 4.52 | ug/kg dry | 354.2 | 1.76 | 41.0 | 45-105 | 15.2 | 30 | QM-07 |
| Acenaphthene | 182 | 4.52 | ug/kg dry | 354.2 | 3.51 | 50.5 | 45-110 | 19.5 | 30 | |
| Fluorene | 255 | 4.52 | ug/kg dry | 354.2 | 5.27 | 70.5 | 50-110 | 8.53 | 30 | |
| Phenanthrene | 237 | 4.52 | ug/kg dry | 354.2 | 19.3 | 61.5 | 50-110 | 11.9 | 30 | |
| Anthracene | 239 | 4.52 | ug/kg dry | 354.2 | 3.51 | 66.5 | 55-105 | 9.16 | 30 | |
| Fluoranthene | 475 | 4.52 | ug/kg dry | 354.2 | 49.2 | 120 | 55-120 | 29.6 | 30 | |
| Pyrene | 344 | 4.52 | ug/kg dry | 354.2 | 35.1 | 87.1 | 45-125 | 20.7 | 30 | |
| Benzo (a) anthracene | 264 | 4.52 | ug/kg dry | 354.2 | 24.6 | 67.6 | 50-120 | 3.86 | 30 | |
| Chrysene | 223 | 4.52 | ug/kg dry | 354.2 | 33.4 | 53.6 | 55-120 | 18.0 | 30 | QM-07 |
| Benzo (b) fluoranthene | 151 | 4.52 | ug/kg dry | 354.2 | 17.6 | 37.5 | 45-115 | 20.6 | 30 | QM-07 |
| Benzo (k) fluoranthene | 174 | 4.52 | ug/kg dry | 354.2 | 24.6 | 42.1 | 45-125 | 38.7 | 30 | QM-07 |
| Benzo (a) pyrene | 142 | 4.52 | ug/kg dry | 354.2 | 17.6 | 35.0 | 50-110 | 30.2 | 30 | QM-07 |
| Indeno (1,2,3-cd) pyrene | 86.8 | 4.52 | ug/kg dry | 354.2 | 14.0 | 20.5 | 40-120 | 41.9 | 30 | QM-07 |
| Dibenz (a,h) anthracene | 72.6 | 4.52 | ug/kg dry | 354.2 | 1.76 | 20.0 | 40-125 | 44.0 | 30 | QM-07 |
| Benzo (g,h,i) perylene | 122 | 4.52 | ug/kg dry | 354.2 | 14.0 | 30.5 | 40-125 | 38.2 | 30 | QM-07 |
| *Surrogate: 2-Fluorobiphenyl* | *340* | | *ug/kg dry* | *354.2* | | *95.5* | *45-105* | | | |
| *Surrogate: Terphenyl-dl4* | *500* | | *ug/kg dry* | *354.2* | | *141* | *30-145* | | | |

| Navy -- SPAWAR | Project: Quantico | |
|---|---|---|
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## Classical Chemistry Parameters - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B211105 - % Solids** | | | | | | | | | | |
| **Duplicate (B211105-DUP1)** | **Source: 2102604-06** | | Prepared & Analyzed: 27-Nov-2012 | | | | | | | |
| % Solids | 37.4 | 0.100 | % Solids | | 39.2 | | | 4.86 | 20 | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | **Reported:**<br>10-Jan-2013 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| S-GC | Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate. |
| QR-05 | RPD between primary and confirmation column values >40%. |
| QM-07 | The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery. |
| QM-02 | The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte inherent in the sample. |
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

29 December 2014

Gunther Rosen
Navy -- SPAWAR
Environmental Science and Applied System Branch, 536(
San Diego, CA 92152

RE: Quantico

Enclosed are the results of analyses for samples received by the laboratory on 26-Sep-2014. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

DJ Rosado For Patty Tuminello
Project Coordinator

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 29-Dec-2014 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| QT2-1-0002-SEDCHEM | 4092606-01 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-1-0205-SEDCHEM | 4092606-02 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-1-0507-SEDCHEM | 4092606-03 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-1-0002-SEDCHEM-AI | 4092606-04 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-1-0002-SEDCHEM-BI | 4092606-05 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-1-0205-SEDCHEM-BI | 4092606-06 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-1-0507-SEDCHEM-BI | 4092606-07 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-2-0002-SEDCHEM | 4092606-08 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-2-0205-SEDCHEM | 4092606-09 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-2-0507-SEDCHEM | 4092606-10 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-2-0002-SEDCHEM-AI | 4092606-11 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-2-0002-SEDCHEM-BI | 4092606-12 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-2-0205-SEDCHEM-BI | 4092606-13 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-2-0507-SEDCHEM-BI | 4092606-14 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-3-0002-SEDCHEM | 4092606-15 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-3-0205-SEDCHEM | 4092606-16 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-3-0507-SEDCHEM | 4092606-17 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-3-0002-SEDCHEM-AI | 4092606-18 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-3-0002-SEDCHEM-BI | 4092606-19 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-3-0205-SEDCHEM-BI | 4092606-20 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-3-0507-SEDCHEM-BI | 4092606-21 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-4-0002-SEDCHEM | 4092606-43 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-4-0205-SEDCHEM | 4092606-44 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-4-0507-SEDCHEM | 4092606-45 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-4-0002-SEDCHEM-AI | 4092606-46 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-4-0002-SEDCHEM-BI | 4092606-47 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-4-0205-SEDCHEM-BI | 4092606-48 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-4-0507-SEDCHEM-BI | 4092606-49 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-5-0002-SEDCHEM | 4092606-50 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-5-0205-SEDCHEM | 4092606-51 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-5-0507-SEDCHEM | 4092606-52 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |

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## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| QT2-5-0002-SEDCHEM-AI | 4092606-53 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-5-0002-SEDCHEM-BI | 4092606-54 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-5-0205-SEDCHEM-BI | 4092606-55 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-5-0507-SEDCHEM-BI | 4092606-56 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-5DUP-0002-SEDCHEM | 4092606-57 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-5DUP-0205-SEDCHEM | 4092606-58 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-5DUP-0507-SEDCHEM | 4092606-59 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-5DUP-0002-SEDCHEM-AI | 4092606-60 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-5DUP-0002-SEDCHEM-BI | 4092606-61 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-5DUP-0205-SEDCHEM-BI | 4092606-62 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-5DUP-0507-SEDCHEM-BI | 4092606-63 | Soil/Sediment | 23-Sep-2014 | 26-Sep-2014 |
| QT2-6-GRAB-SEDCHEM | 4092606-64 | Soil/Sediment | 22-Sep-2014 | 26-Sep-2014 |
| QT2-7-GRAB-SEDCHEM | 4092606-65 | Soil/Sediment | 22-Sep-2014 | 26-Sep-2014 |

| | | |
|---|---|---|
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## Case Narrative

The last continued calibration check (CCV) for 2,4-DDT was above acceptable limits. The samples affected were 4092606 51-65. The nature of the deviation from initial calibration for this analyte resulted in the instrument becoming more sensitive. However, no 2,4-DDT was detected in these samples. The data was acceptable based on criteria for CCVs from EPA Method 8081B.

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## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| S-GC | Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate. |
| RPD-02 | The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data. |
| QM-11 | The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to inherent analyte concentration greater than the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits. |
| QM-07 | The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery. |
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration. |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

| | | |
|---|---|---|
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## QT2-1-0002-SEDCHEM

**4092606-01 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C** | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **82.6** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **20.9** | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **20.7** | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **36.3** | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDT** | **29.8** | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDD** | **1700** | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **411** | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.73** | | *54.5 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.58** | | *81.5 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

| | | |
|---|---|---|
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# QT2-1-0205-SEDCHEM

**4092606-02 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **83.1** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **2.98** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **1.92** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **3.44** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDT** | **1.61** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDD** | **9.22** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **2.03** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.63** | | *85.5 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.15** | | *102 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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## QT2-1-0507-SEDCHEM

**4092606-03 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Classical Chemistry Parameters**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **% Solids** | **83.1** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **4,4´-DDE** | **3.27** | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **3.58** | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **4.10** | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **12.5** | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 4,4´-DDT | ND | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.67** | | *84.0 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.10** | | *97.5 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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## QT2-1-0002-SEDCHEM-AI

**4092606-04 (Soil/Sediment)**

**ERDC- EL-EP-C**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **82.2** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **3.28** | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDE | ND | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **2,4´-DDD** | **4.71** | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **118** | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **1.30** | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.20** | | *99.5 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.22** | | *100 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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# QT2-1-0002-SEDCHEM-BI

**4092606-05 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **74.6** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **17.4** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **13.5** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **24.1** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **90.8** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **10.9** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.32** | | *66.0 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.71** | | *77.0 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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## QT2-1-0205-SEDCHEM-BI

### 4092606-06 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **70.6** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **28.8** | 0.07 | 0.23 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **19.9** | 0.07 | 0.23 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **39.0** | 0.07 | 0.23 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDT** | **4.24** | 0.07 | 0.23 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDD** | **149** | 0.07 | 0.23 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **6.65** | 0.07 | 0.23 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.40** | | *91.5 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.29** | | *88.5 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

| | | |
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# QT2-1-0507-SEDCHEM-BI

**4092606-07 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Classical Chemistry Parameters**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **% Solids** | **68.4** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **4,4´-DDE** | **9.99** | 0.07 | 0.23 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **28.3** | 0.07 | 0.23 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **52.8** | 0.07 | 0.23 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDT** | **13.4** | 0.07 | 0.23 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDD** | **959** | 0.07 | 0.23 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **16.8** | 0.07 | 0.23 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.58** | | *69.0 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **4.30** | | *115 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

| | | |
|---|---|---|
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## QT2-2-0002-SEDCHEM

**4092606-08 (Soil/Sediment)**

**ERDC- EL-EP-C**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **87.8** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **0.66** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **3.55** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **6.67** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDT** | **2.04** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDD** | **23.6** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **0.81** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.78** | | *92.0 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.46** | | *114 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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|---|---|---|
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# QT2-2-0205-SEDCHEM

## 4092606-09 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C** | | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **87.2** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **0.92** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **1.19** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **2.55** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **5.00** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 4,4´-DDT | ND | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.75** | | *91.5 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.84** | | *94.5 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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# QT2-2-0507-SEDCHEM

**4092606-10 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Classical Chemistry Parameters**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **% Solids** | **85.8** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **4,4´-DDE** | **0.46** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **0.94** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **1.84** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **1.79** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 4,4´-DDT | ND | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.62** | | *87.0 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.08** | | *102 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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# QT2-2-0002-SEDCHEM-AI

## 4092606-11 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **84.2** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **0.96** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **1.73** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **2.55** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **8.69** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 4,4´-DDT | ND | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.58** | | *83.5 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.22** | | *104 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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## QT2-2-0002-SEDCHEM-BI

**4092606-12 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **74.9** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **12.6** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **10.1** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **20.0** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDT** | **3.03** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDD** | **78.9** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **8.34** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.29** | | *94.0 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **4.05** | | *116 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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| San Diego CA, 92152 | Project Manager: Gunther Rosen | 29-Dec-2014 |

## QT2-2-0205-SEDCHEM-BI

**4092606-13 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **75.4** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **20.3** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **13.2** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **24.3** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDT** | **2.17** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDD** | **90.6** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **17.9** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.50** | | *100 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.32** | | *95.5 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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# QT2-2-0507-SEDCHEM-BI

**4092606-14 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Classical Chemistry Parameters**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **% Solids** | **76.0** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **4,4´-DDE** | **11.1** | 0.07 | 0.21 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **11.5** | 0.07 | 0.21 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **19.7** | 0.07 | 0.21 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDT** | **3.91** | 0.07 | 0.21 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDD** | **71.7** | 0.07 | 0.21 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **3.02** | 0.07 | 0.21 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **7.31** | | *213 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | *S-GC* |
| *Surrogate: Decachlorobiphenyl* | **2.93** | | *85.5 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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# QT2-3-0002-SEDCHEM

## 4092606-15 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **82.4** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **16.0** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **9.44** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **13.8** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **77.9** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **18.3** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.84** | | *60.0 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.52** | | *114 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

| | | |
|---|---|---|
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# QT2-3-0205-SEDCHEM

## 4092606-16 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **85.3** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **3.42** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **4.35** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **12.9** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDT** | **2.23** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDD** | **45.2** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **1.45** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.59** | | *84.0 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.36** | | *109 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

| | | |
|---|---|---|
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# QT2-3-0507-SEDCHEM

**4092606-17 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **85.0** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **8.01** | 0.06 | 0.18 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **9.21** | 0.06 | 0.18 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **18.9** | 0.06 | 0.18 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDT** | **2.75** | 0.06 | 0.18 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDD** | **86.6** | 0.06 | 0.18 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **1.97** | 0.06 | 0.18 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.81** | | *95.0 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.51** | | *85.0 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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## QT2-3-0002-SEDCHEM-AI

**4092606-18 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **76.3** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **52.0** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **33.2** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **94.8** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDT** | **9.92** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDD** | **389** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **14.2** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **4.04** | | *117 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.78** | | *110 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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## QT2-3-0002-SEDCHEM-BI

**4092606-19 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **86.2** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **2.10** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **3.63** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **7.38** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDT** | **1.69** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDD** | **25.0** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **1.49** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.64** | | *87.5 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.29** | | *109 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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## QT2-3-0205-SEDCHEM-BI

**4092606-20 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **67.8** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **17.1** | 0.08 | 0.24 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **55.3** | 0.08 | 0.24 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **93.7** | 0.08 | 0.24 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDT** | **26.5** | 0.08 | 0.24 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDD** | **4410** | 0.08 | 0.24 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **64.0** | 0.08 | 0.24 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **10.4** | | *275 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | *S-GC* |
| *Surrogate: Decachlorobiphenyl* | **4.32** | | *114 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 29-Dec-2014 |

## QT2-3-0507-SEDCHEM-BI

**4092606-21 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **62.2** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **98.3** | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **44.8** | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **99.1** | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDT** | **5.19** | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDD** | **521** | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **15.0** | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.62** | | *87.0 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.56** | | *85.5 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 29-Dec-2014 |

## QT2-4-0002-SEDCHEM

**4092606-43 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **83.6** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **2.68** | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **0.75** | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **1.36** | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **6.90** | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **1.06** | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.35** | | *42.5 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.56** | | *80.5 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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## QT2-4-0205-SEDCHEM

**4092606-44 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **90.0** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **1.02** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **0.54** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **0.73** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **3.68** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **0.19** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.18** | | *73.5 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.09** | | *70.5 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360! | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 29-Dec-2014 |

## QT2-4-0507-SEDCHEM

**4092606-45 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Classical Chemistry Parameters**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **% Solids** | **78.3** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **4,4´-DDE** | **11.2** | 0.07 | 0.21 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **3.72** | 0.07 | 0.21 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **8.18** | 0.07 | 0.21 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDT** | **0.52** | 0.07 | 0.21 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDD** | **47.6** | 0.07 | 0.21 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **2.21** | 0.07 | 0.21 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.83** | | *55.5 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.89** | | *87.5 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 29-Dec-2014 |

## QT2-4-0002-SEDCHEM-AI

**4092606-46 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **85.8** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **0.16** | 0.06 | 0.18 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | J |
| **2,4´-DDE** | **0.14** | 0.06 | 0.18 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | J |
| **2,4´-DDD** | **0.09** | 0.06 | 0.18 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.18 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **0.50** | 0.06 | 0.18 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 4,4´-DDT | ND | 0.06 | 0.18 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.81** | | *61.5 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.76** | | *93.5 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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| San Diego CA, 92152 | Project Manager: Gunther Rosen | 29-Dec-2014 |

## QT2-4-0002-SEDCHEM-BI

**4092606-47 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **60.4** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **18.8** | 0.09 | 0.27 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **4.55** | 0.09 | 0.27 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **7.63** | 0.09 | 0.27 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDT** | **0.82** | 0.09 | 0.27 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDD** | **157** | 0.09 | 0.27 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **4.92** | 0.09 | 0.27 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.63** | | *37.2 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.39** | | *77.5 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 29-Dec-2014 |

## QT2-4-0205-SEDCHEM-BI

**4092606-48 (Soil/Sediment)**

**ERDC- EL-EP-C**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **61.0** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **25.8** | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **5.94** | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **8.09** | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **78.5** | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **5.11** | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.54** | | *61.0 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **4.44** | | *106 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360! | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 29-Dec-2014 |

# QT2-4-0507-SEDCHEM-BI

## 4092606-49 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |

### ERDC- EL-EP-C

**Classical Chemistry Parameters**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **% Solids** | **60.7** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **4,4´-DDE** | **23.2** | 0.09 | 0.27 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **5.55** | 0.09 | 0.27 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **7.66** | 0.09 | 0.27 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.09 | 0.27 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **55.1** | 0.09 | 0.27 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **4.18** | 0.09 | 0.27 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.57** | | *60.0 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **4.57** | | *106 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 29-Dec-2014 |

## QT2-5-0002-SEDCHEM

**4092606-50 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Classical Chemistry Parameters**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **% Solids** | **73.0** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **4,4´-DDE** | **6.98** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **1.75** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **3.15** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **17.6** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **0.70** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.55** | | *71.0 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.34** | | *93.0 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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## QT2-5-0205-SEDCHEM

**4092606-51 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Classical Chemistry Parameters**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **% Solids** | **79.2** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **4,4´-DDE** | **7.04** | 0.07 | 0.21 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **1.79** | 0.07 | 0.21 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **2.90** | 0.07 | 0.21 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.07 | 0.21 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **17.2** | 0.07 | 0.21 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **20.2** | 0.07 | 0.21 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.20** | | *66.0 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.89** | | *86.5 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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## QT2-5-0507-SEDCHEM

**4092606-52 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **69.9** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **16.3** | 0.08 | 0.24 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **5.00** | 0.08 | 0.24 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **8.28** | 0.08 | 0.24 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.08 | 0.24 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **47.7** | 0.08 | 0.24 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **3.31** | 0.08 | 0.24 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.33** | | *61.5 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.35** | | *88.5 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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| San Diego CA, 92152 | Project Manager: Gunther Rosen | 29-Dec-2014 |

## QT2-5-0002-SEDCHEM-AI

**4092606-53 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **83.1** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **1.14** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **0.91** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **0.76** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **3.48** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **0.47** | 0.06 | 0.19 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.02** | | *66.0 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.82** | | *92.5 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

| | | |
|---|---|---|
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## QT2-5-0002-SEDCHEM-BI

**4092606-54 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C** | | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **62.9** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **73.0** | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **30.2** | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **50.3** | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **239** | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **7.09** | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.94** | | *69.5 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.96** | | *93.5 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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## QT2-5-0205-SEDCHEM-BI

**4092606-55 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C** | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **61.4** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **85.9** | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **39.0** | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **54.0** | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **385** | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **14.5** | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.11** | | *50.5 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.86** | | *92.5 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

| | | |
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# QT2-5-0507-SEDCHEM-BI

**4092606-56 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Classical Chemistry Parameters**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **% Solids** | **60.8** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **4,4´-DDE** | **86.1** | 0.09 | 0.27 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **30.0** | 0.09 | 0.27 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **43.1** | 0.09 | 0.27 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.09 | 0.27 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **248** | 0.09 | 0.27 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **17.5** | 0.09 | 0.27 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.30** | | *53.0 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.67** | | *84.5 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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## QT2-5DUP-0002-SEDCHEM

**4092606-57 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Classical Chemistry Parameters**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **% Solids** | **76.4** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **4,4´-DDE** | **72.7** | 0.07 | 0.21 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **40.2** | 0.07 | 0.21 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **51.1** | 0.07 | 0.21 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.07 | 0.21 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **327** | 0.07 | 0.21 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **17.4** | 0.07 | 0.21 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.60** | | *47.8 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **4.01** | | *120 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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## QT2-5DUP-0205-SEDCHEM

**4092606-58 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **72.6** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **10.9** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **2.79** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **4.57** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **28.4** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **2.32** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.13** | | *61.0 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.15** | | *90.5 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 29-Dec-2014 |

## QT2-5DUP-0507-SEDCHEM

**4092606-59 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **60.8** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **24.0** | 0.09 | 0.27 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **5.87** | 0.09 | 0.27 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **8.40** | 0.09 | 0.27 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.09 | 0.27 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **60.2** | 0.09 | 0.27 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **4.22** | 0.09 | 0.27 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.04** | | *71.0 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **4.35** | | *102 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 29-Dec-2014 |

# QT2-5DUP-0002-SEDCHEM-AI

**4092606-60 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Classical Chemistry Parameters**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **% Solids** | **84.6** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **4,4´-DDE** | **1.29** | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **0.70** | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **0.74** | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **3.74** | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **0.36** | 0.06 | 0.20 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.13** | | *68.0 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.33** | | *106 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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## QT2-5DUP-0002-SEDCHEM-BI

**4092606-61 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **67.3** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **69.9** | 0.07 | 0.23 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **25.8** | 0.07 | 0.23 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **46.0** | 0.07 | 0.23 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.07 | 0.23 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **229** | 0.07 | 0.23 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **11.5** | 0.07 | 0.23 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.74** | | *46.5 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.27** | | *87.5 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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## QT2-5DUP-0205-SEDCHEM-BI

**4092606-62 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Classical Chemistry Parameters**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **% Solids** | **60.6** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **4,4´-DDE** | **60.4** | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **34.2** | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **71.0** | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **258** | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **18.8** | 0.08 | 0.26 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.32** | | *56.0 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.32** | | *80.0 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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## QT2-5DUP-0507-SEDCHEM-BI

**4092606-63 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **57.3** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **67.8** | 0.09 | 0.28 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **28.7** | 0.09 | 0.28 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **42.8** | 0.09 | 0.28 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.09 | 0.28 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **213** | 0.09 | 0.28 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **3.25** | 0.09 | 0.28 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **13.8** | | *303 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | *S-GC* |
| *Surrogate: Decachlorobiphenyl* | **5.17** | | *114 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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## QT2-6-GRAB-SEDCHEM

**4092606-64 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Classical Chemistry Parameters**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **% Solids** | **75.6** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **4,4´-DDE** | **3.21** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **0.88** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **1.60** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **7.43** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **0.57** | 0.07 | 0.22 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.72** | | *107 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.56** | | *102 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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## QT2-7-GRAB-SEDCHEM

**4092606-65 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Solids** | **33.9** | 0.500 | 0.500 | % Solids | | 30-Sep-2014 | 17-Oct-2014 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDE** | **6.41** | 0.16 | 0.49 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDE** | **1.59** | 0.16 | 0.49 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **2,4´-DDD** | **2.30** | 0.16 | 0.49 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.16 | 0.49 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | U |
| **4,4´-DDD** | **10.4** | 0.16 | 0.49 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| **4,4´-DDT** | **1.35** | 0.16 | 0.49 | ug/kg dry | | 09-Oct-2014 | 21-Oct-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **6.06** | | *78.0 %* | *40-125* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **6.30** | | *81.0 %* | *40-130* | | *09-Oct-2014* | *21-Oct-2014* | *EPA 8081A* | |

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## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B410093 - EPA 3545** | | | | | | | | | | | |
| **Blank (B410093-BLK1)** | | | | | Prepared: 09-Oct-2014 Analyzed: 21-Oct-2014 | | | | | | |
| 4,4′-DDE | ND | 0.05 | 0.17 | ug/kg wet | | | | | | | U |
| 2,4′-DDE | ND | 0.05 | 0.17 | ug/kg wet | | | | | | | U |
| 2,4′-DDD | ND | 0.05 | 0.17 | ug/kg wet | | | | | | | U |
| 2,4′-DDT | ND | 0.05 | 0.17 | ug/kg wet | | | | | | | U |
| 4,4′-DDD | ND | 0.05 | 0.17 | ug/kg wet | | | | | | | U |
| 4,4′-DDT | ND | 0.05 | 0.17 | ug/kg wet | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.73* | | | *ug/kg wet* | *2.667* | | *65.0* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.61* | | | *ug/kg wet* | *2.667* | | *98.0* | *40-130* | | | |
| **LCS (B410093-BS1)** | | | | | Prepared: 09-Oct-2014 Analyzed: 21-Oct-2014 | | | | | | |
| 4,4′-DDE | 2.6 | 0.05 | 0.17 | ug/kg wet | 2.667 | | 95.6 | 40-125 | | | |
| 2,4′-DDE | 3.8 | 0.05 | 0.17 | ug/kg wet | 3.333 | | 115 | 40-125 | | | |
| 2,4′-DDD | 3.8 | 0.05 | 0.17 | ug/kg wet | 3.333 | | 114 | 40-125 | | | |
| 2,4′-DDT | 3.8 | 0.05 | 0.17 | ug/kg wet | 3.333 | | 114 | 40-125 | | | |
| 4,4′-DDD | 1.7 | 0.05 | 0.17 | ug/kg wet | 2.667 | | 64.5 | 40-125 | | | |
| 4,4′-DDT | 1.6 | 0.05 | 0.17 | ug/kg wet | 2.667 | | 59.5 | 45-125 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.89* | | | *ug/kg wet* | *2.667* | | *71.0* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.12* | | | *ug/kg wet* | *2.667* | | *117* | *40-130* | | | |
| **Matrix Spike (B410093-MS1)** | **Source: 4092606-10** | | | | Prepared: 09-Oct-2014 Analyzed: 21-Oct-2014 | | | | | | |
| 4,4′-DDE | 5.5 | 0.18 | 0.56 | ug/kg dry | 8.933 | 0.5 | 56.9 | 40-125 | | | |
| 2,4′-DDE | 7.3 | 0.18 | 0.56 | ug/kg dry | 11.17 | 0.9 | 56.8 | 40-125 | | | |
| 2,4′-DDD | 9.0 | 0.18 | 0.56 | ug/kg dry | 11.17 | 1.8 | 64.4 | 40-125 | | | |
| 2,4′-DDT | 7.6 | 0.18 | 0.56 | ug/kg dry | 11.17 | ND | 68.4 | 40-125 | | | |
| 4,4′-DDD | 12.8 | 0.18 | 0.56 | ug/kg dry | 8.933 | 1.8 | 123 | 40-125 | | | |
| 4,4′-DDT | 4.2 | 0.18 | 0.56 | ug/kg dry | 8.933 | ND | 47.0 | 45-125 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *4.06* | | | *ug/kg dry* | *8.933* | | *45.5* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *4.82* | | | *ug/kg dry* | *8.933* | | *54.0* | *40-130* | | | |

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|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 29-Dec-2014 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B410093 - EPA 3545** | | | | | | | | | | | |
| **Matrix Spike Dup (B410093-MSD1)** | | **Source: 4092606-10** | | | Prepared: 09-Oct-2014 Analyzed: 21-Oct-2014 | | | | | | |
| 4,4′-DDE | 5.5 | 0.17 | 0.54 | ug/kg dry | 8.651 | 0.5 | 58.7 | 40-125 | 0.0299 | 30 | |
| 2,4′-DDE | 7.2 | 0.17 | 0.54 | ug/kg dry | 10.81 | 0.9 | 57.7 | 40-125 | 1.38 | 30 | |
| 2,4′-DDD | 9.5 | 0.17 | 0.54 | ug/kg dry | 10.81 | 1.8 | 70.6 | 40-125 | 4.87 | 30 | |
| 2,4′-DDT | 6.9 | 0.17 | 0.54 | ug/kg dry | 10.81 | ND | 64.0 | 40-125 | 9.85 | 30 | |
| 4,4′-DDD | 13.3 | 0.17 | 0.54 | ug/kg dry | 8.651 | 1.8 | 133 | 40-125 | 3.86 | 30 | QM-07 |
| 4,4′-DDT | 10.0 | 0.17 | 0.54 | ug/kg dry | 8.651 | ND | 116 | 45-125 | 82.0 | 30 | RPD-02 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *3.72* | | | *ug/kg dry* | *8.651* | | *43.0* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *4.23* | | | *ug/kg dry* | *8.651* | | *49.0* | *40-130* | | | |
| **Batch B410095 - EPA 3545** | | | | | | | | | | | |
| **Blank (B410095-BLK1)** | | | | | Prepared: 09-Oct-2014 Analyzed: 21-Oct-2014 | | | | | | |
| 4,4′-DDE | ND | 0.05 | 0.17 | ug/kg wet | | | | | | | U |
| 2,4′-DDE | ND | 0.05 | 0.17 | ug/kg wet | | | | | | | U |
| 2,4′-DDD | ND | 0.05 | 0.17 | ug/kg wet | | | | | | | U |
| 2,4′-DDT | ND | 0.05 | 0.17 | ug/kg wet | | | | | | | U |
| 4,4′-DDD | ND | 0.05 | 0.17 | ug/kg wet | | | | | | | U |
| 4,4′-DDT | ND | 0.05 | 0.17 | ug/kg wet | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *2.33* | | | *ug/kg wet* | *2.667* | | *87.5* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.57* | | | *ug/kg wet* | *2.667* | | *96.5* | *40-130* | | | |
| **Blank (B410095-BLK2)** | | | | | Prepared: 09-Oct-2014 Analyzed: 21-Oct-2014 | | | | | | |
| 4,4′-DDE | ND | 0.05 | 0.17 | ug/kg wet | | | | | | | U |
| 2,4′-DDE | ND | 0.05 | 0.17 | ug/kg wet | | | | | | | U |
| 2,4′-DDD | ND | 0.05 | 0.17 | ug/kg wet | | | | | | | U |
| 2,4′-DDT | ND | 0.05 | 0.17 | ug/kg wet | | | | | | | U |
| 4,4′-DDD | ND | 0.05 | 0.17 | ug/kg wet | | | | | | | U |
| 4,4′-DDT | ND | 0.05 | 0.17 | ug/kg wet | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.97* | | | *ug/kg wet* | *2.667* | | *74.0* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.75* | | | *ug/kg wet* | *2.667* | | *103* | *40-130* | | | |

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## Organochlorine Pesticides by EPA Method 8081A - Quality Control
## ERDC- EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B410095 - EPA 3545** | | | | | | | | | | | |
| **LCS (B410095-BS1)** | | | | | Prepared: 09-Oct-2014 Analyzed: 21-Oct-2014 | | | | | | |
| 4,4´-DDE | 2.1 | 0.05 | 0.17 | ug/kg wet | 2.667 | | 80.0 | 40-125 | | | |
| 2,4´-DDE | 2.5 | 0.05 | 0.17 | ug/kg wet | 3.333 | | 73.6 | 40-125 | | | |
| 2,4´-DDD | 3.1 | 0.05 | 0.17 | ug/kg wet | 3.333 | | 92.8 | 40-125 | | | |
| 2,4´-DDT | 2.1 | 0.05 | 0.17 | ug/kg wet | 3.333 | | 64.4 | 40-125 | | | |
| 4,4´-DDD | 2.6 | 0.05 | 0.17 | ug/kg wet | 2.667 | | 98.5 | 40-125 | | | |
| 4,4´-DDT | 1.9 | 0.05 | 0.17 | ug/kg wet | 2.667 | | 70.0 | 45-125 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.48* | | | *ug/kg wet* | *2.667* | | *55.5* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.37* | | | *ug/kg wet* | *2.667* | | *89.0* | *40-130* | | | |
| **LCS (B410095-BS2)** | | | | | Prepared: 09-Oct-2014 Analyzed: 21-Oct-2014 | | | | | | |
| 4,4´-DDE | 2.4 | 0.05 | 0.17 | ug/kg wet | 2.667 | | 89.0 | 40-125 | | | |
| 2,4´-DDE | 2.6 | 0.05 | 0.17 | ug/kg wet | 3.333 | | 79.2 | 40-125 | | | |
| 2,4´-DDD | 3.3 | 0.05 | 0.17 | ug/kg wet | 3.333 | | 100 | 40-125 | | | |
| 2,4´-DDT | 2.4 | 0.05 | 0.17 | ug/kg wet | 3.333 | | 72.8 | 40-125 | | | |
| 4,4´-DDD | 2.7 | 0.05 | 0.17 | ug/kg wet | 2.667 | | 102 | 40-125 | | | |
| 4,4´-DDT | 2.0 | 0.05 | 0.17 | ug/kg wet | 2.667 | | 75.0 | 45-125 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.76* | | | *ug/kg wet* | *2.667* | | *66.0* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.56* | | | *ug/kg wet* | *2.667* | | *96.0* | *40-130* | | | |
| **Matrix Spike (B410095-MS1)** | **Source: 4092606-21** | | | | Prepared: 09-Oct-2014 Analyzed: 21-Oct-2014 | | | | | | |
| 4,4´-DDE | 122 | 0.23 | 0.71 | ug/kg dry | 11.39 | 98.3 | 207 | 40-125 | | | QM-11 |
| 2,4´-DDE | 66.1 | 0.23 | 0.71 | ug/kg dry | 14.24 | 44.8 | 150 | 40-125 | | | QM-07 |
| 2,4´-DDD | 134 | 0.23 | 0.71 | ug/kg dry | 14.24 | 99.1 | 244 | 40-125 | | | QM-11 |
| 2,4´-DDT | 13.3 | 0.23 | 0.71 | ug/kg dry | 14.24 | 5.2 | 56.8 | 40-125 | | | |
| 4,4´-DDD | 741 | 0.23 | 0.71 | ug/kg dry | 11.39 | 521 | NR | 40-125 | | | QM-11 |
| 4,4´-DDT | 30.7 | 0.23 | 0.71 | ug/kg dry | 11.39 | 15.0 | 138 | 45-125 | | | QM-07 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *6.15* | | | *ug/kg dry* | *11.39* | | *54.0* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *9.46* | | | *ug/kg dry* | *11.39* | | *83.0* | *40-130* | | | |

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## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B410095 - EPA 3545** | | | | | | | | | | | |
| **Matrix Spike (B410095-MS2)** | **Source: 4092606-62** | | Prepared: 09-Oct-2014 Analyzed: 21-Oct-2014 | | | | | | | | |
| 4,4´-DDE | 76.1 | 0.26 | 0.81 | ug/kg dry | 12.90 | 60.4 | 122 | 40-125 | | | |
| 2,4´-DDE | 44.0 | 0.26 | 0.81 | ug/kg dry | 16.13 | 34.2 | 60.4 | 40-125 | | | |
| 2,4´-DDD | 58.9 | 0.26 | 0.81 | ug/kg dry | 16.13 | 71.0 | NR | 40-125 | | | QM-11 |
| 2,4´-DDT | 16.2 | 0.26 | 0.81 | ug/kg dry | 16.13 | ND | 100 | 40-125 | | | |
| 4,4´-DDD | 278 | 0.26 | 0.81 | ug/kg dry | 12.90 | 258 | 152 | 40-125 | | | QM-11 |
| 4,4´-DDT | 45.4 | 0.26 | 0.81 | ug/kg dry | 12.90 | 18.8 | 206 | 45-125 | | | QM-07 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *6.77* | | | *ug/kg dry* | *12.90* | | *52.5* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *9.74* | | | *ug/kg dry* | *12.90* | | *75.5* | *40-130* | | | |
| **Matrix Spike Dup (B410095-MSD1)** | **Source: 4092606-21** | | Prepared: 09-Oct-2014 Analyzed: 21-Oct-2014 | | | | | | | | |
| 4,4´-DDE | 119 | 0.24 | 0.75 | ug/kg dry | 11.99 | 98.3 | 175 | 40-125 | 2.17 | 30 | QM-11 |
| 2,4´-DDE | 58.5 | 0.24 | 0.75 | ug/kg dry | 14.99 | 44.8 | 91.7 | 40-125 | 12.2 | 30 | |
| 2,4´-DDD | 117 | 0.24 | 0.75 | ug/kg dry | 14.99 | 99.1 | 119 | 40-125 | 13.5 | 30 | |
| 2,4´-DDT | 13.4 | 0.24 | 0.75 | ug/kg dry | 14.99 | 5.2 | 54.6 | 40-125 | 0.705 | 30 | |
| 4,4´-DDD | 564 | 0.24 | 0.75 | ug/kg dry | 11.99 | 521 | 358 | 40-125 | 27.1 | 30 | QM-11 |
| 4,4´-DDT | 25.8 | 0.24 | 0.75 | ug/kg dry | 11.99 | 15.0 | 90.1 | 45-125 | 17.3 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *6.29* | | | *ug/kg dry* | *11.99* | | *52.5* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *9.53* | | | *ug/kg dry* | *11.99* | | *79.5* | *40-130* | | | |
| **Matrix Spike Dup (B410095-MSD2)** | **Source: 4092606-62** | | Prepared: 09-Oct-2014 Analyzed: 21-Oct-2014 | | | | | | | | |
| 4,4´-DDE | 89.2 | 0.26 | 0.81 | ug/kg dry | 12.93 | 60.4 | 223 | 40-125 | 15.8 | 30 | QM-11 |
| 2,4´-DDE | 44.1 | 0.26 | 0.81 | ug/kg dry | 16.16 | 34.2 | 60.8 | 40-125 | 0.196 | 30 | |
| 2,4´-DDD | 59.0 | 0.26 | 0.81 | ug/kg dry | 16.16 | 71.0 | NR | 40-125 | 0.196 | 30 | QM-11 |
| 2,4´-DDT | 16.2 | 0.26 | 0.81 | ug/kg dry | 16.16 | ND | 100 | 40-125 | 0.195 | 30 | |
| 4,4´-DDD | 278 | 0.26 | 0.81 | ug/kg dry | 12.93 | 258 | 154 | 40-125 | 0.103 | 30 | QM-11 |
| 4,4´-DDT | 45.5 | 0.26 | 0.81 | ug/kg dry | 12.93 | 18.8 | 206 | 45-125 | 0.196 | 30 | QM-07 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *6.79* | | | *ug/kg dry* | *12.93* | | *52.5* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *9.76* | | | *ug/kg dry* | *12.93* | | *75.5* | *40-130* | | | |

# ENVIRON

# CHAIN-of-CUSTODY № 10504

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(602) 734-7701 (fax)


MSA#: – WO#: –

PROJECT NAME / FACILITY ID: Quantico 2-Month Post Cap

FIELD PERSON: M. Grover / J. Conder

PROJECT NUMBER: 04MKJC14 DATE: 9-25-14

PROJECT MANAGER: J. Conder

PROJECT LOCATION: Quantico, VA

LABORATORY: ~~SPAWAR~~ ERDC

IS THIS A UST PROJECT OR IS EDF REQUIRED? Y (N) IF YES, GLOBAL ID #:

SAMPLER: M. Grover

SIGNATURE: [signature]

| SAMPLE I.D. NUMBER | SAMPLE DATE (YEAR 2014) | SAMPLE TIME | SAMPLE DEPTH (ft) | AIR SAMPLE VOLUME (L) | MATRIX (A) AIR (S) SOIL (G) GAS (W) WATER | NUMBER OF CONTAINERS | FILTERED/UNFILTERED (F/U) | PRESERVATION (SEE KEY) | ANALYSIS REQUIRED: DDx EPA8081A | TOC EPA9060 | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2-1-0002-SEDCHEM | 9/23 | 9:31 | X | X | S | 1 | U | NO | X | X | Contact |
| QT2-1-0205-SEDCHEM | | | | | | | | | | | Victoria |
| QT2-1-0507-SEDCHEM | | | | | | | | | | | Kirtay with |
| QT2-1-0002-SEDCHEM-AI | | | | | | | | | | | questions at |
| QT2-1-0002-SEDCHEM-BI | | | | | | | | | | | victoria.kirtay@ |
| QT2-1-0205-SEDCHEM-BI | | | | | | | | | | | navy.mil |
| QT2-1-0507-SEDCHEM-BI | | 10:05 | | | | | | | | | |
| QT2-2-0002-SEDCHEM | | | | | | | | | | | |
| QT2-2-0205-SEDCHEM | | | | | | | | | | | |
| QT2-1-0507-SEDCHEM | | | | | | | | | | | |
| QT2-1-0002-SEDCHEM-AI | | | | | | | | | | | |
| QT2-1-0002-SEDCHEM-BI | | | | | | | | | | | |
| QT2-1-0205-SEDCHEM-BI | | | | | | | | | | | |
| TOTAL | X | X | X | X | X | X | X | X | 13 | 13 | |

| RELINQUISHED BY: | TIME/DATE: | RECEIVED BY: (COMPANY): | TIME/DATE: |
|---|---|---|---|
| [signature] | 2:00 pm / 9/25/14 | [signature] | 9/26/14 |
| RELINQUISHED BY: | TIME/DATE: | RECEIVED BY: (COMPANY): | TIME/DATE: |
| RELINQUISHED BY: | TIME/DATE: | RECEIVED BY: (COMPANY): | TIME/DATE: |

TURNAROUND TIME (CIRCLE ONE): SAME DAY / 24 HOURS / 48 HOURS / 72 HOURS / 5 DAYS / NORMAL

SAMPLE INTEGRITY — INTACT: Y N Temp____

IF SEALED, SEAL INTEGRITY — INTACT: Y N

H = HCL; N = $HNO_3$; S = $H_2SO$; U = UNKNOWN; NO = NONE; O = OTHER

FILE: LOG FORMS\Chain_of_Custody

# ENVIRON — CHAIN-of-CUSTODY № 10505

PAGE 2 of 7


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(602) 734-7701 (fax)


PROJECT NAME / FACILITY ID: Quantico 2-Month Post Cap

PROJECT NUMBER: 04MKJC14 DATE: 9-25-14

PROJECT LOCATION: Quantico, VA

IS THIS A UST PROJECT OR IS EDF REQUIRED? Y (N) IF YES, GLOBAL ID #:

MSA#: — WO#: —

FIELD PERSON: M. Grover / J. Conder

PROJECT MANAGER: J. Conder

LABORATORY: ERDC

SAMPLER: M. Grover

SIGNATURE: M Gr

| SAMPLE I.D. NUMBER | SAMPLE DATE (YEAR 2014) | SAMPLE TIME | SAMPLE DEPTH (ft) | AIR SAMPLE VOLUME (L) | MATRIX (A) AIR (S) SOIL (G) GAS (W) WATER | NUMBER OF CONTAINERS | FILTERED/UNFILTERED (F/U) | PRESERVATION (SEE KEY) | ANALYSIS REQUIRED: DDx EPA 8081A | TOC EPA 9060 | Grain Size ASTM D422 | | | | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2-2-0507-SEDCHEM-BI | 9/23 | 10:05 | X | X | S | 1 | U | NO | X | X | | | | | | | | | Contact |
| QT2-3-0002-SEDCHEM | | 10:31 | | | | | | | | | | | | | | | | | Victoria |
| QT2-3-0205-SEDCHEM | | | | | | | | | | | | | | | | | | | Kirtay with |
| QT2-3-0507-SEDCHEM | | | | | | | | | | | | | | | | | | | questions at |
| QT2-3-0002-SEDCHEM-AI | | | | | | | | | | | | | | | | | | | victoria. |
| QT2-3-0002-SEDCHEM-BI | | | | | | | | | | | | | | | | | | | Kirtay@navy. |
| QT2-3-0205-SEDCHEM-BI | | | | | | | | | | | | | | | | | | | mil |
| QT2-3-0507-SEDCHEM-BI | | | | | | | | | | | | | | | | | | | |
| QT2-1-0002-GS | | 9:31 | | | | | | | | | X | | | | | | | | |
| QT2-1-0205-GS | | | | | | | | | | | | | | | | | | | |
| QT2-1-0507-GS | | | | | | | | | | | | | | | | | | | |
| QT2-1-0002-GS-AI | | | | | | | | | | | | | | | | | | | |
| QT2-1-0002-GS-BI | | | | | | | | | | | | | | | | | | | |
| TOTAL | X | X | X | X | X | X | X | X | 8 | 8 | 5 | | | | | | | | |

| RELINQUISHED BY: | TIME/DATE: | RECEIVED BY: | TIME/DATE: |
|---|---|---|---|
| M Gr | 2:00 pm / 9-25-14 | Michael Cart (COMPANY): | 9/26/14 |
| RELINQUISHED BY: | TIME/DATE: | RECEIVED BY: (COMPANY): | TIME/DATE: |
| RELINQUISHED BY: | TIME/DATE: | RECEIVED BY: (COMPANY): | TIME/DATE: |

TURNAROUND TIME (CIRCLE ONE): SAME DAY, 24 HOURS, 48 HOURS, 72 HOURS, 5 DAYS, NORMAL

SAMPLE INTEGRITY — INTACT: Y N Temp______

IF SEALED, SEAL INTEGRITY — INTACT: Y N

H = HCL; N = $HNO_3$; S = $H_2SO_4$; U = UNKNOWN; NO = NONE; O = OTHER

# ENVIRON

# CHAIN-of-CUSTODY №10530

PAGE 3 of 7

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(602) 734-7701 (fax)

MSA#: — WO#: —

PROJECT NAME / FACILITY ID: Quantico 2-Month Post Cap

FIELD PERSON: M. Grover | J. Conder

PROJECT NUMBER: 04MKdC14 DATE: 9-25-14

PROJECT MANAGER: J. Conder

PROJECT LOCATION: Quantico, VA

LABORATORY: ERDC

IS THIS A UST PROJECT OR IS EDF REQUIRED? Y N IF YES, GLOBAL ID #:

SAMPLER: M. Grover

SIGNATURE: [signature]

YEAR 2014

| SAMPLE I.D. NUMBER | SAMPLE DATE | SAMPLE TIME | SAMPLE DEPTH (ft) | AIR SAMPLE VOLUME (L) | MATRIX (A) AIR (S) SOIL (G) GAS (W) WATER | NUMBER OF CONTAINERS | FILTERED/UNFILTERED (F/U) | PRESERVATION (SEE KEY) | ANALYSIS REQUIRED ~~DDx EPA 8081A~~ | ~~TOC EPA 9060~~ | Grain Size ASTM D422 | | | | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2-1-0205-GS-BI | 9/23 | 9:31 | X | X | S | 1 | U | NO | | | X | | | | | | | | Contact Victoria |
| QT2-1-0507-GS-BI | | | | | | | | | | | | | | | | | | | Kirtay w/ |
| QT2-2-0002-GS | | 10:00 | | | | | | | | | | | | | | | | | questions at |
| QT2-2-0205-GS | | | | | | | | | | | | | | | | | | | victoria.kirtay@ |
| QT2-2-0507-GS | | | | | | | | | | | | | | | | | | | navy.mil |
| QT2-2-0002-GS-AI | | | | | | | | | | | | | | | | | | | |
| QT2-2-0002-GS-BI | | | | | | | | | | | | | | | | | | | |
| QT2-2-0205-GS-BI | | | | | | | | | | | | | | | | | | | |
| QT2-2-0507-GS-BI | | | | | | | | | | | | | | | | | | | |
| QT2-3-0002-GS | | 10:31 | | | | | | | | | | | | | | | | | |
| QT2-3-0205-GS | | | | | | | | | | | | | | | | | | | |
| QT2-3-0507-GS | | | | | | | | | | | | | | | | | | | |
| QT2-3-0002-GS-AI | | | | | | | | | | | | | | | | | | | |
| TOTAL | X | X | X | X | X | X | X | X | 0 | 0 | 13 | | | | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| RELINQUISHED BY: [signature] | TIME/DATE: 2:00 pm/9-25-14 | RECEIVED BY: [signature] (COMPANY): | TIME/DATE: 9/26/14 | TURNAROUND TIME (CIRCLE ONE) | SAME DAY 24 HOURS 48 HOURS / 72 HOURS 5 DAYS NORMAL |
| RELINQUISHED BY: | TIME/DATE: | RECEIVED BY: (COMPANY): | TIME/DATE: | SAMPLE INTEGRITY INTACT: Y N Temp____ | IF SEALED, SEAL INTEGRITY INTACT: Y N |
| RELINQUISHED BY: | TIME/DATE: | RECEIVED BY: (COMPANY): | TIME/DATE: | | |

H = HCL; N = $HNO_3$; S = $H_2SO$; U = UNKNOWN; NO = NONE; O = OTHER

# ENVIRON

# CHAIN-of-CUSTODY № 10532



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MSA#: —— WO#: ——

PROJECT NAME / FACILITY ID: Quantico 2-Month Post Cap

PROJECT NUMBER: 04MKJC14 DATE: 9-25-14

PROJECT LOCATION: Quantico, VA

FIELD PERSON: M. Grover / J. Conder

PROJECT MANAGER: J. Conder

LABORATORY: ERDC

IS THIS A UST PROJECT OR IS EDF REQUIRED? Y (N) IF YES, GLOBAL ID #:

SAMPLER: M. Grover

SIGNATURE: [signature]

YEAR 2014

| SAMPLE I.D. NUMBER | SAMPLE DATE | SAMPLE TIME | SAMPLE DEPTH (ft) | AIR SAMPLE VOLUME (L) | MATRIX (A) AIR (S) SOIL (G) GAS (W) WATER | NUMBER OF CONTAINERS | FILTERED/UNFILTERED (F/U) | PRESERVATION (SEE KEY) | ANALYSIS REQUIRED: DDx EPA 8081A | TOC EPA 9060 | Grain Size ASTM D422 | | | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT3-0002-GS-BI | 9/23 | 10:31 | X | X | S | 1 | U | N | X | X | X | | | | | | | Contact Victoria |
| QT2-3-0205-GS-BI | | | | | | | | | | | | | | | | | | Kirtay w/ |
| QT2-3-0501-GS-BI | | | | | | | | | | | | | | | | | | questions at |
| QT2-4-0002-SEDCHEM | | 11:08 | | | | | | | X | X | | | | | | | | victoria.kirtay@ |
| QT2-4-0205-SEDCHEM | | | | | | | | | | | | | | | | | | navy.mil |
| QT2-4-0501-SEDCHEM | | | | | | | | | | | | | | | | | | |
| QT2-4-0002-SEDCHEM-AI | | | | | | | | | | | | | | | | | | |
| QT2-4-0002-SEDCHEM-BI | | | | | | | | | | | | | | | | | | |
| QT2-4-0205-SEDCHEM-BI | | | | | | | | | | | | | | | | | | |
| QT2-4-0501-SEDCHEM-BI | | | | | | | | | | | | | | | | | | |
| QT2-5-0002-SEDCHEM | | 11:50 | | | | | | | | | | | | | | | | |
| QT2-5-0205-SEDCHEM | | | | | | | | | | | | | | | | | | |
| QT2-5-0501-SEDCHEM | | | | | | | | | | | | | | | | | | |
| TOTAL | X | X | X | X | X | X | X | X | 10 | 10 | 3 | | | | | | | |

| | | | |
|---|---|---|---|
| RELINQUISHED BY: [signature] | TIME/DATE: 2pm / 9-25-14 | RECEIVED BY: (COMPANY): [signature] | TIME/DATE: 9/26/14 |
| RELINQUISHED BY: | TIME/DATE: | RECEIVED BY: (COMPANY): | TIME/DATE: |
| RELINQUISHED BY: | TIME/DATE: | RECEIVED BY: (COMPANY): | TIME/DATE: |

TURNAROUND TIME (CIRCLE ONE): SAME DAY, 24 HOURS, 48 HOURS, 72 HOURS, 5 DAYS, NORMAL

SAMPLE INTEGRITY — INTACT: Y N Temp____

IF SEALED, SEAL INTEGRITY — INTACT: Y N

H = HCL; N = $HNO_3$; S = $H_2SO_4$; U = UNKNOWN; NO = NONE; O = OTHER

# ENVIRON

# CHAIN-of-CUSTODY № 10531



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(602) 734-7701 (fax)

PROJECT NAME / FACILITY ID: Quantico 2-month Post Cap

PROJECT NUMBER: 04MKJC14 DATE: 9-25-14

PROJECT LOCATION: Quantico, VA

IS THIS A UST PROJECT OR IS EDF REQUIRED? Y N IF YES, GLOBAL ID #:

MSA#: — WO#: —

FIELD PERSON: M. Graver / J. Conder

PROJECT MANAGER: J. Conder

LABORATORY: ERDC

SAMPLER: M. Grover

SIGNATURE: [signature]

| SAMPLE I.D. NUMBER | SAMPLE DATE (YEAR 2014) | SAMPLE TIME | SAMPLE DEPTH (ft) | AIR SAMPLE VOLUME (L) | MATRIX (A) AIR (S) SOIL (G) GAS (W) WATER | NUMBER OF CONTAINERS | FILTERED/UNFILTERED (F/U) | PRESERVATION (SEE KEY) | ANALYSIS REQUIRED: DDX EPA 8081A | TOC EPA 9060 | | | | | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2-5-0002-SEDCHEM-AI | 9/23 | 11:50 | X | X | S | 1 | U | NO | X | X | | | | | | | | | Contact Victoria |
| QT2-5-0002-SEDCHEM-BI | | | | | | | | | | | | | | | | | | | Kirtay w/ |
| QT2-5-0205-SEDCHEM-BI | | | | | | | | | | | | | | | | | | | questions at |
| QT2-5-0507-SEDCHEM-BI | | | | | | | | | | | | | | | | | | | victoria.kirtay@ |
| QT2-5DUP-0002-SEDCHEM | | | | | | | | | | | | | | | | | | | navy.mil |
| QT2-5DUP-0205-SEDCHEM | | | | | | | | | | | | | | | | | | | |
| QT2-5DUP-0507-SEDCHEM | | | | | | | | | | | | | | | | | | | |
| QT2-5DUP-0002-SEDCHEM-AI | | | | | | | | | | | | | | | | | | | |
| QT2-5DUP-0002-SEDCHEM-BI | | | | | | | | | | | | | | | | | | | |
| QT2-5DUP-0205-SEDCHEM-BI | | | | | | | | | | | | | | | | | | | |
| QT2-5DUP-0507-SEDCHEM-BI | | | | | | | | | | | | | | | | | | | |
| QT2-6-GRAB-SEDCHEM | 9/22 | 12:15 | | | | | | | | | | | | | | | | | |
| QT2-7-GRAB-SEDCHEM | | 11:30 | | | | | | | | | | | | | | | | | |
| TOTAL | X | X | X | X | X | X | X | | 13 | 13 | | | | | | | | | |

RELINQUISHED BY: [signature] TIME/DATE: 2:00 pm 9-25-14
RECEIVED BY: Michael Cast (COMPANY): TIME/DATE: 9/26/14

RELINQUISHED BY: TIME/DATE:
RECEIVED BY: (COMPANY): TIME/DATE:

RELINQUISHED BY: TIME/DATE:
RECEIVED BY: (COMPANY): TIME/DATE:

TURNAROUND TIME (CIRCLE ONE): SAME DAY 24 HOURS 48 HOURS 72 HOURS 5 DAYS NORMAL

SAMPLE INTEGRITY
INTACT: Y N Temp______

IF SEALED, SEAL INTEGRITY
INTACT: Y N

H = HCL; N = $HNO_3$; S = $H_2SO$; U = UNKNOWN; NO = NONE; O = OTHER

# ENVIRON

# CHAIN-of-CUSTODY № 10533

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MSA#: — WO#: —

PROJECT NAME / FACILITY ID: Quantico 2-Month Post Cap

FIELD PERSON: M. Grover / J. Conder

PROJECT NUMBER: 04MKJC14 DATE: 9-25-14

PROJECT MANAGER: J. Conder

PROJECT LOCATION: Quantico, VA

LABORATORY: ERDC

IS THIS A UST PROJECT OR IS EDF REQUIRED? Y (N) IF YES, GLOBAL ID #: ______

SAMPLER: M. Grover

SIGNATURE: MG

| SAMPLE I.D. NUMBER | SAMPLE DATE (YEAR 2014) | SAMPLE TIME | SAMPLE DEPTH (ft) | AIR SAMPLE VOLUME (L) | MATRIX (A) AIR (S) SOIL (G) GAS (W) WATER | NUMBER OF CONTAINERS | FILTERED/UNFILTERED (F/U) | PRESERVATION (SEE KEY) | ANALYSIS REQUIRED: Grain Size ASTM D422 | | | | | | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2-4-0002-GS | 9/23 | 11:00 | X | X | S | 1 | U | NO | X | | | | | | | | | | Contact |
| QT2-4-0205-GS | | | | | | | | | | | | | | | | | | | Victoria |
| QT2-4-0507-GS | | | | | | | | | | | | | | | | | | | Kirtay w/ |
| QT2-4-0002-GS-AI | | | | | | | | | | | | | | | | | | | questions at |
| QT2-4-0002-GS-BI | | | | | | | | | | | | | | | | | | | Victoria.Kirtay@ |
| QT2-4-0205-GS-BI | | | | | | | | | | | | | | | | | | | navy.mil |
| QT2-4-0507-GS-BI | | | | | | | | | | | | | | | | | | | |
| QT2-5-0002-GS | | 11:50 | | | | | | | | | | | | | | | | | |
| QT2-5-0205-GS | | | | | | | | | | | | | | | | | | | |
| QT2-5-0507-GS | | | | | | | | | | | | | | | | | | | |
| QT2-5-0002-GS-AI | | | | | | | | | | | | | | | | | | | |
| QT2-5-0002-GS-BI | | | | | | | | | | | | | | | | | | | |
| QT2-5-0205-GS-BI | | | | | | | | | | | | | | | | | | | |
| TOTAL | X | X | X | X | X | X | X | X | 13 | | | | | | | | | | |

| | | | | |
|---|---|---|---|---|
| RELINQUISHED BY: MG | TIME/DATE: 2:00pm / 9-25-14 | RECEIVED BY: Michael Cant (COMPANY): | TIME/DATE: 9/26/14 | TURNAROUND TIME (CIRCLE ONE): SAME DAY, 24 HOURS, 48 HOURS, 72 HOURS, 5 DAYS, NORMAL |
| RELINQUISHED BY: | TIME/DATE: | RECEIVED BY: (COMPANY): | TIME/DATE: | SAMPLE INTEGRITY / IF SEALED, SEAL INTEGRITY |
| RELINQUISHED BY: | TIME/DATE: | RECEIVED BY: (COMPANY): | TIME/DATE: | INTACT: Y N Temp____ / INTACT: Y N |

H = HCL; N = $HNO_3$; S = $H_2SO$; U = UNKNOWN; NO = NONE; O = OTHER

# ENVIRON

# CHAIN-of-CUSTODY № 10534



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(602) 734-7701 (fax)

MSA#: — WO#: —

PROJECT NAME / FACILITY ID: Quantico 2-Month Post Cap

FIELD PERSON: M. Grover / J. Conder

PROJECT NUMBER: 04MKJC14 DATE: 9-25-14

PROJECT MANAGER: J. Conder

PROJECT LOCATION: Quantico, VA

LABORATORY: ERDC

IS THIS A UST PROJECT OR IS EDF REQUIRED? Y N IF YES, GLOBAL ID #:

SAMPLER: M. Grover

SIGNATURE: [signature]

YEAR 2014

| SAMPLE I.D. NUMBER | SAMPLE DATE | SAMPLE TIME | SAMPLE DEPTH (ft) | AIR SAMPLE VOLUME (L) | MATRIX (A) AIR (S) SOIL (G) GAS (W) WATER | NUMBER OF CONTAINERS | FILTERED/UNFILTERED (F/U) | PRESERVATION (SEE KEY) | ANALYSIS REQUIRED: Grain Size ASTM D422 | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|
| QT2-5-0507-GS-BI | 9/23 | 11:50 | X | X | S | 1 | U | NO | X | Contact |
| QT2-5DUP-0002-GS | | | | | | | | | | Victoria |
| QT2-5DUP-0205-GS | | | | | | | | | | Kirtay w/ |
| QT2-5DUP-0507-GS | | | | | | | | | | questions at |
| QT2-5DUP-0002-GS-AI | | | | | | | | | | victoria.kirtay@ |
| QT2-5DUP-0002-GS-BI | | | | | | | | | | navy.mil |
| QT2-5DUP-0205-GS-BI | | | | | | | | | | |
| QT2-5DUP-0507-GS-BI | | | | | | | | | | |
| QT2-6-GRAB-GS | 9/22 | 12:15 | | | | | | | | |
| QT2-7-GRAB-GS | | 11:30 | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| TOTAL | X | X | X | X | X | X | X | X | 10 | |

| | | | |
|---|---|---|---|
| RELINQUISHED BY: [signature] | TIME/DATE: 2:00 pm / 9-25-14 | RECEIVED BY: (COMPANY): Michael Cart | TIME/DATE: 9/26/14 |
| RELINQUISHED BY: | TIME/DATE: | RECEIVED BY: (COMPANY): | TIME/DATE: |
| RELINQUISHED BY: | TIME/DATE: | RECEIVED BY: (COMPANY): | TIME/DATE: |

TURNAROUND TIME (CIRCLE ONE): SAME DAY / 24 HOURS / 48 HOURS / 72 HOURS / 5 DAYS / NORMAL

SAMPLE INTEGRITY — INTACT: Y N Temp____

IF SEALED, SEAL INTEGRITY — INTACT: Y N

H = HCL; N = $HNO_3$; S = $H_2SO_4$; U = UNKNOWN; NO = NONE; O = OTHER

# Items for Project Manager Review

| LabNumber | Analysis | Analyte | Exception |
|---|---|---|---|

Sample ID Key For 2-Month Sediment TOC and Grain Size Analyses

| Sample Number | Sample ID |
|---|---|
| 3116-01 | QT2-1-0002-SEDCHEM |
| 3116-02 | QT2-1-0205-SEDCHEM |
| 3116-03 | QT2-1-0507-SEDCHEM |
| 3116-04 | QT2-1-0002-SEDCHEM-AI |
| 3116-05 | QT2-1-0002-SEDCHEM-BI |
| 3116-06 | QT2-1-0205-SEDCHEM-BI |
| 3116-07 | QT2-1-0507-SEDCHEM-BI |
| 3116-08 | QT2-2-0002-SEDCHEM |
| 3116-09 | QT2-2-0205-SEDCHEM |
| 3116-10 | QT2-2-0507-SEDCHEM |
| 3116-11 | QT2-2-0002-SEDCHEM-AI |
| 3116-12 | QT2-2-0002-SEDCHEM-BI |
| 3116-13 | QT2-2-0205-SEDCHEM-BI |
| 3116-14 | QT2-2-0507-SEDCHEM-BI |
| 3116-15 | QT2-3-0002-SEDCHEM |
| 3116-16 | QT2-3-0205-SEDCHEM |
| 3116-17 | QT2-3-0507-SEDCHEM |
| 3116-18 | QT2-3-0002-SEDCHEM-AI |
| 3116-19 | QT2-3-0002-SEDCHEM-BI |
| 3116-20 | QT2-3-0205-SEDCHEM-BI |
| 3116-21 | QT2-3-0507-SEDCHEM-BI |
| 3116-22 | QT2-1-0002-GS |
| 3116-23 | QT2-1-0205-GS |
| 3116-24 | QT2-1-0507-GS |
| 3116-25 | QT2-1-0002-GS-AI |
| 3116-26 | QT2-1-0002-GS-BI |
| 3116-27 | QT2-1-0205-GS-BI |
| 3116-28 | QT2-1-0507-GS-BI |
| 3116-29 | QT2-2-0002-GS |
| 3116-30 | QT2-2-0205-GS |
| 3116-31 | QT2-2-0507-GS |
| 3116-32 | QT2-2-0002-GS-AI |
| 3116-33 | QT2-2-0002-GS-BI |
| 3116-34 | QT2-2-0205-GS-BI |
| 3116-35 | QT2-2-0507-GS-BI |
| 3116-36 | QT2-3-0002-GS |
| 3116-37 | QT2-3-0205-GS |
| 3116-38 | QT2-3-0507-GS |
| 3116-39 | QT2-3-0002-GS-AI |
| 3116-40 | QT2-3-0002-GS-BI |
| 3116-41 | QT2-3-0205-GS-BI |
| 3116-42 | QT2-3-0507-GS-BI |
| 3116-43 | QT2-4-0002-SEDCHEM |
| 3116-44 | QT2-4-0205-SEDCHEM |
| 3116-45 | QT2-4-0507-SEDCHEM |
| 3116-46 | QT2-4-0002-SEDCHEM-AI |
| 3116-47 | QT2-4-0002-SEDCHEM-BI |
| 3116-48 | QT2-4-0205-SEDCHEM-BI |
| 3116-49 | QT2-4-0507-SEDCHEM-BI |
| 3116-50 | QT2-5-0002-SEDCHEM |
| 3116-51 | QT2-5-0205-SEDCHEM |
| 3116-52 | QT2-5-0507-SEDCHEM |
| 3116-53 | QT2-5-0002-SEDCHEM-AI |
| 3116-54 | QT2-5-0002-SEDCHEM-BI |
| 3116-55 | QT2-5-0205-SEDCHEM-BI |
| 3116-56 | QT2-5-0507-SEDCHEM-BI |

| Sample Number | Sample ID |
|---|---|
| 3116-57 | QT2-5DUP-0002-SEDCHEM |
| 3116-58 | QT2-5DUP-0205-SEDCHEM |
| 3116-59 | QT2-5DUP-0507-SEDCHEM |
| 3116-60 | QT2-5DUP-0002-SEDCHEM-AI |
| 3116-61 | QT2-5DUP-0002-SEDCHEM-BI |
| 3116-62 | QT2-5DUP-0205-SEDCHEM-BI |
| 3116-63 | QT2-5DUP-0507-SEDCHEM-BI |
| 3116-64 | QT2-6-GRAB-SEDCHEM |
| 3116-65 | QT2-7-GRAB-SEDCHEM |
| 3116-66 | QT2-4-0002-GS |
| 3116-67 | QT2-4-0205-GS |
| 3116-68 | QT2-4-0507-GS |
| 3116-69 | QT2-4-0002-GS-AI |
| 3116-70 | QT2-4-0002-GS-BI |
| 3116-71 | QT2-4-0205-GS-BI |
| 3116-72 | QT2-4-0507-GS-BI |
| 3116-73 | QT2-5-0002-GS |
| 3116-74 | QT2-5-0205-GS |
| 3116-75 | QT2-5-0507-GS |
| 3116-76 | QT2-5-0002-GS-AI |
| 3116-77 | QT2-5-0002-GS-BI |
| 3116-78 | QT2-5-0205-GS-BI |
| 3116-79 | QT2-5-0507-GS-BI |
| 3116-80 | QT2-5DUP-0002-GS |
| 3116-81 | QT2-5DUP-0205-GS |
| 3116-82 | QT2-5DUP-0507-GS |
| 3116-83 | QT2-5DUP-0002-GS-AI |
| 3116-84 | QT2-5DUP-0002-GS-BI |
| 3116-85 | QT2-5DUP-0205-GS-BI |
| 3116-86 | QT2-5DUP-0507-GS-BI |
| 3116-87 | QT2-6-GRAB-GS |
| 3116-88 | QT2-7-GRAB-GS |

October 17, 2014

Ms. Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

RE: Katahdin Lab Number: SH8352
Project ID: 31116
Project Manager: Ms. Shelly Brown
Sample Receipt Date(s): October 03, 2014

Dear Ms. Stratton:

Please find enclosed the following information:

* Report of Analysis (Analytical and/or Field)
* Quality Control Data Summary
* Chain of Custody (COC)
* Login Report

A copy of the Chain of Custody is included in the paginated report. The original COC is attached as an addendum to this report.

Should you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact the project manager listed above. The results contained in this report relate only to the submitted samples. This cover letter is an integral part of the ROA.

We certify that the test results provided in this report meet all the requirements of the NELAC standards unless otherwise noted in an attached technical narrative or in the Report of Analysis.

We appreciate your continued use of our laboratory and look forward to working with you in the future. The following signature indicates technical review and acceptance of the data.

Please go to http://www.katahdinlab.com/cert.html for copies of Katahdin Analytical Services Inc. current certificates and analyte lists.

Sincerely,
KATAHDIN ANALYTICAL SERVICES

Deborah J. Nadeau 10/17/2014

**Authorized Signature** **Date**

# TECHNICAL NARRATIVE

## Wet Chemistry Analysis

The samples of Work Order SH8352 were analyzed in accordance with the specific methods listed on the Report of Analysis.

Analyses for total organic carbon (TOC) in soil were performed according to "Test Methods for Evaluating Solid Wastes: Physical/Chemical Methods." SW-846. 2nd edition, 1982 (revised 1984), 3rd edition, 1986, and Updates I, II, IIA,III, IIIA and IIIB 1996, 1998 & 2004, Office of Solid Waste and Emergency Response, U.S. EPA. All TOC analyses were performed in duplicate, and both TOC results, as well as the average of the two results, have been reported on the Reports of Analytical Results.

Analyses for total solids were performed according to "Standard Methods for the Examination of Water and Wastewater", 15th, 16th, 17th, 18th, 19th, and 20th editions, 1980, 1985, 1989, 1992, 1995, 1999. APHA-AWWA-WPCF.

All analyses were performed within analytical holding times. All quality control criteria were met, with the following comments and exceptions:

The TOC recovery for the matrix spike duplicate aliquot of Katahdin Sample No. SH8352-5 is outside the laboratory's acceptance limits of 75% - 125%. The TOC recovery for the matrix spike aliquot of this sample is within the laboratory's acceptance limits. All matrix spike recoveries for TOC were calculated relative to the first of the two replicate unspiked analyses of the sample.

At client request, duplicate TOC analyses of a solid reference material (ERA Nutrients in Soil) were performed in each analytical batch containing Work Order SH8352 samples. Two different lots of this reference material, with different certified values and acceptance limits, were used in the analyses. Certificates of Analysis for these reference materials are included with this narrative. The results that were obtained for the analyses of these solid reference materials are summarized in the following table.

| Analysis Date | Replicate | Measured Conc. (mg/kg) | Nutrients in Soil Lot | Certified Value (mg/kg) | Acceptance Limits (mg/kg) |
|---|---|---|---|---|---|
| 10/07/14 | 1 | 2490 | D066-542 | 2720 | 935-4500 |
| | 2 | 2340 | | | |
| 10/09/14 | 1 | 2500 | D066-542 | 2720 | 935-4500 |
| | 2 | 2450 | | | |
| 10/10/14 | 1 | 6740 | D085-542 | 5290 | 2580-7990 |
| | 2 | 6150 | | | |
| 10/07/14 | 1 | 6050 | D085-542 | 5290 | 2580-7990 |
| | 2 | 6640 | | | |
| 10/07/14 | 1 | 6420 | D085-542 | 5290 | 2580-7990 |
| | 2 | 6180 | | | |

ERA

A Waters Company

SwL2936

# Certificate of Analysis

Lot No. D066-542

# Nutrients in Soil

Catalog No. 542
Issue Date: July 15, 2009
Revision Date: January 28, 2010

## Certification

| Parameter | Total Concentration [1] (mg/kg) | Certified Value [2] (mg/kg) | Uncertainty [3] | QC PALs™ [4] (mg/kg) | PT PALs™ [5] (mg/kg) |
|---|---|---|---|---|---|
| ammonia as N | 964 | 823 | 7.1% | 418 - 1230 | 362 - 1280 |
| total kjeldahl nitrogen | 1380 | 1040 | 14.6% | 403 - 1680 | 138 - 2000 |
| total organic carbon | 2140 | 2720 | 11.7% | 935 - 4500 | 214 - 5410 |
| total phosphorus | 495 | 510 | 10.5% | 279 - 740 | 177 - 841 |

1. The **Total Concentrations** are equal to the digestable background concentrations in the blank soil matrix (determined internally by ERA using applicable methods), plus the amount of each analyte spiked onto the soil.

2. The **Certified Values** are equal to the mean recoveries for the parameters as determined in an interlaboratory round robin study. The certified values are based on an "as received" basis, assuming a 100% solids content.

3. The stated **Uncertainty** is the total propagated uncertainty at the 95% confidence interval. The uncertainty is based on the preparation and internal analytical verification of the product by ERA using applicable methods, multiplied by a coverage factor which is equal to the student t factor at a 95% confidence interval at n-1 degrees of freedom.

4. The **QC Performance Acceptance Limits (QC PALs™)** are based on actual historical data collected in ERA's Proficiency Testing program. The **QC PALs™** reflect any inherent biases in the methods used to establish the limits and closely approximate a 95% confidence interval of the performance that experienced laboratories should achieve using accepted environmental methods. Use the **QC PALs™** to realistically evaluate your performance against your peers.

5. **The PT Performance Acceptance Limits (PT PALs™)** are calculated using the regression equations and fixed acceptance criteria specified in the NELAC proficiency testing requirements. Use the **PT PALs™** when analyzing this QC standard alongside USEPA and NELAC compliant PT standards. Please note that many PT study acceptance limits are concentration dependent (some non-linearly) and, therefore, the acceptance limits of this QC standard and any PT standard may differ relative to their difference in concentrations.

6. This standard **expires 3/2013.** The certified values are monitored and purchasers will be notified of any significant changes resulting in recertification or withdrawal of this certified reference material during the period of validity of this certificate.

If you have any questions or need technical assistance, please call ERA technical assistance at 1-800-372-0122 or email to info@eraqc.com.

Certifying Officer: Tom Widera

ERA

A Waters Company

Reference Materials

# ▪ Certificate of Analysis ▪

| | |
|---|---|
| **Product:** | Nutrients in Soil |
| **Catalog Number:** | 542 |
| **Lot No.** | D085-542 |
| **Certificate Issue Date:** | April 23, 2014 |
| **Expiration Date:** | October 31, 2017 |
| **Revision Number:** | Original |

SWL3732

## CERTIFICATION

| Parameter | Total Concentration | Certified Value[1] | Uncertainty[2] | QC Performance Acceptance Limits[3] | PT Performance Acceptance Limits[4] |
|---|---|---|---|---|---|
| | mg/kg | mg/kg | % | mg/kg | mg/kg |
| Ammonia as N | 401 | 404 | 8.86 | 245 - 563 | 174 - 634 |
| Total Kjeldahl Nitrogen | 895 | 881 | 14.5 | 543 - 1220 | 458 - 1300 |
| Total Organic Carbon (TOC) | 5290 | 5290 | 19.7 | 2580 - 7990 | 1400 - 9170 |
| Total Phosphorus | 780 | 879 | 9.56 | 447 - 1310 | 207 - 1550 |

## ANALYTICAL VERIFICATION

| Parameter | Certified Value[1] | Proficiency Testing Study | | | NIST Traceability | |
|---|---|---|---|---|---|---|
| | | Mean | Recovery[5] | n | SRM Number | Recovery |
| | mg/kg | mg/kg | % | | | % |
| Ammonia as N | 404 | 404 | 100 | 54 | - | - |
| Total Kjeldahl Nitrogen | 881 | 881 | 100 | 45 | - | - |
| Total Organic Carbon (TOC) | 5290 | 5290 | 100 | 25 | - | - |
| Total Phosphorus | 879 | 879 | 100 | 65 | - | - |

ACCREDITED ACCREDITED



16341 Table Mountain Pkwy • Golden, CO 80403 • T: 800.372.0122 • 303.431.8454 • www.eraqc.com

**KATAHDIN ANALYTICAL SERVICES – INORGANIC DATA QUALIFIERS**

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U Indicates the compound was analyzed for but not detected above the specified level. This level may be the Limit of Quantitation (LOQ)(previously called Practical Quantitation Level (PQL)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL/LOQ or "U" LOD, where the rate of false negatives is <1%.

E Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Limit of Quantitation (LOQ)(previously called Practical Quantitation Limit (PQL)), but above the Method Detection Limit (MDL).

I-7 The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.

A-4 Please refer to cover letter or narrative for further information.

H_ Please note that the regulatory holding time for _______ is "analyze immediately". Ideally, this analysis must be performed in the field at the time of sample collection. _______ for this sample was not performed at the time of sample collection. The analysis was performed as soon as possible after receipt by the laboratory.

H1 - pH H2 - DO H3 - sulfide H4 - residual chlorine

T1 The client did not provide the full volume of at least one liter for analysis of TSS. Therefore, the PQL of 2.5 mg/L could not be achieved.

T2 The client provided the required volume of at least one liter for analysis of TSS, but the laboratory could not filter the full one liter volume due to the sample matrix. Therefore, the PQL of 2.5 mg/L could not be achieved.

M1 The matrix spike and/or matrix spike duplicate recovery performed on this sample was outside of the laboratory acceptance criteria. Sample matrix is suspected. The laboratory criteria was met for the Laboratory Control Sample (LCS) analyzed concurrently with this sample.

M2 The matrix spike and/or matrix spike duplicate recovery was outside of the laboratory acceptance criteria. The native sample concentration is greater than four times the spike added concentration so the spike added could not be distinguished from the native sample concentration.

R1 The relative percent difference (RPD) between the duplicate analyses performed on this sample was outside of the laboratory acceptance criteria (when both values are greater than ten times the PQL).

MCL Maximum Contaminant Level

NFL No Free Liquid Present

NOD No Odor Detected

NL No limit

FLP Free Liquid Present

TON Threshold Odor Number

D-1 As required by Method 5210B, APHA Standard Methods for the Examination of Water and Wastewater (21$^{st}$ edition), the BOD value reported for this sample is 'qualified' because the check standard run concurrently with the sample analysis did not meet the criteria specified in the method (198 +/- 30.5 mg/L). These results <u>may</u> not be reportable for compliance purposes.

D-2 The measured final dissolved oxygen concentrations of all dilutions were less than the method-specified limit of 1 mg/L. The reported BOD result was calculated assuming a final oxygen concentration equal to 1 mg/L.

D-3 The dilution water used to prepare this sample did not meet the method and/or regulatory criteria of less than 0.2 or 0.4 mg/L dissolved oxygen (DO) uptake over the five day period of incubation. These results <u>may</u> not be reportable for compliance purposes.

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-1
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-01 | SL | 23-SEP-14 09:31:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 2200 ug/gdrywt | 480 | 100 | SW846 9060A Mod. | WG151722 | 07-OCT-14 13:23:57 | N/A | N/A | ZS | |
| Toc In Soil(2) | 4000 ug/gdrywt | 480 | 100 | SW846 9060A Mod. | WG151722 | 07-OCT-14 13:35:40 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 3100 ug/gdrywt | 480 | 100 | SW846 9060A Mod. | WG151722 | 07-OCT-14 08:22:19 | N/A | 07-OCT-14 | ZS | |
| Total Solids | 84. % | 1 | | SM2540G | WG151886 | 12-OCT-14 09:11:12 | SM2540G | 10-OCT-14 | REC | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-2
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-02 | SL | 23-SEP-14 09:31:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 2400 ug/gdrywt | 460 | 99. | SW846 9060A Mod. | WG151722 | 07-OCT-14 13:44:59 | N/A | N/A | ZS | |
| Toc In Soil(2) | 2400 ug/gdrywt | 460 | 99. | SW846 9060A Mod. | WG151722 | 07-OCT-14 13:56:01 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 2400 ug/gdrywt | 460 | 99. | SW846 9060A Mod. | WG151722 | 07-OCT-14 08:22:19 | N/A | 07-OCT-14 | ZS | |
| Total Solids | 86. % | 1 | | SM2540G | WG151886 | 12-OCT-14 09:11:33 | SM2540G | 10-OCT-14 | REC | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-3
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-03 | SL | 23-SEP-14 09:31:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 3300 ug/gdrywt | 470 | 100 | SW846 9060A Mod. | WG151722 | 07-OCT-14 14:07:17 | N/A | N/A | ZS | |
| Toc In Soil(2) | 3000 ug/gdrywt | 470 | 100 | SW846 9060A Mod. | WG151722 | 07-OCT-14 14:26:53 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 3200 ug/gdrywt | 470 | 100 | SW846 9060A Mod. | WG151722 | 07-OCT-14 08:22:19 | N/A | 07-OCT-14 | ZS | |
| Total Solids | 84. % | 1 | | SM2540G | WG151886 | 12-OCT-14 09:11:48 | SM2540G | 10-OCT-14 | REC | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-4
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-04 | SL | 23-SEP-14 09:31:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 2500 ug/gdrywt | 480 | 100 | SW846 9060A Mod. | WG151722 | 07-OCT-14 14:35:58 | N/A | N/A | ZS | |
| Toc In Soil(2) | 2300 ug/gdrywt | 480 | 100 | SW846 9060A Mod. | WG151722 | 07-OCT-14 14:44:22 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 2400 ug/gdrywt | 480 | 100 | SW846 9060A Mod. | WG151722 | 07-OCT-14 08:22:19 | N/A | 07-OCT-14 | ZS | |
| Total Solids | 84. % | 1 | | SM2540G | WG151886 | 12-OCT-14 09:12:03 | SM2540G | 10-OCT-14 | REC | |



600 Technology Way
P.O. Box 540, Scarborough, ME 04070

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sales@katahdinlab.com

Katahdin
ANALYTICAL SERVICES

Cert No E87604

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-5
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-05 | SL | 23-SEP-14 09:31:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 23000 ug/gdrywt | 530 | 110 | SW846 9060A Mod. | WG152163 | 09-OCT-14 09:55:39 | N/A | N/A | ZS | M1 |
| Toc In Soil(2) | 29000 ug/gdrywt | 530 | 110 | SW846 9060A Mod. | WG152163 | 09-OCT-14 10:06:55 | N/A | N/A | ZS | M1 |
| Toc In Soil(Avg) | 26000 ug/gdrywt | 530 | 110 | SW846 9060A Mod. | WG152163 | 09-OCT-14 09:06:47 | N/A | 09-OCT-14 | ZS | M1 |
| Total Solids | 76. % | 1 | | SM2540G | WG151886 | 12-OCT-14 09:12:24 | SM2540G | 10-OCT-14 | REC | |

Katahdin
ANALYTICAL SERVICES

Cert No E87604

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-6
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-06 | SL | 23-SEP-14 09:31:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 30000 ug/gdrywt | 540 | 120 | SW846 9060A Mod. | WG152163 | 09-OCT-14 10:31:35 | N/A | N/A | ZS | |
| Toc In Soil(2) | 32000 ug/gdrywt | 540 | 120 | SW846 9060A Mod. | WG152163 | 09-OCT-14 10:47:46 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 31000 ug/gdrywt | 540 | 120 | SW846 9060A Mod. | WG152163 | 09-OCT-14 09:06:47 | N/A | 09-OCT-14 | ZS | |
| Total Solids | 73. % | 1 | | SM2540G | WG151886 | 12-OCT-14 09:12:41 | SM2540G | 10-OCT-14 | REC | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-7
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-07 | SL | 23-SEP-14 10:05:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 58000 ug/gdrywt | 580 | 120 | SW846 9060A Mod. | WG152163 | 09-OCT-14 11:13:36 | N/A | N/A | ZS | |
| Toc In Soil(2) | 52000 ug/gdrywt | 580 | 120 | SW846 9060A Mod. | WG152163 | 09-OCT-14 11:22:01 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 55000 ug/gdrywt | 580 | 120 | SW846 9060A Mod. | WG152163 | 09-OCT-14 09:06:47 | N/A | 09-OCT-14 | ZS | |
| Total Solids | 68. % | 1 | | SM2540G | WG151886 | 12-OCT-14 09:12:58 | SM2540G | 10-OCT-14 | REC | |



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# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-8
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-08 | SL | 23-SEP-14 10:05:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 2600 ug/gdrywt | 460 | 98. | SW846 9060A Mod. | WG152163 | 09-OCT-14 11:30:37 | N/A | N/A | ZS | |
| Toc In Soil(2) | 3100 ug/gdrywt | 460 | 98. | SW846 9060A Mod. | WG152163 | 09-OCT-14 12:22:52 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 2900 ug/gdrywt | 460 | 98. | SW846 9060A Mod. | WG152163 | 09-OCT-14 09:06:47 | N/A | 09-OCT-14 | ZS | |
| Total Solids | 87. % | 1 | | SM2540G | WG151886 | 12-OCT-14 09:13:13 | SM2540G | 10-OCT-14 | REC | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-9
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-09 | SL | 23-SEP-14 10:05:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 1000 ug/gdrywt | 440 | 93. | SW846 9060A Mod. | WG152163 | 09-OCT-14 12:31:28 | N/A | N/A | ZS | |
| Toc In Soil(2) | 990 ug/gdrywt | 440 | 93. | SW846 9060A Mod. | WG152163 | 09-OCT-14 12:44:52 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 1000 ug/gdrywt | 440 | 93. | SW846 9060A Mod. | WG152163 | 09-OCT-14 09:06:47 | N/A | 09-OCT-14 | ZS | |
| Total Solids | 91. % | 1 | | SM2540G | WG151886 | 12-OCT-14 09:13:29 | SM2540G | 10-OCT-14 | REC | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-10
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-10 | SL | 23-SEP-14 10:05:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 1400 ug/gdrywt | 450 | 95. | SW846 9060A Mod. | WG152163 | 09-OCT-14 12:54:25 | N/A | N/A | ZS | |
| Toc In Soil(2) | 720 ug/gdrywt | 450 | 95. | SW846 9060A Mod. | WG152163 | 09-OCT-14 13:01:54 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 1100 ug/gdrywt | 450 | 95. | SW846 9060A Mod. | WG152163 | 09-OCT-14 09:06:47 | N/A | 09-OCT-14 | ZS | |
| Total Solids | 89. % | 1 | | SM2540G | WG151886 | 12-OCT-14 09:13:47 | SM2540G | 10-OCT-14 | REC | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-11
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-11 | SL | 23-SEP-14 10:05:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 3800 ug/gdrywt | 470 | 100 | SW846 9060A Mod. | WG152163 | 09-OCT-14 13:09:47 | N/A | N/A | ZS | |
| Toc In Soil(2) | 1300 ug/gdrywt | 470 | 100 | SW846 9060A Mod. | WG152163 | 09-OCT-14 13:18:07 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 2600 ug/gdrywt | 470 | 100 | SW846 9060A Mod. | WG152163 | 09-OCT-14 09:06:47 | N/A | 09-OCT-14 | ZS | |
| Total Solids | 85. % | 1 | | SM2540G | WG151940 | 12-OCT-14 10:57:20 | SM2540G | 11-OCT-14 | CB | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-12
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-12 | SL | 23-SEP-14 10:05:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 16000 ug/gdrywt | 520 | 110 | SW846 9060A Mod. | WG152163 | 09-OCT-14 13:41:04 | N/A | N/A | ZS | |
| Toc In Soil(2) | 19000 ug/gdrywt | 520 | 110 | SW846 9060A Mod. | WG152163 | 09-OCT-14 14:08:36 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 18000 ug/gdrywt | 520 | 110 | SW846 9060A Mod. | WG152163 | 09-OCT-14 09:06:47 | N/A | 09-OCT-14 | ZS | |
| Total Solids | 77. % | 1 | | SM2540G | WG151940 | 12-OCT-14 10:57:43 | SM2540G | 11-OCT-14 | CB | |

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ANALYTICAL SERVICES

Cert No E87604

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-13
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-13 | SL | 23-SEP-14 10:05:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 20000 ug/gdrywt | 500 | 110 | SW846 9060A Mod. | WG152163 | 09-OCT-14 14:16:51 | N/A | N/A | ZS | |
| Toc In Soil(2) | 17000 ug/gdrywt | 500 | 110 | SW846 9060A Mod. | WG152163 | 09-OCT-14 14:25:01 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 18000 ug/gdrywt | 500 | 110 | SW846 9060A Mod. | WG152163 | 09-OCT-14 09:06:47 | N/A | 09-OCT-14 | ZS | |
| Total Solids | 79. % | 1 | | SM2540G | WG151940 | 12-OCT-14 10:57:56 | SM2540G | 11-OCT-14 | CB | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-14
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-14 | SL | 23-SEP-14 10:05:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 16000 ug/gdrywt | 500 | 110 | SW846 9060A Mod. | WG152163 | 09-OCT-14 14:33:58 | N/A | N/A | ZS | |
| Toc In Soil(2) | 16000 ug/gdrywt | 500 | 110 | SW846 9060A Mod. | WG152163 | 09-OCT-14 14:43:14 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 16000 ug/gdrywt | 500 | 110 | SW846 9060A Mod. | WG152163 | 09-OCT-14 09:06:47 | N/A | 09-OCT-14 | ZS | |
| Total Solids | 80. % | 1 | | SM2540G | WG151940 | 12-OCT-14 10:58:10 | SM2540G | 11-OCT-14 | CB | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-15
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-15 | SL | 23-SEP-14 10:31:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 6200 ug/gdrywt | 480 | 100 | SW846 9060A Mod. | WG152163 | 09-OCT-14 14:51:11 | N/A | N/A | ZS | |
| Toc In Soil(2) | 7700 ug/gdrywt | 480 | 100 | SW846 9060A Mod. | WG152163 | 09-OCT-14 14:59:17 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 6900 ug/gdrywt | 480 | 100 | SW846 9060A Mod. | WG152163 | 09-OCT-14 09:06:47 | N/A | 09-OCT-14 | ZS | |
| Total Solids | 83. % | 1 | | SM2540G | WG151940 | 12-OCT-14 10:58:25 | SM2540G | 11-OCT-14 | CB | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-16
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-16 | SL | 23-SEP-14 10:31:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 7700 ug/gdrywt | 470 | 100 | SW846 9060A Mod. | WG152163 | 09-OCT-14 15:42:50 | N/A | N/A | ZS | |
| Toc In Soil(2) | 6500 ug/gdrywt | 470 | 100 | SW846 9060A Mod. | WG152163 | 09-OCT-14 15:51:45 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 7100 ug/gdrywt | 470 | 100 | SW846 9060A Mod. | WG152163 | 09-OCT-14 09:06:47 | N/A | 09-OCT-14 | ZS | |
| Total Solids | 85. % | 1 | | SM2540G | WG151940 | 12-OCT-14 10:58:38 | SM2540G | 11-OCT-14 | CB | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-17
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-17 | SL | 23-SEP-14 10:31:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 14000 ug/gdrywt | 470 | 99. | SW846 9060A Mod. | WG152163 | 09-OCT-14 15:59:32 | N/A | N/A | ZS | |
| Toc In Soil(2) | 13000 ug/gdrywt | 470 | 99. | SW846 9060A Mod. | WG152163 | 09-OCT-14 16:07:32 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 14000 ug/gdrywt | 470 | 99. | SW846 9060A Mod. | WG152163 | 09-OCT-14 09:06:47 | N/A | 09-OCT-14 | ZS | |
| Total Solids | 86. % | 1 | | SM2540G | WG151940 | 12-OCT-14 10:58:50 | SM2540G | 11-OCT-14 | CB | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-18
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-18 | SL | 23-SEP-14 10:31:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 4300 ug/gdrywt | 460 | 98. | SW846 9060A Mod. | WG152163 | 09-OCT-14 16:15:40 | N/A | N/A | ZS | |
| Toc In Soil(2) | 4200 ug/gdrywt | 460 | 98. | SW846 9060A Mod. | WG152163 | 09-OCT-14 16:23:38 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 4300 ug/gdrywt | 460 | 98. | SW846 9060A Mod. | WG152163 | 09-OCT-14 09:06:47 | N/A | 09-OCT-14 | ZS | |
| Total Solids | 86. % | 1 | | SM2540G | WG151940 | 12-OCT-14 10:59:04 | SM2540G | 11-OCT-14 | CB | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-19
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-19 | SL | 23-SEP-14 10:31:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 34000 ug/gdrywt | 510 | 110 | SW846 9060A Mod. | WG152163 | 09-OCT-14 16:34:10 | N/A | N/A | ZS | |
| Toc In Soil(2) | 35000 ug/gdrywt | 510 | 110 | SW846 9060A Mod. | WG152163 | 09-OCT-14 16:44:14 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 35000 ug/gdrywt | 510 | 110 | SW846 9060A Mod. | WG152163 | 09-OCT-14 09:06:47 | N/A | 09-OCT-14 | ZS | |
| Total Solids | 78. % | 1 | | SM2540G | WG151940 | 12-OCT-14 10:59:24 | SM2540G | 11-OCT-14 | CB | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-20
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-20 | SL | 23-SEP-14 10:31:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 94000 ug/gdrywt | 590 | 120 | SW846 9060A Mod. | WG152163 | 09-OCT-14 16:52:46 | N/A | N/A | ZS | |
| Toc In Soil(2) | 81000 ug/gdrywt | 590 | 120 | SW846 9060A Mod. | WG152163 | 09-OCT-14 17:00:44 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 87000 ug/gdrywt | 590 | 120 | SW846 9060A Mod. | WG152163 | 09-OCT-14 09:06:47 | N/A | 09-OCT-14 | ZS | |
| Total Solids | 68. % | 1 | | SM2540G | WG151940 | 12-OCT-14 10:59:44 | SM2540G | 11-OCT-14 | CB | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-21
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-21 | SL | 23-SEP-14 10:31:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 110000 ug/gdrywt | 610 | 130 | SW846 9060A Mod. | WG152167 | 10-OCT-14 17:51:07 | N/A | N/A | ZS | |
| Toc In Soil(2) | 89000 ug/gdrywt | 610 | 130 | SW846 9060A Mod. | WG152167 | 10-OCT-14 17:58:48 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 100000 ug/gdrywt | 610 | 130 | SW846 9060A Mod. | WG152167 | 10-OCT-14 08:23:23 | N/A | 10-OCT-14 | ZS | |
| Total Solids | 65. % | 1 | | SM2540G | WG151940 | 12-OCT-14 10:59:57 | SM2540G | 11-OCT-14 | CB | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-22
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-43 | SL | 23-SEP-14 11:08:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 4500 ug/gdrywt | 470 | 100 | SW846 9060A Mod. | WG152167 | 10-OCT-14 09:38:54 | N/A | N/A | ZS | |
| Toc In Soil(2) | 3900 ug/gdrywt | 470 | 100 | SW846 9060A Mod. | WG152167 | 10-OCT-14 09:47:38 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 4200 ug/gdrywt | 470 | 100 | SW846 9060A Mod. | WG152167 | 10-OCT-14 08:23:23 | N/A | 10-OCT-14 | ZS | |
| Total Solids | 85. % | 1 | | SM2540G | WG151940 | 12-OCT-14 11:00:12 | SM2540G | 11-OCT-14 | CB | |

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ANALYTICAL SERVICES

Cert No E87604

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-23
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-44 | SL | 23-SEP-14 11:08:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 1200 ug/gdrywt | 460 | 98. | SW846 9060A Mod. | WG152167 | 10-OCT-14 09:57:14 | N/A | N/A | ZS | |
| Toc In Soil(2) | 1500 ug/gdrywt | 460 | 98. | SW846 9060A Mod. | WG152167 | 10-OCT-14 10:05:13 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 1400 ug/gdrywt | 460 | 98. | SW846 9060A Mod. | WG152167 | 10-OCT-14 08:23:23 | N/A | 10-OCT-14 | ZS | |
| Total Solids | 87. % | 1 | | SM2540G | WG151940 | 12-OCT-14 11:00:23 | SM2540G | 11-OCT-14 | CB | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-24
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-45 | SL | 23-SEP-14 11:08:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 11000 ug/gdrywt | 500 | 100 | SW846 9060A Mod. | WG152167 | 10-OCT-14 10:49:18 | N/A | N/A | ZS | |
| Toc In Soil(2) | 12000 ug/gdrywt | 500 | 100 | SW846 9060A Mod. | WG152167 | 10-OCT-14 11:02:18 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 11000 ug/gdrywt | 500 | 100 | SW846 9060A Mod. | WG152167 | 10-OCT-14 08:23:23 | N/A | 10-OCT-14 | ZS | |
| Total Solids | 80. % | 1 | | SM2540G | WG151940 | 12-OCT-14 11:00:35 | SM2540G | 11-OCT-14 | CB | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-25
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-46 | SL | 23-SEP-14 11:08:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 790 ug/gdrywt | 470 | 99. | SW846 9060A Mod. | WG152167 | 10-OCT-14 11:10:36 | N/A | N/A | ZS | |
| Toc In Soil(2) | 1700 ug/gdrywt | 470 | 99. | SW846 9060A Mod. | WG152167 | 10-OCT-14 11:37:14 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 1200 ug/gdrywt | 470 | 99. | SW846 9060A Mod. | WG152167 | 10-OCT-14 08:23:23 | N/A | 10-OCT-14 | ZS | |
| Total Solids | 86. % | 1 | | SM2540G | WG151940 | 12-OCT-14 11:00:49 | SM2540G | 11-OCT-14 | CB | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-26
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-47 | SL | 23-SEP-14 11:08:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 27000 ug/gdrywt | 620 | 130 | SW846 9060A Mod. | WG152167 | 10-OCT-14 12:11:58 | N/A | N/A | ZS | |
| Toc In Soil(2) | 25000 ug/gdrywt | 620 | 130 | SW846 9060A Mod. | WG152167 | 10-OCT-14 12:20:27 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 26000 ug/gdrywt | 620 | 130 | SW846 9060A Mod. | WG152167 | 10-OCT-14 08:23:23 | N/A | 10-OCT-14 | ZS | |
| Total Solids | 64. % | 1 | | SM2540G | WG151940 | 12-OCT-14 11:01:04 | SM2540G | 11-OCT-14 | CB | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-27
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-48 | SL | 23-SEP-14 11:08:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 24000 ug/gdrywt | 670 | 140 | SW846 9060A Mod. | WG152167 | 10-OCT-14 12:48:18 | N/A | N/A | ZS | |
| Toc In Soil(2) | 25000 ug/gdrywt | 670 | 140 | SW846 9060A Mod. | WG152167 | 10-OCT-14 12:58:05 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 24000 ug/gdrywt | 670 | 140 | SW846 9060A Mod. | WG152167 | 10-OCT-14 08:23:23 | N/A | 10-OCT-14 | ZS | |
| Total Solids | 60. % | 1 | | SM2540G | WG151940 | 12-OCT-14 11:01:25 | SM2540G | 11-OCT-14 | CB | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-28
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-49 | SL | 23-SEP-14 11:08:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 25000 ug/gdrywt | 680 | 140 | SW846 9060A Mod. | WG152167 | 10-OCT-14 13:13:39 | N/A | N/A | ZS | |
| Toc In Soil(2) | 24000 ug/gdrywt | 680 | 140 | SW846 9060A Mod. | WG152167 | 10-OCT-14 13:21:24 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 25000 ug/gdrywt | 680 | 140 | SW846 9060A Mod. | WG152167 | 10-OCT-14 08:23:23 | N/A | 10-OCT-14 | ZS | |
| Total Solids | 59. % | 1 | | SM2540G | WG151940 | 12-OCT-14 11:01:37 | SM2540G | 11-OCT-14 | CB | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-29
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-50 | SL | 23-SEP-14 11:50:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 6200 ug/gdrywt | 510 | 110 | SW846 9060A Mod. | WG152167 | 10-OCT-14 14:09:39 | N/A | N/A | ZS | |
| Toc In Soil(2) | 6000 ug/gdrywt | 510 | 110 | SW846 9060A Mod. | WG152167 | 10-OCT-14 14:22:26 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 6100 ug/gdrywt | 510 | 110 | SW846 9060A Mod. | WG152167 | 10-OCT-14 08:23:23 | N/A | 10-OCT-14 | ZS | |
| Total Solids | 78. % | 1 | | SM2540G | WG151940 | 12-OCT-14 11:01:50 | SM2540G | 11-OCT-14 | CB | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-30
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-51 | SL | 23-SEP-14 11:50:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 5600 ug/gdrywt | 480 | 100 | SW846 9060A Mod. | WG152167 | 10-OCT-14 14:52:07 | N/A | N/A | ZS | |
| Toc In Soil(2) | 5400 ug/gdrywt | 480 | 100 | SW846 9060A Mod. | WG152167 | 10-OCT-14 15:03:38 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 5500 ug/gdrywt | 480 | 100 | SW846 9060A Mod. | WG152167 | 10-OCT-14 08:23:23 | N/A | 10-OCT-14 | ZS | |
| Total Solids | 82. % | 1 | | SM2540G | WG151940 | 12-OCT-14 11:02:03 | SM2540G | 11-OCT-14 | CB | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-31
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-52 | SL | 23-SEP-14 11:50:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 16000 ug/gdrywt | 550 | 120 | SW846 9060A Mod. | WG152167 | 10-OCT-14 15:14:49 | N/A | N/A | ZS | |
| Toc In Soil(2) | 16000 ug/gdrywt | 550 | 120 | SW846 9060A Mod. | WG152167 | 10-OCT-14 15:27:00 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 16000 ug/gdrywt | 550 | 120 | SW846 9060A Mod. | WG152167 | 10-OCT-14 08:23:23 | N/A | 10-OCT-14 | ZS | |
| Total Solids | 73. % | 1 | | SM2540G | WG151946 | 12-OCT-14 11:09:17 | SM2540G | 11-OCT-14 | CB | |

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ANALYTICAL SERVICES

Cert No E87604

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-32
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-53 | SL | 23-SEP-14 11:50:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 540 ug/gdrywt | 480 | 100 | SW846 9060A Mod. | WG152167 | 10-OCT-14 16:55:27 | N/A | N/A | ZS | |
| Toc In Soil(2) | 800 ug/gdrywt | 480 | 100 | SW846 9060A Mod. | WG152167 | 10-OCT-14 17:03:51 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 670 ug/gdrywt | 480 | 100 | SW846 9060A Mod. | WG152167 | 10-OCT-14 08:23:23 | N/A | 10-OCT-14 | ZS | |
| Total Solids | 83. % | 1 | | SM2540G | WG151946 | 12-OCT-14 11:09:31 | SM2540G | 11-OCT-14 | CB | |



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# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-33
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-54 | SL | 23-SEP-14 11:50:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 58000 ug/gdrywt | 620 | 130 | SW846 9060A Mod. | WG152167 | 10-OCT-14 17:11:58 | N/A | N/A | ZS | |
| Toc In Soil(2) | 65000 ug/gdrywt | 620 | 130 | SW846 9060A Mod. | WG152167 | 10-OCT-14 17:24:55 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 61000 ug/gdrywt | 620 | 130 | SW846 9060A Mod. | WG152167 | 10-OCT-14 08:23:23 | N/A | 10-OCT-14 | ZS | |
| Total Solids | 65. % | 1 | | SM2540G | WG151946 | 12-OCT-14 11:09:45 | SM2540G | 11-OCT-14 | CB | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-34
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-55 | SL | 23-SEP-14 11:50:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 64000 ug/gdrywt | 650 | 140 | SW846 9060A Mod. | WG152167 | 10-OCT-14 17:33:29 | N/A | N/A | ZS | |
| Toc In Soil(2) | 58000 ug/gdrywt | 650 | 140 | SW846 9060A Mod. | WG152167 | 10-OCT-14 17:41:48 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 61000 ug/gdrywt | 650 | 140 | SW846 9060A Mod. | WG152167 | 10-OCT-14 08:23:23 | N/A | 10-OCT-14 | ZS | |
| Total Solids | 62. % | 1 | | SM2540G | WG151946 | 12-OCT-14 11:10:01 | SM2540G | 11-OCT-14 | CB | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-35
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-56 | SL | 23-SEP-14 11:50:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 65000 ug/gdrywt | 640 | 140 | SW846 9060A Mod. | WG152168 | 11-OCT-14 11:07:36 | N/A | N/A | ZS | |
| Toc In Soil(2) | 65000 ug/gdrywt | 640 | 140 | SW846 9060A Mod. | WG152168 | 11-OCT-14 11:19:15 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 65000 ug/gdrywt | 640 | 140 | SW846 9060A Mod. | WG152168 | 11-OCT-14 14:18:00 | N/A | 11-OCT-14 | ZS | |
| Total Solids | 62. % | 1 | | SM2540G | WG151946 | 12-OCT-14 11:10:22 | SM2540G | 11-OCT-14 | CB | |

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ANALYTICAL SERVICES

Cert No E87604

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-36
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-57 | SL | 23-SEP-14 11:50:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 5400 ug/gdrywt | 500 | 100 | SW846 9060A Mod. | WG152168 | 11-OCT-14 11:53:37 | N/A | N/A | ZS | |
| Toc In Soil(2) | 7300 ug/gdrywt | 500 | 100 | SW846 9060A Mod. | WG152168 | 11-OCT-14 12:01:44 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 6300 ug/gdrywt | 500 | 100 | SW846 9060A Mod. | WG152168 | 11-OCT-14 14:18:00 | N/A | 11-OCT-14 | ZS | |
| Total Solids | 80. % | 1 | | SM2540G | WG151946 | 12-OCT-14 11:10:57 | SM2540G | 11-OCT-14 | CB | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-37
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-58 | SL | 23-SEP-14 11:50:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 6800 ug/gdrywt | 500 | 100 | SW846 9060A Mod. | WG152196 | 13-OCT-14 09:10:32 | N/A | N/A | ZS | |
| Toc In Soil(2) | 12000 ug/gdrywt | 500 | 100 | SW846 9060A Mod. | WG152196 | 13-OCT-14 09:24:56 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 9200 ug/gdrywt | 500 | 100 | SW846 9060A Mod. | WG152196 | 13-OCT-14 10:01:00 | N/A | 13-OCT-14 | ZS | |
| Total Solids | 80. % | 1 | | SM2540G | WG151946 | 12-OCT-14 11:11:11 | SM2540G | 11-OCT-14 | CB | |



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# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-38
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-59 | SL | 23-SEP-14 11:50:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 19000 ug/gdrywt | 610 | 130 | SW846 9060A Mod. | WG152196 | 13-OCT-14 09:33:02 | N/A | N/A | ZS | |
| Toc In Soil(2) | 18000 ug/gdrywt | 610 | 130 | SW846 9060A Mod. | WG152196 | 13-OCT-14 09:41:10 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 18000 ug/gdrywt | 610 | 130 | SW846 9060A Mod. | WG152196 | 13-OCT-14 10:01:00 | N/A | 13-OCT-14 | ZS | |
| Total Solids | 65. % | 1 | | SM2540G | WG151946 | 12-OCT-14 11:11:27 | SM2540G | 11-OCT-14 | CB | |

Katahdin
ANALYTICAL SERVICES

Cert No E87604

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-39
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-60 | SL | 23-SEP-14 11:50:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 910 ug/gdrywt | 480 | 100 | SW846 9060A Mod. | WG152196 | 13-OCT-14 09:49:08 | N/A | N/A | ZS | |
| Toc In Soil(2) | 920 ug/gdrywt | 480 | 100 | SW846 9060A Mod. | WG152196 | 13-OCT-14 09:56:48 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 920 ug/gdrywt | 480 | 100 | SW846 9060A Mod. | WG152196 | 13-OCT-14 10:01:00 | N/A | 13-OCT-14 | ZS | |
| Total Solids | 84. % | 1 | | SM2540G | WG151946 | 12-OCT-14 11:11:40 | SM2540G | 11-OCT-14 | CB | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-40
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-61 | SL | 23-SEP-14 11:50:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 59000 ug/gdrywt | 600 | 130 | SW846 9060A Mod. | WG152196 | 13-OCT-14 10:05:08 | N/A | N/A | ZS | |
| Toc In Soil(2) | 56000 ug/gdrywt | 600 | 130 | SW846 9060A Mod. | WG152196 | 13-OCT-14 10:29:47 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 58000 ug/gdrywt | 600 | 130 | SW846 9060A Mod. | WG152196 | 13-OCT-14 10:01:00 | N/A | 13-OCT-14 | ZS | |
| Total Solids | 66. % | 1 | | SM2540G | WG151946 | 12-OCT-14 11:11:52 | SM2540G | 11-OCT-14 | CB | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-41
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-62 | SL | 23-SEP-14 11:50:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 67000 ug/gdrywt | 640 | 140 | SW846 9060A Mod. | WG152196 | 13-OCT-14 10:39:43 | N/A | N/A | ZS | |
| Toc In Soil(2) | 66000 ug/gdrywt | 640 | 140 | SW846 9060A Mod. | WG152196 | 13-OCT-14 10:48:14 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 66000 ug/gdrywt | 640 | 140 | SW846 9060A Mod. | WG152196 | 13-OCT-14 10:01:00 | N/A | 13-OCT-14 | ZS | |
| Total Solids | 62. % | 1 | | SM2540G | WG151946 | 12-OCT-14 11:12:07 | SM2540G | 11-OCT-14 | CB | |

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ANALYTICAL SERVICES

Cert No E87604

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-42
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-63 | SL | 23-SEP-14 11:50:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 73000 ug/gdrywt | 660 | 140 | SW846 9060A Mod. | WG152196 | 13-OCT-14 11:16:18 | N/A | N/A | ZS | |
| Toc In Soil(2) | 70000 ug/gdrywt | 660 | 140 | SW846 9060A Mod. | WG152196 | 13-OCT-14 11:24:24 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 71000 ug/gdrywt | 660 | 140 | SW846 9060A Mod. | WG152196 | 13-OCT-14 10:01:00 | N/A | 13-OCT-14 | ZS | |
| Total Solids | 61. % | 1 | | SM2540G | WG151946 | 12-OCT-14 11:12:22 | SM2540G | 11-OCT-14 | CB | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-43
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-64 | SL | 23-SEP-14 12:15:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 24000 ug/gdrywt | 860 | 180 | SW846 9060A Mod. | WG152196 | 13-OCT-14 12:10:48 | N/A | N/A | ZS | |
| Toc In Soil(2) | 24000 ug/gdrywt | 860 | 180 | SW846 9060A Mod. | WG152196 | 13-OCT-14 12:18:53 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 24000 ug/gdrywt | 860 | 180 | SW846 9060A Mod. | WG152196 | 13-OCT-14 10:01:00 | N/A | 13-OCT-14 | ZS | |
| Total Solids | 46. % | 1 | | SM2540G | WG151946 | 12-OCT-14 11:12:36 | SM2540G | 11-OCT-14 | CB | |

# Report of Analytical Results

**Client:** Jane Stratton
Absolute Resources
124 Heritage Avenue #16
Portsmouth,NH 03801

**Lab Sample ID:** SH8352-44
**Report Date:** 17-OCT-14
**Client PO:** 31116
**Project:** 31116
**SDG:** SH8352

| Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|
| 3116-65 | SL | 23-SEP-14 11:36:00 | 03-OCT-14 |

| Parameter | Result | Adj PQL | Adj MDL | Anal. Method | QC Batch | Analysis Date | Prep. Method | Prep. Date | Analyst | Footnotes |
|---|---|---|---|---|---|---|---|---|---|---|
| Toc In Soil(1) | 34000 ug/gdrywt | 1300 | 280 | SW846 9060A Mod. | WG152196 | 13-OCT-14 12:26:52 | N/A | N/A | ZS | |
| Toc In Soil(2) | 36000 ug/gdrywt | 1300 | 280 | SW846 9060A Mod. | WG152196 | 13-OCT-14 12:48:35 | N/A | N/A | ZS | |
| Toc In Soil(Avg) | 35000 ug/gdrywt | 1300 | 280 | SW846 9060A Mod. | WG152196 | 13-OCT-14 10:01:00 | N/A | 13-OCT-14 | ZS | |
| Total Solids | 31. % | 1 | | SM2540G | WG151946 | 12-OCT-14 11:12:47 | SM2540G | 11-OCT-14 | CB | |

# Quality Control Report

**Blank Sample Summary Report**

## *Toc In Soil(1)*

| Samp Type | QC Batch | Anal. Method | Anal. Date | Prep. Date | Result | PQL |
|---|---|---|---|---|---|---|
| MBLANK | WG151722 | SW846 9060A Mod. | 07-OCT-14 | N/A | U 300 ug/gdrywt | 400 ug/gdrywt |
| MBLANK | WG152163 | SW846 9060A Mod. | 09-OCT-14 | N/A | U 300 ug/gdrywt | 400 ug/gdrywt |
| MBLANK | WG152167 | SW846 9060A Mod. | 10-OCT-14 | N/A | U 300 ug/gdrywt | 400 ug/gdrywt |
| MBLANK | WG152168 | SW846 9060A Mod. | 11-OCT-14 | N/A | U 300 ug/gdrywt | 400 ug/gdrywt |
| MBLANK | WG152196 | SW846 9060A Mod. | 13-OCT-14 | N/A | U 300 ug/gdrywt | 400 ug/gdrywt |

## *Total Solids*

| Samp Type | QC Batch | Anal. Method | Anal. Date | Prep. Date | Result | PQL |
|---|---|---|---|---|---|---|
| MBLANK | WG151886 | SM2540 | 12-OCT-14 | 10-OCT-14 | U 1 % | 1 % |
| MBLANK | WG151940 | SM2540 | 12-OCT-14 | 11-OCT-14 | U 1 % | 1 % |
| MBLANK | WG151946 | SM2540 | 12-OCT-14 | 11-OCT-14 | U 1 % | 1 % |

600 Technology Way
P.O. Box 540, Scarborough, ME 04070
Tel:(207) 874-2400 Fax:(207) 775-4029

http://katahdinlab.com
sales@katahdinlab.com

# Quality Control Report

## Laboratory Control Sample Summary Report

### *Toc In Soil(1)*

| Lab Sample Id | Samp Type | QC Batch | Analysis Date | Prep Date | Units | Spike Amt. | Result | Recovery | Acceptance Range | RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| WG151722-2 | LCS | WG151722 | 07-OCT-14 | N/A | ug/gdrywt | 400000.000 | 410000 | 102 | 80-120 | |
| WG152163-2 | LCS | WG152163 | 09-OCT-14 | N/A | ug/gdrywt | 400000.000 | 390000 | 97 | 80-120 | |
| WG152167-2 | LCS | WG152167 | 10-OCT-14 | N/A | ug/gdrywt | 400000.000 | 420000 | 105 | 80-120 | |
| WG152168-2 | LCS | WG152168 | 11-OCT-14 | N/A | ug/gdrywt | 400000.000 | 400000 | 101 | 80-120 | |
| WG152196-2 | LCS | WG152196 | 13-OCT-14 | N/A | ug/gdrywt | 400000.000 | 410000 | 102 | 80-120 | |

### *Total Solids*

| Lab Sample Id | Samp Type | QC Batch | Analysis Date | Prep Date | Units | Spike Amt. | Result | Recovery | Acceptance Range | RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| WG151886-2 | LCS | WG151886 | 12-OCT-14 | 10-OCT-14 | % | 90 | 94. | 104 | 80-120 | |
| WG151940-2 | LCS | WG151940 | 12-OCT-14 | 11-OCT-14 | % | 90 | 91. | 102 | 80-120 | |
| WG151946-2 | LCS | WG151946 | 12-OCT-14 | 11-OCT-14 | % | 90 | 90. | 100 | 80-120 | |

Katahdin
ANALYTICAL SERVICES

Cert No E87604

# Quality Control Report

## Duplicate Sample Summary Report

### *Total Solids*

| Duplicate Sample ID | Original Sample ID | QC Batch | Analysis Date | Result Units | Sample Result | Duplicate Result | RPD(%) | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| WG151946-4 | SH8352-44 | WG151946 | 12-OCT-14 | % | 31. | 30. | 0 | 20 |
| WG151940-4 | SH8352-30 | WG151940 | 12-OCT-14 | % | 82. | 81. | 2 | 20 |
| WG151946-3 | SH8352-33 | WG151946 | 12-OCT-14 | % | 65. | 66. | 2 | 20 |
| WG151886-4 | SH8352-10 | WG151886 | 12-OCT-14 | % | 89. | 90. | 1 | 20 |
| WG151940-3 | SH8352-11 | WG151940 | 12-OCT-14 | % | 85. | 86. | 1 | 20 |

# Quality Control Report

## Matrix Spike Sample Summary Report

### *Toc In Soil(1)*

| Matrix Spike Sample ID | Sample Type | Original Sample ID | QC Batch | Analysis Date | Result Units | Spike Amount | Sample Result | MS Result | Recovery (%) | Recovery Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| WG152196-3 | MS | SH8352-41 | WG152196 | 13-OCT-14 | ug/gdrywt | 45212.86 | 67000 | 120000 | 110 | 75 - 125 |
| WG152163-3 | MS | SH8352-5 | WG152163 | 09-OCT-14 | ug/gdrywt | 28705.86 | 23000 | 55000 | 111 | 75 - 125 |
| WG152167-7 | MS | SH8352-31 | WG152167 | 10-OCT-14 | ug/gdrywt | 21771.86 | 16000 | 37000 | 94 | 75 - 125 |
| WG152167-5 | MS | SH8352-25 | WG152167 | 10-OCT-14 | ug/gdrywt | 10329.08 | 790 | 11000 | 103 | 75 - 125 |
| WG152168-3 | MS | SH8352-35 | WG152168 | 11-OCT-14 | ug/gdrywt | 23835.3 | 65000 | 95000 | 125 | 75 - 125 |
| WG152163-5 | MS | SH8352-15 | WG152163 | 09-OCT-14 | ug/gdrywt | 21405.63 | 6200 | 27000 | 91 | 75 - 125 |
| WG152168-4 | MSD | SH8352-35 | WG152168 | 11-OCT-14 | ug/gdrywt | 22744.57 | 65000 | 93000 | 121 | 75 - 125 |
| WG152163-6 | MSD | SH8352-15 | WG152163 | 09-OCT-14 | ug/gdrywt | 18989.81 | 6200 | 31000 | 125 | 75 - 125 |
| WG151722-4 | MSD | SH8352-4 | WG151722 | 07-OCT-14 | ug/gdrywt | 18770.92 | 2500 | 22000 | 107 | 75 - 125 |
| WG152163-4 | MSD | SH8352-5 | WG152163 | 09-OCT-14 | ug/gdrywt | 23526.24 | 23000 | 58000 | 152* | 75 - 125 |
| WG152167-8 | MSD | SH8352-31 | WG152167 | 10-OCT-14 | ug/gdrywt | 22663.64 | 16000 | 39000 | 99 | 75 - 125 |
| WG152167-6 | MSD | SH8352-25 | WG152167 | 10-OCT-14 | ug/gdrywt | 14850.73 | 790 | 16000 | 106 | 75 - 125 |
| WG152196-4 | MSD | SH8352-41 | WG152196 | 13-OCT-14 | ug/gdrywt | 51459.14 | 67000 | 130000 | 116 | 75 - 125 |
| WG151722-3 | MS | SH8352-4 | WG151722 | 07-OCT-14 | ug/gdrywt | 15707.42 | 2500 | 18000 | 99 | 75 - 125 |

**Katahdin Analytical Services, Inc.** **Sample Receipt Condition Report**

| | | |
|---|---|---|
| Client: Absolute Resources | KAS PM: SMB | Sampled By: Client |
| Project: | KIMS Entry By: DM | Delivered By: UPS |
| KAS Work Order#: SH8352 | KIMS Review By: [illegible] | Received By: DM |
| SDG #: | Cooler: 1 of 1 | Date/Time Rec.: 10-3-14 1200 |

| Receipt Criteria | Y | N | EX* | NA | Comments and/or Resolution |
|---|---|---|---|---|---|
| 1. Custody seals present / intact? | ✓ | | | | |
| 2. Chain of Custody present in cooler? | ✓ | | | | |
| 3. Chain of Custody signed by client? | ✓ | | | | |
| 4. Chain of Custody matches samples? | ✓ | | | | |
| 5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun. | | ✓ | | | Temp (°C): 4.0 |
| Samples received at <6 °C w/o freezing? | ✓ | | | | Note: Not required for metals analysis. |
| Ice packs or ice present? | ✓ | | | | The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data. |
| If yes, was there sufficient ice to meet temperature requirements? | ✓ | | | | |
| If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool? | | | | ✓ | Note: No cooling process required for metals analysis. |
| 6. Volatiles: **Aqueous:** No bubble larger than a pea? | | | | ✓ | |
| **Soil/Sediment:** Received in airtight container? | | | | ✓ | |
| Received in methanol? | | | | ✓ | |
| Methanol covering soil? | | | | ✓ | |
| D.I. Water - Received within 48 hour HT? | | | | ✓ | |
| **Air:** Refer to KAS COC for canister/flow controller requirements. | √ if air included | | | | |
| 7. Trip Blank present in cooler? | | | | ✓ | |
| 8. Proper sample containers and volume? | ✓ | | | | |
| 9. Samples within hold time upon receipt? | ✓ | | | | |
| 10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2 | | | | ✓ | |
| Sulfide - >9 | | | | ✓ | |
| Cyanide – pH >12 | | | | ✓ | |

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments

Katahdin SH8352



Absolute Resource associates
124 Heritage Avenue #16
Portsmouth, NH 03801
603-436-2001
absoluteresourceassociates.com

# CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Company Name: See Above

Company Address:

Report To: Jane Stratton

Phone #:

Invoice to Email: Same

☐ Hard Copy Invoice Required

Project Name:

Project #: 31116

Project Location: NH MA ME VT NY ____ Other

Protocol: RCRA MCP SDWA NHDES NPDES OTHER

Reporting Limits: QAPP EPA DW GW-1 Other S-1

Quote # ____ ☐ NH Reimbursement Pricing

PO # 31116

## ANALYSIS REQUEST

☐ VOC 8260 ☐ VOC 8260 NHDES ☐ VOC 8260 MADEP
☐ VOC 624 ☐ VOC BTEX ☐ MtBE, only ☐ VOC 8021VT
☐ VPH MADEP ☐ MEGRO ☐ GRO 8015 ☐ 1,4-Dioxane
☐ VOC 524.2 ☐ VOC 524.2 NH List ☐ Gases-List:
☐ TPH ☐ DRO 8015 ☐ MEDRO ☐ EPH MADEP ☐ TPH Fingerprint
☐ 8270PAH ☐ 8270ABN ☐ 625 ☐ EDB
☐ 8082 PCB ☐ 8081 Pesticides ☐ 608 Pest/PCB
☐ O&G 1664 ☐ Mineral O&G SM5520F
☐ pH ☐ BOD ☐ Conductivity ☐ Turbidity
☐ TSS ☐ TDS ☐ TS ☐ TVS ☐ Alkalinity
☐ RCRA Metals ☐ Priority Pollutant Metals ☐ TAL Metals ☐ Hardness
☐ Total Metals-list:
☐ Dissolved Metals-list:
☐ Ammonia ☐ COD ☐ TKN ☐ TN ☐ TON ☐ TOC
☐ T-Phosphorus ☐ Phenols ☐ Bacteria P/A ☐ Bacteria MPN
☐ Cyanide ☐ Sulfide ☐ Nitrate + Nitrite ☐ Ortho P
☐ Nitrate ☐ Nitrite ☐ Chloride ☐ Sulfate ☐ Bromide ☐ Fluoride
☐ Corrosivity ☐ Reactive CN ☐ Reactive S- ☐ Ignitibility/FP
☐ TCLP Metals ☐ TCLP VOC ☐ TCLP SVOC ☐ TCLP Pesticide
Subcontract: ☐ Grain Size ☐ Herbicides ☐ Formaldehyde
TOC
Grab (G) or Composite (C)

| Lab Sample ID (Lab Use Only) | Field ID | # CONTAINERS | WATER | SOLID | OTHER | HCl | $HNO_3$ | $H_2SO_4$ | NaOH | MeOH | DATE | TIME | SAMPLER | TOC | Grab (G) or Composite (C) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 31116-01 | | | | | | | | | | 9/23/14 | 0931 | | X | |
| | 02 | | | | | | | | | | | 0931 | | | |
| | 03 | | | | | | | | | | | | | | |
| | 04 | | | | | | | | | | | | | | |
| | 05 | | | | | | | | | | | | | | |
| | 06 | | | | | | | | | | | | | | |
| | 07 | | | | | | | | | | | 1005 | | | |
| | 08 | | | | | | | | | | | | | | |
| | 09 | | | | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | | | |

**TAT REQUESTED**

Priority (24 hr)* ☐
Expedited (48 hr)* ☐
Standard (10 Business Days) ☒
*Date Needed ____

See absoluteresourceassociates.com for sample acceptance policy and current accreditation lists.

SPECIAL INSTRUCTIONS

REPORTING INSTRUCTIONS ☒ PDF (e-mail address) janes and jennifers
☐ HARD COPY REQUIRED ☐ FAX (FAX#)

RECEIVED ON ICE ☑ YES ☐ NO
TEMPERATURE ____ °C

## CUSTODY RECORD

| | Date | Time | | Date | Time |
|---|---|---|---|---|---|
| Relinquished by Sampler: | | | Received by: | | |
| Relinquished by: Jane Stratton | 10/2/14 | 1421 | Received by: UPS | | |
| Relinquished by: | | | Received by Laboratory: [signature] | 10/3/14 | 1200 |

QSD-01 Revision 08/05/14

Absolute Resource associates
124 Heritage Avenue #16
Portsmouth, NH 03801
603-436-2001
absoluteresourceassociates.com

# CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Company Name: See Above
Company Address:
Report To: Jane Stratton
Phone #:
Invoice to Email: Same
☐ Hard Copy Invoice Required

Project Name:
Project #: 31116
Project Location: NH MA ME VT NY ____ Other
Protocol: RCRA MCP SDWA NHDES NPDES OTHER
Reporting Limits: QAPP EPA DW GW-1 Other S-1
Quote #: ____ ☐ NH Reimbursement Pricing
PO #: 31116

## ANALYSIS REQUEST

☐ VOC 8260 ☐ VOC 8260 NHDES ☐ VOC 8260 MADEP
☐ VOC 624 ☐ VOC BTEX ☐ MBE, only ☐ VOC 8021VT
☐ VPH MADEP ☐ MEGRO ☐ GRO 8015 ☐ 1,4-Dioxane
☐ VOC 524.2 ☐ VOC 524.2 NH List ☐ Gases-List:
☐ TPH ☐ DRO 8015 ☐ MEDRO ☐ EPH MADEP ☐ TPH Fingerprint
☐ 8270PAH ☐ 8270ABN ☐ 625 ☐ EDB
☐ 8082 PCB ☐ 8081 Pesticides ☐ 608 Pest/PCB
☐ O&G 1664 ☐ Mineral O&G SM5520F
☐ pH ☐ BOD ☐ Conductivity ☐ Turbidity
☐ TSS ☐ TDS ☐ TS ☐ TVS ☐ Alkalinity
☐ RCRA Metals ☐ Priority Pollutant Metals ☐ TAL Metals ☐ Hardness
☐ Total Metals-list:
☐ Dissolved Metals-list:
☐ Ammonia ☐ COD ☐ TKN ☐ TN ☐ TON ☐ TOC
☐ T-Phosphorus ☐ Phenols ☐ Bacteria P/A ☐ Bacteria MPN
☐ Cyanide ☐ Sulfide ☐ Nitrate + Nitrite ☐ Ortho P
☐ Nitrate ☐ Nitrite ☐ Chloride ☐ Sulfate ☐ Bromide ☐ Fluoride
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Subcontract: ☐ Grain Size ☐ Herbicides ☐ Formaldehyde
TOC
Grab (G) or Composite (C)

| Lab Sample ID (Lab Use Only) | Field ID | # CONTAINERS | WATER | SOLID | OTHER | HCl | $HNO_3$ | $H_2SO_4$ | NaOH | MeOH | DATE | TIME | SAMPLER | TOC | Grab (G) or Composite (C) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 31116-12 | | | | | | | | | | 9/23 | 1005 | | X | |
| | 13 | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | 1031 | | | |
| | 16 | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | |
| | 18 | | | | | | | | | | | | | | |
| | 19 | | | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | | | |
| | 21 | | | | | | | | | | | | | | |
| | 23 | | | | | | | | | | | 1108 | | | |

**TAT REQUESTED**
Priority (24 hr)* ☐
Expedited (48 hr)* ☐
Standard (10 Business Days) ☒
*Date Needed ____

See absoluteresourceassociates.com for sample acceptance policy and current accreditation lists.

SPECIAL INSTRUCTIONS

REPORTING INSTRUCTIONS ☒ PDF (e-mail address) ____
☐ HARD COPY REQUIRED ☐ FAX (FAX#) ____

RECEIVED ON ICE ☑ YES ☐ NO
TEMPERATURE ____ °C

## CUSTODY RECORD

| Relinquished | Date | Time | Received | Date | Time |
|---|---|---|---|---|---|
| Relinquished by Sampler: | | | Received by: | | |
| Relinquished by: Jane Stratton | 10/2/14 | 1421 | Received by: UPS | | |
| Relinquished by: | | | Received by Laboratory: [signature] | 10/3/14 | 1200 |

QSD-01 Revision 08/05/14

Absolute Resource associates

124 Heritage Avenue #16
Portsmouth, NH 03801
603-436-2001
absoluteresourceassociates.com

## CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Company Name: See p. 1
Company Address:
Report To:
Phone #:
Invoice to Email:
☐ Hard Copy Invoice Required

Project Name:
Project #: 31116
Project Location: NH MA ME VT NY ____ Other
Protocol: RCRA MCP SDWA NHDES NPDES OTHER
Reporting Limits: QAPP EPA DW GW-1 Other S-1
Quote # ____ ☐ NH Reimbursement Pricing
PO # 31116

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☐ 8270PAH ☐ 8270ABN ☐ 625 ☐ EDB
☐ 8082 PCB ☐ 8081 Pesticides ☐ 608 Pest/PCB
☐ O&G 1664 ☐ Mineral O&G SM5520F
☐ pH ☐ BOD ☐ Conductivity ☐ Turbidity
☐ TSS ☐ TDS ☐ TS ☐ TVS ☐ Alkalinity
☐ RCRA Metals ☐ Priority Pollutant Metals ☐ TAL Metals ☐ Hardness
☐ Total Metals-list:
☐ Dissolved Metals-list:
☐ Ammonia ☐ COD ☐ TKN ☐ TN ☐ TON ☐ TOC
☐ T-Phosphorus ☐ Phenols ☐ Bacteria P/A ☐ Bacteria MPN
☐ Cyanide ☐ Sulfide ☐ Nitrate + Nitrite ☐ Ortho P
☐ Nitrate ☐ Nitrite ☐ Chloride ☐ Sulfate ☐ Bromide ☐ Fluoride
☐ Corrosivity ☐ Reactive CN ☐ Reactive S- ☐ Ignitibility/FP
☐ TCLP Metals ☐ TCLP VOC ☐ TCLP SVOC ☐ TCLP Pesticide
Subcontract: ☐ Grain Size ☐ Herbicides ☐ Formaldehyde — TOC
Grab (G) or Composite (C)

| Lab Sample ID (Lab Use Only) | Field ID | # CONTAINERS | WATER | SOLID | OTHER | HCl | $HNO_3$ | $H_2SO_4$ | NaOH | MeOH | DATE | TIME | SAMPLER | Subcontract: TOC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 31116-44 | | | | | | | | | | 9/23 | 1108 | | X |
| | 45 | | | | | | | | | | | | | |
| | 46 | | | | | | | | | | | | | |
| | 47 | | | | | | | | | | | | | |
| | 48 | | | | | | | | | | | | | |
| | 49 | | | | | | | | | | | | | |
| | 50 | | | | | | | | | | | 1150 | | |
| | 51 | | | | | | | | | | | | | |
| | 52 | | | | | | | | | | | | | |
| | 53 | | | | | | | | | | | | | |
| | 54 | | | | | | | | | | | | | |

**TAT REQUESTED**
Priority (24 hr)* ☐
Expedited (48 hr)* ☐
Standard (10 Business Days) ☒
*Date Needed ____

See absoluteresourceassociates.com for sample acceptance policy and current accreditation lists.

SPECIAL INSTRUCTIONS

REPORTING INSTRUCTIONS ☐ PDF (e-mail address) ____
☐ HARD COPY REQUIRED ☐ FAX (FAX#) ____

RECEIVED ON ICE ☑ YES ☐ NO
TEMPERATURE ____ °C

**CUSTODY RECORD**

| Relinquished | Date | Time | Received | Date | Time |
|---|---|---|---|---|---|
| Relinquished by Sampler: | Date | Time | Received by: | | |
| Relinquished by: Jan Smith | 10/2/14 | 1421 | Received by: UPS | | |
| Relinquished by: | | | Received by Laboratory: Don Meader | 10-3-14 | 1200 |

QSD-01 Revision 08/05/14

Absolute Resource associates
124 Heritage Avenue #16
Portsmouth, NH 03801
603-436-2001
absoluteresourceassociates.com

# CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Company Name:

Company Address:

Report To: See P. 1

Phone #:

Invoice to Email:

☐ Hard Copy Invoice Required

Project Name:

Project #: 31116

Project Location: NH MA ME VT NY ____ Other

Protocol: RCRA SDWA NPDES MCP NHDES OTHER

Reporting Limits: QAPP GW-1 S-1 EPA DW Other

Quote # ________ ☐ NH Reimbursement Pricing

PO # 31116

## ANALYSIS REQUEST

- ☐ VOC 8260 ☐ VOC 8260 NHDES ☐ VOC 8260 MADEP
- ☐ VOC 624 ☐ VOC BTEX ☐ MtBE, only ☐ VOC 8021VT
- ☐ VPH MADEP ☐ MEGRO ☐ GRO 8015 ☐ 1,4-Dioxane
- ☐ VOC 524.2 ☐ VOC 524.2 NH List ☐ Gases-List:
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- ☐ 8270PAH ☐ 8270ABN ☐ 625 ☐ EDB
- ☐ 8082 PCB ☐ 8081 Pesticides ☐ 608 Pest/PCB
- ☐ O&G 1664 ☐ Mineral O&G SM5520F
- ☐ pH ☐ BOD ☐ Conductivity ☐ Turbidity
- ☐ TSS ☐ TDS ☐ TS ☐ TVS ☐ Alkalinity
- ☐ RCRA Metals ☐ Priority Pollutant Metals ☐ TAL Metals ☐ Hardness
- ☐ Total Metals-list:
- ☐ Dissolved Metals-list:
- ☐ Ammonia ☐ COD ☐ TKN ☐ TN ☐ TON ☐ TOC
- ☐ T-Phosphorus ☐ Phenols ☐ Bacteria P/A ☐ Bacteria MPN
- ☐ Cyanide ☐ Sulfide ☐ Nitrate + Nitrite ☐ Ortho P
- ☐ Nitrate ☐ Nitrite ☐ Chloride ☐ Sulfate ☐ Bromide ☐ Fluoride
- ☐ Corrosivity ☐ Reactive CN ☐ Reactive S- ☐ Ignitibility/FP
- ☐ TCLP Metals ☐ TCLP VOC ☐ TCLP SVOC ☐ TCLP Pesticide
- Subcontract: ☐ Grain Size ☐ Herbicides ☐ Formaldehyde  TOC
- Grab (G) or Composite (C)

| Lab Sample ID (Lab Use Only) | Field ID | # CONTAINERS | WATER | SOLID | OTHER | HCl | $HNO_3$ | $H_2SO_4$ | NaOH | MeOH | DATE | TIME | SAMPLER | Subcontract: TOC | Grab (G) or Composite (C) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 31116-55 | | | | | | | | | | 9/23 | 1150 | | X | |
| | 56 | | | | | | | | | | | | | | |
| | 57 | | | | | | | | | | | | | | |
| | 58 | | | | | | | | | | | | | | |
| | 59 | | | | | | | | | | | | | | |
| | 60 | | | | | | | | | | | | | | |
| | 61 | | | | | | | | | | | | | | |
| | 62 | | | | | | | | | | | | | | |
| | 63 | | | | | | | | | | | | | | |
| | 64 | | | | | | | | | | | 1215 | | | |
| | 65 | | | | | | | | | | | 1136 | | | |

**TAT REQUESTED**

- Priority (24 hr)* ☐
- Expedited (48 hr)* ☐
- Standard (10 Business Days) ☒
- *Date Needed ________

See absoluteresourceassociates.com for sample acceptance policy and current accreditation lists.

SPECIAL INSTRUCTIONS

REPORTING INSTRUCTIONS ☒ PDF (e-mail address) janes and jenniferz

☐ HARD COPY REQUIRED ☐ FAX (FAX#)

RECEIVED ON ICE ☒ YES ☐ NO

TEMPERATURE ________ °C

**CUSTODY RECORD**

| Relinquished by | Date | Time | Received by | Date | Time |
|---|---|---|---|---|---|
| Relinquished by Sampler: | | | Received by: | | |
| Relinquished by: [signature] | 10/2/14 | 1421 | Received by: UPS | | |
| Relinquished by: | | | Received by Laboratory: [signature] | 10/3/14 | 1200 |

QSD-01 Revision 08/05/14

Katahdin ANALYTICAL SERVICES

# Katahdin Analytical Services

## Login Chain of Custody Report (lno1)

Oct. 03, 2014
03:08 PM

**Login Number: SH8352**

Quote/Incoming:

**Account:** ABSOL001 NoWeb
Absolute Resources

**Project:** ABSOL001

***Primary Report Address:***
Jane Stratton
Absolute Resources
124 Heritage Avenue #16

Portsmouth,NH 03801
janes@absoluteresourceassociates.com

***Primary Invoice Address:***
Accounts Payable
Absolute Resources
124 Heritage Avenue #16

Portsmouth,NH 03801

***Report CC Addresses:***

***Invoice CC Addresses:***

**Login Information:**

| | | |
|---|---|---|
| ANALYSIS INSTRUCTIONS | : | Analyze Nutrients in Soil, in Duplicate, and report in narrartive, TOC Reporting Limit 0.1 % |
| CHECK NO. | : | |
| CLIENT PO# | : | 31116 |
| CLIENT PROJECT MANAGE | : | |
| CONTRACT | : | |
| COOLER TEMPERATURE | : | 4.0 |
| DELIVERY SERVICES | : | Fed Ex |
| EDD FORMAT | : | |
| LOGIN INITIALS | : | |
| PM | : | SMB |
| PROJECT NAME | : | 31116 |
| QC LEVEL | : | I |
| REGULATORY LIST | : | |
| REPORT INSTRUCTIONS | : | email pdf and invoice to Jane, janes@absoluteresourceaccociates.com and jenniferz@absoluteresourceassoiciates.com, no HC |
| SDG ID | : | |
| SDG STATUS | : | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-1 | 3116-01 | 23-SEP-14 09:31 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-2 | 3116-02 | 23-SEP-14 09:31 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-3 | 3116-03 | 23-SEP-14 09:31 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-4 | 3116-04 | 23-SEP-14 09:31 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-5 | 3116-05 | 23-SEP-14 09:31 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-6 | 3116-06 | 23-SEP-14 09:31 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

Katahdin ANALYTICAL SERVICES

# Katahdin Analytical Services

## Login Chain of Custody Report (lno1)



Oct. 03, 2014
03:08 PM

**Login Number: SH8352**

Quote/Incoming:

**Account:** ABSOL001 NoWeb
Absolute Resources

**Project:** ABSOL001

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-7 | 3116-07 | 23-SEP-14 10:05 | 03-OCT-14 | | | 16-OCT-14 | |
| SH8352-8 | 3116-08 | 23-SEP-14 10:05 | 03-OCT-14 | | | 16-OCT-14 | |
| SH8352-9 | 3116-09 | 23-SEP-14 10:05 | 03-OCT-14 | | | 16-OCT-14 | |
| SH8352-10 | 3116-10 | 23-SEP-14 10:05 | 03-OCT-14 | | | 16-OCT-14 | |
| SH8352-11 | 3116-11 | 23-SEP-14 10:05 | 03-OCT-14 | | | 16-OCT-14 | |
| SH8352-12 | 3116-12 | 23-SEP-14 10:05 | 03-OCT-14 | | | 16-OCT-14 | |
| SH8352-13 | 3116-13 | 23-SEP-14 10:05 | 03-OCT-14 | | | 16-OCT-14 | |
| SH8352-14 | 3116-14 | 23-SEP-14 10:05 | 03-OCT-14 | | | 16-OCT-14 | |

SH8352-7 3116-07

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

SH8352-8 3116-08

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

SH8352-9 3116-09

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

SH8352-10 3116-10

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

SH8352-11 3116-11

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

SH8352-12 3116-12

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

SH8352-13 3116-13

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

SH8352-14 3116-14

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

Katahdin
ANALYTICAL SERVICES

# Katahdin Analytical Services

## Login Chain of Custody Report (lno1)

Oct. 03, 2014
03:08 PM

**Login Number: SH8352**

Quote/Incoming:

**Account:** ABSOL001 NoWeb
Absolute Resources

**Project:** ABSOL001

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-15 | 3116-15 | 23-SEP-14 10:31 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-16 | 3116-16 | 23-SEP-14 10:31 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-17 | 3116-17 | 23-SEP-14 10:31 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-18 | 3116-18 | 23-SEP-14 10:31 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-19 | 3116-19 | 23-SEP-14 10:31 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-20 | 3116-20 | 23-SEP-14 10:31 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-21 | 3116-21 | 23-SEP-14 10:31 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-22 | 3116-43 | 23-SEP-14 11:08 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

Katahdin ANALYTICAL SERVICES

# Katahdin Analytical Services

## Login Chain of Custody Report (lno1)



*Oct. 03, 2014*
*03:08 PM*

**Login Number: SH8352**

**Quote/Incoming:**

**Account:** ABSOL001 NoWeb
Absolute Resources

**Project:** ABSOL001

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-23 | 3116-44 | 23-SEP-14 11:08 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-24 | 3116-45 | 23-SEP-14 11:08 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-25 | 3116-46 | 23-SEP-14 11:08 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-26 | 3116-47 | 23-SEP-14 11:08 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-27 | 3116-48 | 23-SEP-14 11:08 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-28 | 3116-49 | 23-SEP-14 11:08 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-29 | 3116-50 | 23-SEP-14 11:50 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-30 | 3116-51 | 23-SEP-14 11:50 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

Katahdin ANALYTICAL SERVICES

**Katahdin Analytical Services**

**Login Chain of Custody Report (lno1)**

Oct. 03, 2014

03:08 PM

**Login Number: SH8352**

**Quote/Incoming:**

**Account:** ABSOL001 NoWeb

Absolute Resources

**Project:** ABSOL001

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-31 | 3116-52 | 23-SEP-14 11:50 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-32 | 3116-53 | 23-SEP-14 11:50 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-33 | 3116-54 | 23-SEP-14 11:50 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-34 | 3116-55 | 23-SEP-14 11:50 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-35 | 3116-56 | 23-SEP-14 11:50 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-36 | 3116-57 | 23-SEP-14 11:50 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-37 | 3116-58 | 23-SEP-14 11:50 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-38 | 3116-59 | 23-SEP-14 11:50 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Oct. 03, 2014

03:08 PM



**Login Number: SH8352**

Quote/Incoming:

Account: ABSOL001 NoWeb

Absolute Resources

Project: ABSOL001

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-39 | 3116-60 | 23-SEP-14 11:50 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-40 | 3116-61 | 23-SEP-14 11:50 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-41 | 3116-62 | 23-SEP-14 11:50 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-42 | 3116-63 | 23-SEP-14 11:50 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-43 | 3116-64 | 23-SEP-14 12:15 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

| Laboratory Sample ID | Client Sample Number | Collect Date/Time | Receive Date | PR | Verbal Date | Due Date | Mailed |
|---|---|---|---|---|---|---|---|
| SH8352-44 | 3116-65 | 23-SEP-14 11:36 | 03-OCT-14 | | | 16-OCT-14 | |

| Matrix | | Product | Hold Date (shortest) | Bottle Type | Bottle Count | Comments |
|---|---|---|---|---|---|---|
| Solid | S | SW9060-TOC(1) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(2) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | SW9060-TOC(AVG) | 21-OCT-14 | 2oz Glass | | |
| Solid | S | TS | 23-OCT-14 | 4oz Glass | | |

***Total Samples:* 44** ***Total Analyses:* 176**

# SUBCONTRACT ORDER

**ERDC- EL-EP-C**

**4092606**

31116

**SENDING LABORATORY:**

ERDC- EL-EP-C
3909 Halls Ferry Road , Building 3299
Vicksburg, MS 39180
Phone: 601-634-4826
Fax: 601-634-2742
Project Manager: Patty Tuminello

**RECEIVING LABORATORY:**

ARA
124 Heritage Ave, #16
Portsmouth, NH 03801
Phone :(603) 436-2001
Fax:

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **Sample Name: QT2-1-0002-SEDCHEM** | | | | |
| **Sample ID: 4092606-01** | **Soil/Sedir** | **Sampled:23-Sep-2014 09:31** | 31116-01 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 09:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-1-0205-SEDCHEM** | | | | |
| **Sample ID: 4092606-02** | **Soil/Sedir** | **Sampled:23-Sep-2014 09:31** | 02 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 09:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-1-0507-SEDCHEM** | | | | |
| **Sample ID: 4092606-03** | **Soil/Sedir** | **Sampled:23-Sep-2014 09:31** | 03 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 09:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-1-0002-SEDCHEM-AI** | | | | |
| **Sample ID: 4092606-04** | **Soil/Sedir** | **Sampled:23-Sep-2014 09:31** | 04 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 09:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-1-0002-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-05** | **Soil/Sedir** | **Sampled:23-Sep-2014 09:31** | 05 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 09:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-1-0205-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-06** | **Soil/Sedir** | **Sampled:23-Sep-2014 09:31** | 06 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 09:31 | | |
| *Containers Supplied:* | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| [signature] | 9-30-14 | Fed EX | 9/30/14 |
| FedEX | ~~9/30/14~~ 10/1/14 | [signature] | 10/1/14 |

Rec'd on Ice @ 2°C

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C**

**4092606** 31116

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **Sample Name: QT2-1-0507-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-07** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:0!** | 07 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-2-0002-SEDCHEM** | | | | |
| **Sample ID: 4092606-08** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:0!** | 08 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-2-0205-SEDCHEM** | | | | |
| **Sample ID: 4092606-09** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:0!** | 09 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-2-0507-SEDCHEM** | | | | |
| **Sample ID: 4092606-10** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:0!** | 10 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-2-0002-SEDCHEM-AI** | | | | |
| **Sample ID: 4092606-11** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:0!** | 11 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-2-0002-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-12** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:0!** | 12 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-2-0205-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-13** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:0!** | 13 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-2-0507-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-14** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:0!** | 14 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| [signature] | 9-30-14 | Fed Ex | 9/30/14 |
| FedEx | 10/1/14 | [signature] | 10/1/14 |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C**

**4092606**

31116

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **Sample Name: QT2-3-0002-SEDCHEM** | | | | |
| **Sample ID: 4092606-15** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | 15 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-3-0205-SEDCHEM** | | | | |
| **Sample ID: 4092606-16** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | 16 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-3-0507-SEDCHEM** | | | | |
| **Sample ID: 4092606-17** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | 17 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-3-0002-SEDCHEM-AI** | | | | |
| **Sample ID: 4092606-18** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | 18 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-3-0002-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-19** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | 19 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-3-0205-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-20** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | 20 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-3-0507-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-21** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | 21 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-1-0002-GS** | | | | |
| **Sample ID: 4092606-22** | **Soil/Sedir** | **Sampled:23-Sep-2014 09:31** | 22 | •• |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| *Containers Supplied:* | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| [signature] | 9-30-14 | Fed Ex | 9/30/14 |
| FedEx | 10/1/14 | [signature] | 10/1/14 |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C**

**4092606**

311116

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **Sample Name: QT2-1-0205-GS** | | | | |
| **Sample ID: 4092606-23** | **Soil/Sedir** | **Sampled:23-Sep-2014 09:31** | 23 | • • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-1-0507-GS** | | | | |
| **Sample ID: 4092606-24** | **Soil/Sedir** | **Sampled:23-Sep-2014 09:31** | 24 | • • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-1-0002-GS-AI** | | | | |
| **Sample ID: 4092606-25** | **Soil/Sedir** | **Sampled:23-Sep-2014 09:31** | 25 | • • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-1-0002-GS-BI** | | | | |
| **Sample ID: 4092606-26** | **Soil/Sedir** | **Sampled:23-Sep-2014 09:31** | 26 | • • |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-1-0205-GS-BI** | | | | |
| **Sample ID: 4092606-27** | **Soil/Sedir** | **Sampled:23-Sep-2014 09:31** | 27 | • • |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-1-0507-GS-BI** | | | | |
| **Sample ID: 4092606-28** | **Soil/Sedir** | **Sampled:23-Sep-2014 09:31** | 28 | • • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| *Containers Supplied:* | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| [signature] | 9-30-14 | Fed Ex | 9/30/14 |
| Fed Ex | 10/1/14 | [signature] | 10/1/14 |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C**

**4092606**

31116

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **Sample Name: QT2-2-0002-GS** | | | | |
| **Sample ID: 4092606-29** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:05** | 29 | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-2-0205-GS** | | | | |
| **Sample ID: 4092606-30** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:05** | 30 | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-2-0507-GS** | | | | |
| **Sample ID: 4092606-31** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:05** | 31 | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-2-0002-GS-AI** | | | | |
| **Sample ID: 4092606-32** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:05** | 32 | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-2-0002-GS-BI** | | | | |
| **Sample ID: 4092606-33** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:05** | 33 | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-2-0205-GS-BI** | | | | |
| **Sample ID: 4092606-34** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:05** | 34 | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| [signature] | 9-30-14 | Fed Ex | 9/30/14 |
| Fed Ex | 10/1/14 | [signature] | 10/1/14 |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C**

**4092606** 31116

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **Sample Name: QT2-2-0507-GS-BI** | | | 35 | • • |
| **Sample ID: 4092606-35** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:05** | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-3-0002-GS** | | | 36 | • • |
| **Sample ID: 4092606-36** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-3-0205-GS** | | | 37 | • • |
| **Sample ID: 4092606-37** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-3-0507-GS** | | | 38 | • • |
| **Sample ID: 4092606-38** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-3-0002-GS-AI** | | | 39 | • • |
| **Sample ID: 4092606-39** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-3-0002-GS-BI** | | | 40 | • • |
| **Sample ID: 4092606-40** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| [signature] | 9-30-14 | FedEx | 9/30/14 |
| FedEx | 10/1/14 | [signature] | 10/1/14 |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C**

**4092606**

31114

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **Sample Name: QT2-3-0205-GS-BI** | | | | |
| **Sample ID: 4092606-41** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | 41 | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-3-0507-GS-BI** | | | | |
| **Sample ID: 4092606-42** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | 42 | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-4-0002-SEDCHEM** | | | | |
| **Sample ID: 4092606-43** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:08** | 43 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:08 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-4-0205-SEDCHEM** | | | | |
| **Sample ID: 4092606-44** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:08** | 44 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:08 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-4-0507-SEDCHEM** | | | | |
| **Sample ID: 4092606-45** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:08** | 45 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:08 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-4-0002-SEDCHEM-AI** | | | | |
| **Sample ID: 4092606-46** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:08** | 46 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:08 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-4-0002-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-47** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:08** | 47 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:08 | | |
| *Containers Supplied:* | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| [signature] | 9-30-14 | Fed Ex | 9/30/14 |
| Fed Ex | 10/1/14 | [signature] | 10/1/14 |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C**

**4092606**

31116

| **Analysis** | **Due** | **Expires** | **Laboratory ID** | **Comments** |
|---|---|---|---|---|
| **Sample Name: QT2-4-0205-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-48** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:08** | 48 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:08 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-4-0507-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-49** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:08** | 49 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:08 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5-0002-SEDCHEM** | | | | |
| **Sample ID: 4092606-50** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 50 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5-0205-SEDCHEM** | | | | |
| **Sample ID: 4092606-51** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 51 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5-0507-SEDCHEM** | | | | |
| **Sample ID: 4092606-52** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 52 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5-0002-SEDCHEM-AI** | | | | |
| **Sample ID: 4092606-53** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 53 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5-0002-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-54** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 54 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5-0205-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-55** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 55 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |

| | | | |
|---|---|---|---|
| [signature] | 9-30-14 | Fed Ex | 9/30/14 |
| Released By | Date | Received By | Date |
| FedEx | ~~9/30/14~~ 10/1/14 | [signature] | 10/1/14 |
| Released By | Date | Received By | Date |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C**

**4092606**

31116

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **Sample Name: QT2-5-0507-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-56** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 56 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5DUP-0002-SEDCHEM** | | | | |
| **Sample ID: 4092606-57** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 57 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5DUP-0205-SEDCHEM** | | | | |
| **Sample ID: 4092606-58** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 58 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5DUP-0507-SEDCHEM** | | | | |
| **Sample ID: 4092606-59** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 59 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5DUP-0002-SEDCHEM-AI** | | | | |
| **Sample ID: 4092606-60** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 60 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5DUP-0002-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-61** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 61 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5DUP-0205-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-62** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 62 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5DUP-0507-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-63** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 63 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| [signature] | 9-30-14 | FedEX | 9/30/14 |
| FedEX | 10/1/14 | [signature] | 10/1/14 |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C**

**4092606**

311116

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **Sample Name: QT2-6-GRAB-SEDCHEM** | | | 64 | |
| **Sample ID: 4092606-64** | **Soil/Sedir** | **Sampled:22-Sep-2014 12:1!** | | |
| TOC | 27-Oct-2014 00:00 | 20-Oct-2014 12:15 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-7-GRAB-SEDCHEM** | | | 65 | |
| **Sample ID: 4092606-65** | **Soil/Sedir** | **Sampled:22-Sep-2014 11:36** | | |
| TOC | 27-Oct-2014 00:00 | 20-Oct-2014 11:36 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-4-0002-GS** | | | 66 | |
| **Sample ID: 4092606-66** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:00** | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-4-0205-GS** | | | 67 | |
| **Sample ID: 4092606-67** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:00** | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-4-0507-GS** | | | 68 | |
| **Sample ID: 4092606-68** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:00** | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-4-0002-GS-AI** | | | 69 | |
| **Sample ID: 4092606-69** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:00** | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-4-0002-GS-BI** | | | 70 | |
| **Sample ID: 4092606-70** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:00** | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| *Containers Supplied:* | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| [signature] | 9-30-14 | FedEx | 9/30/14 |
| FedEx | 10/1/14 | [signature] | 10/1/14 |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C**

**4092606**

311116

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **Sample Name: QT2-4-0205-GS-BI** | | | | |
| **Sample ID: 4092606-71** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:00** | 71 | • |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-4-0507-GS-BI** | | | | |
| **Sample ID: 4092606-72** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:00** | 72 | • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5-0002-GS** | | | | |
| **Sample ID: 4092606-73** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 73 | • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5-0205-GS** | | | | |
| **Sample ID: 4092606-74** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 74 | • |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5-0507-GS** | | | | |
| **Sample ID: 4092606-75** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 75 | • |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5-0002-GS-AI** | | | | |
| **Sample ID: 4092606-76** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 76 | • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| [signature] | 9-30-14 | FedEx | 9/30/14 |
| FedEx | 10/1/14 | [signature] | 10/1/14 |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C**

**4092606**

31116

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **Sample Name: QT2-5-0002-GS-BI** | | | | |
| **Sample ID: 4092606-77** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 77 | • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5-0205-GS-BI** | | | | |
| **Sample ID: 4092606-78** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 78 | • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5-0507-GS-BI** | | | | |
| **Sample ID: 4092606-79** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 79 | • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5DUP-0002-GS** | | | | |
| **Sample ID: 4092606-80** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 80 | • |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5DUP-0205-GS** | | | | |
| **Sample ID: 4092606-81** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 81 | • |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5DUP-0507-GS** | | | | |
| **Sample ID: 4092606-82** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 82 | • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| [signature] | 9-30-14 | Fed EX | 9/30/14 |
| Fed EX | 10/1/14 | [signature] | 10/1/14 |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C**

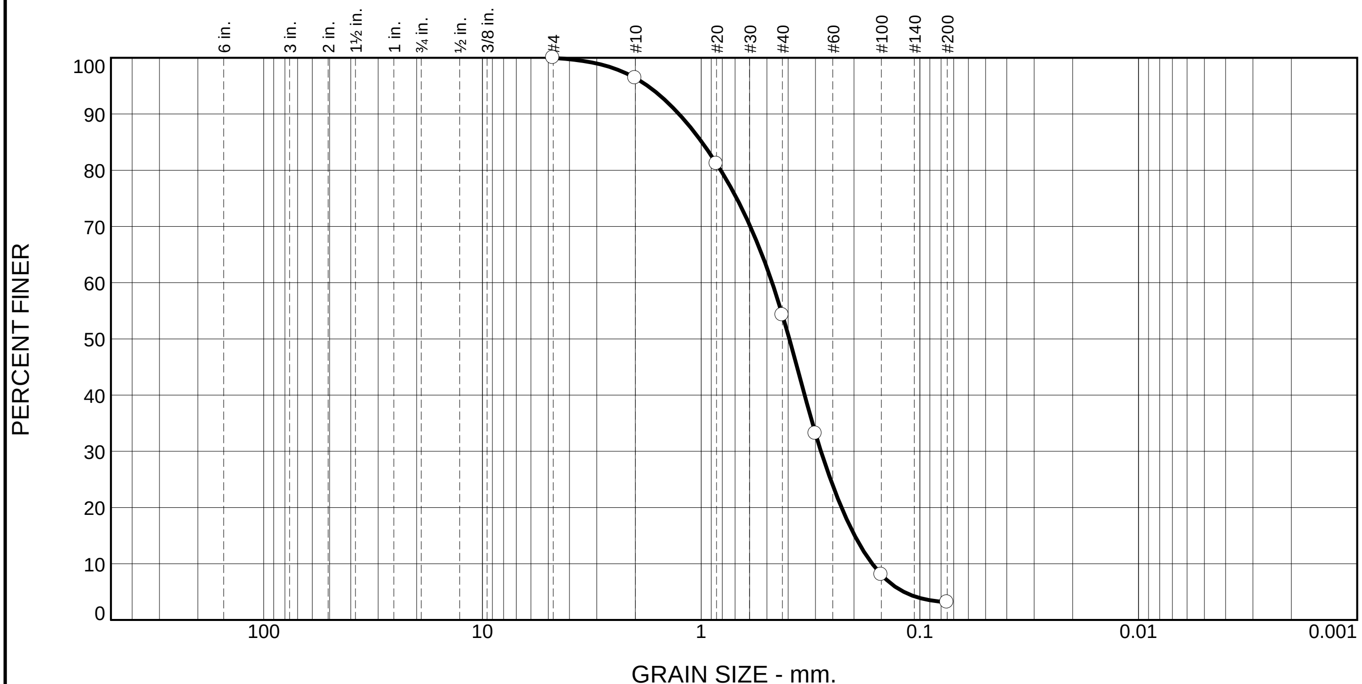
**4092606**

31116

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **Sample Name: QT2-5DUP-0002-GS-AI** | | | 83 | • |
| **Sample ID: 4092606-83** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5DUP-0002-GS-BI** | | | 84 | • |
| **Sample ID: 4092606-84** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5DUP-0205-GS-BI** | | | 85 | • |
| **Sample ID: 4092606-85** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5DUP-0507-GS-BI** | | | 86 | • |
| **Sample ID: 4092606-86** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-6-GRAB-GS** | | | 87 | • |
| **Sample ID: 4092606-87** | **Soil/Sedir** | **Sampled:22-Sep-2014 12:15** | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 22-Oct-2014 12:15 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 22-Oct-2014 12:15 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-7-GRAB-GS** | | | 88 | • |
| **Sample ID: 4092606-88** | **Soil/Sedir** | **Sampled:22-Sep-2014 11:36** | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 22-Oct-2014 11:36 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 22-Oct-2014 11:36 | | |
| *Containers Supplied:* | | | | |

| | | | |
|---|---|---|---|
| [signature] | 9-30-14 | Fed EX | 9/30/14 |
| Released By | Date | Received By | Date |
| Fed EX | 10/1/14 | [signature] | 10/1/14 |
| Released By | Date | Received By | Date |

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 3.6 | 42.1 | 51.2 | 3.1 | |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 96.4 | | |
| #20 | 81.2 | | |
| #40 | 54.3 | | |
| #50 | 33.2 | | |
| #100 | 8.1 | | |
| #200 | 3.1 | | |

* (no specification provided)

**Material Description**

FINE-MEDIUM SAND, trace Silt

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 1.2621 $D_{85}$= 0.9922 $D_{60}$= 0.4735
$D_{50}$= 0.3952 $D_{30}$= 0.2831 $D_{15}$= 0.1984
$D_{10}$= 0.1651 $C_u$= 2.87 $C_c$= 1.03

**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-6-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

**Location:** 31116-22
**Sample Number:** 14-1161
**Date Sampled:** 10-3-14

CONSULTING TESTING INSPECTION JTC inc. GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 011

# Particle Size Distribution Report


| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.7 | 4.9 | 46.5 | 44.8 | 3.1 | |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 99.3 | | |
| #10 | 94.4 | | |
| #20 | 78.7 | | |
| #40 | 47.9 | | |
| #50 | 28.0 | | |
| #100 | 7.2 | | |
| #200 | 3.1 | | |

* (no specification provided)

**Material Description**

FINE-MEDIUM SAND, trace Silt

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 1.3991 $D_{85}$= 1.0745 $D_{60}$= 0.5332
$D_{50}$= 0.4407 $D_{30}$= 0.3115 $D_{15}$= 0.2165
$D_{10}$= 0.1772 $C_u$= 3.01 $C_c$= 1.03

**Remarks**

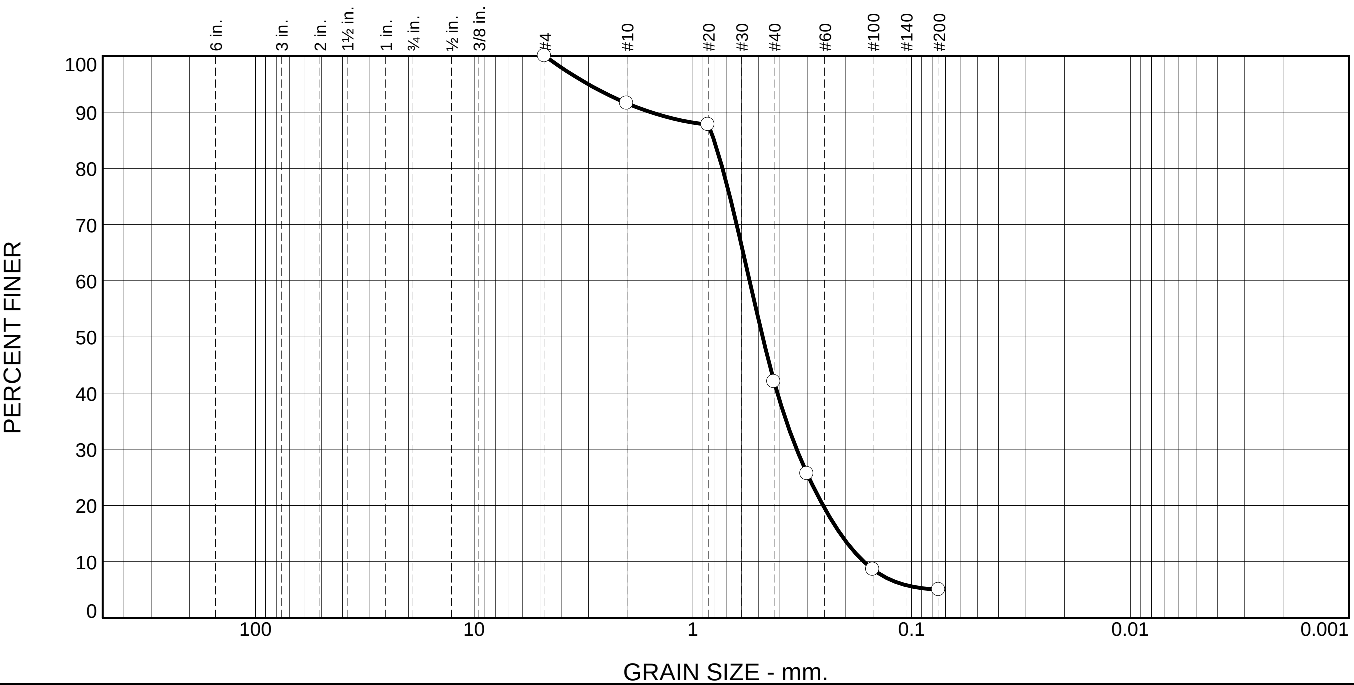
**Date Received:** 10-3-14 **Date Tested:** 10-6-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

**Location:** 31116-23
**Sample Number:** 14-1162
**Date Sampled:** 10-3-14

JTC inc. CONSULTING TESTING INSPECTION GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 012

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 8.4 | 49.6 | 37.0 | 5.0 | |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 91.6 | | |
| #20 | 87.8 | | |
| #40 | 42.0 | | |
| #50 | 25.6 | | |
| #100 | 8.6 | | |
| #200 | 5.0 | | |

* (no specification provided)

**Material Description**

FINE-MEDIUM SAND, trace Silt

**Atterberg Limits (ASTM D 4318)**

PL= LL= PI=

**Classification**

USCS (D 2487)= AASHTO (M 145)=

**Coefficients**

$D_{90}$= 1.5596 $D_{85}$= 0.8006 $D_{60}$= 0.5505
$D_{50}$= 0.4799 $D_{30}$= 0.3354 $D_{15}$= 0.2120
$D_{10}$= 0.1654 $C_u$= 3.33 $C_c$= 1.24

**Remarks**

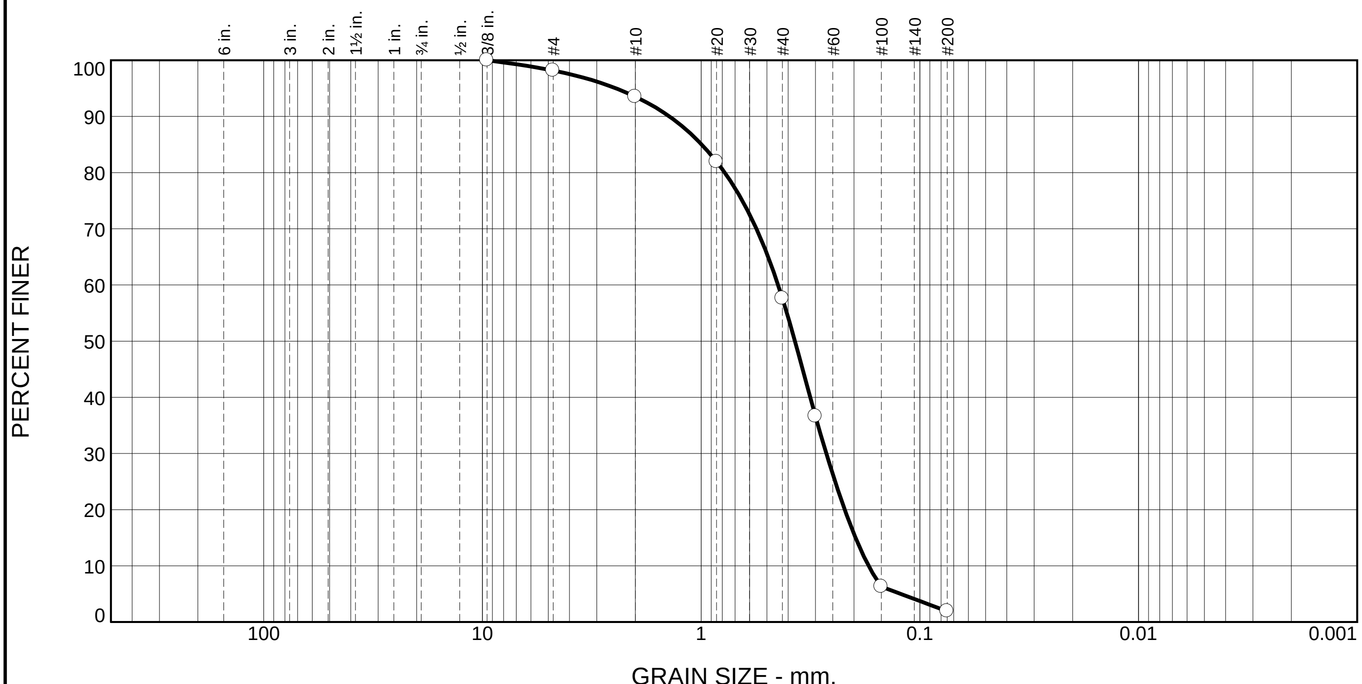
**Date Received:** 10-3-14 **Date Tested:** 10-6-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

**Location:** 31116-24
**Sample Number:** 14-1163
**Date Sampled:** 10-3-14

**Client:** Absolute Resources
**Project:** Misc. Testing

**Project No:** 14-25-010 **Figure** 013

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.8 | 4.7 | 35.9 | 55.7 | 1.9 | |

| TEST RESULTS (ASTM D422) | | | |
|---|---|---|---|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| 3/8 | 100.0 | | |
| #4 | 98.2 | | |
| #10 | 93.5 | | |
| #20 | 81.9 | | |
| #40 | 57.6 | | |
| #50 | 36.6 | | |
| #100 | 6.3 | | |
| #200 | 1.9 | | |

* (no specification provided)

**Material Description**

FINE-MEDIUM SAND, trace Silt, trace Fine Gravel

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 1.3963 $D_{85}$= 0.9947 $D_{60}$= 0.4446
$D_{50}$= 0.3726 $D_{30}$= 0.2677 $D_{15}$= 0.1967
$D_{10}$= 0.1715 $C_u$= 2.59 $C_c$= 0.94

**Remarks**

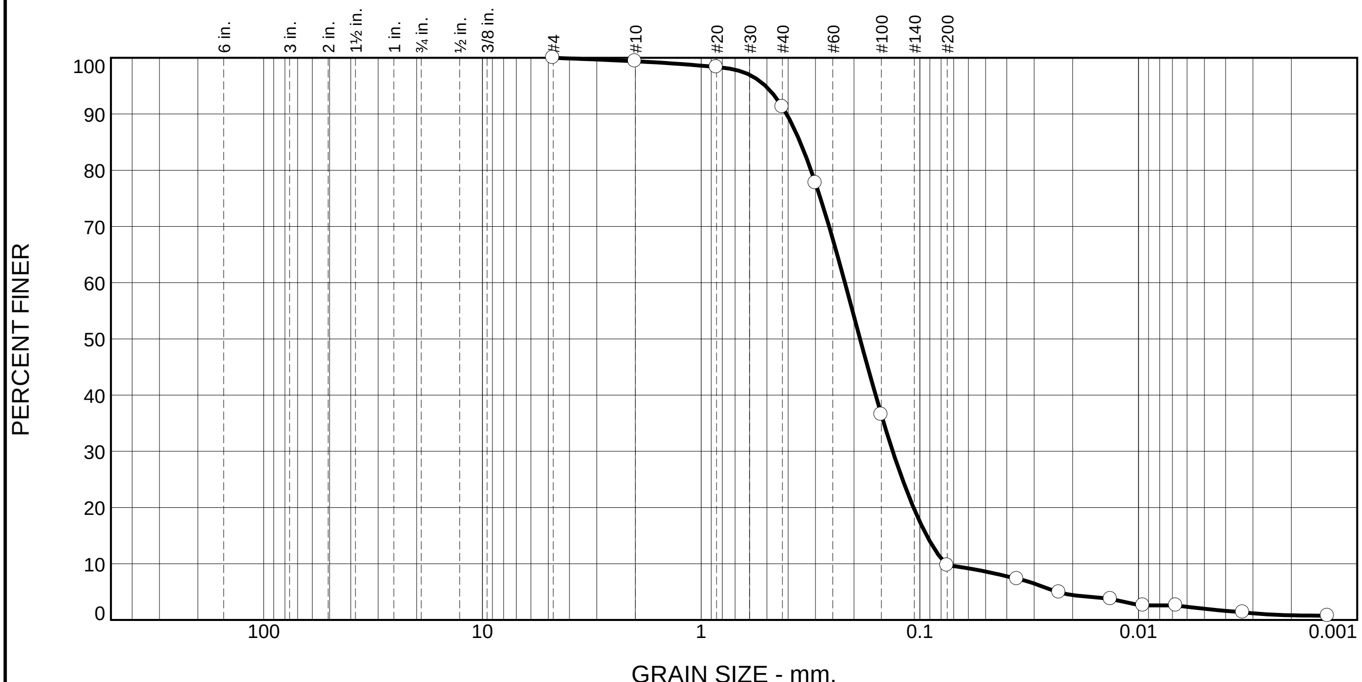
**Date Received:** 10-3-14 **Date Tested:** 10-6-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

**Location:** 31116-25
**Sample Number:** 14-1164
**Date Sampled:** 10-3-14

**Client:** Absolute Resources
**Project:** Misc. Testing

**Project No:** 14-25-010 **Figure** 014

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.6 | 8.1 | 81.6 | 7.7 | 2.0 |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 99.4 | | |
| #20 | 98.4 | | |
| #40 | 91.3 | | |
| #50 | 77.7 | | |
| #100 | 36.5 | | |
| #200 | 9.7 | | |
| 0.0359 mm. | 7.3 | | |
| 0.0231 mm. | 4.9 | | |
| 0.0134 mm. | 3.7 | | |
| 0.0095 mm. | 2.6 | | |
| 0.0067 mm. | 2.6 | | |
| 0.0033 mm. | 1.4 | | |
| 0.0014 mm. | 0.8 | | |

* (no specification provided)

**Material Description**

FINE SAND, trace Silt, trace Clay

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.4067 $D_{85}$= 0.3525 $D_{60}$= 0.2201
$D_{50}$= 0.1876 $D_{30}$= 0.1330 $D_{15}$= 0.0930
$D_{10}$= 0.0761 $C_u$= 2.89 $C_c$= 1.06

**Remarks**

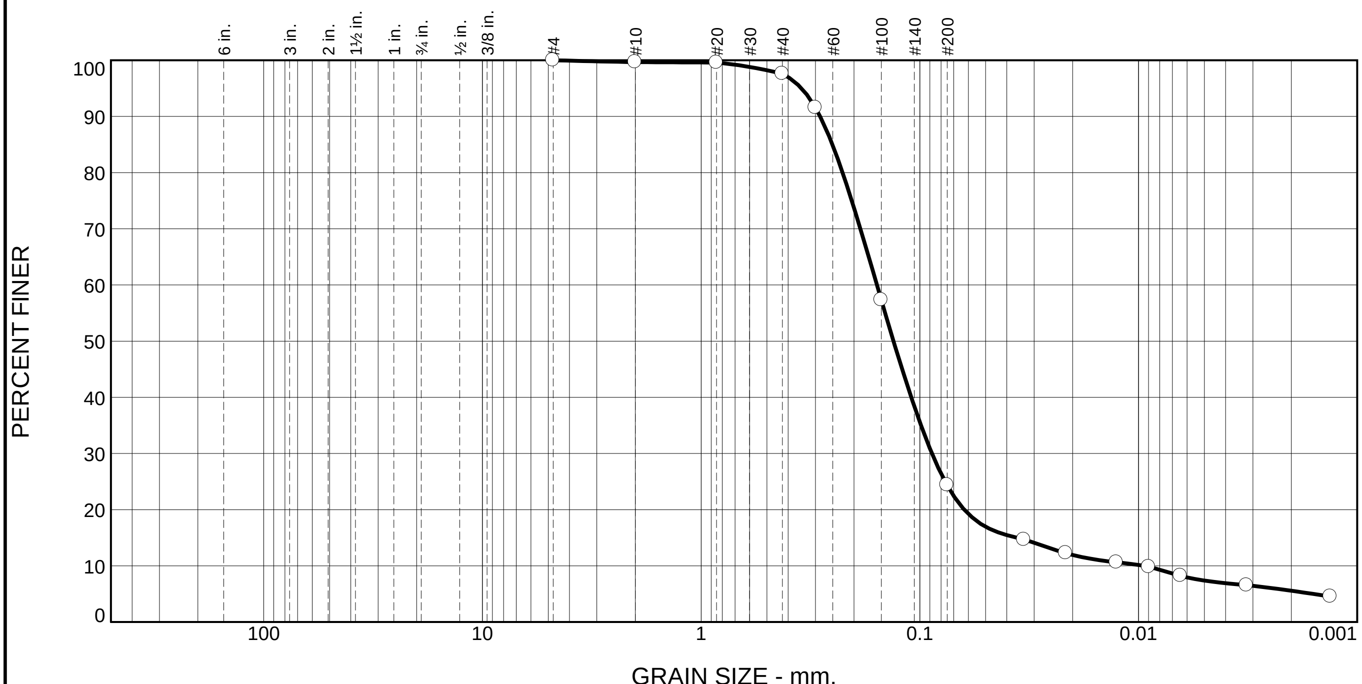
**Date Received:** 10-3-14 **Date Tested:** 10-10-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

**Location:** 31116-26
**Sample Number:** 14-1165
**Date Sampled:** 10-3-14

CONSULTING TESTING INSPECTION JTC inc. GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 035

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.3 | 2.1 | 73.2 | 17.0 | 7.4 |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 99.7 | | |
| #20 | 99.6 | | |
| #40 | 97.6 | | |
| #50 | 91.6 | | |
| #100 | 57.3 | | |
| #200 | 24.4 | | |
| 0.0334 mm. | 14.7 | | |
| 0.0215 mm. | 12.3 | | |
| 0.0126 mm. | 10.6 | | |
| 0.0090 mm. | 9.8 | | |
| 0.0064 mm. | 8.2 | | |
| 0.0032 mm. | 6.6 | | |
| 0.0013 mm. | 4.5 | | |

* (no specification provided)

**Material Description**

FINE SAND, little Silt, trace Clay

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.2856 $D_{85}$= 0.2510 $D_{60}$= 0.1571
$D_{50}$= 0.1319 $D_{30}$= 0.0880 $D_{15}$= 0.0360
$D_{10}$= 0.0095 $C_u$= 16.60 $C_c$= 5.21

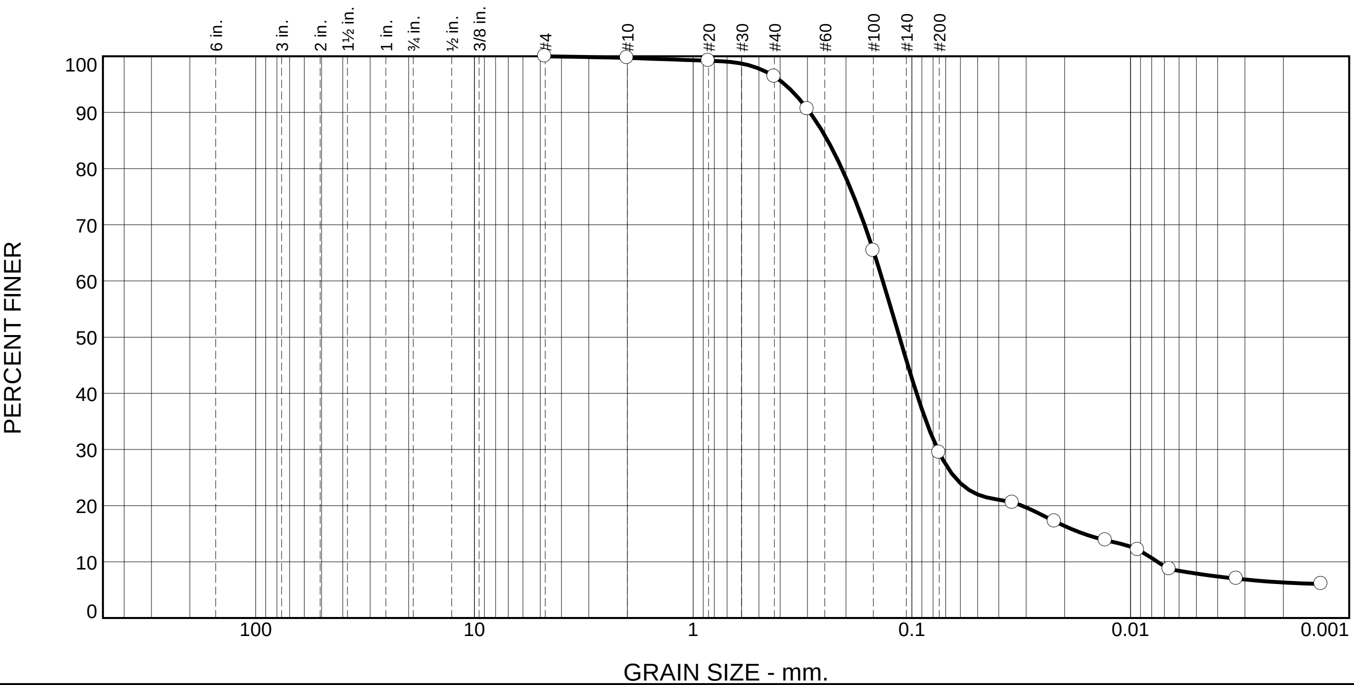
**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-10-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

**Location:** 31116-27
**Sample Number:** 14-1166
**Date Sampled:** 10-3-14

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 036

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.3 | 3.3 | 66.9 | 21.6 | 7.9 |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 99.7 | | |
| #20 | 99.2 | | |
| #40 | 96.4 | | |
| #50 | 90.6 | | |
| #100 | 65.4 | | |
| #200 | 29.5 | | |
| 0.0346 mm. | 20.6 | | |
| 0.0222 mm. | 17.2 | | |
| 0.0130 mm. | 13.8 | | |
| 0.0092 mm. | 12.1 | | |
| 0.0066 mm. | 8.7 | | |
| 0.0033 mm. | 7.0 | | |
| 0.0013 mm. | 6.1 | | |

* (no specification provided)

**Material Description**

FINE SAND, some Silt, trace Clay

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.2924 $D_{85}$= 0.2427 $D_{60}$= 0.1357
$D_{50}$= 0.1139 $D_{30}$= 0.0761 $D_{15}$= 0.0163
$D_{10}$= 0.0075 $C_u$= 18.03 $C_c$= 5.67

**Remarks**

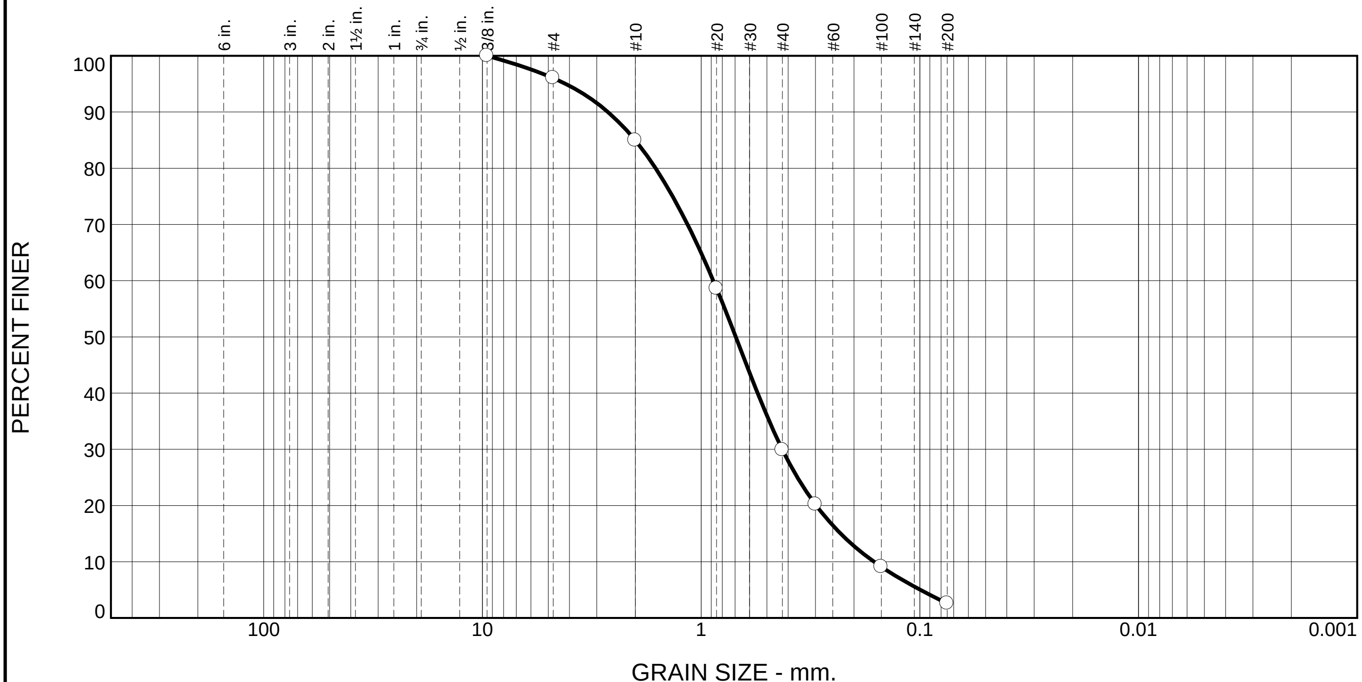
**Date Received:** 10-3-14 **Date Tested:** 10-10-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

**Location:** 31116-28
**Sample Number:** 14-1167
**Date Sampled:** 10-3-14

JTC inc. CONSULTING TESTING INSPECTION GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 037

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 4.0 | 11.0 | 55.1 | 27.3 | 2.6 | |

| TEST RESULTS (ASTM D422) | | | |
|---|---|---|---|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| 3/8 | 100.0 | | |
| #4 | 96.0 | | |
| #10 | 85.0 | | |
| #20 | 58.6 | | |
| #40 | 29.9 | | |
| #50 | 20.2 | | |
| #100 | 9.1 | | |
| #200 | 2.6 | | |

* (no specification provided)

**Material Description**

FINE-COARSE SAND, trace Fine Gravel, trace Silt

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 2.6680 $D_{85}$= 2.0048 $D_{60}$= 0.8796
$D_{50}$= 0.6945 $D_{30}$= 0.4262 $D_{15}$= 0.2301
$D_{10}$= 0.1619 $C_u$= 5.43 $C_c$= 1.28

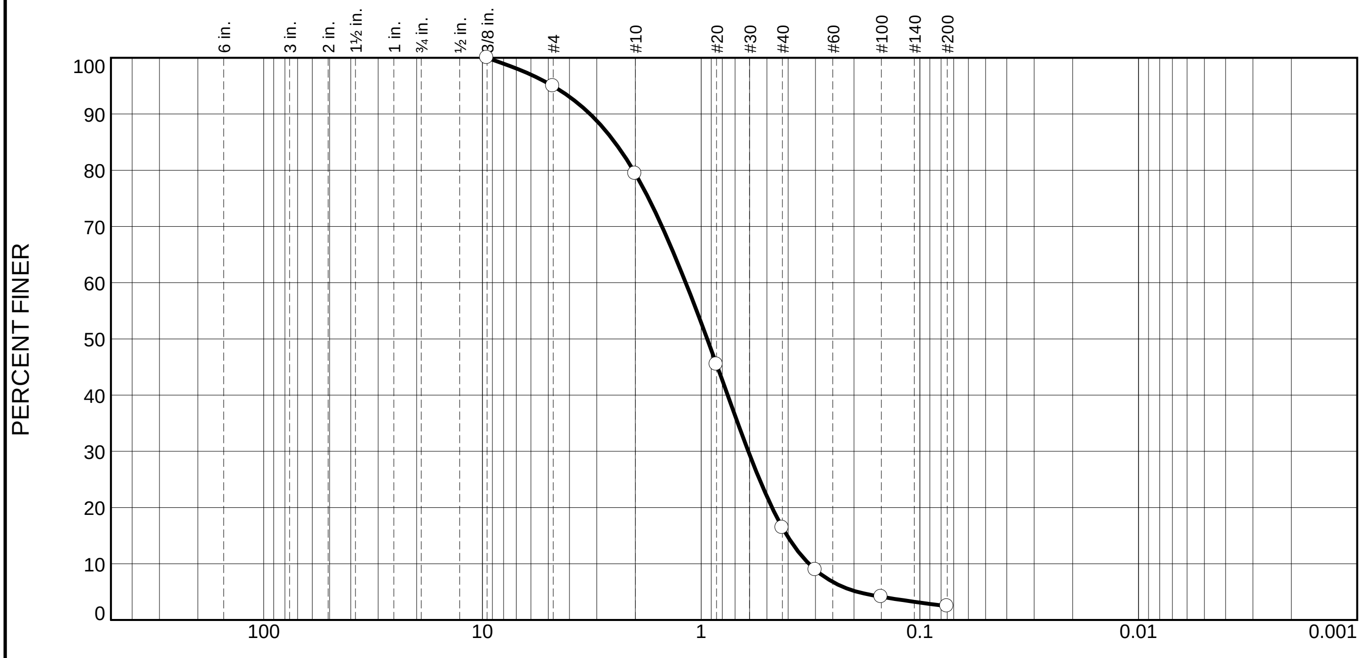
**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-6-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

**Location:** 31116-29
**Sample Number:** 14-1168
**Date Sampled:** 10-3-14

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 015

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 5.0 | 15.6 | 63.0 | 13.9 | 2.5 | |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 95.0 | | |
| #10 | 79.4 | | |
| #20 | 45.4 | | |
| #40 | 16.4 | | |
| #50 | 8.9 | | |
| #100 | 4.1 | | |
| #200 | 2.5 | | |

* (no specification provided)

**Material Description**

FINE-COARSE SAND, trace Fine Gravel, trace Silt

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 3.2198 $D_{85}$= 2.4850 $D_{60}$= 1.1761
$D_{50}$= 0.9381 $D_{30}$= 0.6082 $D_{15}$= 0.4045
$D_{10}$= 0.3214 $C_u$= 3.66 $C_c$= 0.98

**Remarks**

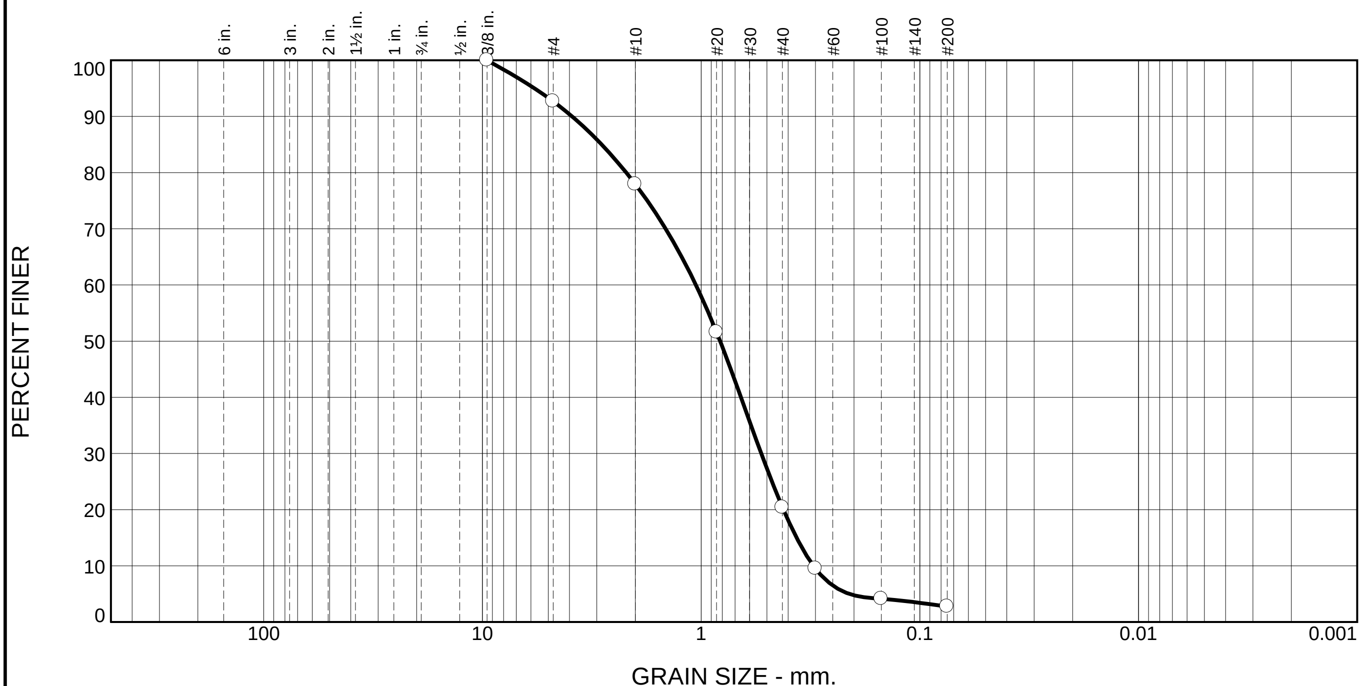
**Date Received:** 10-3-14 **Date Tested:** 10-6-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

**Location:** 31116-30
**Sample Number:** 14-1169
**Date Sampled:** 10-3-14

CONSULTING TESTING INSPECTION JTC inc. GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 016

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 7.3 | 14.8 | 57.5 | 17.6 | 2.8 | |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 92.7 | | |
| #10 | 77.9 | | |
| #20 | 51.6 | | |
| #40 | 20.4 | | |
| #50 | 9.5 | | |
| #100 | 4.1 | | |
| #200 | 2.8 | | |

* (no specification provided)

**Material Description**

FINE-COARSE SAND, trace Fine Gravel, trace Silt

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 3.8904 $D_{85}$= 2.8498 $D_{60}$= 1.0566
$D_{50}$= 0.8189 $D_{30}$= 0.5309 $D_{15}$= 0.3661
$D_{10}$= 0.3065 $C_u$= 3.45 $C_c$= 0.87

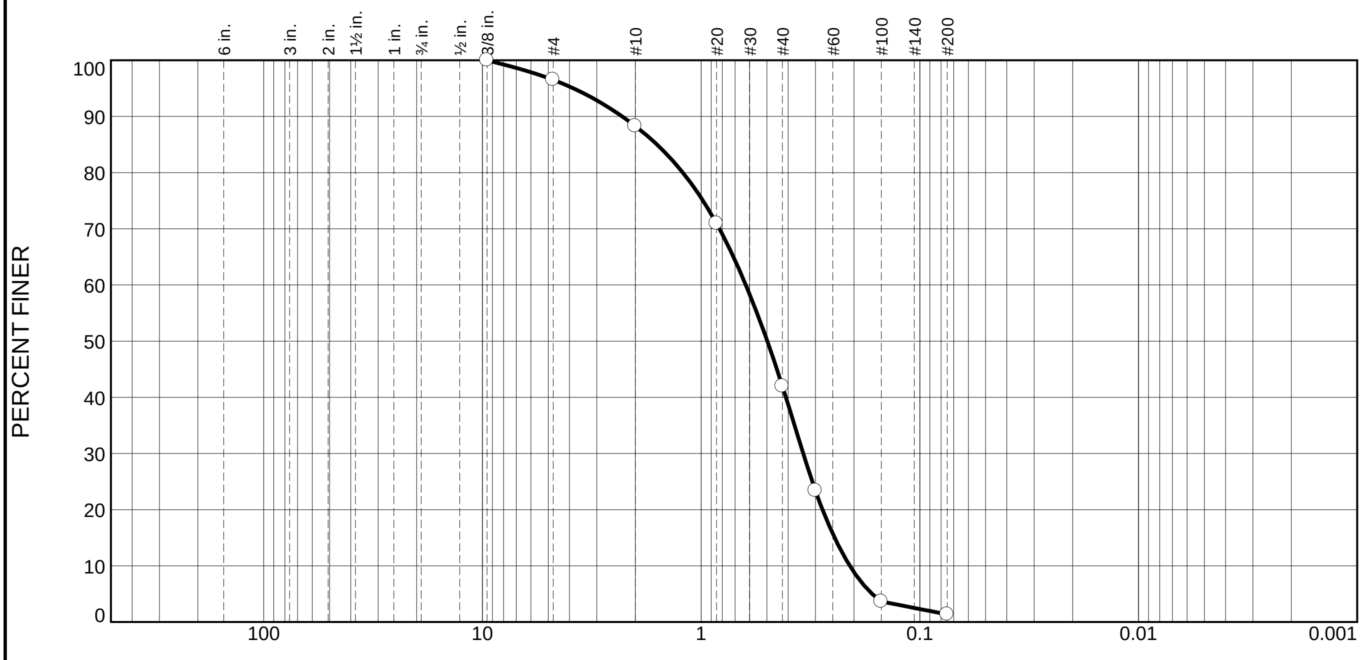
**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-6-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

**Location:** 31116-31
**Sample Number:** 14-1170
**Date Sampled:** 10-3-14

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 017

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 3.5 | 8.2 | 46.3 | 40.6 | 1.4 | |

| TEST RESULTS (ASTM D422) | | | |
|---|---|---|---|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| 3/8 | 100.0 | | |
| #4 | 96.5 | | |
| #10 | 88.3 | | |
| #20 | 70.9 | | |
| #40 | 42.0 | | |
| #50 | 23.4 | | |
| #100 | 3.7 | | |
| #200 | 1.4 | | |

* (no specification provided)

**Material Description**

FINE-MEDIUM SAND, trace Fine Gravel. trace Silt

**Atterberg Limits (ASTM D 4318)**

PL= LL= PI=

**Classification**

USCS (D 2487)= AASHTO (M 145)=

**Coefficients**

$D_{90}$= 2.2969 $D_{85}$= 1.5926 $D_{60}$= 0.6246
$D_{50}$= 0.4981 $D_{30}$= 0.3415 $D_{15}$= 0.2453
$D_{10}$= 0.2089 $C_u$= 2.99 $C_c$= 0.89

**Remarks**

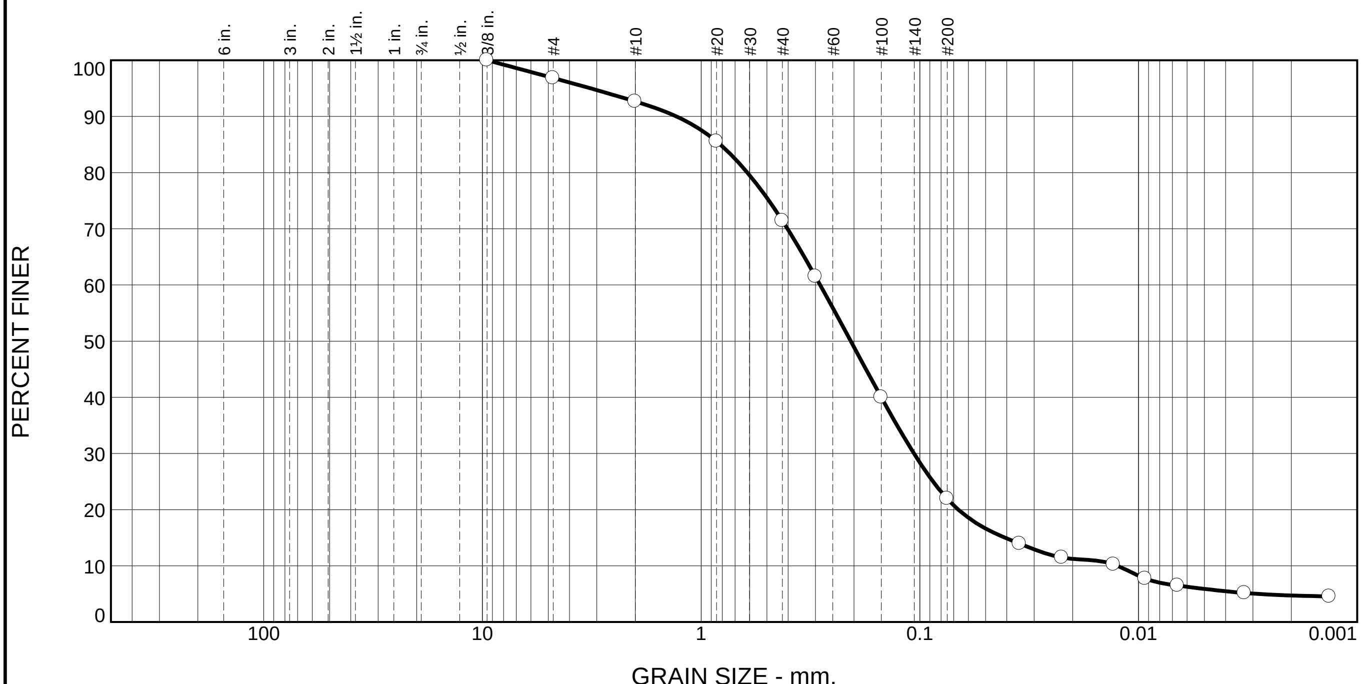
**Date Received:** 10-3-14 **Date Tested:** 10-6-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

**Location:** 31116-32
**Sample Number:** 14-1171
**Date Sampled:** 10-3-14

JTC inc. CONSULTING TESTING INSPECTION GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 018

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 3.2 | 4.1 | 21.3 | 49.4 | 16.1 | 5.9 |

| TEST RESULTS (ASTM D422) | | | |
|---|---|---|---|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| 3/8 | 100.0 | | |
| #4 | 96.8 | | |
| #10 | 92.7 | | |
| #20 | 85.5 | | |
| #40 | 71.4 | | |
| #50 | 61.5 | | |
| #100 | 40.0 | | |
| #200 | 22.0 | | |
| 0.0350 mm. | 14.0 | | |
| 0.0224 mm. | 11.5 | | |
| 0.0130 mm. | 10.3 | | |
| 0.0093 mm. | 7.7 | | |
| 0.0066 mm. | 6.5 | | |
| 0.0033 mm. | 5.2 | | |
| 0.0013 mm. | 4.6 | | |

* (no specification provided)

**Material Description**

FINE-MEDIUM SAND, little Silt, trace Clay, trace Fine Gravel

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 1.2959 $D_{85}$= 0.8184 $D_{60}$= 0.2856
$D_{50}$= 0.2068 $D_{30}$= 0.1064 $D_{15}$= 0.0408
$D_{10}$= 0.0125 $C_u$= 22.87 $C_c$= 3.17

**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-10-14

**Tested By:** Jeff Young

**Checked By:** John Turner

**Title:** President

**Location:** 31116-33
**Sample Number:** 14-1172

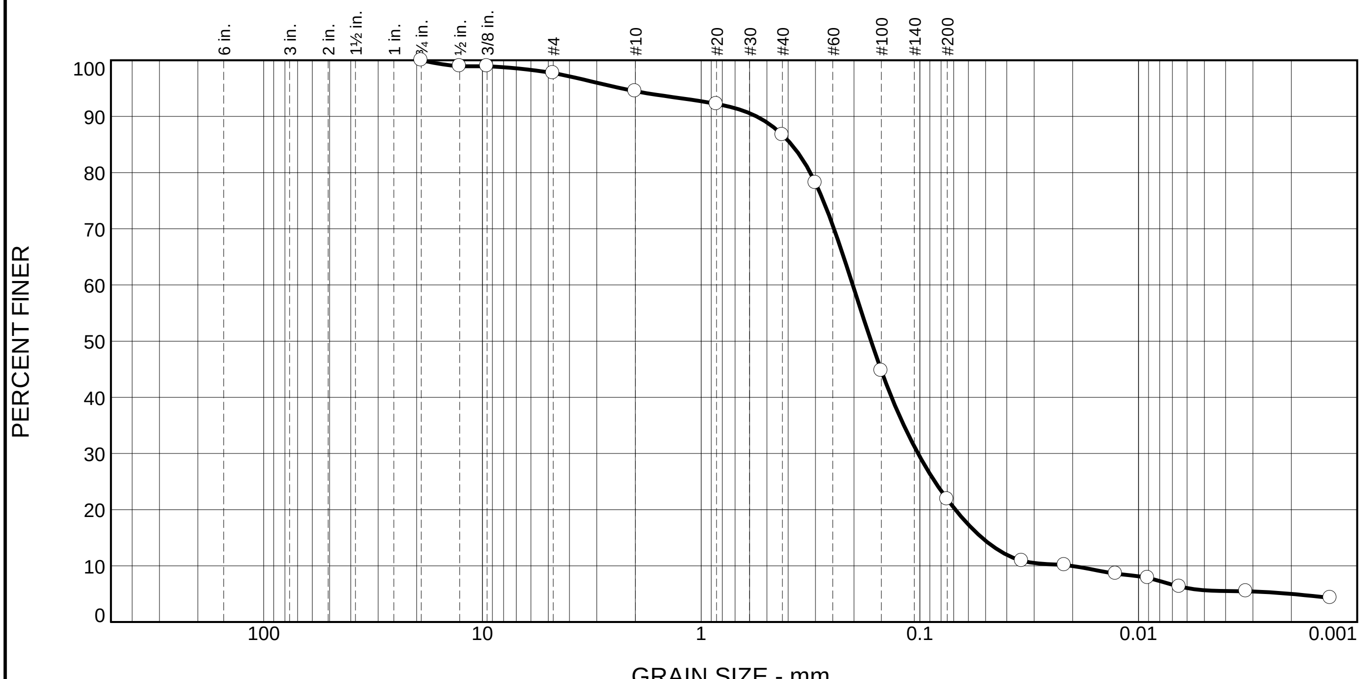
**Date Sampled:** 10-3-14

JTC inc. CONSULTING TESTING INSPECTION GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resources
**Project:** Misc. Testing

**Project No:** 14-25-010 **Figure** 038

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 2.3 | 3.2 | 7.8 | 64.8 | 16.2 | 5.7 |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/4 | 100.0 | | |
| 1/2 | 98.9 | | |
| 3/8 | 98.9 | | |
| #4 | 97.7 | | |
| #10 | 94.5 | | |
| #20 | 92.2 | | |
| #40 | 86.7 | | |
| #50 | 78.2 | | |
| #100 | 44.8 | | |
| #200 | 21.9 | | |
| 0.0342 mm. | 10.9 | | |
| 0.0218 mm. | 10.1 | | |
| 0.0127 mm. | 8.6 | | |
| 0.0091 mm. | 7.8 | | |
| 0.0065 mm. | 6.3 | | |
| 0.0032 mm. | 5.5 | | |
| 0.0013 mm. | 4.3 | | |

* (no specification provided)

**Material Description**

FINE SAND, little Silt, trace Clay, trace Fine Gravel

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

| | | |
|---|---|---|
| $D_{90}$= 0.5577 | $D_{85}$= 0.3860 | $D_{60}$= 0.2026 |
| $D_{50}$= 0.1671 | $D_{30}$= 0.1019 | $D_{15}$= 0.0520 |
| $D_{10}$= 0.0202 | $C_u$= 10.01 | $C_c$= 2.53 |

**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-10-14

**Tested By:** Jeff Young

**Checked By:** John Turner

**Title:** President

**Location:** 31116-34
**Sample Number:** 14-1173

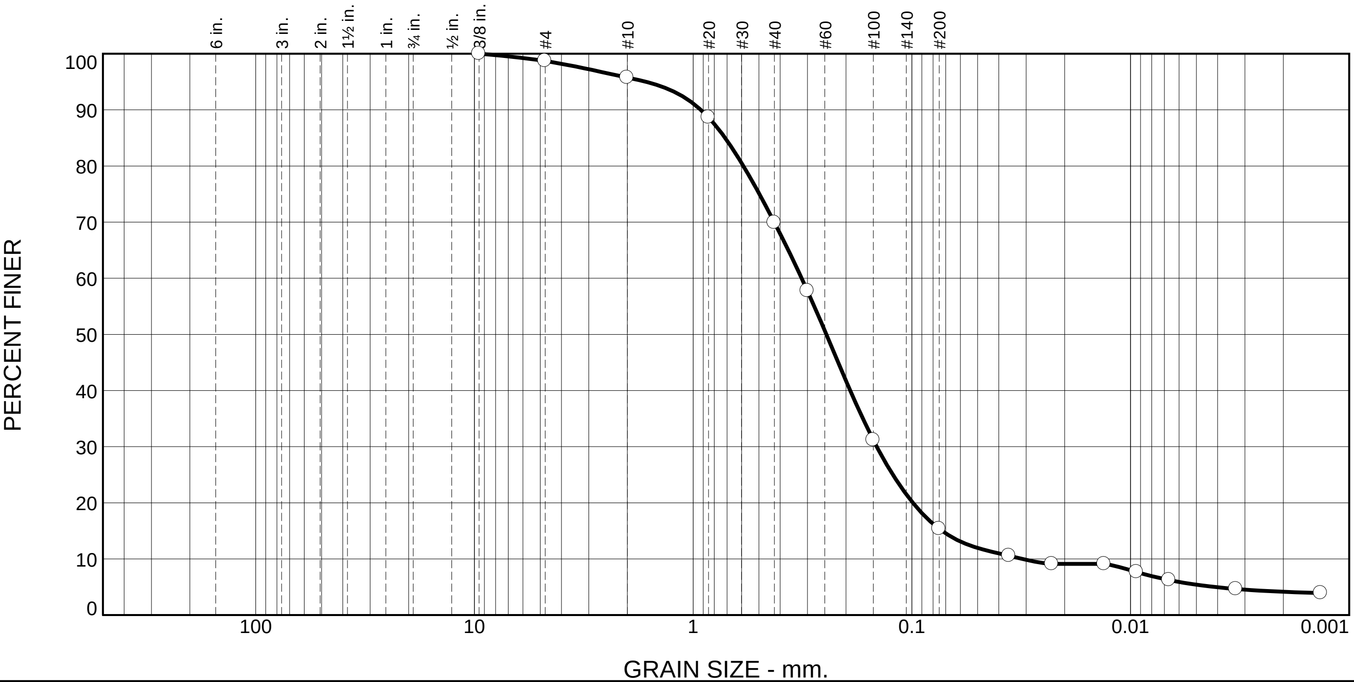
**Date Sampled:** 10-3-14

CONSULTING TESTING INSPECTION JTC inc. GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resources
**Project:** Misc. Testing

**Project No:** 14-25-010 **Figure** 039

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.3 | 3.0 | 25.8 | 54.5 | 10.0 | 5.4 |

| TEST RESULTS (ASTM D422) | | | |
|---|---|---|---|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| 3/8 | 100.0 | | |
| #4 | 98.7 | | |
| #10 | 95.7 | | |
| #20 | 88.6 | | |
| #40 | 69.9 | | |
| #50 | 57.7 | | |
| #100 | 31.2 | | |
| #200 | 15.4 | | |
| 0.0359 mm. | 10.6 | | |
| 0.0228 mm. | 9.1 | | |
| 0.0132 mm. | 9.1 | | |
| 0.0094 mm. | 7.7 | | |
| 0.0067 mm. | 6.2 | | |
| 0.0033 mm. | 4.7 | | |
| 0.0013 mm. | 3.9 | | |

* (no specification provided)

**Material Description**

FINE-MEDIUM SAND, little Silt, trace Clay, trace Fine Gravel

**Atterberg Limits (ASTM D 4318)**

PL= LL= PI=

**Classification**

USCS (D 2487)= AASHTO (M 145)=

**Coefficients**

$D_{90}$= 0.9224 $D_{85}$= 0.7140 $D_{60}$= 0.3189
$D_{50}$= 0.2460 $D_{30}$= 0.1446 $D_{15}$= 0.0728
$D_{10}$= 0.0311 $C_u$= 10.24 $C_c$= 2.11

**Remarks**

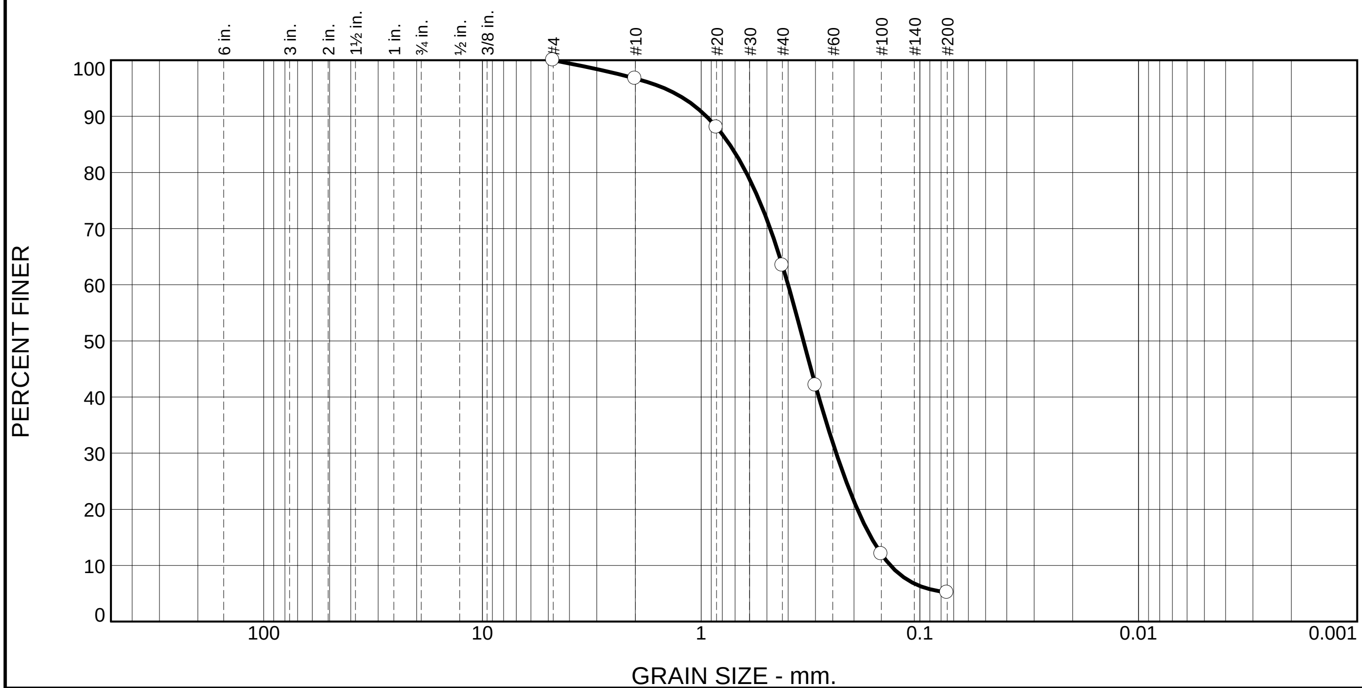
**Date Received:** 10-3-14 **Date Tested:** 10-10-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

**Location:** 31116-35
**Sample Number:** 14-1174
**Date Sampled:** 10-3-14

CONSULTING TESTING INSPECTION JTC inc. GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 040

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 3.3 | 33.3 | 58.2 | 5.2 | |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 96.7 | | |
| #20 | 88.1 | | |
| #40 | 63.4 | | |
| #50 | 42.1 | | |
| #100 | 12.1 | | |
| #200 | 5.2 | | |

* (no specification provided)

**Material Description**

FINE-MEDIUM SAND, trace Silt

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.9460 $D_{85}$= 0.7409 $D_{60}$= 0.4003
$D_{50}$= 0.3406 $D_{30}$= 0.2413 $D_{15}$= 0.1670
$D_{10}$= 0.1362 $C_u$= 2.94 $C_c$= 1.07

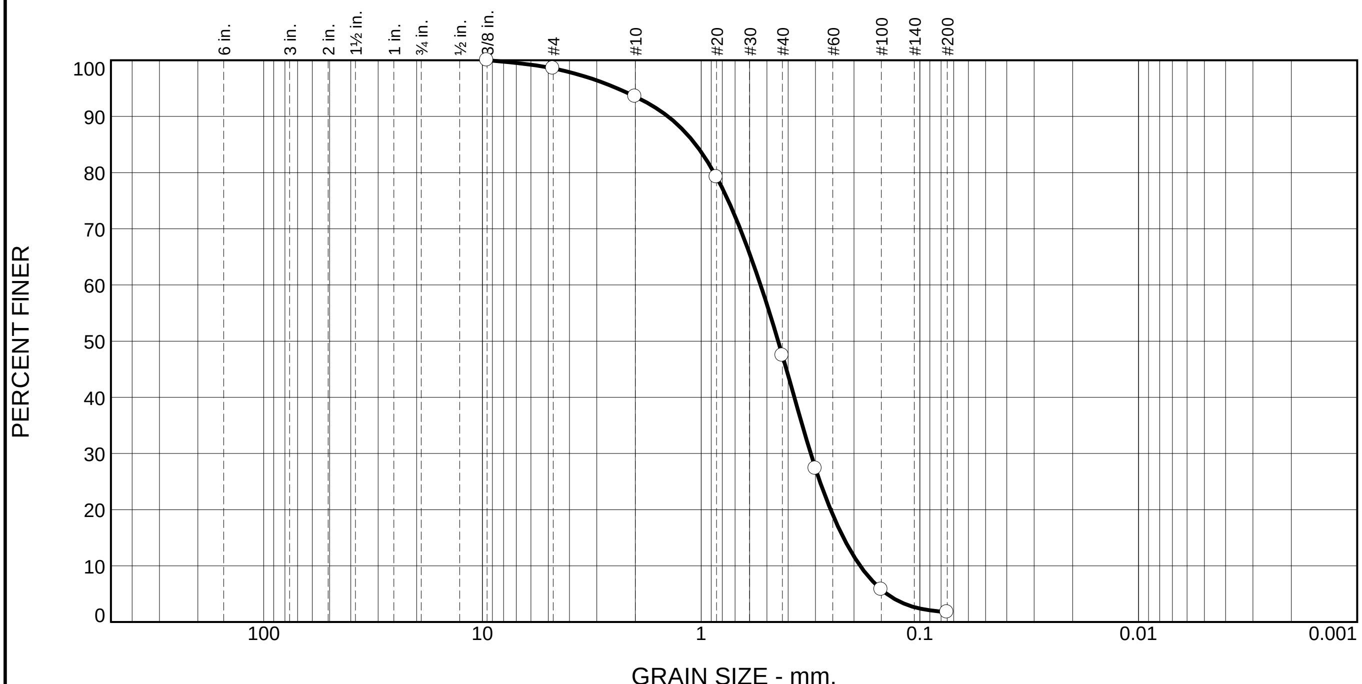
**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-6-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

**Location:** 31116-36
**Sample Number:** 14-1175
**Date Sampled:** 10-3-14

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 020

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.4 | 5.1 | 46.0 | 45.7 | 1.8 | |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 98.6 | | |
| #10 | 93.5 | | |
| #20 | 79.2 | | |
| #40 | 47.5 | | |
| #50 | 27.3 | | |
| #100 | 5.8 | | |
| #200 | 1.8 | | |

* (no specification provided)

**Material Description**

FINE-MEDIUM SAND, trace Silt, trace Fine Gravel

**Atterberg Limits (ASTM D 4318)**

PL= LL= PI=

**Classification**

USCS (D 2487)= AASHTO (M 145)=

**Coefficients**

$D_{90}$= 1.4172 $D_{85}$= 1.0594 $D_{60}$= 0.5348
$D_{50}$= 0.4442 $D_{30}$= 0.3154 $D_{15}$= 0.2235
$D_{10}$= 0.1873 $C_u$= 2.86 $C_c$= 0.99

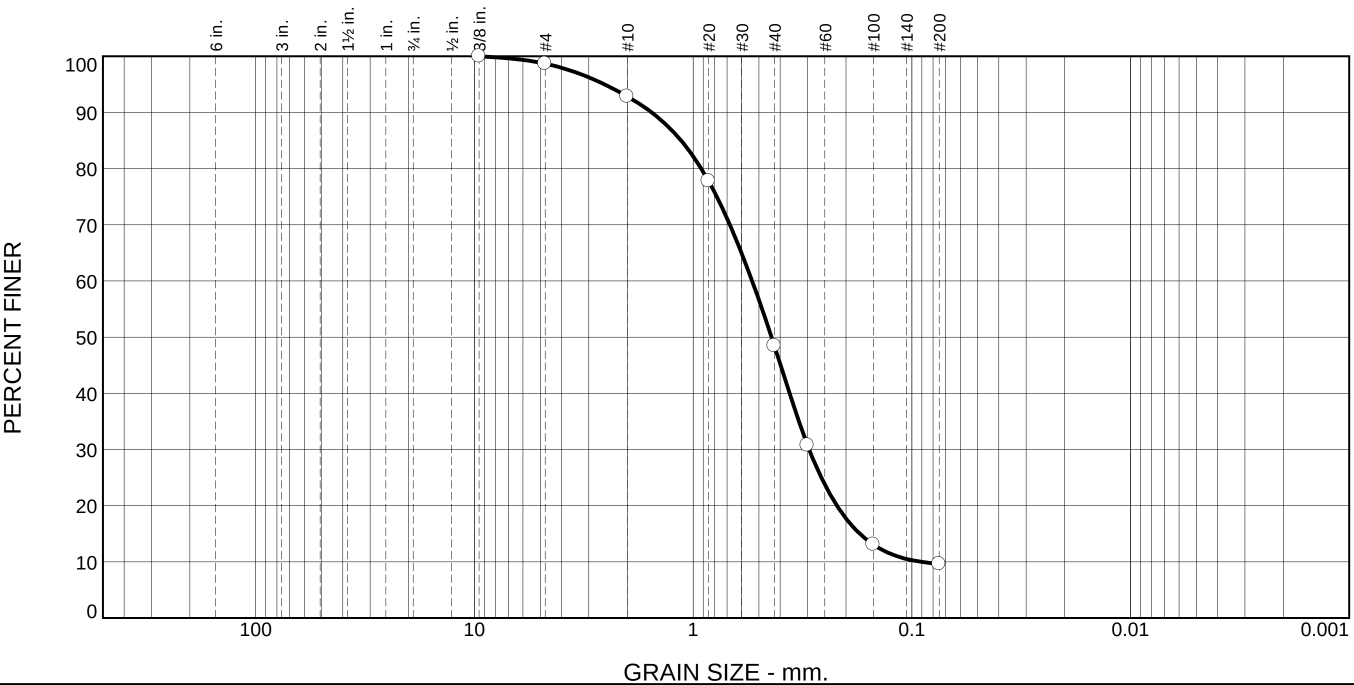
**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-6-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

**Location:** 31116-37
**Sample Number:** 14-1176
**Date Sampled:** 10-3-14

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 019

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.3 | 5.9 | 44.4 | 38.8 | 9.6 | |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 98.7 | | |
| #10 | 92.8 | | |
| #20 | 77.8 | | |
| #40 | 48.4 | | |
| #50 | 30.8 | | |
| #100 | 13.1 | | |
| #200 | 9.6 | | |

* (no specification provided)

**Material Description**

FINE-MEDIUM SAND, trace Silt, trace Fine Gravel

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 1.5473 $D_{85}$= 1.1350 $D_{60}$= 0.5372
$D_{50}$= 0.4380 $D_{30}$= 0.2948 $D_{15}$= 0.1729
$D_{10}$= 0.0904 $C_u$= 5.94 $C_c$= 1.79

**Remarks**

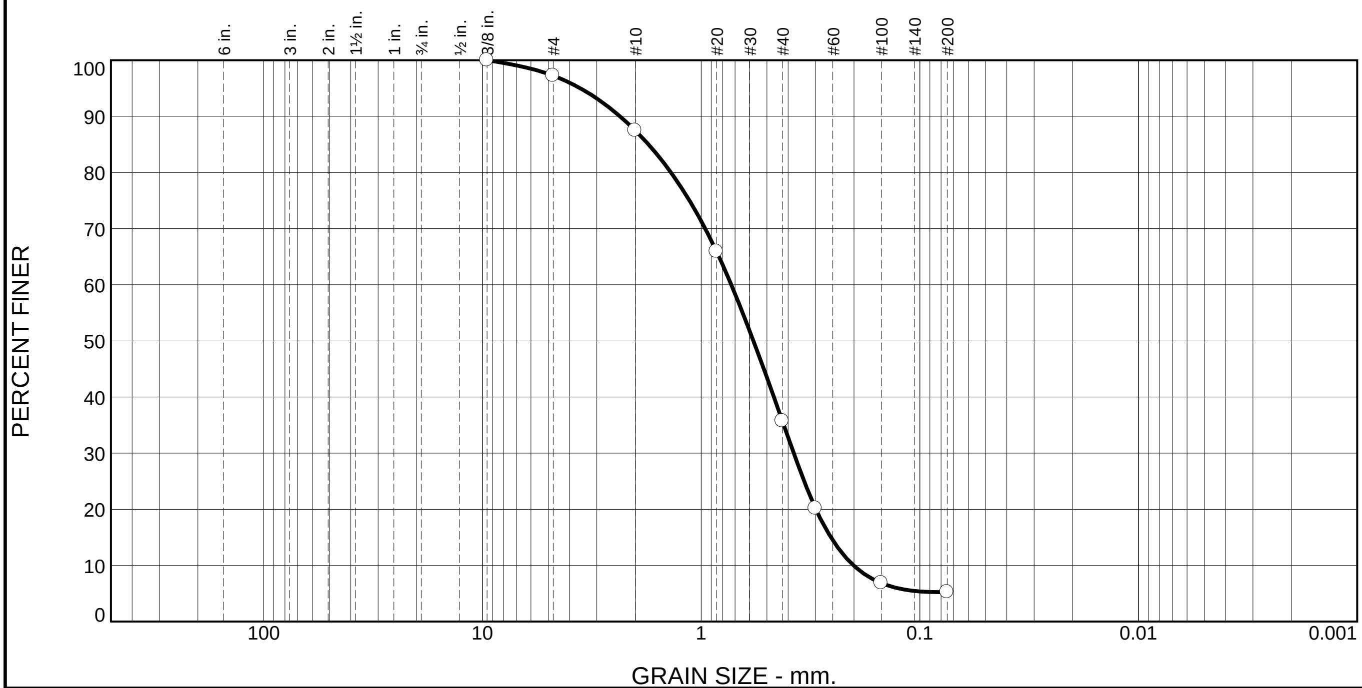
**Date Received:** 10-3-14 **Date Tested:** 10-8-14
**Tested By:** Pete Schrier
**Checked By:** John Turner
**Title:** President

**Location:** 31116-38
**Sample Number:** 14-1177
**Date Sampled:** 10-3-14

CONSULTING TESTING INSPECTION JTC inc. GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 021

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 2.7 | 9.8 | 51.8 | 30.5 | 5.2 | |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 97.3 | | |
| #10 | 87.5 | | |
| #20 | 65.9 | | |
| #40 | 35.7 | | |
| #50 | 20.2 | | |
| #100 | 6.9 | | |
| #200 | 5.2 | | |

* (no specification provided)

**Material Description**

FINE-MEDIUM SAND, trace Silt, trace Fine Gravel

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 2.3500 $D_{85}$= 1.7415 $D_{60}$= 0.7280
$D_{50}$= 0.5765 $D_{30}$= 0.3772 $D_{15}$= 0.2550
$D_{10}$= 0.2009 $C_u$= 3.62 $C_c$= 0.97

**Remarks**

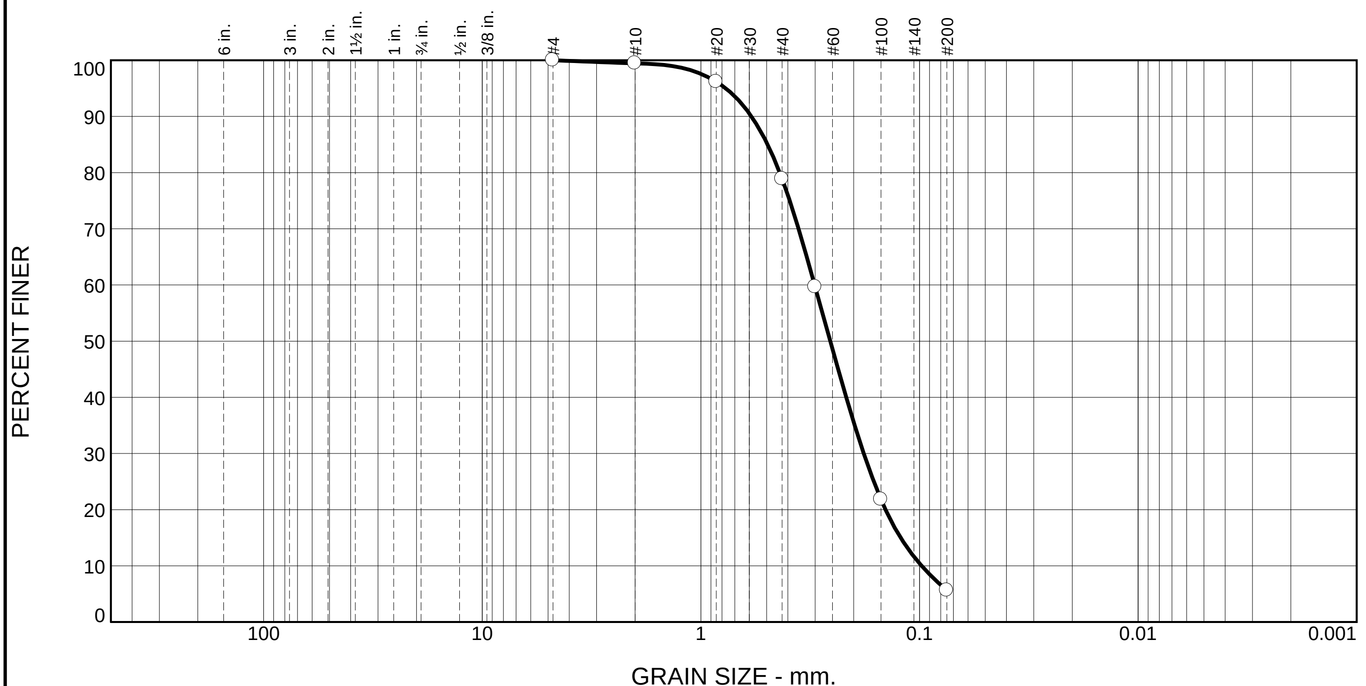
**Date Received:** 10-3-14 **Date Tested:** 10-9-14
**Tested By:** Pete Schrier
**Checked By:** John Turner
**Title:** President

**Location:** 31116-39
**Sample Number:** 14-1178
**Date Sampled:** 10-3-14

CONSULTING TESTING INSPECTION JTC inc. GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 022

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.5 | 20.6 | 73.3 | 5.6 | |

| TEST RESULTS (ASTM D422) | | | |
|---|---|---|---|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| #4 | 100.0 | | |
| #10 | 99.5 | | |
| #20 | 96.2 | | |
| #40 | 78.9 | | |
| #50 | 59.7 | | |
| #100 | 21.8 | | |
| #200 | 5.6 | | |

* (no specification provided)

**Material Description**

FINE-MEDIUM SAND, trace Silt

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.5867 $D_{85}$= 0.4951 $D_{60}$= 0.3017
$D_{50}$= 0.2560 $D_{30}$= 0.1798 $D_{15}$= 0.1220
$D_{10}$= 0.0978 $C_u$= 3.09 $C_c$= 1.10

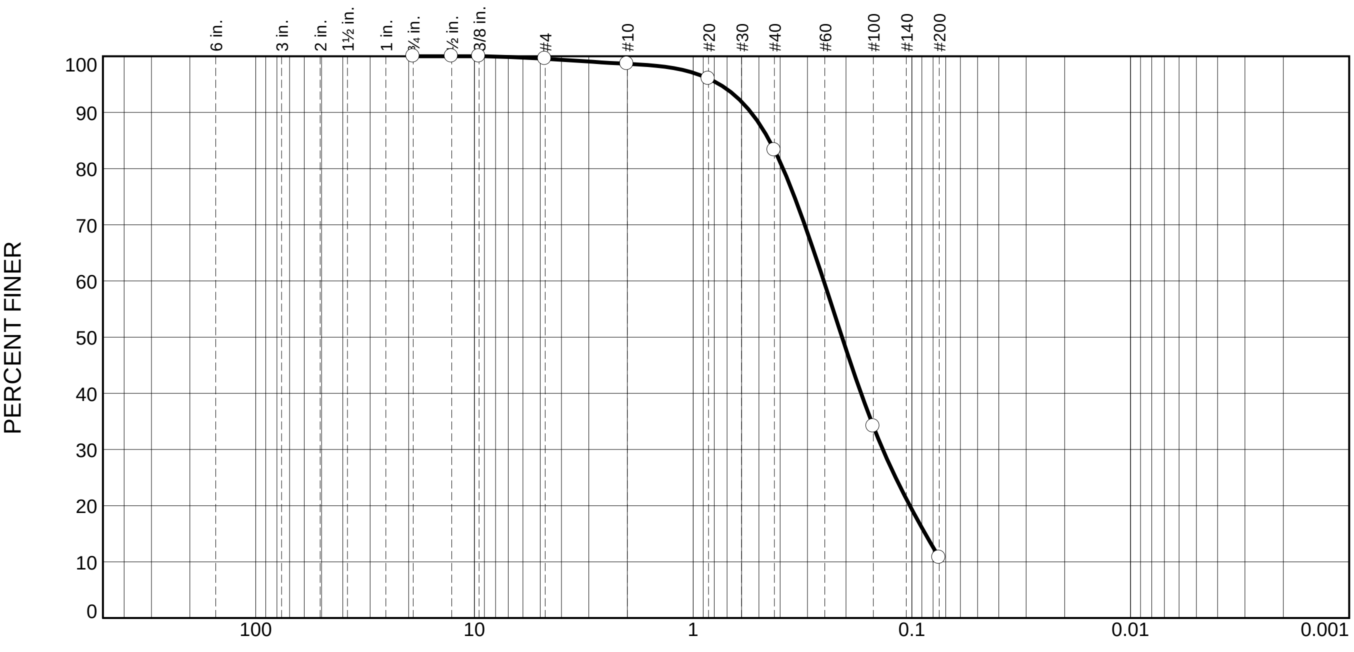
**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-9-14
**Tested By:** Derek Kraytenberg
**Checked By:** John Turner
**Title:** President

**Location:** 31116-40
**Sample Number:** 14-1179
**Date Sampled:** 10-3-14

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 023

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.5 | 0.9 | 15.3 | 72.5 | 10.8 | |

| TEST RESULTS (ASTM D422) | | | |
|---|---|---|---|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| 3/4 | 100.0 | | |
| 1/2 | 100.0 | | |
| 3/8 | 100.0 | | |
| #4 | 99.5 | | |
| #10 | 98.6 | | |
| #20 | 96.0 | | |
| #40 | 83.3 | | |
| #100 | 34.1 | | |
| #200 | 10.8 | | |

* (no specification provided)

**Material Description**

FINE-MEDIUM SAND, little Silt

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.5433 $D_{85}$= 0.4478 $D_{60}$= 0.2528
$D_{50}$= 0.2084 $D_{30}$= 0.1357 $D_{15}$= 0.0867
$D_{10}$= $C_u$= $C_c$=

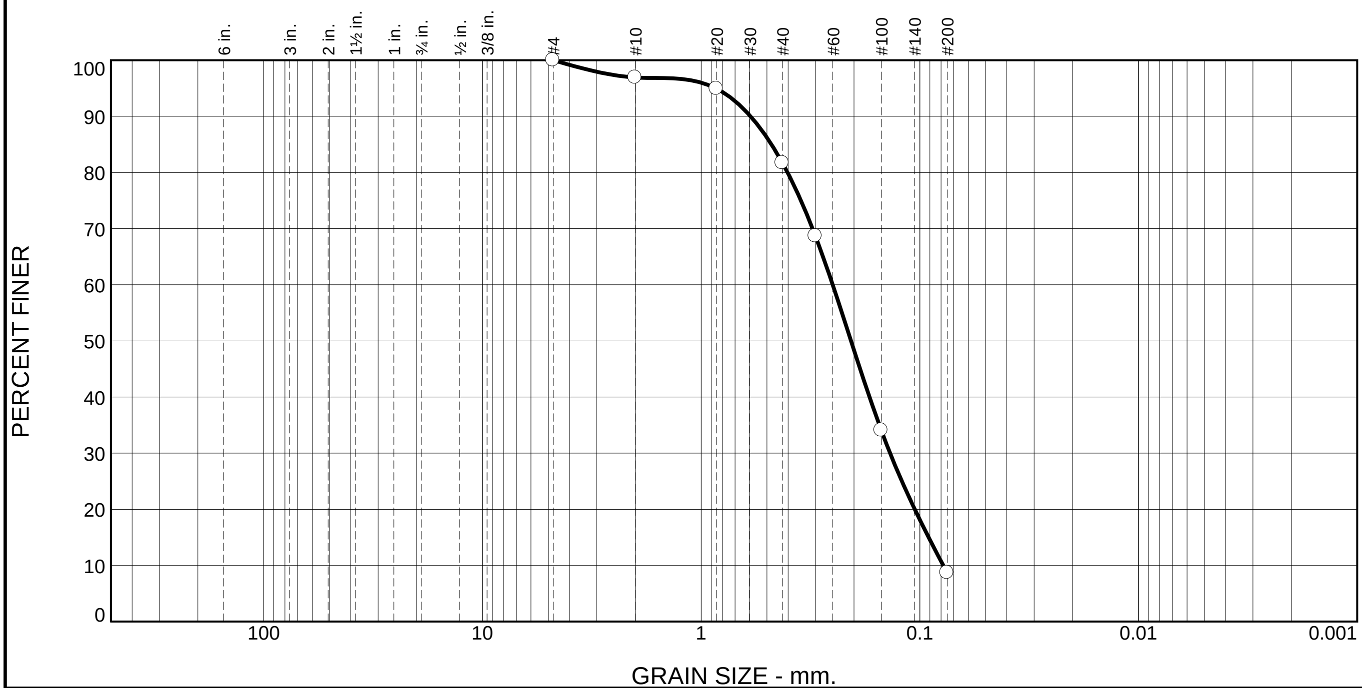
**Remarks**

**Date Received:** 10-03-14 **Date Tested:** 10-09-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

**Location:** 31116-41
**Sample Number:** 14-1180
**Date Sampled:** 10-03-14

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 054

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 3.1 | 15.2 | 73.0 | 8.7 | |

| TEST RESULTS (ASTM D422) | | | |
|---|---|---|---|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| #4 | 100.0 | | |
| #10 | 96.9 | | |
| #20 | 94.9 | | |
| #40 | 81.7 | | |
| #50 | 68.7 | | |
| #100 | 34.1 | | |
| #200 | 8.7 | | |

* (no specification provided)

**Material Description**

FINE-MEDIUM SAND, trace Silt

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

| | | |
|---|---|---|
| $D_{90}$= 0.5941 | $D_{85}$= 0.4770 | $D_{60}$= 0.2503 |
| $D_{50}$= 0.2063 | $D_{30}$= 0.1368 | $D_{15}$= 0.0911 |
| $D_{10}$= 0.0781 | $C_u$= 3.20 | $C_c$= 0.96 |

**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-8-14

**Tested By:** Justin Sigouin

**Checked By:** John Turner

**Title:** President

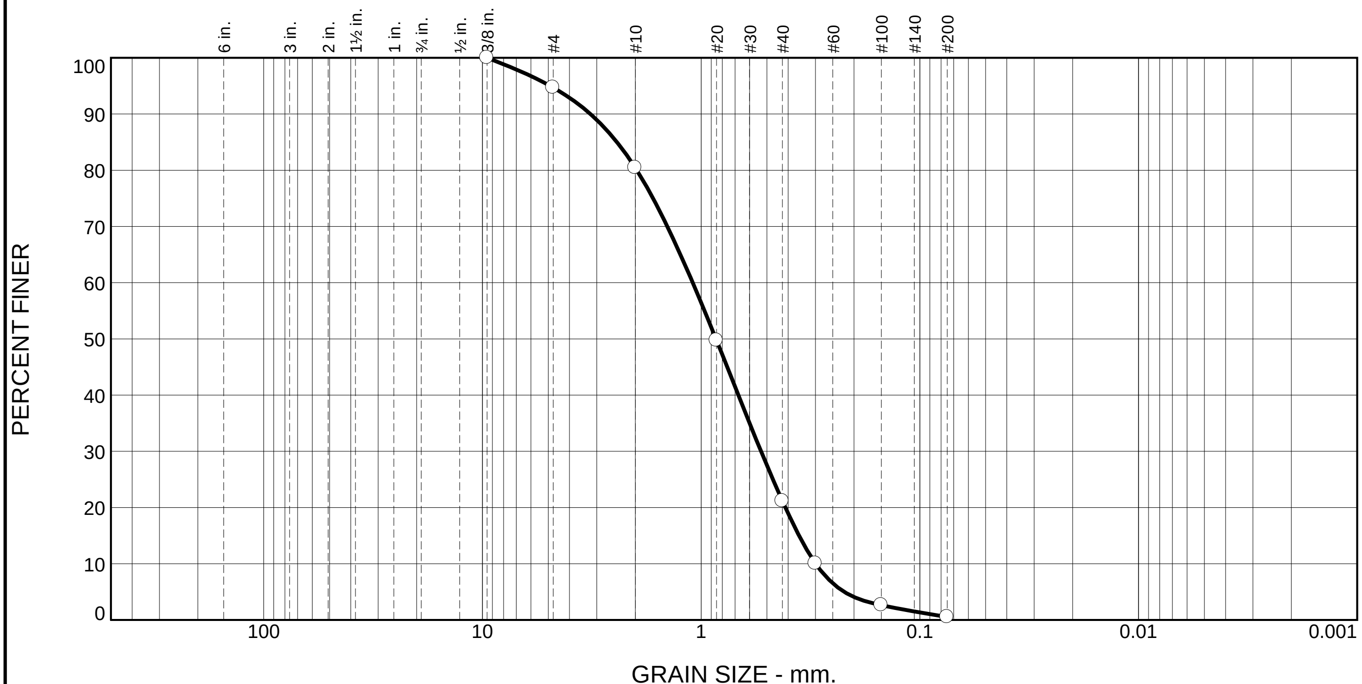
**Location:** 31116-42
**Sample Number:** 14-1181

**Date Sampled:** 10-3-14

**Client:** Absolute Resources
**Project:** Misc. Testing

**Project No:** 14-25-010 **Figure** 024

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 5.3 | 14.3 | 59.2 | 20.7 | 0.5 | |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 94.7 | | |
| #10 | 80.4 | | |
| #20 | 49.7 | | |
| #40 | 21.2 | | |
| #50 | 10.1 | | |
| #100 | 2.6 | | |
| #200 | 0.5 | | |

* (no specification provided)

**Material Description**

FINE-COARSE SAND, trace Fine Gravel, trace Silt

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 3.2095 $D_{85}$= 2.4266 $D_{60}$= 1.0927
$D_{50}$= 0.8554 $D_{30}$= 0.5320 $D_{15}$= 0.3568
$D_{10}$= 0.2993 $C_u$= 3.65 $C_c$= 0.87

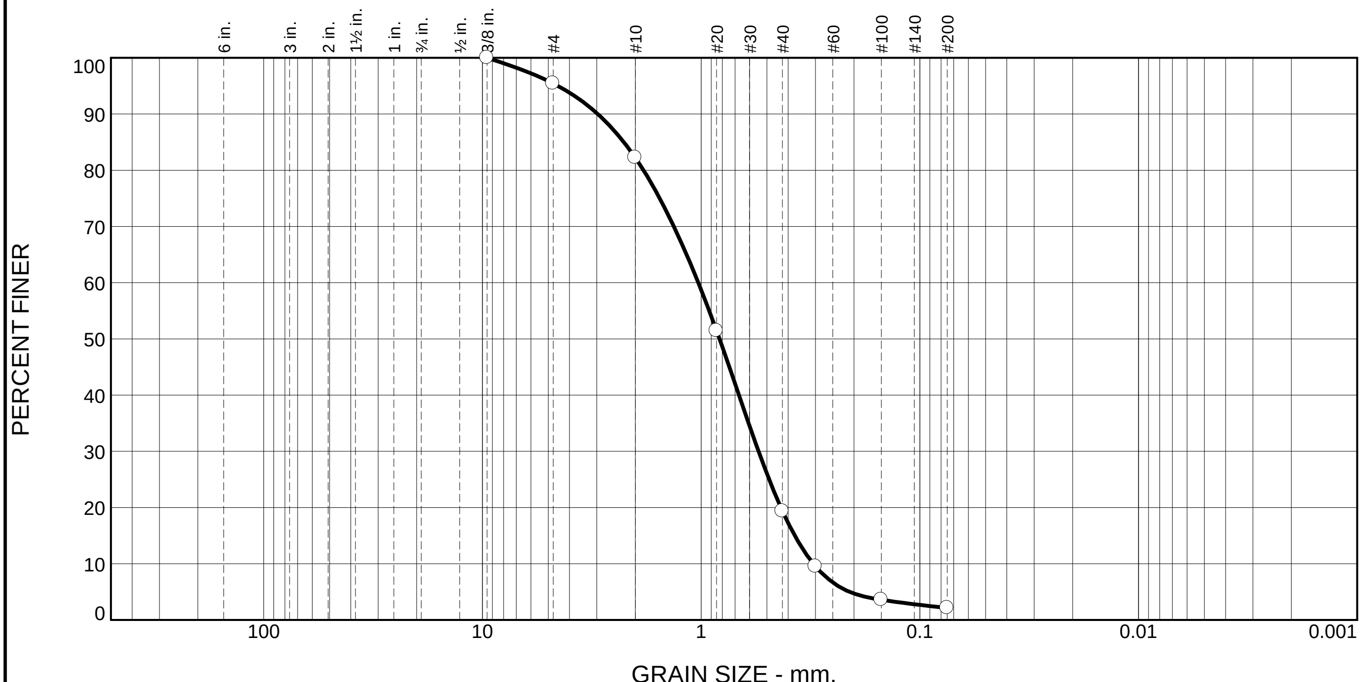
**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-9-14
**Tested By:** Justin Sigouin
**Checked By:** John Turner
**Title:** President

**Location:** 31116-66
**Sample Number:** 14-1182
**Date Sampled:** 10-3-14

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 025

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 4.6 | 13.2 | 62.8 | 17.3 | 2.1 | |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 95.4 | | |
| #10 | 82.2 | | |
| #20 | 51.5 | | |
| #40 | 19.4 | | |
| #50 | 9.5 | | |
| #100 | 3.6 | | |
| #200 | 2.1 | | |

* (no specification provided)

**Material Description**

FINE-COARSE SAND, trace Fine Gravel, trace Silt

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 2.9697 $D_{85}$= 2.2566 $D_{60}$= 1.0302
$D_{50}$= 0.8242 $D_{30}$= 0.5462 $D_{15}$= 0.3733
$D_{10}$= 0.3068 $C_u$= 3.36 $C_c$= 0.94

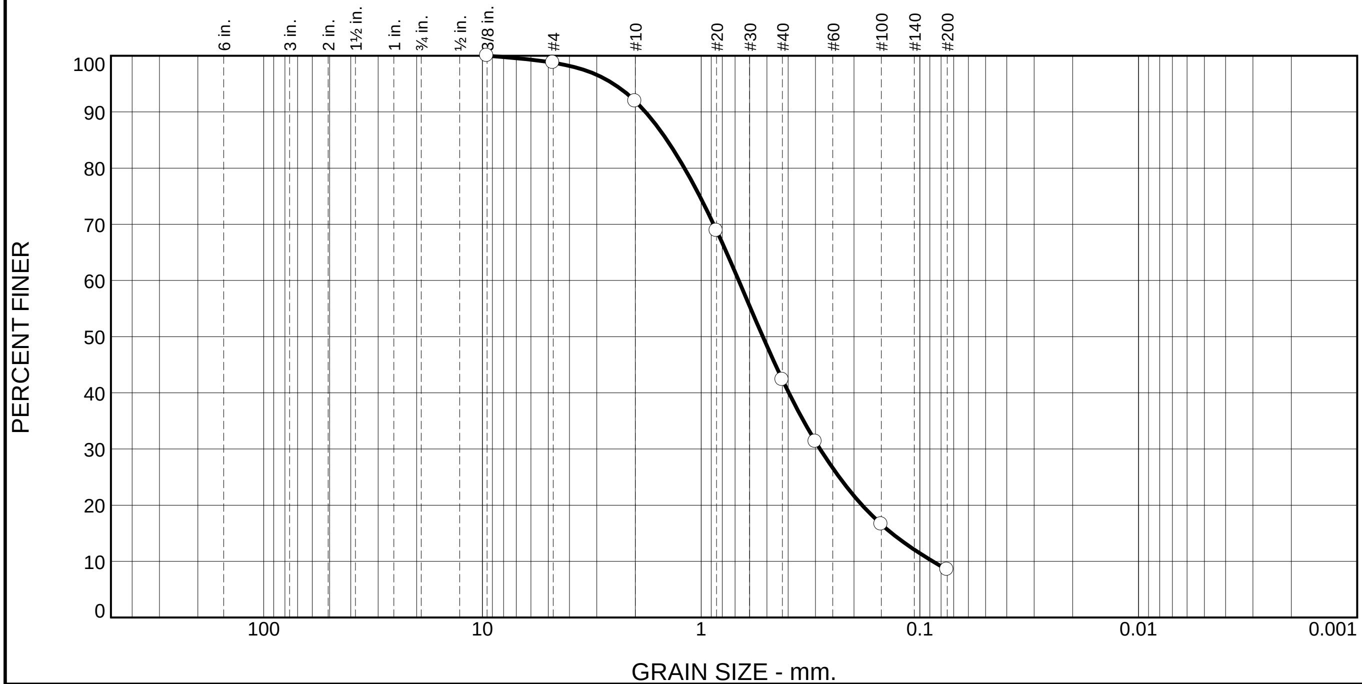
**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-9-14
**Tested By:** Justin Sigouin
**Checked By:** John Turner
**Title:** President

**Location:** 31116-67
**Sample Number:** 14-1183
**Date Sampled:** 10-3-14

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 026

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.2 | 6.9 | 49.6 | 33.8 | 8.5 | |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 98.8 | | |
| #10 | 91.9 | | |
| #20 | 68.9 | | |
| #40 | 42.3 | | |
| #50 | 31.3 | | |
| #100 | 16.6 | | |
| #200 | 8.5 | | |

* (no specification provided)

**Material Description**

FINE-MEDIUM SAND, trace Silt, trace Fine Gravel

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 1.7967 $D_{85}$= 1.4332 $D_{60}$= 0.6733
$D_{50}$= 0.5222 $D_{30}$= 0.2858 $D_{15}$= 0.1343
$D_{10}$= 0.0871 $C_u$= 7.73 $C_c$= 1.39

**Remarks**

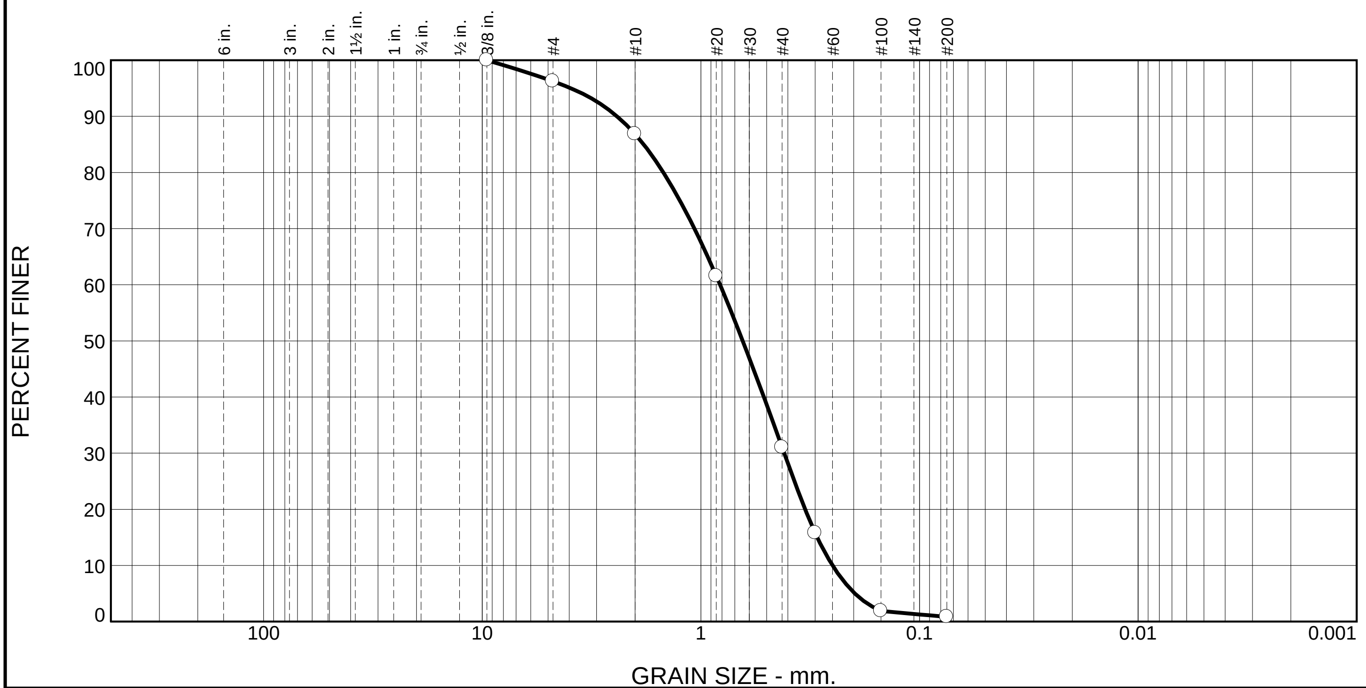
**Date Received:** 10-3-14 **Date Tested:** 10-6-14
**Tested By:** Justin Sigouin
**Checked By:** John Turner
**Title:** President

**Location:** 31116-68
**Sample Number:** 14-1184
**Date Sampled:** 10-3-14

**Client:** Absolute Resources
**Project:** Misc. Testing

**Project No:** 14-25-010 **Figure** 027

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 3.8 | 9.4 | 55.8 | 30.2 | 0.8 | |

| TEST RESULTS (ASTM D422) | | | |
|---|---|---|---|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| 3/8 | 100.0 | | |
| #4 | 96.2 | | |
| #10 | 86.8 | | |
| #20 | 61.5 | | |
| #40 | 31.0 | | |
| #50 | 15.8 | | |
| #100 | 1.9 | | |
| #200 | 0.8 | | |

* (no specification provided)

**Material Description**

FINE-MEDIUM SAND, trace Fine Gravel, trace Silt

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 2.4184 $D_{85}$= 1.8269 $D_{60}$= 0.8173
$D_{50}$= 0.6437 $D_{30}$= 0.4157 $D_{15}$= 0.2936
$D_{10}$= 0.2500 $C_u$= 3.27 $C_c$= 0.85

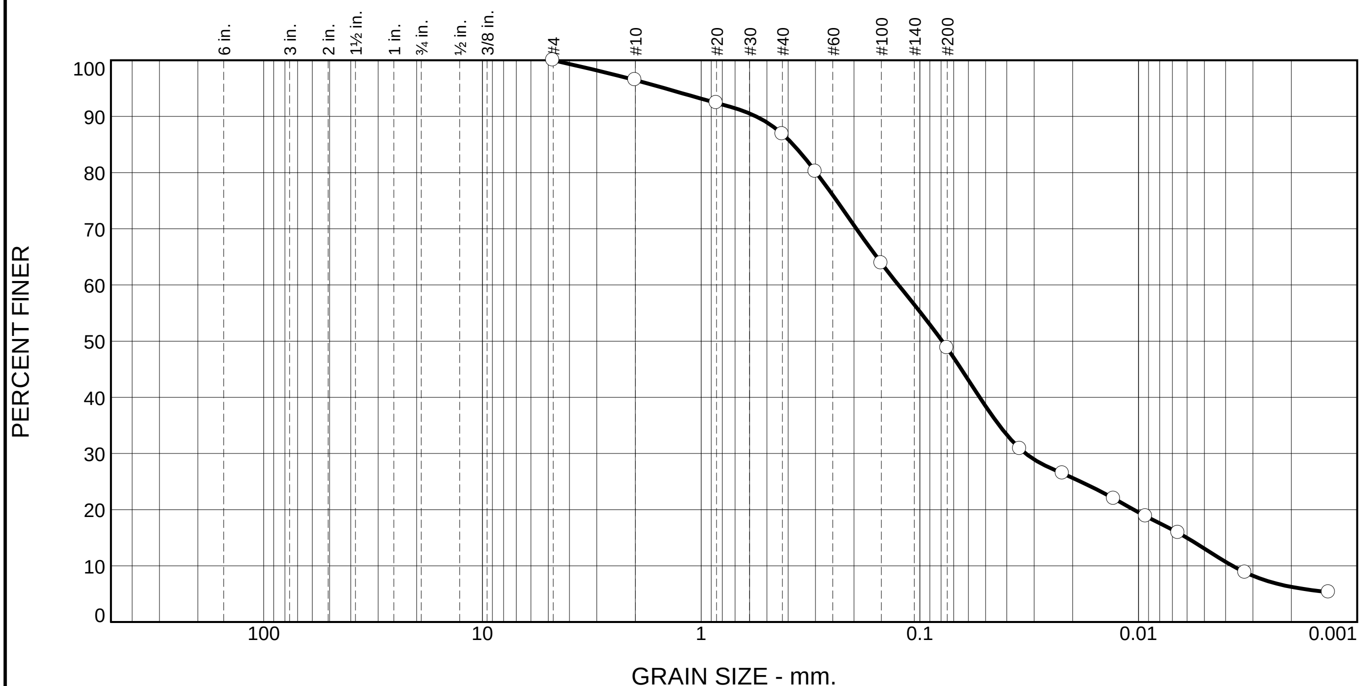
**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-8-14
**Tested By:** Justin Sigouin
**Checked By:** John Turner
**Title:** President

**Location:** 31116-69
**Sample Number:** 14-1185
**Date Sampled:** 10-3-14

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 028

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 3.5 | 9.6 | 38.1 | 35.7 | 13.1 |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 96.5 | | |
| #20 | 92.4 | | |
| #40 | 86.9 | | |
| #50 | 80.2 | | |
| #100 | 63.9 | | |
| #200 | 48.8 | | |
| 0.0348 mm. | 30.9 | | |
| 0.0222 mm. | 26.5 | | |
| 0.0130 mm. | 22.0 | | |
| 0.0093 mm. | 18.8 | | |
| 0.0066 mm. | 15.9 | | |
| 0.0033 mm. | 8.8 | | |
| 0.0013 mm. | 5.3 | | |

* (no specification provided)

**Material Description**

FINE SAND and Silt, little Clay

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.5606 $D_{85}$= 0.3798 $D_{60}$= 0.1253
$D_{50}$= 0.0790 $D_{30}$= 0.0328 $D_{15}$= 0.0060
$D_{10}$= 0.0037 $C_u$= 33.72 $C_c$= 2.31

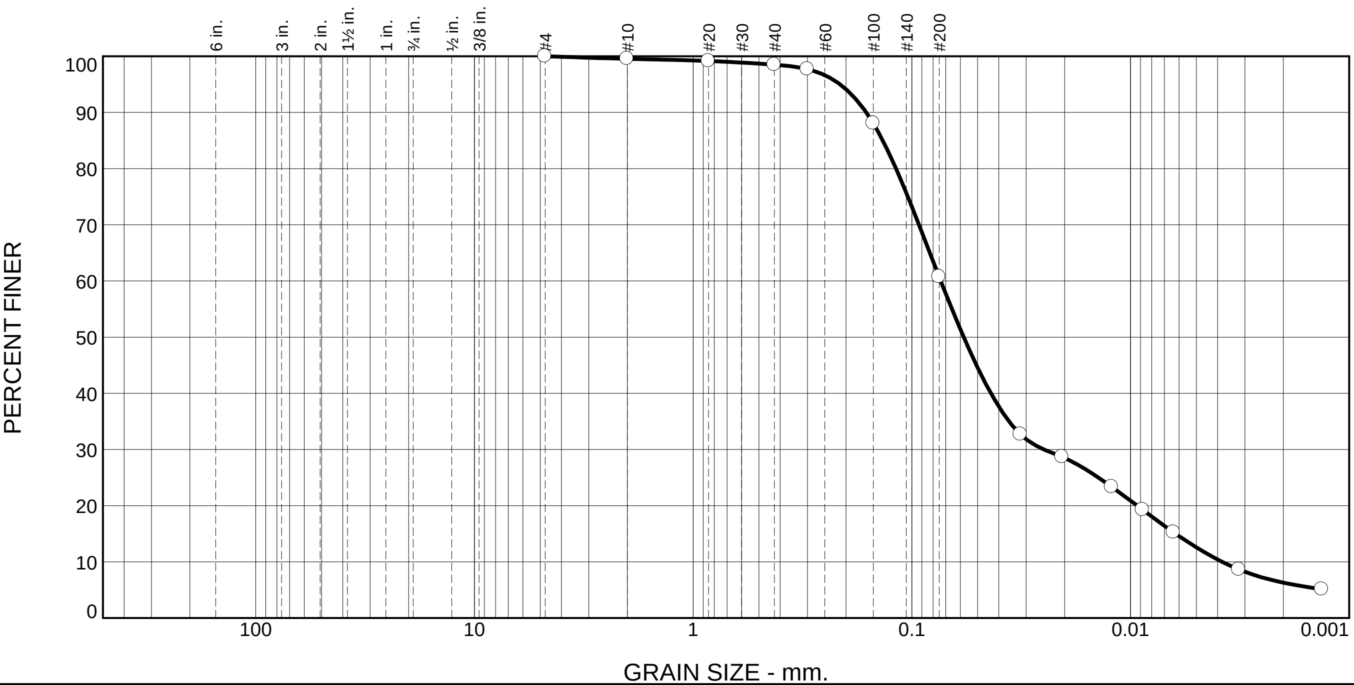
**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-17-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

**Location:** 31116-70
**Sample Number:** 14-1186
**Date Sampled:** 10-3-14

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 041

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.5 | 1.0 | 37.8 | 48.1 | 12.6 |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 99.5 | | |
| #20 | 99.2 | | |
| #40 | 98.5 | | |
| #50 | 97.7 | | |
| #100 | 88.1 | | |
| #200 | 60.7 | | |
| 0.0318 mm. | 32.7 | | |
| 0.0206 mm. | 28.7 | | |
| 0.0122 mm. | 23.3 | | |
| 0.0088 mm. | 19.3 | | |
| 0.0063 mm. | 15.2 | | |
| 0.0032 mm. | 8.6 | | |
| 0.0013 mm. | 5.1 | | |

* (no specification provided)

**Material Description**

Silt and Fine Sand, little Clay

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.1615 $D_{85}$= 0.1358 $D_{60}$= 0.0737
$D_{50}$= 0.0579 $D_{30}$= 0.0249 $D_{15}$= 0.0062
$D_{10}$= 0.0038 $C_u$= 19.35 $C_c$= 2.20

**Remarks**

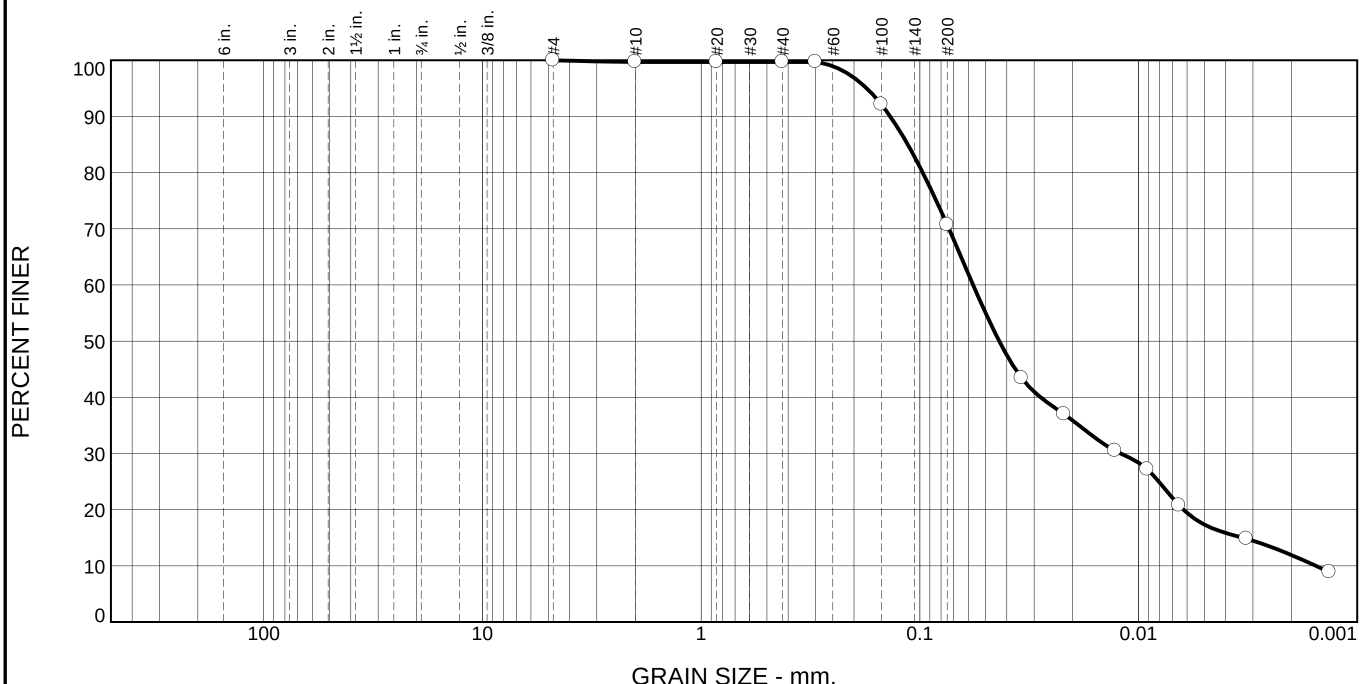
**Date Received:** 10-3-14 **Date Tested:** 10-17-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

**Location:** 31116-71
**Sample Number:** 14-1187
**Date Sampled:** 10-3-14

CONSULTING TESTING INSPECTION JTC inc. GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010
**Figure** 042

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.3 | 0.0 | 29.0 | 53.4 | 17.3 |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 99.7 | | |
| #20 | 99.7 | | |
| #40 | 99.7 | | |
| #50 | 99.7 | | |
| #100 | 92.1 | | |
| #200 | 70.7 | | |
| 0.0342 mm. | 43.4 | | |
| 0.0219 mm. | 37.0 | | |
| 0.0128 mm. | 30.5 | | |
| 0.0091 mm. | 27.2 | | |
| 0.0065 mm. | 20.8 | | |
| 0.0032 mm. | 14.8 | | |
| 0.0013 mm. | 8.9 | | |

* (no specification provided)

**Material Description**

SILT, some Fine Sand, little Clay

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.1365 $D_{85}$= 0.1135 $D_{60}$= 0.0570
$D_{50}$= 0.0433 $D_{30}$= 0.0121 $D_{15}$= 0.0033
$D_{10}$= 0.0015 $C_u$= 36.94 $C_c$= 1.66

**Remarks**

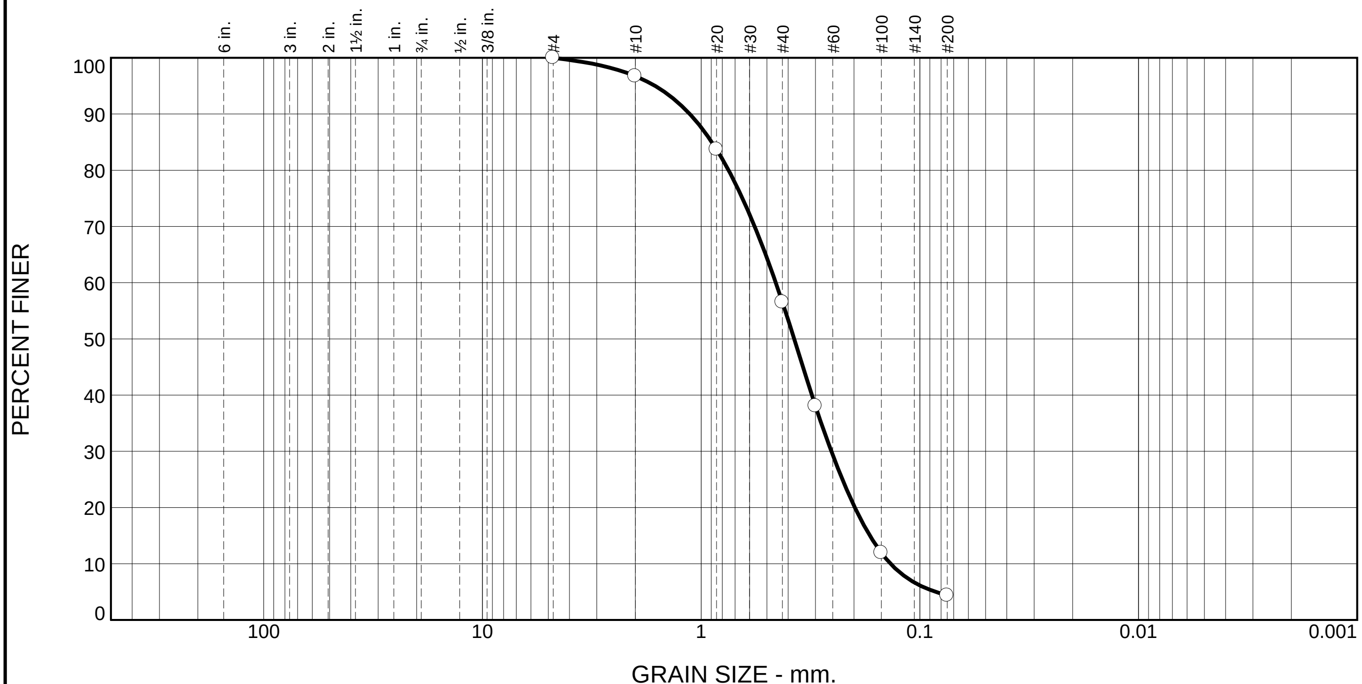
**Date Received:** 10-3-14 **Date Tested:** 10-17-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

**Location:** 31116-72
**Sample Number:** 14-1188
**Date Sampled:** 10-3-14

CONSULTING TESTING INSPECTION JTC inc. GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 043

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 3.3 | 40.2 | 52.2 | 4.3 | |

| TEST RESULTS (ASTM D422) | | | |
|---|---|---|---|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| #4 | 100.0 | | |
| #10 | 96.7 | | |
| #20 | 83.7 | | |
| #40 | 56.5 | | |
| #50 | 38.0 | | |
| #100 | 12.0 | | |
| #200 | 4.3 | | |

* (no specification provided)

**Material Description**

FINE-MEDIUM SAND, trace Silt

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 1.1266 $D_{85}$= 0.8934 $D_{60}$= 0.4557
$D_{50}$= 0.3755 $D_{30}$= 0.2539 $D_{15}$= 0.1692
$D_{10}$= 0.1361 $C_u$= 3.35 $C_c$= 1.04

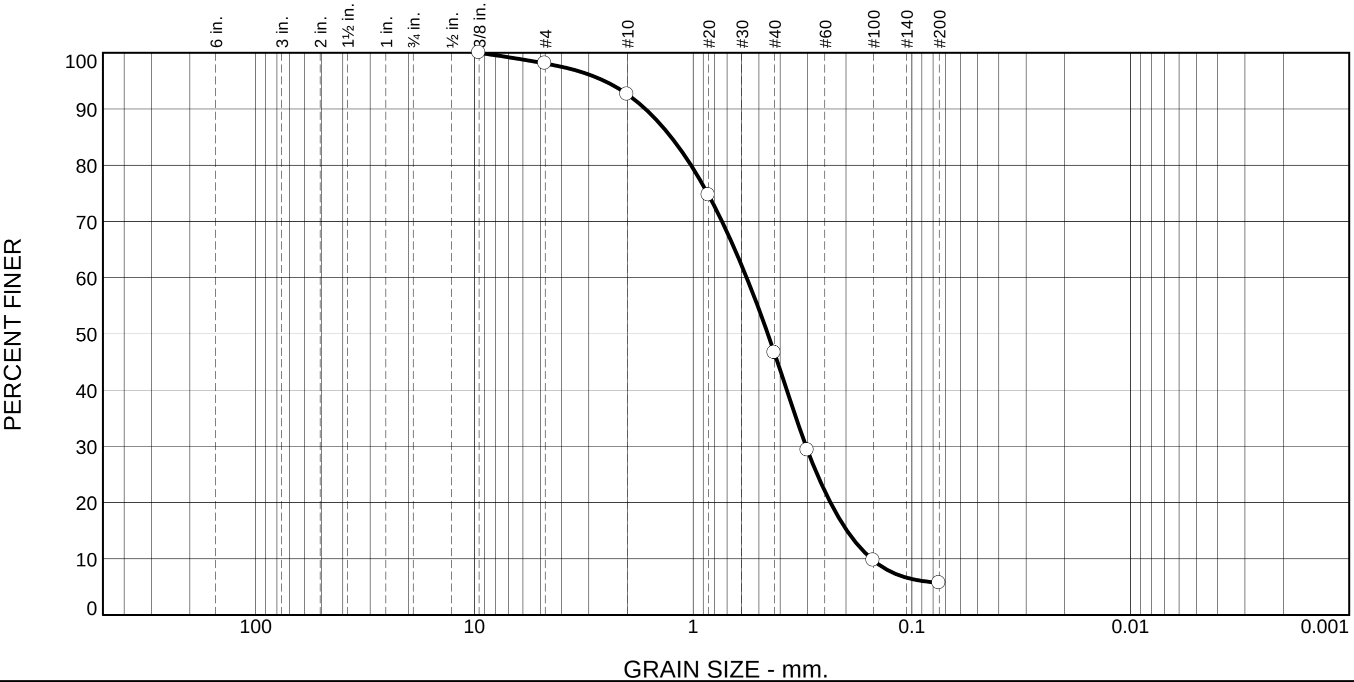
**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-10-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

**Location:** 31116-73
**Sample Number:** 14-1189
**Date Sampled:** 10-3-14

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 029

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.9 | 5.5 | 46.0 | 40.9 | 5.7 | |

| TEST RESULTS (ASTM D422) | | | |
|---|---|---|---|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| 3/8 | 100.0 | | |
| #4 | 98.1 | | |
| #10 | 92.6 | | |
| #20 | 74.7 | | |
| #40 | 46.6 | | |
| #50 | 29.3 | | |
| #100 | 9.7 | | |
| #200 | 5.7 | | |

* (no specification provided)

**Material Description**

FINE-MEDIUM SAND, trace Silt, trace Fine Gravel

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 1.6526 $D_{85}$= 1.2602 $D_{60}$= 0.5690
$D_{50}$= 0.4554 $D_{30}$= 0.3045 $D_{15}$= 0.1978
$D_{10}$= 0.1531 $C_u$= 3.72 $C_c$= 1.06

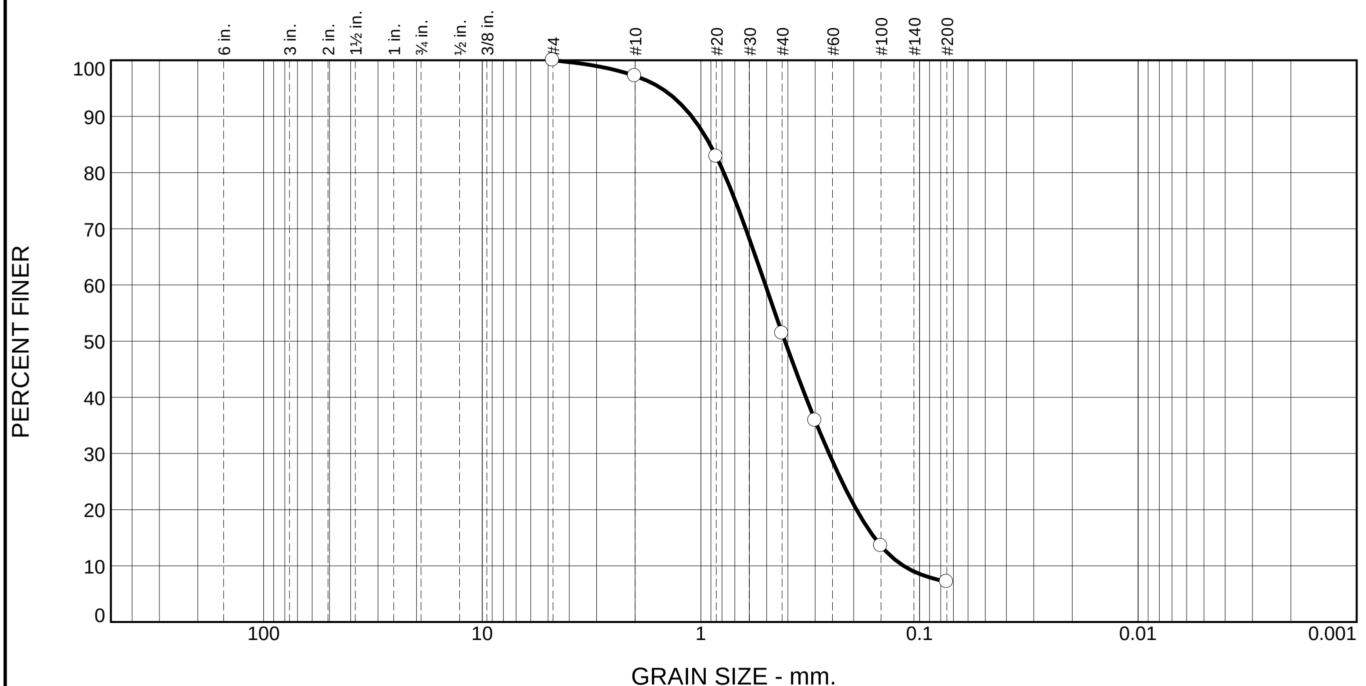
**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-10-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

**Location:** 31116-74
**Sample Number:** 14-1190
**Date Sampled:** 10-3-14

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 030

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 2.8 | 45.8 | 44.2 | 7.2 | |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 97.2 | | |
| #20 | 82.9 | | |
| #40 | 51.4 | | |
| #50 | 35.9 | | |
| #100 | 13.5 | | |
| #200 | 7.2 | | |

* (no specification provided)

**Material Description**

FINE-MEDIUM SAND, trace Silt

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 1.1004 $D_{85}$= 0.9076 $D_{60}$= 0.5069
$D_{50}$= 0.4127 $D_{30}$= 0.2592 $D_{15}$= 0.1607
$D_{10}$= 0.1182 $C_u$= 4.29 $C_c$= 1.12

**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-8-14
**Tested By:** Justin Sigouin
**Checked By:** John Turner
**Title:** President

**Location:** 31116-75
**Sample Number:** 14-1191
**Date Sampled:** 10-3-14

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 031

# Particle Size Distribution Report


| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 3.0 | 44.2 | 51.5 | 1.3 | |

| TEST RESULTS (ASTM D422) | | | |
|---|---|---|---|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| #4 | 100.0 | | |
| #10 | 97.0 | | |
| #20 | 85.4 | | |
| #40 | 52.8 | | |
| #50 | 26.0 | | |
| #100 | 2.0 | | |
| #200 | 1.3 | | |

* (no specification provided)

**Material Description**

FINE-MEDIUM SAND, trace Silt

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

| | | |
|---|---|---|
| $D_{90}$= 1.0421 | $D_{85}$= 0.8371 | $D_{60}$= 0.4719 |
| $D_{50}$= 0.4093 | $D_{30}$= 0.3172 | $D_{15}$= 0.2469 |
| $D_{10}$= 0.2181 | $C_u$= 2.16 | $C_c$= 0.98 |

**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-9-14

**Tested By:** Justin Sigouin

**Checked By:** John Turner

**Title:** President

**Location:** 31116-76
**Sample Number:** 14-1192

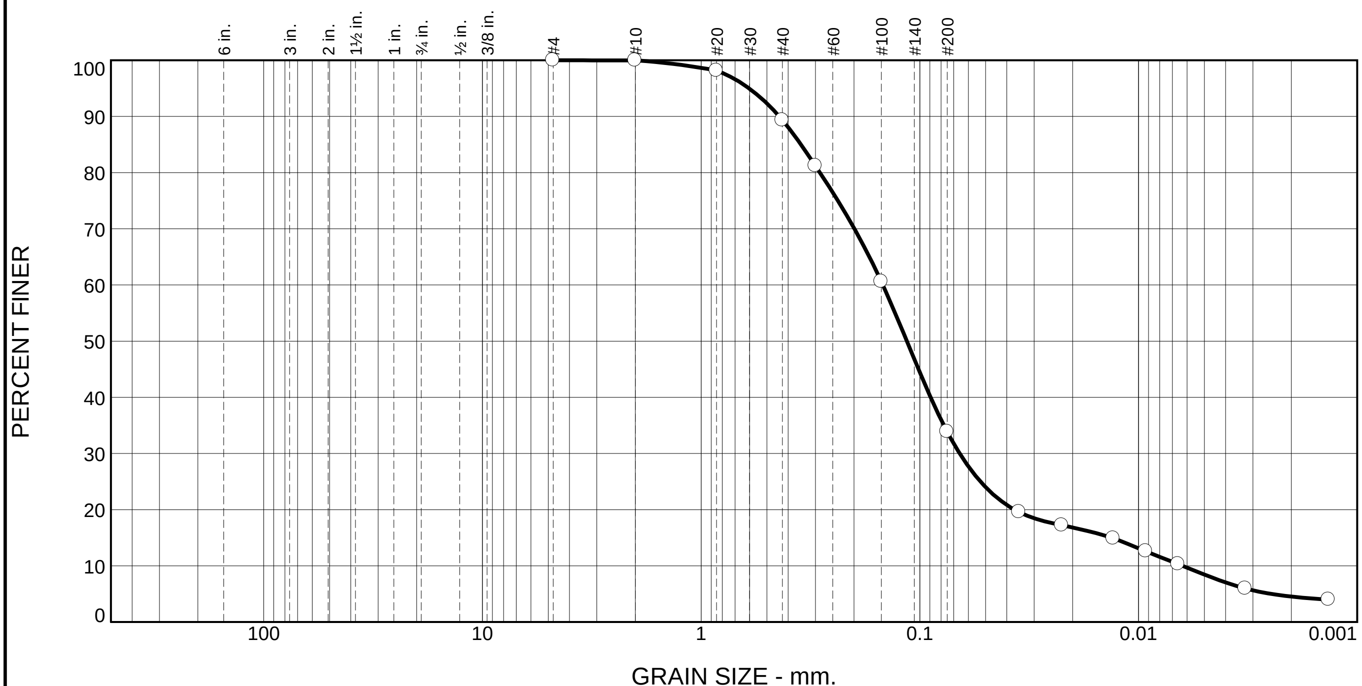
**Date Sampled:** 10-3-14

CONSULTING TESTING INSPECTION JTC inc. GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resources
**Project:** Misc. Testing

**Project No:** 14-25-010 **Figure** 032

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 10.7 | 55.4 | 25.4 | 8.5 |

| TEST RESULTS (ASTM D422) | | | |
|---|---|---|---|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 98.2 | | |
| #40 | 89.3 | | |
| #50 | 81.2 | | |
| #100 | 60.6 | | |
| #200 | 33.9 | | |
| 0.0352 mm. | 19.6 | | |
| 0.0224 mm. | 17.2 | | |
| 0.0130 mm. | 14.9 | | |
| 0.0093 mm. | 12.6 | | |
| 0.0066 mm. | 10.3 | | |
| 0.0032 mm. | 6.0 | | |
| 0.0014 mm. | 4.0 | | |

* (no specification provided)

**Material Description**

FINE-MEDIUM SAND, some Silt, trace Clay

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.4394 $D_{85}$= 0.3498 $D_{60}$= 0.1476
$D_{50}$= 0.1146 $D_{30}$= 0.0657 $D_{15}$= 0.0133
$D_{10}$= 0.0063 $C_u$= 23.47 $C_c$= 4.65

**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-17-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

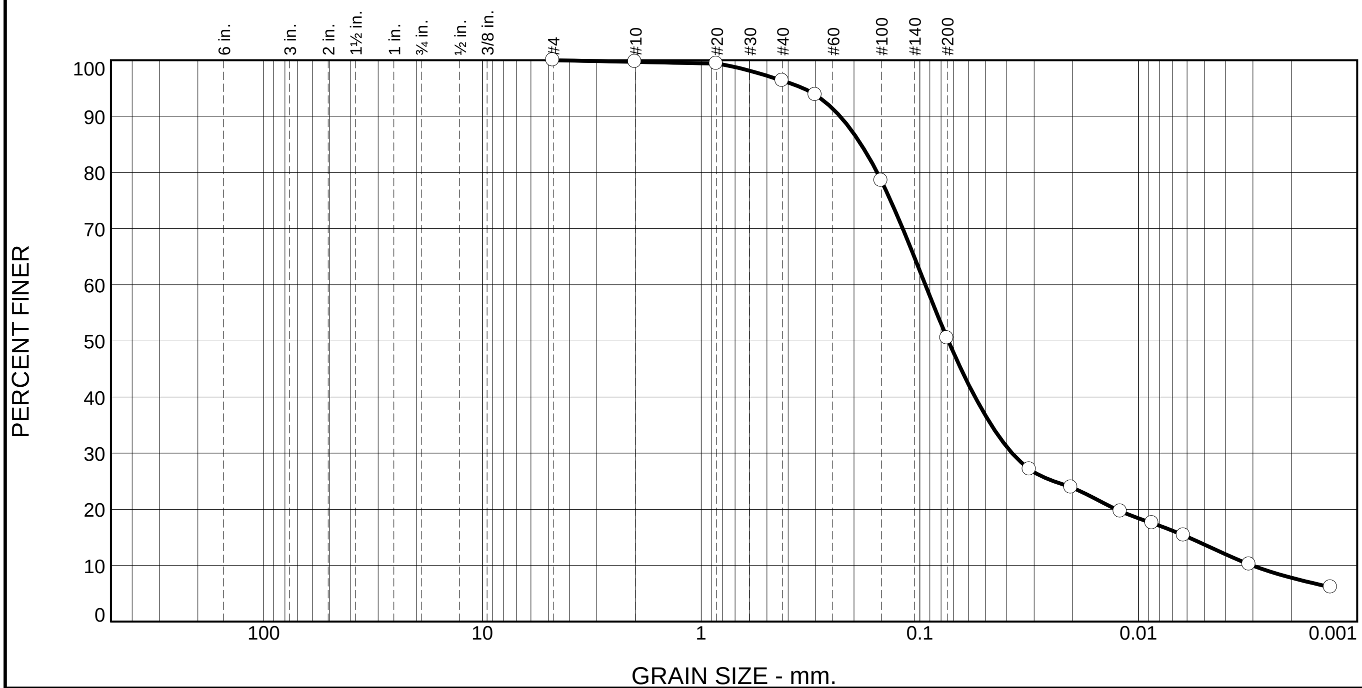
**Location:** 31116-77
**Sample Number:** 14-1193
**Date Sampled:** 10-3-14

CONSULTING TESTING INSPECTION JTC inc. GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resources
**Project:** Misc. Testing

**Project No:** 14-25-010 **Figure** 044

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.3 | 3.3 | 45.9 | 36.8 | 13.7 |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 99.7 | | |
| #20 | 99.4 | | |
| #40 | 96.4 | | |
| #50 | 93.8 | | |
| #100 | 78.5 | | |
| #200 | 50.5 | | |
| 0.0314 mm. | 27.1 | | |
| 0.0203 mm. | 23.9 | | |
| 0.0121 mm. | 19.7 | | |
| 0.0087 mm. | 17.5 | | |
| 0.0062 mm. | 15.4 | | |
| 0.0031 mm. | 10.2 | | |
| 0.0013 mm. | 6.1 | | |

* (no specification provided)

**Material Description**

Fine Sand and Silt, little Clay

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.2315 $D_{85}$= 0.1856 $D_{60}$= 0.0944
$D_{50}$= 0.0740 $D_{30}$= 0.0378 $D_{15}$= 0.0059
$D_{10}$= 0.0030 $C_u$= 31.26 $C_c$= 5.02

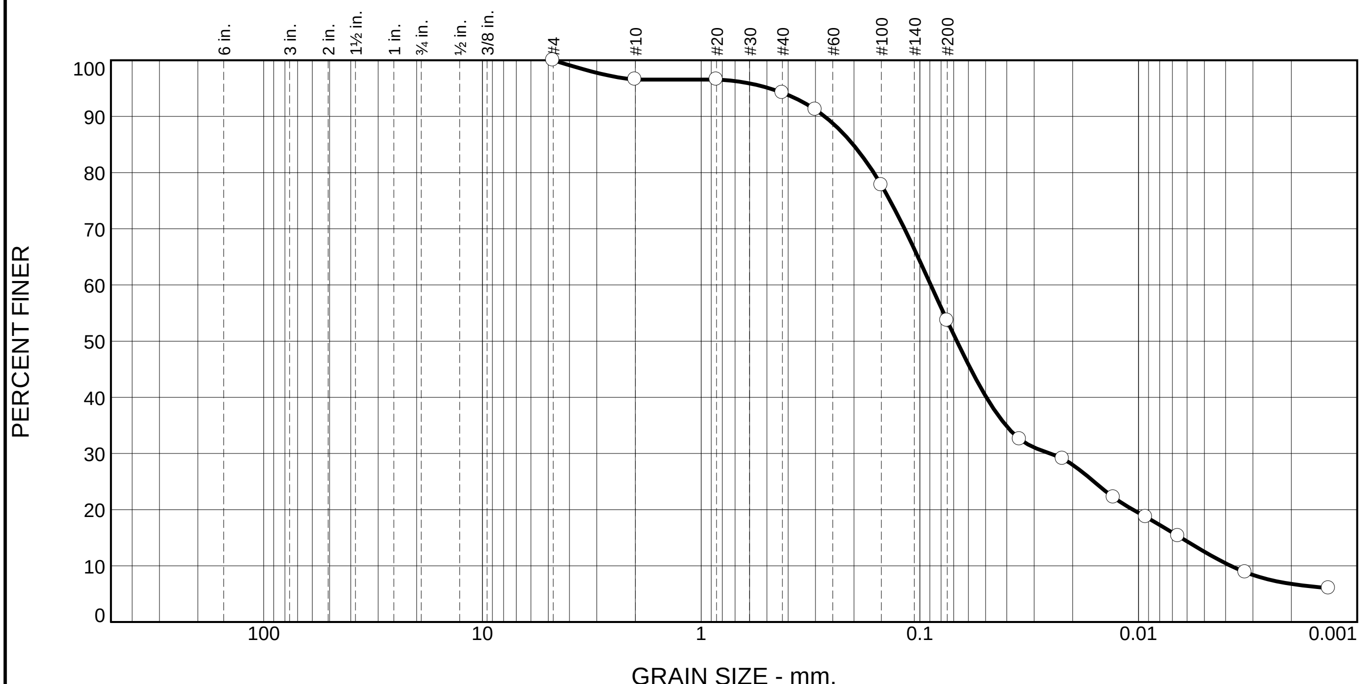
**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-17-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

**Location:** 31116-78
**Sample Number:** 14-1194
**Date Sampled:** 10-3-14

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 045

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 3.4 | 2.4 | 40.5 | 41.2 | 12.5 |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 96.6 | | |
| #20 | 96.6 | | |
| #40 | 94.2 | | |
| #50 | 91.2 | | |
| #100 | 77.8 | | |
| #200 | 53.7 | | |
| 0.0349 mm. | 32.6 | | |
| 0.0222 mm. | 29.1 | | |
| 0.0130 mm. | 22.2 | | |
| 0.0093 mm. | 18.7 | | |
| 0.0066 mm. | 15.3 | | |
| 0.0032 mm. | 8.9 | | |
| 0.0013 mm. | 6.0 | | |

* (no specification provided)

**Material Description**

FINE SAND and Silt, little Clay

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.2723 $D_{85}$= 0.2017 $D_{60}$= 0.0891
$D_{50}$= 0.0677 $D_{30}$= 0.0253 $D_{15}$= 0.0064
$D_{10}$= 0.0038 $C_u$= 23.53 $C_c$= 1.90

**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-17-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

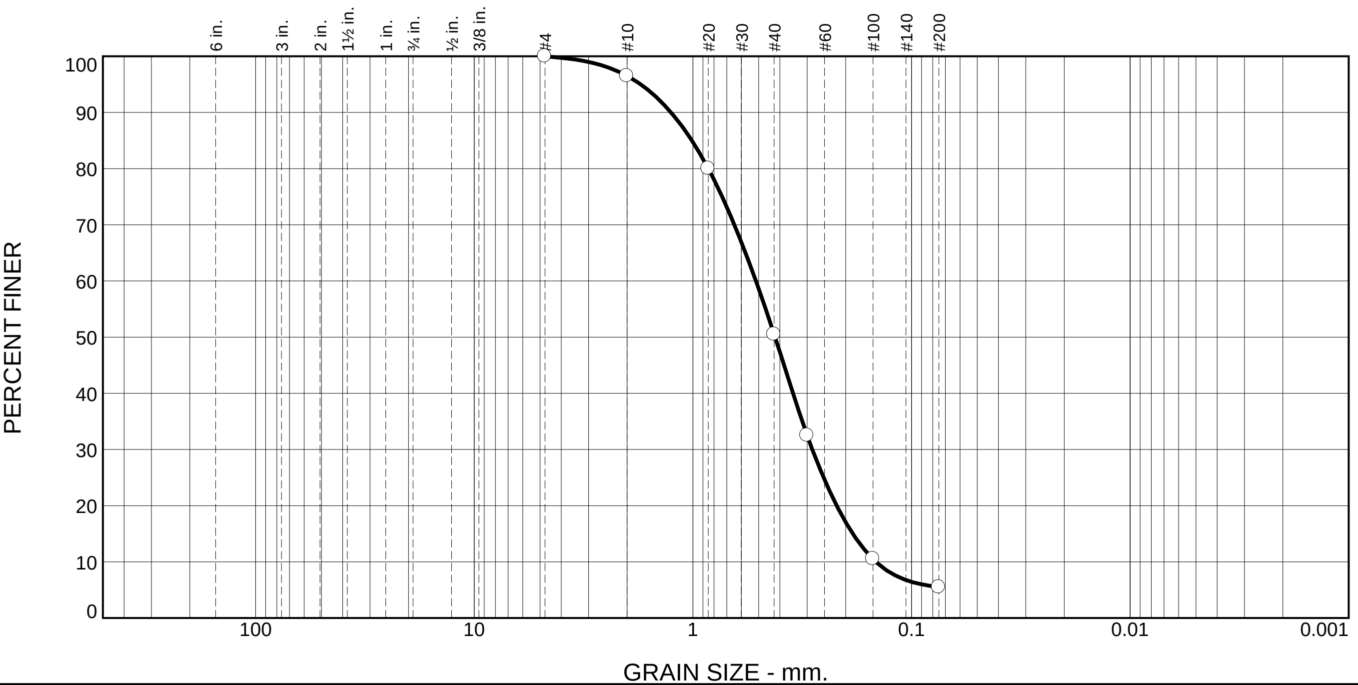
**Location:** 31116-79
**Sample Number:** 14-1195
**Date Sampled:** 10-3-14

CONSULTING TESTING INSPECTION JTC inc. GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resources
**Project:** Misc. Testing

**Project No:** 14-25-010 **Figure** 046

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 3.5 | 46.0 | 45.0 | 5.5 | |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 96.5 | | |
| #20 | 80.0 | | |
| #40 | 50.5 | | |
| #50 | 32.5 | | |
| #100 | 10.5 | | |
| #200 | 5.5 | | |

* (no specification provided)

**Material Description**

FINE-MEDIUM SAND, trace Silt

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 1.2588 $D_{85}$= 1.0105 $D_{60}$= 0.5148
$D_{50}$= 0.4209 $D_{30}$= 0.2842 $D_{15}$= 0.1855
$D_{10}$= 0.1454 $C_u$= 3.54 $C_c$= 1.08

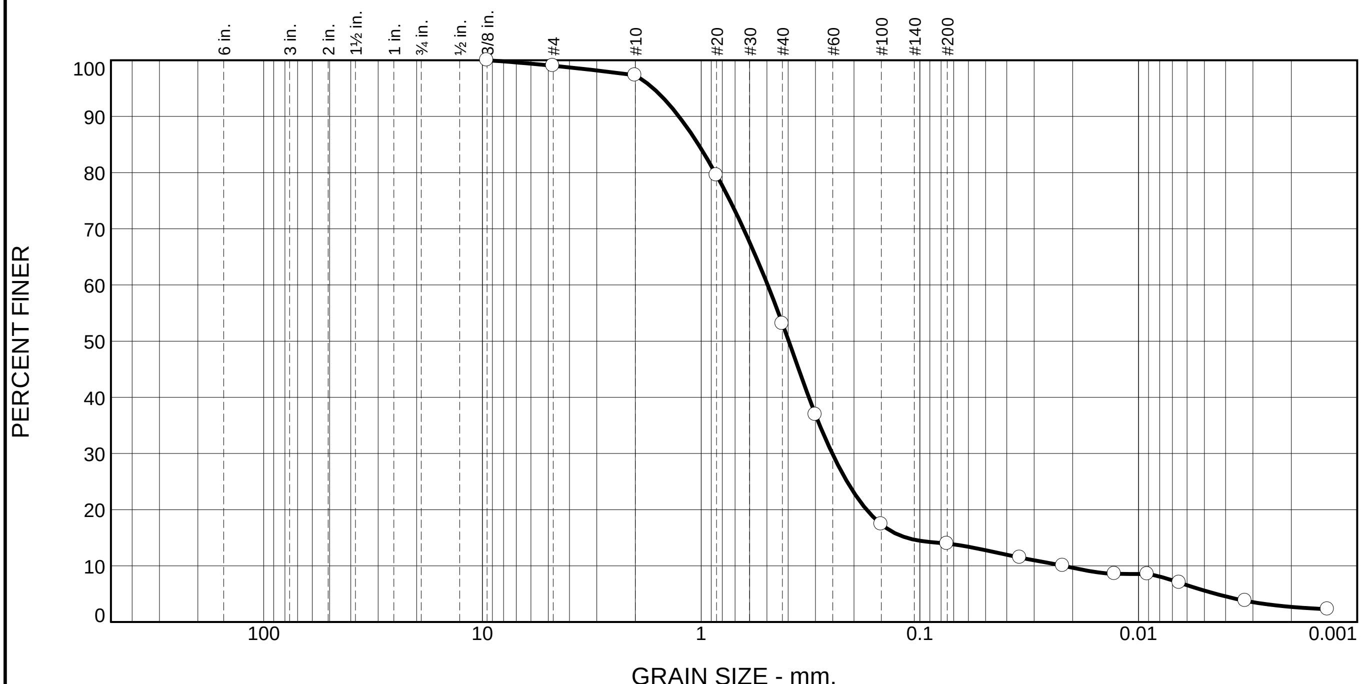
**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-9-14
**Tested By:** Justin Sigouin
**Checked By:** John Turner
**Title:** President

**Location:** 31116-80
**Sample Number:** 14-1196
**Date Sampled:** 10-3-14

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 033

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.0 | 1.7 | 44.2 | 39.2 | 8.3 | 5.6 |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 99.0 | | |
| #10 | 97.3 | | |
| #20 | 79.5 | | |
| #40 | 53.1 | | |
| #50 | 36.9 | | |
| #100 | 17.4 | | |
| #200 | 13.9 | | |
| 0.0348 mm. | 11.5 | | |
| 0.0222 mm. | 10.0 | | |
| 0.0129 mm. | 8.6 | | |
| 0.0091 mm. | 8.5 | | |
| 0.0065 mm. | 7.0 | | |
| 0.0032 mm. | 3.8 | | |
| 0.0014 mm. | 2.3 | | |

* (no specification provided)

**Material Description**

FINE-MEDIUM SAND, trace Silt, trace Clay, trace Gravel

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 1.2633 $D_{85}$= 1.0287 $D_{60}$= 0.4965
$D_{50}$= 0.3976 $D_{30}$= 0.2515 $D_{15}$= 0.1151
$D_{10}$= 0.0220 $C_u$= 22.57 $C_c$= 5.79

**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-17-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

**Location:** 31116-81
**Sample Number:** 14-1197
**Date Sampled:** 10-3-14

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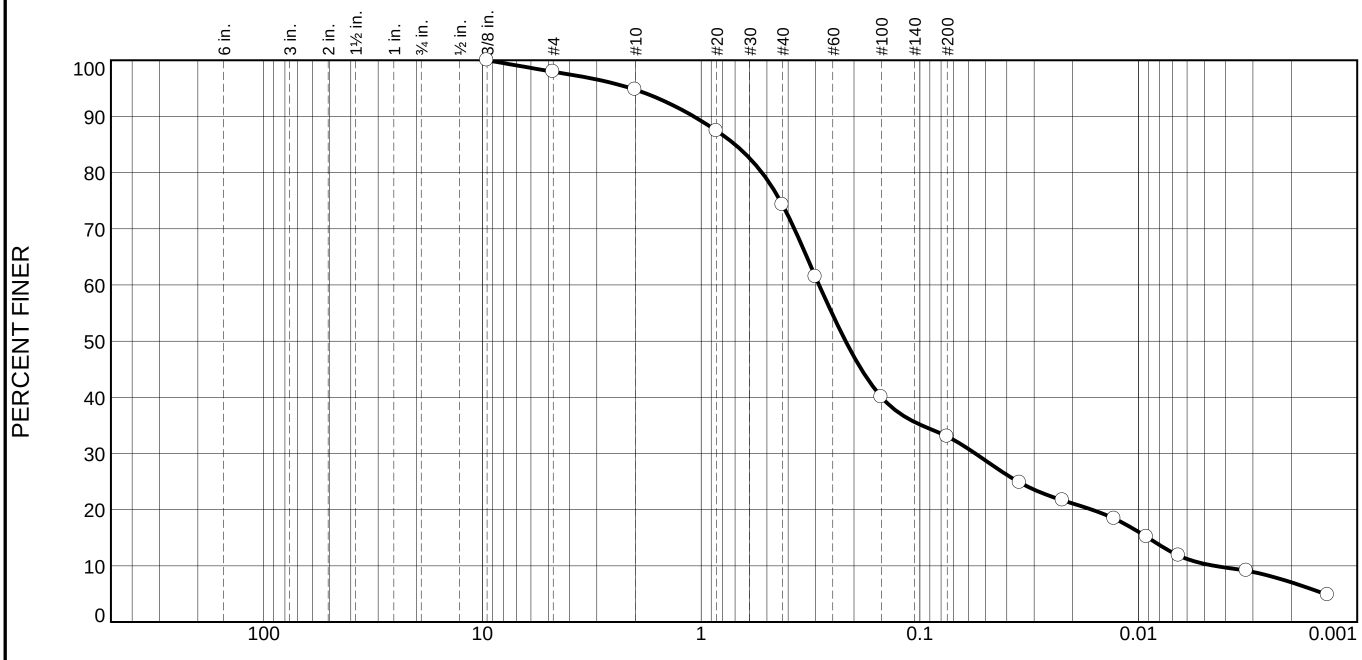
**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 047

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 2.0 | 3.2 | 20.5 | 41.3 | 22.7 | 10.3 |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 98.0 | | |
| #10 | 94.8 | | |
| #20 | 87.4 | | |
| #40 | 74.3 | | |
| #50 | 61.5 | | |
| #100 | 40.1 | | |
| #200 | 33.0 | | |
| 0.0349 mm. | 24.8 | | |
| 0.0222 mm. | 21.7 | | |
| 0.0129 mm. | 18.4 | | |
| 0.0092 mm. | 15.2 | | |
| 0.0065 mm. | 11.8 | | |
| 0.0032 mm. | 9.1 | | |
| 0.0014 mm. | 4.8 | | |

* (no specification provided)

**Material Description**

FINE-MEDIUM SAND, some Silt, little Clay, trace Gravel

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 1.0810 $D_{85}$= 0.7002 $D_{60}$= 0.2888
$D_{50}$= 0.2184 $D_{30}$= 0.0557 $D_{15}$= 0.0090
$D_{10}$= 0.0045 $C_u$= 64.31 $C_c$= 2.39

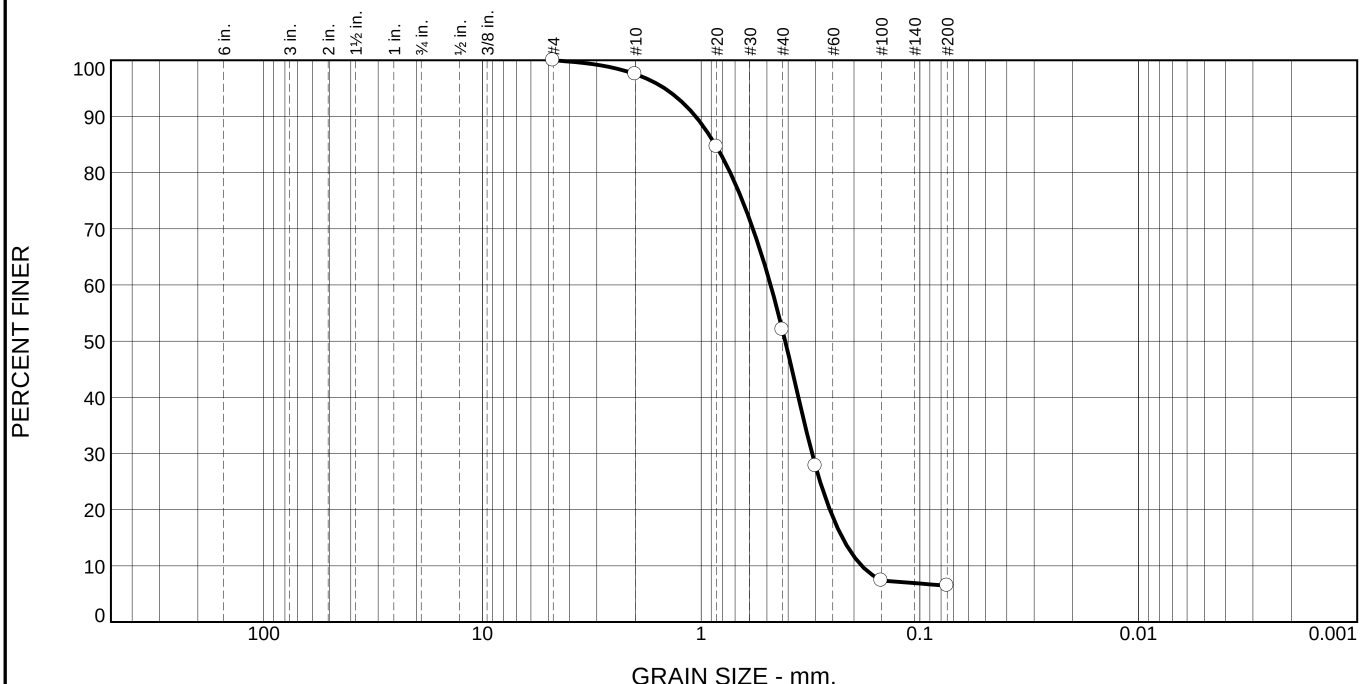
**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-17-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

**Location:** 31116-82
**Sample Number:** 14-1198
**Date Sampled:** 10-3-14

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 048

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 2.5 | 45.5 | 45.5 | 6.5 | |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 97.5 | | |
| #20 | 84.6 | | |
| #40 | 52.0 | | |
| #50 | 27.8 | | |
| #100 | 7.4 | | |
| #200 | 6.5 | | |

* (no specification provided)

**Material Description**

FINE-MEDIUM SAND, trace Silt

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 1.0598 $D_{85}$= 0.8619 $D_{60}$= 0.4813
$D_{50}$= 0.4127 $D_{30}$= 0.3109 $D_{15}$= 0.2261
$D_{10}$= 0.1842 $C_u$= 2.61 $C_c$= 1.09

**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-8-14
**Tested By:** Justin Sigouin
**Checked By:** John Turner
**Title:** President

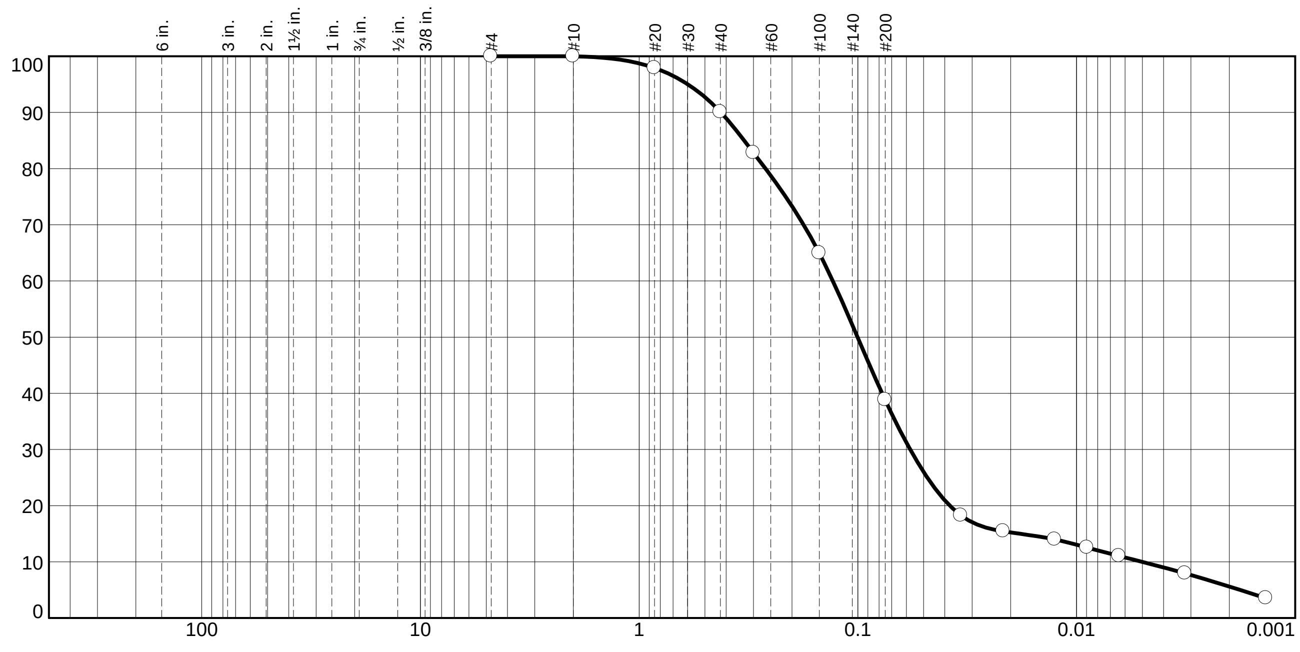
**Location:** 31116-83
**Sample Number:** 14-1199
**Date Sampled:** 10-3-14

JTC inc. CONSULTING TESTING INSPECTION GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resources
**Project:** Misc. Testing

**Project No:** 14-25-010 **Figure** 034

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 9.9 | 51.3 | 28.8 | 10.0 |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 97.9 | | |
| #40 | 90.1 | | |
| #50 | 82.8 | | |
| #100 | 64.9 | | |
| #200 | 38.8 | | |
| 0.0338 mm. | 18.3 | | |
| 0.0216 mm. | 15.4 | | |
| 0.0126 mm. | 14.0 | | |
| 0.0090 mm. | 12.5 | | |
| 0.0064 mm. | 11.0 | | |
| 0.0032 mm. | 8.0 | | |
| 0.0014 mm. | 3.5 | | |

* (no specification provided)

**Material Description**

FINE SAND, some Silt, little Clay

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.4230 $D_{85}$= 0.3310 $D_{60}$= 0.1301
$D_{50}$= 0.1003 $D_{30}$= 0.0576 $D_{15}$= 0.0181
$D_{10}$= 0.0050 $C_u$= 25.96 $C_c$= 5.09

**Remarks**

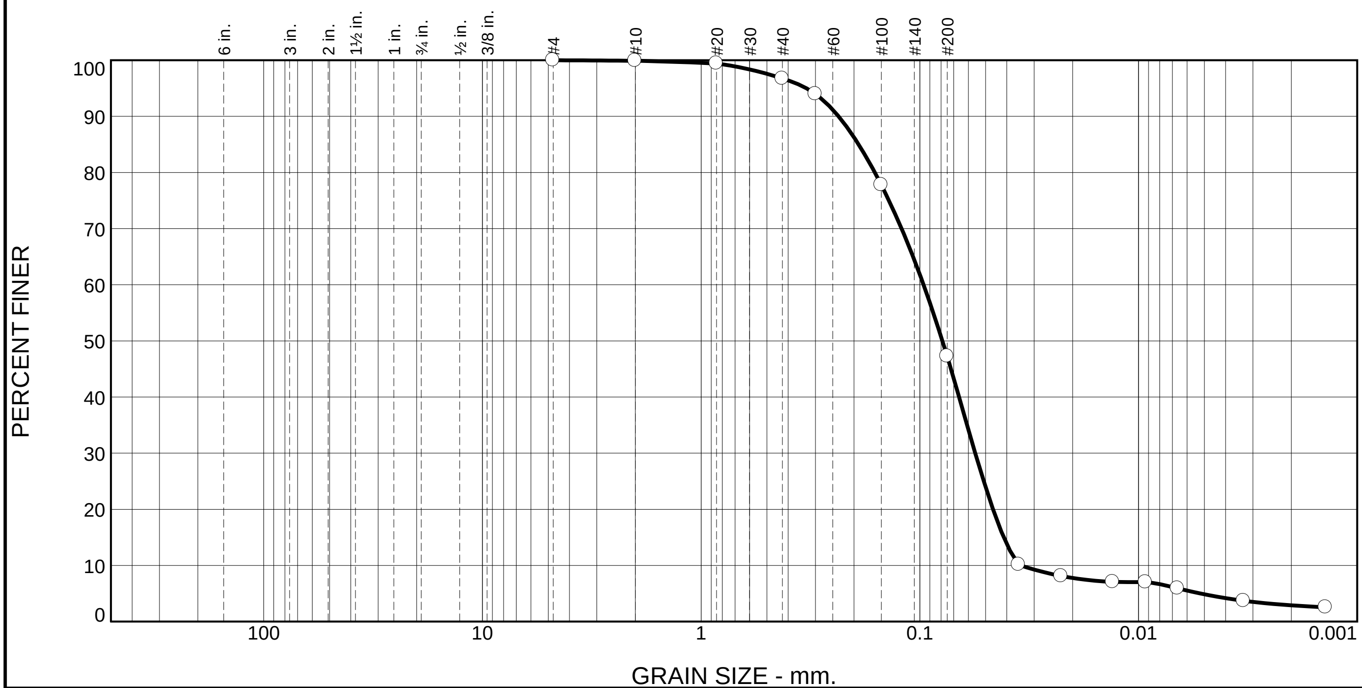
**Date Received:** 10-3-14 **Date Tested:** 10-17-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

**Location:** 31116-84
**Sample Number:** 14-1200
**Date Sampled:** 10-3-14

CONSULTING TESTING INSPECTION JTC inc. GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 049

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 3.2 | 49.4 | 42.4 | 4.9 |

| TEST RESULTS (ASTM D422) | | | |
|---|---|---|---|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 99.4 | | |
| #40 | 96.7 | | |
| #50 | 94.0 | | |
| #100 | 77.8 | | |
| #200 | 47.3 | | |
| 0.0353 mm. | 10.1 | | |
| 0.0226 mm. | 8.1 | | |
| 0.0131 mm. | 7.1 | | |
| 0.0093 mm. | 7.0 | | |
| 0.0066 mm. | 5.9 | | |
| 0.0033 mm. | 3.7 | | |
| 0.0014 mm. | 2.5 | | |

* (no specification provided)

**Material Description**

FINE SAND and Silt, trace Clay

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.2352 $D_{85}$= 0.1904 $D_{60}$= 0.0961
$D_{50}$= 0.0788 $D_{30}$= 0.0558 $D_{15}$= 0.0413
$D_{10}$= 0.0345 $C_u$= 2.78 $C_c$= 0.94

**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-17-14

**Tested By:** Jeff Young

**Checked By:** John Turner

**Title:** President

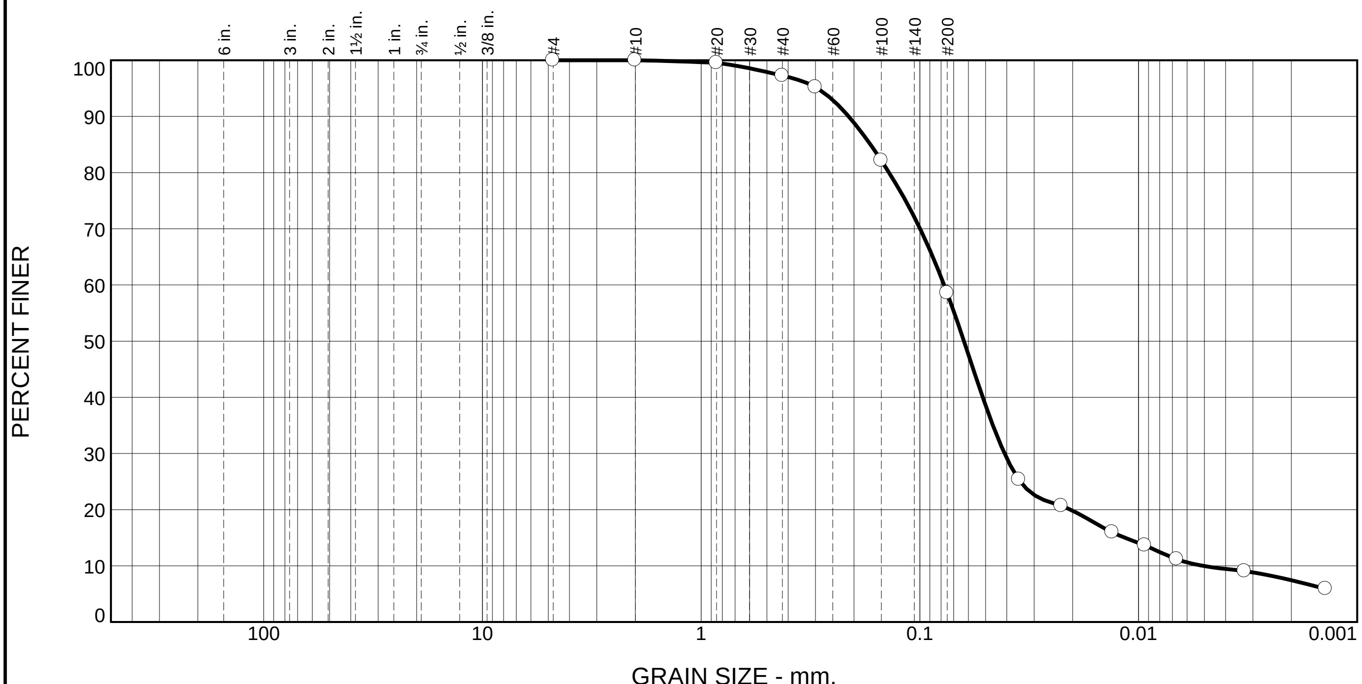
**Location:** 31116-85
**Sample Number:** 14-1201

**Date Sampled:** 10-3-14

**Client:** Absolute Resources
**Project:** Misc. Testing

**Project No:** 14-25-010 **Figure** 050

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 2.7 | 38.7 | 48.6 | 10.0 |

| TEST RESULTS (ASTM D422) | | | |
|---|---|---|---|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #20 | 99.5 | | |
| #40 | 97.3 | | |
| #50 | 95.2 | | |
| #100 | 82.2 | | |
| #200 | 58.6 | | |
| 0.0353 mm. | 25.4 | | |
| 0.0226 mm. | 20.7 | | |
| 0.0132 mm. | 16.0 | | |
| 0.0094 mm. | 13.6 | | |
| 0.0067 mm. | 11.2 | | |
| 0.0033 mm. | 9.1 | | |
| 0.0014 mm. | 5.9 | | |

* (no specification provided)

**Material Description**

Silt and Fine Sand, little Clay

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.2115 $D_{85}$= 0.1682 $D_{60}$= 0.0774
$D_{50}$= 0.0629 $D_{30}$= 0.0410 $D_{15}$= 0.0115
$D_{10}$= 0.0051 $C_u$= 15.25 $C_c$= 4.28

**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-17-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

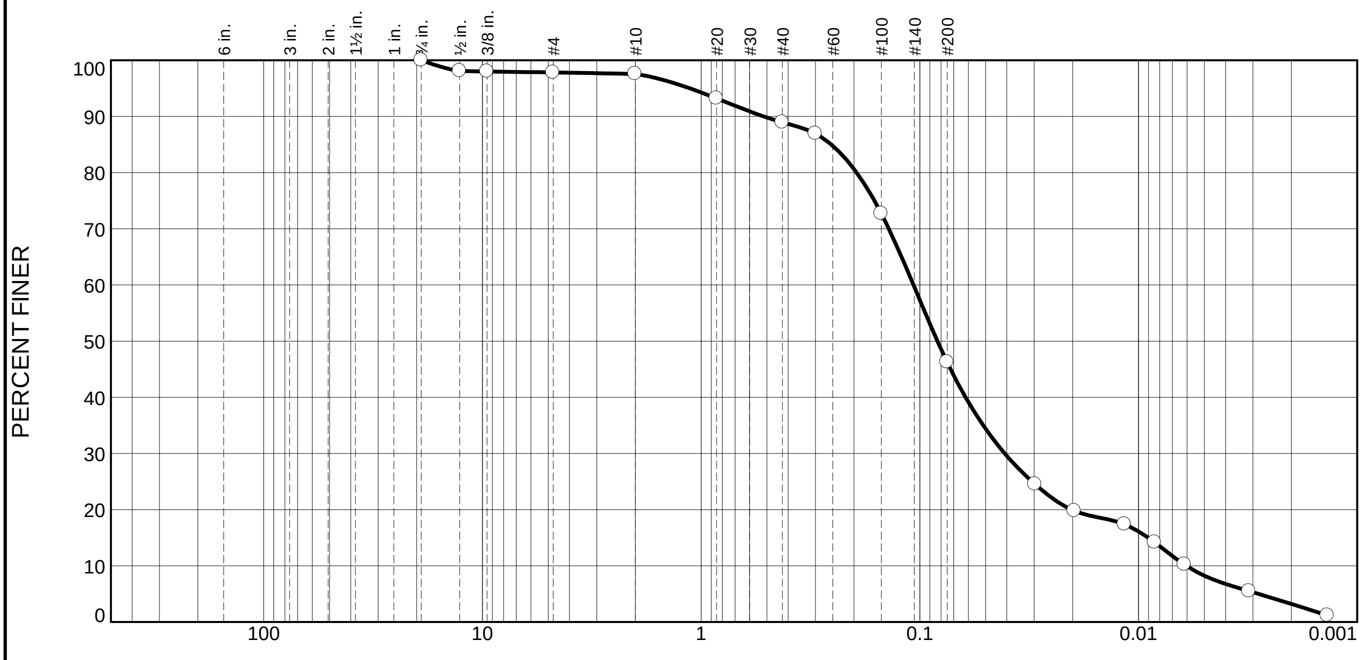
**Location:** 31116-86
**Sample Number:** 14-1202
**Date Sampled:** 10-3-14

JTC inc. CONSULTING TESTING INSPECTION GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resources
**Project:** Misc. Testing

**Project No:** 14-25-010 **Figure** 051

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 2.2 | 0.2 | 8.7 | 42.6 | 38.0 | 8.3 |

| TEST RESULTS (ASTM D422) | | | |
|---|---|---|---|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| 3/4 | 100.0 | | |
| 1/2 | 98.1 | | |
| 3/8 | 98.0 | | |
| #4 | 97.8 | | |
| #10 | 97.6 | | |
| #20 | 93.2 | | |
| #40 | 88.9 | | |
| #50 | 86.9 | | |
| #100 | 72.7 | | |
| #200 | 46.3 | | |
| 0.0297 mm. | 24.5 | | |
| 0.0197 mm. | 19.8 | | |
| 0.0116 mm. | 17.4 | | |
| 0.0084 mm. | 14.2 | | |
| 0.0062 mm. | 10.2 | | |
| 0.0031 mm. | 5.5 | | |
| 0.0014 mm. | 1.2 | | |

* (no specification provided)

**Material Description**

Fine Sand and Silt, trace Clay, trace Gravel

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.5178 $D_{85}$= 0.2540 $D_{60}$= 0.1069
$D_{50}$= 0.0831 $D_{30}$= 0.0409 $D_{15}$= 0.0090
$D_{10}$= 0.0060 $C_u$= 17.69 $C_c$= 2.59

**Remarks**

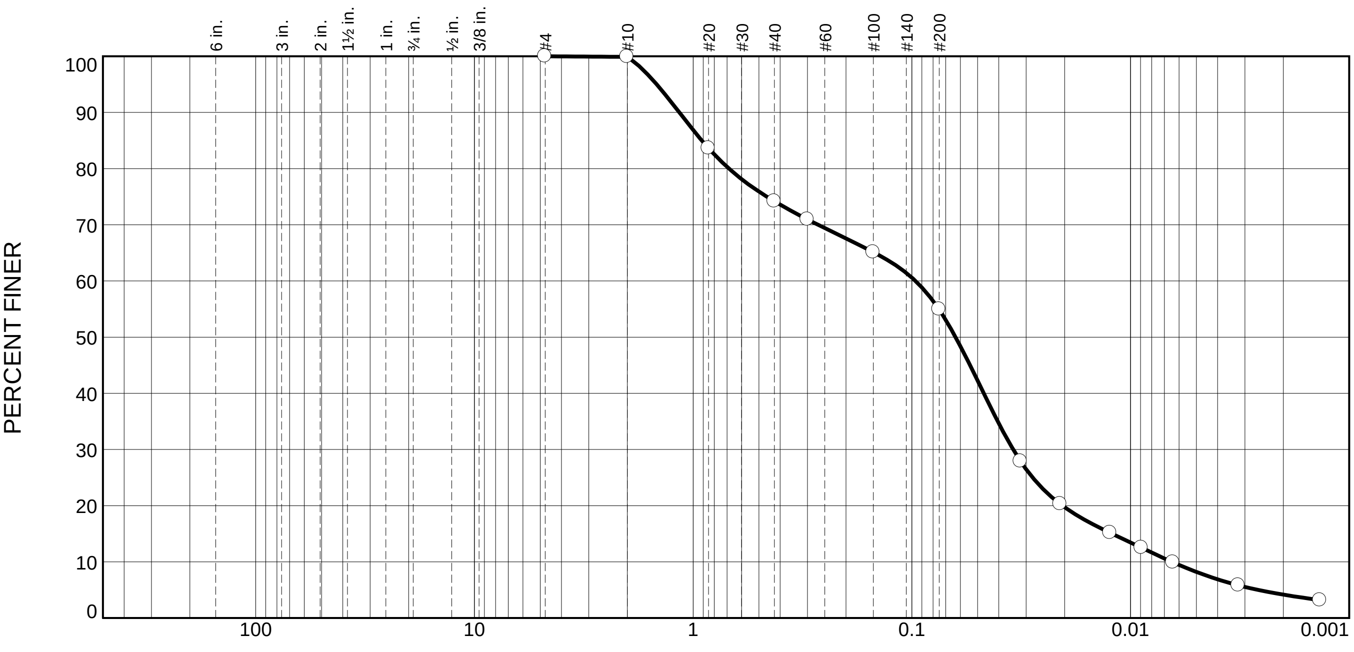
**Date Received:** 10-3-14 **Date Tested:** 10-17-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

**Location:** 31116-87
**Sample Number:** 14-1203
**Date Sampled:** 10-3-14

CONSULTING · TESTING · INSPECTION JTC inc. GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 052

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.1 | 25.7 | 19.3 | 46.7 | 8.2 |

**TEST RESULTS (ASTM D422)**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 99.9 | | |
| #20 | 83.6 | | |
| #40 | 74.2 | | |
| #50 | 71.0 | | |
| #100 | 65.1 | | |
| #200 | 54.9 | | |
| 0.0318 mm. | 27.9 | | |
| 0.0209 mm. | 20.3 | | |
| 0.0124 mm. | 15.2 | | |
| 0.0089 mm. | 12.5 | | |
| 0.0064 mm. | 9.9 | | |
| 0.0032 mm. | 5.8 | | |
| 0.0014 mm. | 3.2 | | |

* (no specification provided)

**Material Description**

Silt and Fine-Medium Sand, trace Clay

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 1.1558 $D_{85}$= 0.9125 $D_{60}$= 0.0962
$D_{50}$= 0.0631 $D_{30}$= 0.0344 $D_{15}$= 0.0121
$D_{10}$= 0.0065 $C_u$= 14.87 $C_c$= 1.90

**Remarks**

**Date Received:** 10-3-14 **Date Tested:** 10-17-14
**Tested By:** Jeff Young
**Checked By:** John Turner
**Title:** President

**Location:** 31116-88
**Sample Number:** 14-1204
**Date Sampled:** 10-3-14

**Client:** Absolute Resources
**Project:** Misc. Testing
**Project No:** 14-25-010 **Figure** 053

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C**

**4092606**

31116

| **SENDING LABORATORY:** | **RECEIVING LABORATORY:** |
|---|---|
| ERDC- EL-EP-C | ARA |
| 3909 Halls Ferry Road , Building 3299 | 124 Heritage Ave, #16 |
| Vicksburg, MS 39180 | Portsmouth, NH 03801 |
| Phone: 601-634-4826 | Phone :(603) 436-2001 |
| Fax: 601-634-2742 | Fax: |
| Project Manager: Patty Tuminello | |

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **Sample Name: QT2-1-0002-SEDCHEM** | | | | |
| **Sample ID: 4092606-01** | **Soil/Sedir** | **Sampled:23-Sep-2014 09:31** | 31116-01 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 09:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-1-0205-SEDCHEM** | | | | |
| **Sample ID: 4092606-02** | **Soil/Sedir** | **Sampled:23-Sep-2014 09:31** | 02 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 09:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-1-0507-SEDCHEM** | | | | |
| **Sample ID: 4092606-03** | **Soil/Sedir** | **Sampled:23-Sep-2014 09:31** | 03 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 09:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-1-0002-SEDCHEM-AI** | | | | |
| **Sample ID: 4092606-04** | **Soil/Sedir** | **Sampled:23-Sep-2014 09:31** | 04 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 09:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-1-0002-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-05** | **Soil/Sedir** | **Sampled:23-Sep-2014 09:31** | 05 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 09:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-1-0205-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-06** | **Soil/Sedir** | **Sampled:23-Sep-2014 09:31** | 06 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 09:31 | | |
| *Containers Supplied:* | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| [signature] | 9-30-14 | Fed EX | 9/30/14 |
| FedEX | ~~9/30/14~~ 10/1/14 | [signature] | 10/1/14 |

Rec'd on Ice @ 2°C

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C**

**4092606** 31116

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **Sample Name: QT2-1-0507-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-07** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:05** | 07 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-2-0002-SEDCHEM** | | | | |
| **Sample ID: 4092606-08** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:05** | 08 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-2-0205-SEDCHEM** | | | | |
| **Sample ID: 4092606-09** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:05** | 09 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-2-0507-SEDCHEM** | | | | |
| **Sample ID: 4092606-10** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:05** | 10 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-2-0002-SEDCHEM-AI** | | | | |
| **Sample ID: 4092606-11** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:05** | 11 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-2-0002-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-12** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:05** | 12 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-2-0205-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-13** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:05** | 13 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-2-0507-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-14** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:05** | 14 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| [signature] | 9-30-14 | FedEx | 9/30/14 |
| FedEx | 10/1/14 | [signature] | 10/1/14 |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C**

**4092606**

31116

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **Sample Name: QT2-3-0002-SEDCHEM** | | | | |
| **Sample ID: 4092606-15** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | 15 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-3-0205-SEDCHEM** | | | | |
| **Sample ID: 4092606-16** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | 16 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-3-0507-SEDCHEM** | | | | |
| **Sample ID: 4092606-17** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | 17 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-3-0002-SEDCHEM-AI** | | | | |
| **Sample ID: 4092606-18** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | 18 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-3-0002-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-19** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | 19 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-3-0205-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-20** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | 20 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-3-0507-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-21** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | 21 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-1-0002-GS** | | | | |
| **Sample ID: 4092606-22** | **Soil/Sedir** | **Sampled:23-Sep-2014 09:31** | 22 | • • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| *Containers Supplied:* | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| [signature] | 9-30-14 | Fed Ex | 9/30/14 |
| FedEx | 10/1/14 | [signature] | 10/1/14 |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C**

**4092606**

3/11/16

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **Sample Name: QT2-1-0205-GS** | | | | |
| **Sample ID: 4092606-23** | **Soil/Sedir** | **Sampled:23-Sep-2014 09:31** | 23 | • • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-1-0507-GS** | | | | |
| **Sample ID: 4092606-24** | **Soil/Sedir** | **Sampled:23-Sep-2014 09:31** | 24 | • • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-1-0002-GS-AI** | | | | |
| **Sample ID: 4092606-25** | **Soil/Sedir** | **Sampled:23-Sep-2014 09:31** | 25 | • • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-1-0002-GS-BI** | | | | |
| **Sample ID: 4092606-26** | **Soil/Sedir** | **Sampled:23-Sep-2014 09:31** | 26 | • • |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-1-0205-GS-BI** | | | | |
| **Sample ID: 4092606-27** | **Soil/Sedir** | **Sampled:23-Sep-2014 09:31** | 27 | • • |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-1-0507-GS-BI** | | | | |
| **Sample ID: 4092606-28** | **Soil/Sedir** | **Sampled:23-Sep-2014 09:31** | 28 | • • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 09:31 | | |
| *Containers Supplied:* | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| [signature] | 9-30-14 | Fed Ex | 9/30/14 |
| Fed Ex | 10/1/14 | [signature] | 10/1/14 |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C**

**4092606**

31116

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **Sample Name: QT2-2-0002-GS** | | | | |
| **Sample ID: 4092606-29** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:05** | 29 | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-2-0205-GS** | | | | |
| **Sample ID: 4092606-30** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:05** | 30 | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-2-0507-GS** | | | | |
| **Sample ID: 4092606-31** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:05** | 31 | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-2-0002-GS-AI** | | | | |
| **Sample ID: 4092606-32** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:05** | 32 | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-2-0002-GS-BI** | | | | |
| **Sample ID: 4092606-33** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:05** | 33 | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-2-0205-GS-BI** | | | | |
| **Sample ID: 4092606-34** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:05** | 34 | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |

| | | | |
|---|---|---|---|
| | 9-30-14 | Fed Ex | 9/30/14 |
| Released By | Date | Received By | Date |
| Fed Ex | 10/1/14 | | 10/1/14 |
| Released By | Date | Received By | Date |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C**

**4092606**

31116

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **Sample Name: QT2-2-0507-GS-BI** | | | 35 | |
| **Sample ID: 4092606-35** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:0ξ** | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:05 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-3-0002-GS** | | | 36 | |
| **Sample ID: 4092606-36** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-3-0205-GS** | | | 37 | |
| **Sample ID: 4092606-37** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-3-0507-GS** | | | 38 | |
| **Sample ID: 4092606-38** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-3-0002-GS-AI** | | | 39 | |
| **Sample ID: 4092606-39** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-3-0002-GS-BI** | | | 40 | |
| **Sample ID: 4092606-40** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| [signature] | 9-30-14 | FedEx | 9/30/14 |
| FedEx | 10/1/14 | [signature] | 10/1/14 |

SUBCONTRACT ORDER

ERDC- EL-EP-C

4092606

31114

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **Sample Name: QT2-3-0205-GS-BI** | | | | |
| **Sample ID: 4092606-41** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | 41 | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-3-0507-GS-BI** | | | | |
| **Sample ID: 4092606-42** | **Soil/Sedir** | **Sampled:23-Sep-2014 10:31** | 42 | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 10:31 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-4-0002-SEDCHEM** | | | | |
| **Sample ID: 4092606-43** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:08** | 43 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:08 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-4-0205-SEDCHEM** | | | | |
| **Sample ID: 4092606-44** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:08** | 44 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:08 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-4-0507-SEDCHEM** | | | | |
| **Sample ID: 4092606-45** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:08** | 45 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:08 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-4-0002-SEDCHEM-AI** | | | | |
| **Sample ID: 4092606-46** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:08** | 46 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:08 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-4-0002-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-47** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:08** | 47 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:08 | | |
| *Containers Supplied:* | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| [signature] | 9-30-14 | Fed Ex | 9/30/14 |
| Fed Ex | 10/1/14 | [signature] | 10/1/14 |

# SUBCONTRACT ORDER

**ERDC- EL-EP-C**

**4092606** 3116

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **Sample Name: QT2-4-0205-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-48** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:08** | 48 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:08 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-4-0507-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-49** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:08** | 49 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:08 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5-0002-SEDCHEM** | | | | |
| **Sample ID: 4092606-50** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 50 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5-0205-SEDCHEM** | | | | |
| **Sample ID: 4092606-51** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 51 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5-0507-SEDCHEM** | | | | |
| **Sample ID: 4092606-52** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 52 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5-0002-SEDCHEM-AI** | | | | |
| **Sample ID: 4092606-53** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 53 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5-0002-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-54** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 54 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5-0205-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-55** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 55 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| [signature] | 9-30-14 | Fed Ex | 9/30/14 |
| FedEx | ~~9/30/14~~ 10/1/14 | [signature] | 10/1/14 |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C**

**4092606**

31116

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **Sample Name: QT2-5-0507-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-56** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 56 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5DUP-0002-SEDCHEM** | | | | |
| **Sample ID: 4092606-57** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 57 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5DUP-0205-SEDCHEM** | | | | |
| **Sample ID: 4092606-58** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 58 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5DUP-0507-SEDCHEM** | | | | |
| **Sample ID: 4092606-59** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 59 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5DUP-0002-SEDCHEM-AI** | | | | |
| **Sample ID: 4092606-60** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 60 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5DUP-0002-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-61** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 61 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5DUP-0205-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-62** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 62 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5DUP-0507-SEDCHEM-BI** | | | | |
| **Sample ID: 4092606-63** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 63 | |
| TOC | 27-Oct-2014 00:00 | 21-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| (signature) | 9-30-14 | FedEx | 9/30/14 |
| FedEx | 10/1/14 | (signature) | 10/1/14 |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C**

**4092606**

311116

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **Sample Name: QT2-6-GRAB-SEDCHEM** | | | | |
| **Sample ID: 4092606-64** | **Soil/Sedir** | **Sampled:22-Sep-2014 12:15** | 64 | |
| TOC | 27-Oct-2014 00:00 | 20-Oct-2014 12:15 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-7-GRAB-SEDCHEM** | | | | |
| **Sample ID: 4092606-65** | **Soil/Sedir** | **Sampled:22-Sep-2014 11:36** | 65 | |
| TOC | 27-Oct-2014 00:00 | 20-Oct-2014 11:36 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-4-0002-GS** | | | | |
| **Sample ID: 4092606-66** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:00** | 66 | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-4-0205-GS** | | | | |
| **Sample ID: 4092606-67** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:00** | 67 | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-4-0507-GS** | | | | |
| **Sample ID: 4092606-68** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:00** | 68 | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-4-0002-GS-AI** | | | | |
| **Sample ID: 4092606-69** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:00** | 69 | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-4-0002-GS-BI** | | | | |
| **Sample ID: 4092606-70** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:00** | 70 | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| *Containers Supplied:* | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| [signature] | 9-30-14 | FedEX | 9/30/14 |
| FedEX | 10/1/14 | [signature] | 10/1/14 |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C**

**4092606** 311116

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **Sample Name: QT2-4-0205-GS-BI** | | | | |
| **Sample ID: 4092606-71** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:00** | 71 | • |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-4-0507-GS-BI** | | | | |
| **Sample ID: 4092606-72** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:00** | 72 | • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:00 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5-0002-GS** | | | | |
| **Sample ID: 4092606-73** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 73 | • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5-0205-GS** | | | | |
| **Sample ID: 4092606-74** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 74 | • |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5-0507-GS** | | | | |
| **Sample ID: 4092606-75** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 75 | • |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5-0002-GS-AI** | | | | |
| **Sample ID: 4092606-76** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 76 | • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| [signature] | 9-30-14 | Fed EX | 9/30/14 |
| Fed EX | 10/1/14 | [signature] | 10/1/14 |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C**

**4092606**

31116

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **Sample Name: QT2-5-0002-GS-BI** | | | | |
| **Sample ID: 4092606-77** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 77 | • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5-0205-GS-BI** | | | | |
| **Sample ID: 4092606-78** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 78 | • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5-0507-GS-BI** | | | | |
| **Sample ID: 4092606-79** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 79 | • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5DUP-0002-GS** | | | | |
| **Sample ID: 4092606-80** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 80 | • |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5DUP-0205-GS** | | | | |
| **Sample ID: 4092606-81** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 81 | • |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5DUP-0507-GS** | | | | |
| **Sample ID: 4092606-82** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 82 | • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |

| Released By | Date | Received By | Date |
|---|---|---|---|
| [signature] | 9-30-14 | Fed EX | 9/30/14 |
| Fed EX | 10/1/14 | [signature] | 10/1/14 |

**SUBCONTRACT ORDER**

**ERDC- EL-EP-C**

**4092606** 31116

| Analysis | Due | Expires | Laboratory ID | Comments |
|---|---|---|---|---|
| **Sample Name: QT2-5DUP-0002-GS-AI** | | | | |
| **Sample ID: 4092606-83** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 83 | • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5DUP-0002-GS-BI** | | | | |
| **Sample ID: 4092606-84** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 84 | • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5DUP-0205-GS-BI** | | | | |
| **Sample ID: 4092606-85** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 85 | • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-5DUP-0507-GS-BI** | | | | |
| **Sample ID: 4092606-86** | **Soil/Sedir** | **Sampled:23-Sep-2014 11:50** | 86 | • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 23-Oct-2014 11:50 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-6-GRAB-GS** | | | | |
| **Sample ID: 4092606-87** | **Soil/Sedir** | **Sampled:22-Sep-2014 12:15** | 87 | • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 22-Oct-2014 12:15 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 22-Oct-2014 12:15 | | |
| *Containers Supplied:* | | | | |
| **Sample Name: QT2-7-GRAB-GS** | | | | |
| **Sample ID: 4092606-88** | **Soil/Sedir** | **Sampled:22-Sep-2014 11:36** | 88 | • |
| Particle Size - Hydrometer | 27-Sep-2014 00:00 | 22-Oct-2014 11:36 | | |
| Particle Size - Sieve | 27-Sep-2014 00:00 | 22-Oct-2014 11:36 | | |
| *Containers Supplied:* | | | | |

| | | | |
|---|---|---|---|
| [signature] | 9-30-14 | Fed EX | 9/30/14 |
| Released By | Date | Received By | Date |
| FedEX | 10/1/14 | [signature] | 10/1/14 |
| Released By | Date | Received By | Date |

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**Vicksburg, MS 39180-6199**

26 January 2016

Gunther Rosen
Navy -- SPAWAR
Environmental Science and Applied System Branch, 536(
San Diego, CA 92152

RE: Quantico

Enclosed are the results of analyses for samples received by the laboratory on 11-Sep-2015. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Dale Rosado, Ph. D.

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| | | |
|---|---|---|
| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360!<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | **Reported:**<br>26-Jan-2016 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| QT12-1-0002-SEDCHEM | 5091107-01 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-1-0205-SEDCHEM | 5091107-02 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-1-0507-SEDCHEM | 5091107-03 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-1-0002-SEDCHEM-AI | 5091107-04 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-1-0002-SEDCHEM-BI | 5091107-05 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-1-0205-SEDCHEM-BI | 5091107-06 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-1-0507-SEDCHEM-BI | 5091107-07 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-2-0002-SEDCHEM | 5091107-08 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-2-0205-SEDCHEM | 5091107-09 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-2-0507-SEDCHEM | 5091107-10 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-2-0002-SEDCHEM-AI | 5091107-11 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-2-0002-SEDCHEM-BI | 5091107-12 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-2-0205-SEDCHEM-BI | 5091107-13 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-2-0507-SEDCHEM-BI | 5091107-14 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-3-0002-SEDCHEM | 5091107-15 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-3-0205-SEDCHEM | 5091107-16 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-3-0507-SEDCHEM | 5091107-17 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-3-0002-SEDCHEM-AI | 5091107-18 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-3-0002-SEDCHEM-BI | 5091107-19 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-3-0205-SEDCHEM-BI | 5091107-20 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-3-0507-SEDCHEM-BI | 5091107-21 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-4-0002-SEDCHEM | 5091107-43 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-4-0205-SEDCHEM | 5091107-44 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-4-0507-SEDCHEM | 5091107-45 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-4-0002-SEDCHEM-AI | 5091107-46 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-4-0002-SEDCHEM-BI | 5091107-47 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-4-0205-SEDCHEM-BI | 5091107-48 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-4-0507-SEDCHEM-BI | 5091107-49 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-5-0002-SEDCHEM | 5091107-50 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-5-0205-SEDCHEM | 5091107-51 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-5-0507-SEDCHEM | 5091107-52 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |

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**WORK ORDER SUMMARY**

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| QT12-5-0002-SEDCHEM-AI | 5091107-53 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-5-0002-SEDCHEM-BI | 5091107-54 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-5-0205-SEDCHEM-BI | 5091107-55 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-5-0507-SEDCHEM-BI | 5091107-56 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-5DUP-0002-SEDCHEM | 5091107-57 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-5DUP-0205-SEDCHEM | 5091107-58 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-5DUP-0507-SEDCHEM | 5091107-59 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-5DUP-0002-SEDCHEM-AI | 5091107-60 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-5DUP-0002-SEDCHEM-BI | 5091107-61 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-5DUP-0205-SEDCHEM-BI | 5091107-62 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-5DUP-0507-SEDCHEM-BI | 5091107-63 | Soil/Sediment | 09-Sep-2015 | 11-Sep-2015 |
| QT12-6-GRAB-SEDCHEM | 5091107-64 | Soil/Sediment | 10-Sep-2015 | 11-Sep-2015 |
| QT12-7-GRAB-SEDCHEM | 5091107-65 | Soil/Sediment | 10-Sep-2015 | 11-Sep-2015 |

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|---|---|---|
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**Case Narrative**

For some samples, the primary and confirmation columns did not always agree within 40%. This primarily occured for 4,4-DDT. For these samples, the higher concentration was likely caused by an interference. Therefore, the lower value was reported per SW 846 guidelines.

Some samples had low recoveries for the TMX surrogate. Data was accepted based on acceptable recoveries of the decachlorobiphenyl surrogate.

| | | |
|---|---|---|
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## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| S-GC | Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate/s. |
| RPD-06 | RPD exceeds acceptance limit. |
| RPD-04 | RPD between primary and confirmation column values >40%. Per SW846 8000C, the lower result has been reported. |
| QM-11 | The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to inherent analyte concentration greater than the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits. |
| QM-08 | Spike or surrogate was inadvertently left out of this sample. |
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration. |
| H | Sample was prepped or analyzed beyond the specified holding time |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

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## QT12-1-0002-SEDCHEM

**5091107-01 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **510** | 67 | 250 | mg/Kg | | 02-Oct-2015 | WALKLEY BLACK | |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **86.9** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **20.2** | 0.07 | 0.21 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **2,4´-DDE** | **12.2** | 0.07 | 0.21 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **2,4´-DDT** | **6.23** | 0.07 | 0.21 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDD** | **60.2** | 0.07 | 0.21 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDE** | **24.5** | 0.07 | 0.21 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDT** | **9.02** | 0.07 | 0.21 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.03** | | *68.5 %* | *40-125* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.00** | | *67.5 %* | *40-130* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## QT12-1-0205-SEDCHEM

**5091107-02 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **510** | 67 | 250 | mg/Kg | | 02-Oct-2015 | WALKLEY BLACK | |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **85.6** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.98** | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| 2,4´-DDE | ND | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| **4,4´-DDD** | **4.25** | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDE** | **0.96** | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| 4,4´-DDT | ND | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.13** | | *36.5 %* | *40-125* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | *S-GC* |
| *Surrogate: Decachlorobiphenyl* | **1.82** | | *59.0 %* | *40-130* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
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# QT12-1-0507-SEDCHEM

## 5091107-03 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ARA** | | | | | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| Total Organic Carbon | ND | 67 | 250 | mg/Kg | | 02-Oct-2015 | WALKLEY BLACK | |
| **ERDC-EL-EP-C** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **86.2** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.29** | 0.07 | 0.21 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **2,4´-DDE** | **0.18** | 0.07 | 0.21 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.07 | 0.21 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| **4,4´-DDD** | **1.41** | 0.07 | 0.21 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDE** | **0.40** | 0.07 | 0.21 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDT** | **0.11** | 0.07 | 0.21 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.895** | | *29.8 %* | *40-125* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | *S-GC* |
| *Surrogate: Decachlorobiphenyl* | **1.65** | | *55.0 %* | *40-130* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | **Reported:**<br>26-Jan-2016 |

## QT12-1-0002-SEDCHEM-AI

**5091107-04 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| Total Organic Carbon | ND | 67 | 250 | mg/Kg | | 02-Oct-2015 | WALKLEY BLACK | |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **84.8** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.26** | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| 2,4´-DDE | ND | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| **4,4´-DDD** | **1.39** | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDE** | **0.24** | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| 4,4´-DDT | ND | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **ND** | | *%* | *40-125* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | *S-GC, U* |
| *Surrogate: Decachlorobiphenyl* | **1.55** | | *50.0 %* | *40-130* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
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## QT12-1-0002-SEDCHEM-BI

**5091107-05 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **1500** | 67 | 250 | mg/Kg | | 02-Oct-2015 | WALKLEY BLACK | |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **81.6** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.07 | 0.23 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.07 | 0.23 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.07 | 0.23 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.24** | 0.07 | 0.23 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| 4,4´-DDE | ND | 0.07 | 0.23 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.07 | 0.23 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.725** | | *22.8 %* | *40-125* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | *S-GC* |
| *Surrogate: Decachlorobiphenyl* | **1.67** | | *52.5 %* | *40-130* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |

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## QT12-1-0205-SEDCHEM-BI

**5091107-06 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **5200** | 67 | 250 | mg/Kg | | 02-Oct-2015 | WALKLEY BLACK | |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **74.4** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **5.52** | 0.08 | 0.25 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **2,4´-DDE** | **4.14** | 0.08 | 0.25 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| 2,4´-DDT | ND | 0.08 | 0.25 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| **4,4´-DDD** | **38.0** | 0.08 | 0.25 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDE** | **5.43** | 0.08 | 0.25 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDT** | **8.71** | 0.08 | 0.25 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.30** | | *37.4 %* | *40-125* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | *S-GC* |
| *Surrogate: Decachlorobiphenyl* | **2.01** | | *58.0 %* | *40-130* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
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## QT12-1-0507-SEDCHEM-BI

### 5091107-07 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **4200** | 67 | 250 | mg/Kg | | 02-Oct-2015 | WALKLEY BLACK | |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **73.9** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **12.6** | 0.08 | 0.25 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **2,4´-DDE** | **7.21** | 0.08 | 0.25 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| 2,4´-DDT | ND | 0.08 | 0.25 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| **4,4´-DDD** | **64.3** | 0.08 | 0.25 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDE** | **15.0** | 0.08 | 0.25 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDT** | **3.39** | 0.08 | 0.25 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.32** | | *37.5 %* | *40-125* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | *S-GC* |
| *Surrogate: Decachlorobiphenyl* | **2.47** | | *70.0 %* | *40-130* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |

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|---|---|---|
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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

# QT12-2-0002-SEDCHEM

## 5091107-08 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ARA** | | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **710** | 67 | 250 | mg/Kg | | 02-Oct-2015 | WALKLEY BLACK | |
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **85.1** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **30.2** | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **2,4´-DDE** | **15.2** | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| 2,4´-DDT | ND | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| **4,4´-DDD** | **434** | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDE** | **23.2** | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDT** | **6.25** | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.57** | | *51.5 %* | *40-125* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.16** | | *71.0 %* | *40-130* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## QT12-2-0205-SEDCHEM

**5091107-09 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| Total Organic Carbon | ND | 67 | 250 | mg/Kg | | 02-Oct-2015 | WALKLEY BLACK | |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **85.3** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **1.60** | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **2,4´-DDE** | **0.68** | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| 2,4´-DDT | ND | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| **4,4´-DDD** | **6.66** | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDE** | **0.93** | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| 4,4´-DDT | ND | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.67** | | *54.5 %* | *40-125* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.75** | | *57.0 %* | *40-130* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |

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## QT12-2-0507-SEDCHEM

**5091107-10 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| Total Organic Carbon | ND | 67 | 250 | mg/Kg | | 02-Oct-2015 | WALKLEY BLACK | |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **88.0** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.70** | 0.07 | 0.21 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **2,4´-DDE** | **0.27** | 0.07 | 0.21 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| 2,4´-DDT | ND | 0.07 | 0.21 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| **4,4´-DDD** | **2.83** | 0.07 | 0.21 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDE** | **0.39** | 0.07 | 0.21 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| 4,4´-DDT | ND | 0.07 | 0.21 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.757** | | *25.2 %* | *40-125* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | *S-GC* |
| *Surrogate: Decachlorobiphenyl* | **1.54** | | *51.5 %* | *40-130* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |

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## QT12-2-0002-SEDCHEM-AI

**5091107-11 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ARA** | | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| Total Organic Carbon | ND | 67 | 250 | mg/Kg | | 02-Oct-2015 | WALKLEY BLACK | |
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **84.4** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.35** | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| 4,4´-DDE | ND | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.557** | | *17.7 %* | *40-125* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | *S-GC* |
| *Surrogate: Decachlorobiphenyl* | **1.52** | | *48.3 %* | *40-130* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | **Reported:**<br>26-Jan-2016 |

## QT12-2-0002-SEDCHEM-BI

**5091107-12 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ARA** | | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **4800** | 67 | 250 | mg/Kg | | 02-Oct-2015 | WALKLEY BLACK | |
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **75.9** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **12.3** | 0.08 | 0.25 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **2,4´-DDE** | **6.09** | 0.08 | 0.25 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| 2,4´-DDT | ND | 0.08 | 0.25 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| **4,4´-DDD** | **59.5** | 0.08 | 0.25 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDE** | **8.23** | 0.08 | 0.25 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDT** | **2.28** | 0.08 | 0.25 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.60** | | *45.7 %* | *40-125* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.06** | | *59.0 %* | *40-130* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
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## QT12-2-0205-SEDCHEM-BI

### 5091107-13 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **8100** | 67 | 250 | mg/Kg | | 02-Oct-2015 | WALKLEY BLACK | |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **76.2** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **3.06** | 0.08 | 0.24 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **2,4´-DDE** | **1.21** | 0.08 | 0.24 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| 2,4´-DDT | ND | 0.08 | 0.24 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| **4,4´-DDD** | **14.1** | 0.08 | 0.24 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDE** | **2.50** | 0.08 | 0.24 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| 4,4´-DDT | ND | 0.08 | 0.24 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **ND** | | *%* | *40-125* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | *QM-08, U* |
| *Surrogate: Decachlorobiphenyl* | **ND** | | *%* | *40-130* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | *QM-08, U* |

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## QT12-2-0507-SEDCHEM-BI

### 5091107-14 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ARA** | | | | | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **5800** | 67 | 250 | mg/Kg | | 02-Oct-2015 | WALKLEY BLACK | |
| **ERDC-EL-EP-C** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **74.5** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **12.4** | 0.08 | 0.25 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **2,4´-DDE** | **5.39** | 0.08 | 0.25 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| 2,4´-DDT | ND | 0.08 | 0.25 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| **4,4´-DDD** | **62.1** | 0.08 | 0.25 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDE** | **14.5** | 0.08 | 0.25 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDT** | **15.5** | 0.08 | 0.25 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.83** | | *52.5 %* | *40-125* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.61** | | *46.0 %* | *40-130* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
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# QT12-3-0002-SEDCHEM

## 5091107-15 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ARA** | | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **2700** | 67 | 250 | mg/Kg | | 02-Oct-2015 | WALKLEY BLACK | |
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **75.3** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **61.9** | 0.08 | 0.24 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **2,4´-DDE** | **22.3** | 0.08 | 0.24 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| 2,4´-DDT | ND | 0.08 | 0.24 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| **4,4´-DDD** | **254** | 0.08 | 0.24 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDE** | **38.6** | 0.08 | 0.24 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDT** | **16.3** | 0.08 | 0.24 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.97** | | *57.5 %* | *40-125* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.42** | | *70.5 %* | *40-130* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |

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## QT12-3-0205-SEDCHEM

**5091107-16 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **1600** | 67 | 250 | mg/Kg | | 02-Oct-2015 | WALKLEY BLACK | |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **80.6** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **36.6** | 0.07 | 0.23 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **2,4´-DDE** | **15.8** | 0.07 | 0.23 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| 2,4´-DDT | ND | 0.07 | 0.23 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| **4,4´-DDD** | **133** | 0.07 | 0.23 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDE** | **22.6** | 0.07 | 0.23 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDT** | **13.3** | 0.07 | 0.23 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.77** | | *54.5 %* | *40-125* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.20** | | *67.5 %* | *40-130* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |

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## QT12-3-0507-SEDCHEM

### 5091107-17 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **1500** | 67 | 250 | mg/Kg | | 02-Oct-2015 | WALKLEY BLACK | |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **79.3** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **34.9** | 0.08 | 0.24 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **2,4´-DDE** | **15.1** | 0.08 | 0.24 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| 2,4´-DDT | ND | 0.08 | 0.24 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| **4,4´-DDD** | **134** | 0.08 | 0.24 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDE** | **26.3** | 0.08 | 0.24 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDT** | **30.0** | 0.08 | 0.24 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.02** | | *61.0 %* | *40-125* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.33** | | *70.5 %* | *40-130* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## QT12-3-0002-SEDCHEM-AI

**5091107-18 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **300** | 67 | 250 | mg/Kg | | 02-Oct-2015 | WALKLEY BLACK | |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **84.2** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.41** | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **2,4´-DDE** | **0.21** | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| **4,4´-DDD** | **1.75** | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDE** | **0.37** | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDT** | **0.31** | 0.07 | 0.22 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.50** | | *47.6 %* | *40-125* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.89** | | *60.0 %* | *40-130* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## QT12-3-0002-SEDCHEM-BI

**5091107-19 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ARA** | | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **1300** | 67 | 250 | mg/Kg | | 02-Oct-2015 | WALKLEY BLACK | |
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **78.5** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **42.3** | 0.08 | 0.24 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **2,4´-DDE** | **13.3** | 0.08 | 0.24 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| 2,4´-DDT | ND | 0.08 | 0.24 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| **4,4´-DDD** | **182** | 0.08 | 0.24 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDE** | **26.2** | 0.08 | 0.24 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDT** | **6.59** | 0.08 | 0.24 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.19** | | *66.0 %* | *40-125* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.24** | | *67.5 %* | *40-130* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
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## QT12-3-0205-SEDCHEM-BI

**5091107-20 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **4600** | 67 | 250 | mg/Kg | | 02-Oct-2015 | WALKLEY BLACK | |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **72.4** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **51.2** | 0.08 | 0.26 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **2,4´-DDE** | **19.1** | 0.08 | 0.26 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| 2,4´-DDT | ND | 0.08 | 0.26 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | U |
| **4,4´-DDD** | **275** | 0.08 | 0.26 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDE** | **43.4** | 0.08 | 0.26 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| **4,4´-DDT** | **10.5** | 0.08 | 0.26 | ug/kg dry | 18-Sep-2015 | 20-Oct-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.35** | | *64.5 %* | *40-125* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.90** | | *79.5 %* | *40-130* | *18-Sep-2015* | *20-Oct-2015* | *EPA 8081A* | |

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## QT12-3-0507-SEDCHEM-BI

**5091107-21 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **8300** | 67 | 250 | mg/Kg | | 09-Oct-2015 | WALKLEY BLACK | H |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **66.7** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **47.2** | 0.09 | 0.28 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| **2,4´-DDE** | **25.0** | 0.09 | 0.28 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| 2,4´-DDT | ND | 0.09 | 0.28 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | U |
| **4,4´-DDD** | **231** | 0.09 | 0.28 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| **4,4´-DDE** | **54.4** | 0.09 | 0.28 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| **4,4´-DDT** | **11.9** | 0.09 | 0.28 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.71** | | *68.5 %* | *40-125* | *23-Sep-2015* | *23-Nov-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.23** | | *56.5 %* | *40-130* | *23-Sep-2015* | *23-Nov-2015* | *EPA 8081A* | |

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## QT12-4-0002-SEDCHEM

**5091107-43 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **1000** | 67 | 250 | mg/Kg | | 09-Oct-2015 | WALKLEY BLACK | H |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **86.1** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **1.02** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| 2,4´-DDE | ND | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | U |
| **4,4´-DDD** | **4.43** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| **4,4´-DDE** | **1.13** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| **4,4´-DDT** | **0.53** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.37** | | *44.8 %* | *40-125* | *23-Sep-2015* | *23-Nov-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.62** | | *53.0 %* | *40-130* | *23-Sep-2015* | *23-Nov-2015* | *EPA 8081A* | |

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## QT12-4-0205-SEDCHEM

**5091107-44 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **1400** | 67 | 250 | mg/Kg | | 09-Oct-2015 | WALKLEY BLACK | H |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **85.0** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **1.12** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| **2,4´-DDE** | **0.56** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| 2,4´-DDT | ND | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | U |
| **4,4´-DDD** | **5.36** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| **4,4´-DDE** | **1.37** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| **4,4´-DDT** | **0.57** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.95** | | *63.0 %* | *40-125* | *23-Sep-2015* | *23-Nov-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.95** | | *63.0 %* | *40-130* | *23-Sep-2015* | *23-Nov-2015* | *EPA 8081A* | |

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## QT12-4-0507-SEDCHEM

### 5091107-45 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ARA** | | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **810** | 67 | 250 | mg/Kg | | 09-Oct-2015 | WALKLEY BLACK | H |
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **86.4** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **1.13** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| **2,4´-DDE** | **0.55** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| 2,4´-DDT | ND | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | U |
| **4,4´-DDD** | **4.73** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| **4,4´-DDE** | **1.32** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| **4,4´-DDT** | **1.32** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.46** | | *81.5 %* | *40-125* | *23-Sep-2015* | *23-Nov-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.12** | | *70.0 %* | *40-130* | *23-Sep-2015* | *23-Nov-2015* | *EPA 8081A* | |

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# QT12-4-0002-SEDCHEM-AI

## 5091107-46 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ARA** | | | | | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| Total Organic Carbon | ND | 67 | 250 | mg/Kg | | 09-Oct-2015 | WALKLEY BLACK | H |
| **ERDC-EL-EP-C** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **86.1** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.08** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | J |
| 4,4´-DDE | ND | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.23** | | *40.3 %* | *40-125* | *23-Sep-2015* | *23-Nov-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.39** | | *45.4 %* | *40-130* | *23-Sep-2015* | *23-Nov-2015* | *EPA 8081A* | |

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## QT12-4-0002-SEDCHEM-BI

**5091107-47 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **7800** | 67 | 250 | mg/Kg | | 09-Oct-2015 | WALKLEY BLACK | H |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **59.2** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **11.4** | 0.10 | 0.32 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| **2,4´-DDE** | **4.84** | 0.10 | 0.32 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| 2,4´-DDT | ND | 0.10 | 0.32 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | U |
| **4,4´-DDD** | **64.1** | 0.10 | 0.32 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| **4,4´-DDE** | **26.4** | 0.10 | 0.32 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| **4,4´-DDT** | **9.41** | 0.10 | 0.32 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.53** | | *57.0 %* | *40-125* | *23-Sep-2015* | *23-Nov-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.66** | | *82.5 %* | *40-130* | *23-Sep-2015* | *23-Nov-2015* | *EPA 8081A* | |

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## QT12-4-0205-SEDCHEM-BI

**5091107-48 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **11000** | 67 | 250 | mg/Kg | | 09-Oct-2015 | WALKLEY BLACK | H |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **54.9** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **13.9** | 0.11 | 0.34 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| 2,4´-DDE | ND | 0.11 | 0.34 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.11 | 0.34 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | U |
| **4,4´-DDD** | **73.9** | 0.11 | 0.34 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| **4,4´-DDE** | **31.9** | 0.11 | 0.34 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| **4,4´-DDT** | **4.28** | 0.11 | 0.34 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.81** | | *58.5 %* | *40-125* | *23-Sep-2015* | *23-Nov-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.86** | | *59.5 %* | *40-130* | *23-Sep-2015* | *23-Nov-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

# QT12-4-0507-SEDCHEM-BI

**5091107-49 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ARA** | | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **9900** | 67 | 250 | mg/Kg | | 09-Oct-2015 | WALKLEY BLACK | H |
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **58.1** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **17.6** | 0.10 | 0.32 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| **2,4´-DDE** | **8.91** | 0.10 | 0.32 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| **2,4´-DDT** | **0.21** | 0.10 | 0.32 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | J |
| **4,4´-DDD** | **90.6** | 0.10 | 0.32 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| **4,4´-DDE** | **27.5** | 0.10 | 0.32 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| **4,4´-DDT** | **5.09** | 0.10 | 0.32 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.39** | | *53.5 %* | *40-125* | *23-Sep-2015* | *23-Nov-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.43** | | *54.5 %* | *40-130* | *23-Sep-2015* | *23-Nov-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

# QT12-5-0002-SEDCHEM

## 5091107-50 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **940** | 67 | 250 | mg/Kg | | 09-Oct-2015 | WALKLEY BLACK | H |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **84.1** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.61** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| 2,4´-DDE | ND | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | U |
| **4,4´-DDD** | **2.36** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| **4,4´-DDE** | **1.00** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | |
| **4,4´-DDT** | **0.49** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 23-Nov-2015 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.33** | | *43.1 %* | *40-125* | *23-Sep-2015* | *23-Nov-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.71** | | *55.5 %* | *40-130* | *23-Sep-2015* | *23-Nov-2015* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## QT12-5-0205-SEDCHEM

**5091107-51 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **670** | 67 | 250 | mg/Kg | | 09-Oct-2015 | WALKLEY BLACK | H |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **84.3** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.46** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| 2,4´-DDE | ND | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | U |
| **4,4´-DDD** | **1.87** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDE** | **0.79** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDT** | **0.47** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.52** | | *48.5 %* | *40-125* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.91** | | *61.0 %* | *40-130* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## QT12-5-0507-SEDCHEM

**5091107-52 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **470** | 67 | 250 | mg/Kg | | 09-Oct-2015 | WALKLEY BLACK | H |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **84.5** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.10** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | J |
| 2,4´-DDE | ND | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.67** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDE** | **0.27** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDT** | **0.47** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.28** | | *41.4 %* | *40-125* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.70** | | *55.0 %* | *40-130* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## QT12-5-0002-SEDCHEM-AI

### 5091107-53 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **600** | 67 | 250 | mg/Kg | | 09-Oct-2015 | WALKLEY BLACK | H |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **82.1** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.89** | 0.07 | 0.23 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **2,4´-DDE** | **0.47** | 0.07 | 0.23 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| 2,4´-DDT | ND | 0.07 | 0.23 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | U |
| **4,4´-DDD** | **4.00** | 0.07 | 0.23 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDE** | **1.19** | 0.07 | 0.23 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDT** | **0.57** | 0.07 | 0.23 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.45** | | *45.5 %* | *40-125* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.93** | | *60.5 %* | *40-130* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |

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## QT12-5-0002-SEDCHEM-BI

**5091107-54 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ARA** | | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **7900** | 67 | 250 | mg/Kg | | 09-Oct-2015 | WALKLEY BLACK | H |
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **65.8** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **12.7** | 0.09 | 0.29 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **2,4´-DDE** | **8.03** | 0.09 | 0.29 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **2,4´-DDT** | **0.95** | 0.09 | 0.29 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDD** | **77.6** | 0.09 | 0.29 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDE** | **39.1** | 0.09 | 0.29 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDT** | **13.2** | 0.09 | 0.29 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.08** | | *51.5 %* | *40-125* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.48** | | *61.5 %* | *40-130* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## QT12-5-0205-SEDCHEM-BI

**5091107-55 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **7900** | 67 | 250 | mg/Kg | | 09-Oct-2015 | WALKLEY BLACK | H |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **64.8** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **35.2** | 0.09 | 0.29 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **2,4´-DDE** | **16.3** | 0.09 | 0.29 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **2,4´-DDT** | **0.75** | 0.09 | 0.29 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDD** | **125** | 0.09 | 0.29 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDE** | **37.4** | 0.09 | 0.29 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDT** | **13.5** | 0.09 | 0.29 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.21** | | *55.0 %* | *40-125* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.25** | | *56.0 %* | *40-130* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## QT12-5-0507-SEDCHEM-BI

### 5091107-56 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **8100** | 67 | 250 | mg/Kg | | 09-Oct-2015 | WALKLEY BLACK | H |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **64.2** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **70.8** | 0.09 | 0.29 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **2,4´-DDE** | **34.7** | 0.09 | 0.29 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **2,4´-DDT** | **2.25** | 0.09 | 0.29 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDD** | **788** | 0.09 | 0.29 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDE** | **70.0** | 0.09 | 0.29 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDT** | **75.0** | 0.09 | 0.29 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.51** | | *62.5 %* | *40-125* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.41** | | *60.0 %* | *40-130* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## QT12-5DUP-0002-SEDCHEM

**5091107-57 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **400** | 67 | 250 | mg/Kg | | 09-Oct-2015 | WALKLEY BLACK | H |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **85.3** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **1.80** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| 2,4´-DDE | ND | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | U |
| **4,4´-DDD** | **6.81** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDE** | **1.74** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDT** | **0.65** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.42** | | *46.0 %* | *40-125* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.29** | | *74.5 %* | *40-130* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## QT12-5DUP-0205-SEDCHEM

**5091107-58 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ARA** | | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **940** | 67 | 250 | mg/Kg | | 09-Oct-2015 | WALKLEY BLACK | H |
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **85.1** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.39** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| 2,4´-DDE | ND | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | U |
| **4,4´-DDD** | **1.55** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDE** | **0.94** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDT** | **0.45** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.48** | | *49.2 %* | *40-125* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.86** | | *61.5 %* | *40-130* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

# QT12-5DUP-0507-SEDCHEM

**5091107-59 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ARA** | | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **670** | 67 | 250 | mg/Kg | | 09-Oct-2015 | WALKLEY BLACK | H |
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **84.8** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.38** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| 2,4´-DDE | ND | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | U |
| **4,4´-DDD** | **1.41** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDE** | **0.64** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDT** | **0.40** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.69** | | *54.0 %* | *40-125* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.90** | | *61.0 %* | *40-130* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## QT12-5DUP-0002-SEDCHEM-AI

**5091107-60 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **270** | 67 | 250 | mg/Kg | | 09-Oct-2015 | WALKLEY BLACK | H |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **83.8** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.28** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **2,4´-DDE** | **0.16** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | U |
| **4,4´-DDD** | **1.06** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDE** | **0.30** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDT** | **0.36** | 0.07 | 0.22 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.03** | | *33.3 %* | *40-125* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | *S-GC* |
| *Surrogate: Decachlorobiphenyl* | **1.42** | | *45.8 %* | *40-130* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## QT12-5DUP-0002-SEDCHEM-BI

**5091107-61 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ARA** | | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **7700** | 67 | 250 | mg/Kg | | 09-Oct-2015 | WALKLEY BLACK | H |
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **62.9** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **8.32** | 0.10 | 0.30 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **2,4´-DDE** | **3.42** | 0.10 | 0.30 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **2,4´-DDT** | **0.36** | 0.10 | 0.30 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDD** | **34.8** | 0.10 | 0.30 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDE** | **14.8** | 0.10 | 0.30 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDT** | **3.88** | 0.10 | 0.30 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.48** | | *35.4 %* | *40-125* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | *S-GC* |
| *Surrogate: Decachlorobiphenyl* | **1.93** | | *46.1 %* | *40-130* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |

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## QT12-5DUP-0205-SEDCHEM-BI

**5091107-62 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ARA** | | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **8500** | 67 | 250 | mg/Kg | | 09-Oct-2015 | WALKLEY BLACK | H |
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **63.1** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **40.5** | 0.09 | 0.30 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **2,4´-DDE** | **16.9** | 0.09 | 0.30 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **2,4´-DDT** | **0.84** | 0.09 | 0.30 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDD** | **177** | 0.09 | 0.30 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDE** | **47.6** | 0.09 | 0.30 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDT** | **10.6** | 0.09 | 0.30 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.87** | | *69.0 %* | *40-125* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.58** | | *62.0 %* | *40-130* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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## QT12-5DUP-0507-SEDCHEM-BI

**5091107-63 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ARA** | | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **9000** | 67 | 250 | mg/Kg | | 09-Oct-2015 | WALKLEY BLACK | H |
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **62.8** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **45.8** | 0.09 | 0.30 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **2,4´-DDE** | **22.6** | 0.09 | 0.30 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **2,4´-DDT** | **0.85** | 0.09 | 0.30 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDD** | **550** | 0.09 | 0.30 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDE** | **45.2** | 0.09 | 0.30 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDT** | **24.4** | 0.09 | 0.30 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.58** | | *62.0 %* | *40-125* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.42** | | *58.0 %* | *40-130* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| Navy -- SPAWAR | Project: Quantico | |
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# QT12-6-GRAB-SEDCHEM

**5091107-64 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **7500** | 67 | 250 | mg/Kg | | 09-Oct-2015 | WALKLEY BLACK | H |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **38.5** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.16 | 0.49 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.20** | 0.16 | 0.49 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.16 | 0.49 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | U |
| **4,4´-DDD** | **8.97** | 0.16 | 0.49 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDE** | **5.72** | 0.16 | 0.49 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDT** | **2.98** | 0.16 | 0.49 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.49** | | *51.0 %* | *40-125* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **5.21** | | *76.0 %* | *40-130* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |

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| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## QT12-7-GRAB-SEDCHEM

### 5091107-65 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ARA** | | | | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **8600** | 67 | 250 | mg/Kg | | 09-Oct-2015 | WALKLEY BLACK | H |
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **36.7** | 0.500 | 0.500 | % Solids | 20-Oct-2015 | 20-Oct-2015 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **2.85** | 0.16 | 0.50 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| 2,4´-DDE | ND | 0.16 | 0.50 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.16 | 0.50 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | U |
| **4,4´-DDD** | **13.6** | 0.16 | 0.50 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDE** | **7.71** | 0.16 | 0.50 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| **4,4´-DDT** | **2.75** | 0.16 | 0.50 | ug/kg dry | 23-Sep-2015 | 27-Nov-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **4.31** | | *61.5 %* | *40-125* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **5.64** | | *80.5 %* | *40-130* | *23-Sep-2015* | *27-Nov-2015* | *EPA 8081A* | |

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|---|---|---|
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| Environmental Science and Applied System Branch, 5360! | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC-EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B510014 - EPA 3545** | | | | | | | | | | | |
| **Blank (B510014-BLK1)** | | | | | Prepared: 18-Sep-2015 Analyzed: 20-Oct-2015 | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ug/kg wet | | | | | | | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ug/kg wet | | | | | | | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ug/kg wet | | | | | | | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ug/kg wet | | | | | | | U |
| 4,4´-DDE | ND | 0.06 | 0.19 | ug/kg wet | | | | | | | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ug/kg wet | | | | | | | U |
| **LCS (B510014-BS1)** | | | | | Prepared: 18-Sep-2015 Analyzed: 20-Oct-2015 | | | | | | |
| 2,4´-DDD | 4.3 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 64.0 | 40-125 | | | |
| 2,4´-DDE | 4.5 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 68.2 | 40-125 | | | |
| 2,4´-DDT | 4.4 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 66.0 | 40-125 | | | |
| 4,4´-DDD | 4.7 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 70.0 | 40-125 | | | |
| 4,4´-DDE | 4.6 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 68.8 | 40-125 | | | |
| 4,4´-DDT | 4.5 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 67.2 | 45-125 | | | |
| **LCS Dup (B510014-BSD1)** | | | | | Prepared: 18-Sep-2015 Analyzed: 20-Oct-2015 | | | | | | |
| 2,4´-DDD | 3.9 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 58.4 | 40-125 | 9.15 | 30 | |
| 2,4´-DDE | 3.5 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 52.6 | 40-125 | 25.8 | 30 | |
| 2,4´-DDT | 3.5 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 53.0 | 40-125 | 21.8 | 30 | |
| 4,4´-DDD | 3.8 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 56.8 | 40-125 | 20.8 | 30 | |
| 4,4´-DDE | 3.4 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 51.4 | 40-125 | 29.0 | 30 | |
| 4,4´-DDT | 3.6 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 54.4 | 45-125 | 21.1 | 30 | |
| **Matrix Spike (B510014-MS1)** | **Source: 5091107-06** | | | | Prepared: 02-Oct-2015 Analyzed: 30-Nov-2015 | | | | | | |
| 2,4´-DDD | 99.3 | 0.12 | 0.37 | ug/kg dry | 13.04 | 5.5 | 720 | 40-125 | | | |
| 2,4´-DDE | 18.6 | 0.12 | 0.37 | ug/kg dry | 13.04 | 4.1 | 111 | 40-125 | | | |
| 2,4´-DDT | 2.7 | 0.12 | 0.37 | ug/kg dry | 13.04 | ND | 20.7 | 40-125 | | | |
| 4,4´-DDD | 322 | 0.12 | 0.37 | ug/kg dry | 13.04 | 38.0 | NR | 40-125 | | | QM-11 |
| 4,4´-DDE | 65.4 | 0.12 | 0.37 | ug/kg dry | 13.04 | 5.4 | 460 | 40-125 | | | |
| 4,4´-DDT | 34.7 | 0.12 | 0.37 | ug/kg dry | 13.04 | 8.7 | 199 | 45-125 | | | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC-EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B510014 - EPA 3545** | | | | | | | | | | | |
| **Matrix Spike Dup (B510014-MSD1)** | | **Source: 5091107-06** | | | Prepared: 02-Oct-2015 Analyzed: 30-Nov-2015 | | | | | | |
| 2,4´-DDD | 29.0 | 0.12 | 0.37 | ug/kg dry | 12.81 | 5.5 | 183 | 40-125 | 110 | 30 | |
| 2,4´-DDE | 17.5 | 0.12 | 0.37 | ug/kg dry | 12.81 | 4.1 | 104 | 40-125 | 5.88 | 30 | |
| 2,4´-DDT | 11.6 | 0.12 | 0.37 | ug/kg dry | 12.81 | ND | 90.4 | 40-125 | 124 | 30 | |
| 4,4´-DDD | 122 | 0.12 | 0.37 | ug/kg dry | 12.81 | 38.0 | 656 | 40-125 | 90.0 | 30 | |
| 4,4´-DDE | 42.5 | 0.12 | 0.37 | ug/kg dry | 12.81 | 5.4 | 290 | 40-125 | 42.4 | 30 | |
| 4,4´-DDT | 21.9 | 0.12 | 0.37 | ug/kg dry | 12.81 | 8.7 | 103 | 45-125 | 45.3 | 30 | |
| **Batch B510038 - EPA 3545** | | | | | | | | | | | |
| **Blank (B510038-BLK1)** | | | | | Prepared: 23-Sep-2015 Analyzed: 27-Nov-2015 | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ug/kg wet | | | | | | | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ug/kg wet | | | | | | | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ug/kg wet | | | | | | | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ug/kg wet | | | | | | | U |
| 4,4´-DDE | ND | 0.06 | 0.19 | ug/kg wet | | | | | | | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ug/kg wet | | | | | | | U |
| **Blank (B510038-BLK2)** | | | | | Prepared: 23-Sep-2015 Analyzed: 27-Nov-2015 | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ug/kg wet | | | | | | | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ug/kg wet | | | | | | | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ug/kg wet | | | | | | | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ug/kg wet | | | | | | | U |
| 4,4´-DDE | ND | 0.06 | 0.19 | ug/kg wet | | | | | | | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ug/kg wet | | | | | | | U |
| **LCS (B510038-BS2)** | | | | | Prepared: 23-Sep-2015 Analyzed: 27-Nov-2015 | | | | | | |
| 2,4´-DDD | 4.3 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 64.0 | 40-125 | | | |
| 2,4´-DDE | 4.7 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 70.2 | 40-125 | | | |
| 2,4´-DDT | 4.9 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 73.6 | 40-125 | | | |
| 4,4´-DDD | 4.7 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 70.0 | 40-125 | | | |
| 4,4´-DDE | 4.7 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 71.0 | 40-125 | | | |
| 4,4´-DDT | 4.7 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 70.6 | 45-125 | | | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC-EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B510038 - EPA 3545** | | | | | | | | | | | |
| **LCS (B510038-BS3)** | | | | | Prepared: 23-Sep-2015 Analyzed: 27-Nov-2015 | | | | | | |
| 2,4´-DDD | 4.3 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 64.8 | 40-125 | | | |
| 2,4´-DDE | 4.2 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 62.8 | 40-125 | | | |
| 2,4´-DDT | 4.8 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 72.6 | 40-125 | | | |
| 4,4´-DDD | 4.6 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 69.0 | 40-125 | | | |
| 4,4´-DDE | 4.4 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 66.4 | 40-125 | | | |
| 4,4´-DDT | 4.6 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 69.0 | 45-125 | | | |
| **LCS Dup (B510038-BSD2)** | | | | | Prepared: 23-Sep-2015 Analyzed: 27-Nov-2015 | | | | | | |
| 2,4´-DDD | 4.7 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 71.2 | 40-125 | 10.7 | 30 | |
| 2,4´-DDE | 4.9 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 73.6 | 40-125 | 4.73 | 30 | |
| 2,4´-DDT | 5.3 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 79.2 | 40-125 | 7.33 | 30 | |
| 4,4´-DDD | 4.9 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 73.4 | 40-125 | 4.74 | 30 | |
| 4,4´-DDE | 4.9 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 73.8 | 40-125 | 3.87 | 30 | |
| 4,4´-DDT | 5.1 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 76.2 | 45-125 | 7.63 | 30 | |
| **LCS Dup (B510038-BSD3)** | | | | | Prepared: 23-Sep-2015 Analyzed: 27-Nov-2015 | | | | | | |
| 2,4´-DDD | 4.3 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 64.6 | 40-125 | 0.309 | 30 | |
| 2,4´-DDE | 4.2 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 63.6 | 40-125 | 1.27 | 30 | |
| 2,4´-DDT | 4.6 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 68.6 | 40-125 | 5.67 | 30 | |
| 4,4´-DDD | 4.5 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 67.4 | 40-125 | 2.35 | 30 | |
| 4,4´-DDE | 4.3 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 64.4 | 40-125 | 3.06 | 30 | |
| 4,4´-DDT | 4.6 | 0.06 | 0.19 | ug/kg wet | 6.667 | | 68.6 | 45-125 | 0.581 | 30 | |
| **Matrix Spike (B510038-MS1)** | | **Source: 5091107-45** | | | Prepared: 23-Sep-2015 Analyzed: 27-Nov-2015 | | | | | | |
| 2,4´-DDD | 9.4 | 0.10 | 0.32 | ug/kg dry | 11.15 | 1.1 | 74.4 | 40-125 | | | |
| 2,4´-DDE | 8.8 | 0.10 | 0.32 | ug/kg dry | 11.15 | 0.6 | 74.3 | 40-125 | | | |
| 2,4´-DDT | 8.9 | 0.10 | 0.32 | ug/kg dry | 11.15 | ND | 79.8 | 40-125 | | | |
| 4,4´-DDD | 14.2 | 0.10 | 0.32 | ug/kg dry | 11.15 | 4.7 | 85.0 | 40-125 | | | |
| 4,4´-DDE | 10.7 | 0.10 | 0.32 | ug/kg dry | 11.15 | 1.3 | 84.4 | 40-125 | | | |
| 4,4´-DDT | 10.5 | 0.10 | 0.32 | ug/kg dry | 11.15 | 1.3 | 82.3 | 45-125 | | | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC-EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B510038 - EPA 3545** | | | | | | | | | | | |
| **Matrix Spike (B510038-MS2)** | | **Source: 5091107-59** | | | Prepared: 23-Sep-2015 Analyzed: 27-Nov-2015 | | | | | | |
| 2,4´-DDD | 8.2 | 0.11 | 0.33 | ug/kg dry | 11.57 | 0.4 | 67.7 | 40-125 | | | |
| 2,4´-DDE | 7.7 | 0.11 | 0.33 | ug/kg dry | 11.57 | ND | 66.6 | 40-125 | | | |
| 2,4´-DDT | 8.5 | 0.11 | 0.33 | ug/kg dry | 11.57 | ND | 73.2 | 40-125 | | | |
| 4,4´-DDD | 10.7 | 0.11 | 0.33 | ug/kg dry | 11.57 | 1.4 | 80.2 | 40-125 | | | |
| 4,4´-DDE | 9.9 | 0.11 | 0.33 | ug/kg dry | 11.57 | 0.6 | 79.9 | 40-125 | | | |
| 4,4´-DDT | 8.8 | 0.11 | 0.33 | ug/kg dry | 11.57 | 0.4 | 72.3 | 45-125 | | | |
| **Matrix Spike Dup (B510038-MSD1)** | | **Source: 5091107-45** | | | Prepared: 23-Sep-2015 Analyzed: 27-Nov-2015 | | | | | | |
| 2,4´-DDD | 9.7 | 0.10 | 0.31 | ug/kg dry | 11.02 | 1.1 | 77.9 | 40-125 | 3.02 | 30 | |
| 2,4´-DDE | 9.3 | 0.10 | 0.31 | ug/kg dry | 11.02 | 0.6 | 79.2 | 40-125 | 4.97 | 30 | |
| 2,4´-DDT | 8.9 | 0.10 | 0.31 | ug/kg dry | 11.02 | ND | 80.6 | 40-125 | 0.152 | 30 | |
| 4,4´-DDD | 20.0 | 0.10 | 0.31 | ug/kg dry | 11.02 | 4.7 | 138 | 40-125 | 33.6 | 30 | RPD-06 |
| 4,4´-DDE | 10.9 | 0.10 | 0.31 | ug/kg dry | 11.02 | 1.3 | 87.0 | 40-125 | 1.72 | 30 | |
| 4,4´-DDT | 9.8 | 0.10 | 0.31 | ug/kg dry | 11.02 | 1.3 | 77.0 | 45-125 | 6.83 | 30 | |
| **Matrix Spike Dup (B510038-MSD2)** | | **Source: 5091107-59** | | | Prepared: 23-Sep-2015 Analyzed: 27-Nov-2015 | | | | | | |
| 2,4´-DDD | 8.8 | 0.11 | 0.33 | ug/kg dry | 11.53 | 0.4 | 73.1 | 40-125 | 6.94 | 30 | |
| 2,4´-DDE | 9.1 | 0.11 | 0.33 | ug/kg dry | 11.53 | ND | 78.8 | 40-125 | 16.4 | 30 | |
| 2,4´-DDT | 9.5 | 0.11 | 0.33 | ug/kg dry | 11.53 | ND | 82.4 | 40-125 | 11.4 | 30 | |
| 4,4´-DDD | 11.0 | 0.11 | 0.33 | ug/kg dry | 11.53 | 1.4 | 83.0 | 40-125 | 2.59 | 30 | |
| 4,4´-DDE | 10.4 | 0.11 | 0.33 | ug/kg dry | 11.53 | 0.6 | 84.5 | 40-125 | 4.85 | 30 | |
| 4,4´-DDT | 9.1 | 0.11 | 0.33 | ug/kg dry | 11.53 | 0.4 | 75.7 | 45-125 | 4.00 | 30 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## WALKLEY_BLACK Organic Carbon, Total (TOC) - Quality Control

## ARA

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 155607 -** | | | | | | | | | | | |
| **LCS (180-1556071)** | | | | | Prepared: Analyzed: 02-Oct-2015 | | | | | | |
| Total Organic Carbon | 495000 | 67 | 250 | mg/Kg | 471000 | | 105 | 80-120 | | | |
| **MB (180-1556072)** | | | | | Prepared: Analyzed: 02-Oct-2015 | | | | | | |
| Total Organic Carbon | ND | 67 | 250 | mg/Kg | | | | - | | | |
| **DU (180-48101-12DU)** | | **Source: 180-48101-12** | | | Prepared: Analyzed: 02-Oct-2015 | | | | | | |
| Total Organic Carbon | 3950 | 67 | 250 | mg/Kg | | 4800 | | - | 19 | 20 | |
| **Batch 156461 -** | | | | | | | | | | | |
| **LCS (180-1564611)** | | | | | Prepared: Analyzed: 09-Oct-2015 | | | | | | |
| Total Organic Carbon | 494000 | 67 | 250 | mg/Kg | 471000 | | 105 | 80-120 | | | |
| **MB (180-1564612)** | | | | | Prepared: Analyzed: 09-Oct-2015 | | | | | | |
| Total Organic Carbon | ND | 67 | 250 | mg/Kg | | | | - | | | |
| **DU (180-48102-14DU)** | | **Source: 180-48102-14** | | | Prepared: Analyzed: 09-Oct-2015 | | | | | | |
| Total Organic Carbon | 9880 | 67 | 250 | mg/Kg | | 8100 | | - | 19 | 20 | |
| **Batch 156463 -** | | | | | | | | | | | |
| **LCS (180-1564631)** | | | | | Prepared: Analyzed: 09-Oct-2015 | | | | | | |
| Total Organic Carbon | 497000 | 67 | 250 | mg/Kg | 471000 | | 106 | 80-120 | | | |
| **MB (180-1564632)** | | | | | Prepared: Analyzed: 09-Oct-2015 | | | | | | |
| Total Organic Carbon | ND | 67 | 250 | mg/Kg | | | | - | | | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

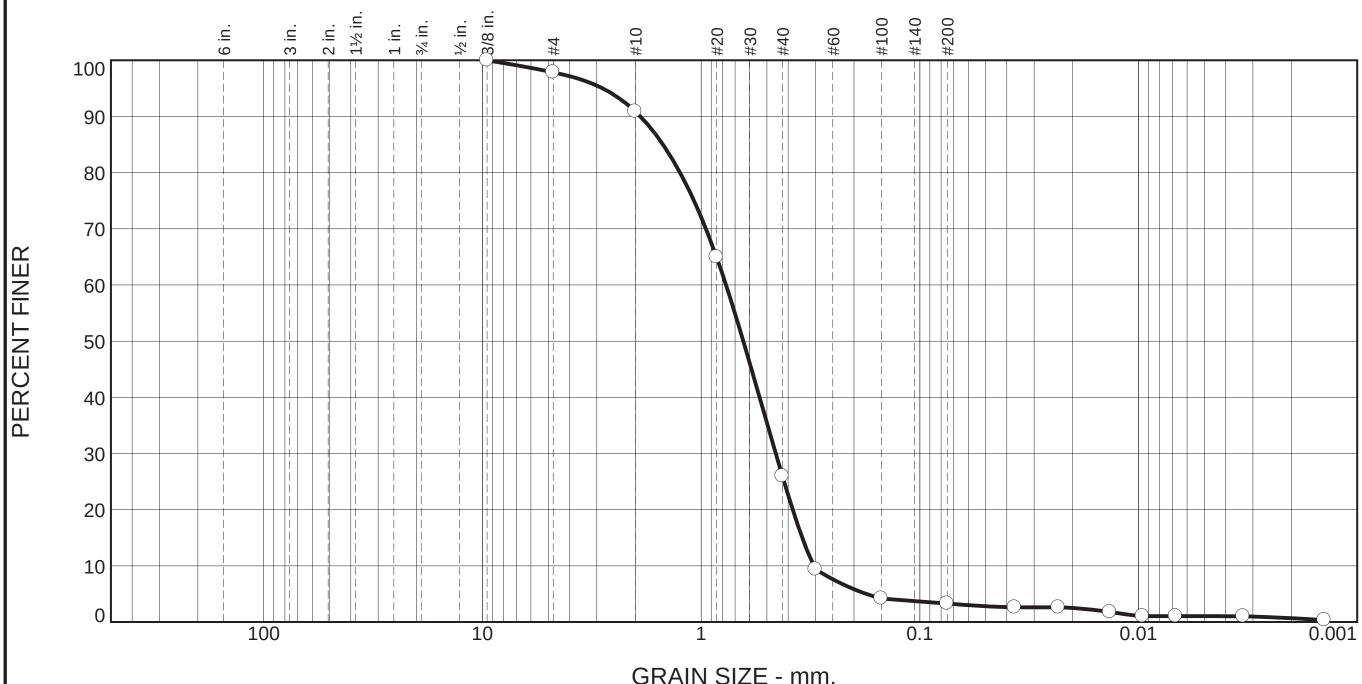
## Items for Project Manager Review

| LabNumber | Analysis | Analyte | Exception |
|---|---|---|---|
| | | | Data included from: W:\TransferIn\5091107 TRANSFER 03 Dec 2015 0952.mdb |
| | | | Data included from: W:\TransferIn\5091107 TRANSFER 03 Dec 2015 1541.mdb |
| | | | Data included from: W:\TransferIn\5091107 TRANSFER 03 Dec 2015 1547.mdb |

Sample ID Key For 14-Month Grain Size Samples

| Sample Name | Location ID |
|---|---|
| QT12-1-0002-GS | 34390-22 |
| QT12-1-0205-GS | 34390-23 |
| QT12-1-0507-GS | 34391-01 |
| QT12-1-0002-GS-AI | 34391-02 |
| QT12-1-0002-GS-BI | 34391-03 |
| QT12-1-0205-GS-BI | 34391-04 |
| QT12-1-0507-GS-BI | 34391-05 |
| QT12-2-0002-GS | 34391-06 |
| QT12-2-0205-GS | 34391-07 |
| QT12-2-0507-GS | 34391-08 |
| QT12-2-0002-GS-AI | 34391-09 |
| QT12-2-0002-GS-BI | 34391-10 |
| QT12-2-0205-GS-BI | 34391-11 |
| QT12-2-0507-GS-BI | 34391-12 |
| QT12-3-0002-GS | 34391-13 |
| QT12-3-0205-GS | 34391-14 |
| QT12-3-0507-GS | 34391-15 |
| QT12-3-0002-GS-AI | 34391-16 |
| QT12-3-0002-GS-BI | 34392-01 |
| QT12-3-0205-GS-BI | 34392-02 |
| QT12-3-0507-GS-BI | 34392-03 |
| QT12-4-0002-GS | 34393-04 |
| QT12-4-0205-GS | 34393-05 |
| QT12-4-0507-GS | 34393-06 |
| QT12-4-0002-GS-AI | 34393-07 |
| QT12-4-0205-GS-BI | 34393-08 |
| QT12-4-0507-GS-BI | 34393-09 |
| QT12-4-0002-GS-BI | 34393-10 |
| QT12-5-0002-GS | 34393-11 |
| QT12-5-0205-GS | 34393-12 |
| QT12-5-0507-GS | 34393-13 |
| QT12-5-0002-GS-AI | 34393-14 |
| QT12-5-0002-GS-BI | 34393-15 |
| QT12-5-0205-GS-BI | 34393-16 |
| QT12-5-0507-GS-BI | 34393-17 |
| QT12-5DUP-0002-GS | 34395-01 |
| QT12-5DUP-0205-GS | 34395-02 |
| QT12-5DUP-0507-GS | 34395-03 |
| QT12-5DUP-0002-GS-AI | 34395-04 |
| QT12-5DUP-0002-GS-BI | 34395-05 |
| QT12-5DUP-0205-GS-BI | 34395-06 |
| QT12-5DUP-0507-GS-BI | 34395-07 |
| QT12-6-GRAB-GS | 34395-08 |
| QT12-7-GRAB-GS | 34395-09 |

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 2.2 | 6.9 | 64.9 | 22.7 | 2.3 | 1.0 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 97.8 | | |
| #10 | 90.9 | | |
| #20 | 65.0 | | |
| #40 | 26.0 | | |
| #50 | 9.4 | | |
| #100 | 4.2 | | |
| #200 | 3.3 | | |
| 0.0368 mm. | 2.6 | | |
| 0.0233 mm. | 2.6 | | |
| 0.0135 mm. | 1.8 | | |
| 0.0096 mm. | 1.0 | | |
| 0.0068 mm. | 1.0 | | |
| 0.0033 mm. | 1.0 | | |
| 0.0014 mm. | 0.4 | | |

* (no specification provided)

**Material Description**

Poorly graded sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SP **AASHTO (M 145)=**

**Coefficients**

| | | |
|---|---|---|
| $D_{90}$= 1.8974 | $D_{85}$= 1.4942 | $D_{60}$= 0.7695 |
| $D_{50}$= 0.6412 | $D_{30}$= 0.4558 | $D_{15}$= 0.3451 |
| $D_{10}$= 0.3054 | $C_u$= 2.52 | $C_c$= 0.88 |

**Remarks**

**Date Received:** 9-25-15 **Date Tested:** 10-13-15

**Tested By:** Ted Moody

**Checked By:** Jeff Young

**Title:** Lab Manager

**Location:** 34390-22
**Sample Number:** 15-1154

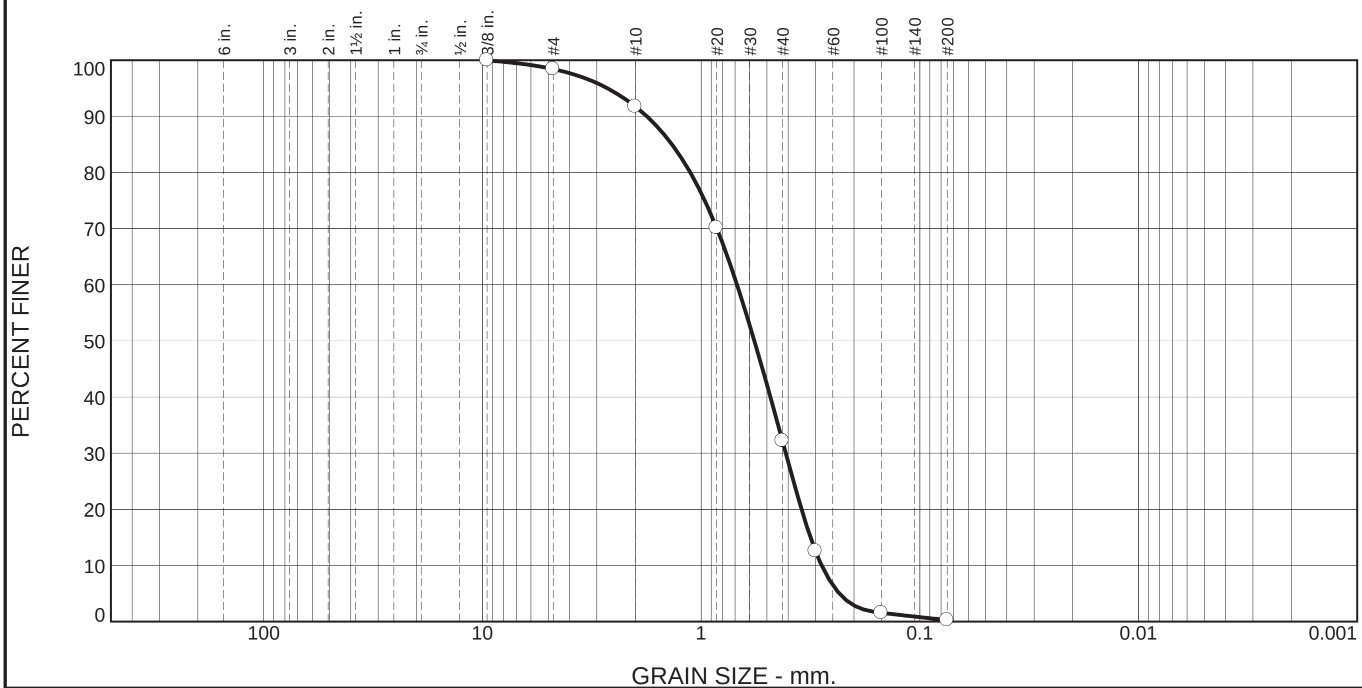
**Date Sampled:** 9-9-15

CONSULTING TESTING INSPECTION JTC inc. GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 045

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.6 | 6.6 | 59.6 | 31.9 | 0.3 | |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 98.4 | | |
| #10 | 91.8 | | |
| #20 | 70.2 | | |
| #40 | 32.2 | | |
| #50 | 12.6 | | |
| #100 | 1.6 | | |
| #200 | 0.3 | | |

* (no specification provided)

**Material Description**

Poorly graded sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SP **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 1.7705 $D_{85}$= 1.3587 $D_{60}$= 0.6852
$D_{50}$= 0.5708 $D_{30}$= 0.4103 $D_{15}$= 0.3163
$D_{10}$= 0.2811 $C_u$= 2.44 $C_c$= 0.87

**Remarks**

**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

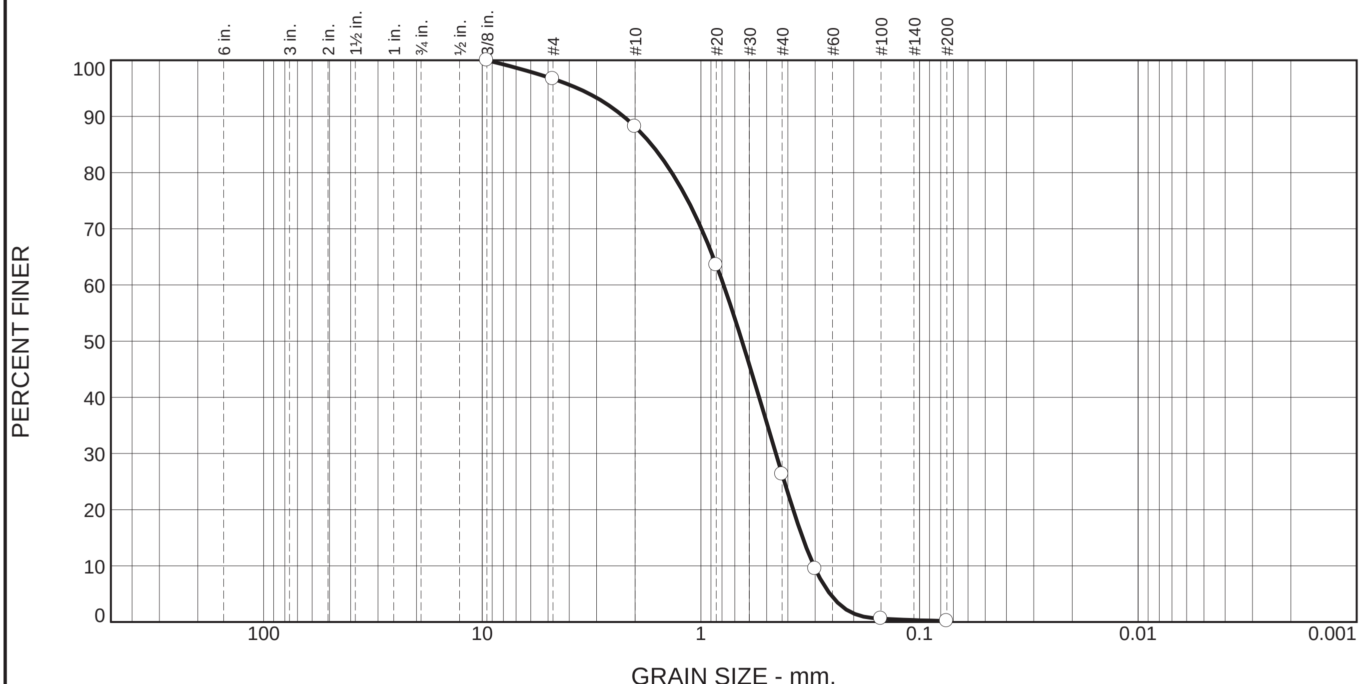
**Location:** 34390-23
**Sample Number:** 15-1155
**Date Sampled:** 9-9-15

CONSULTING TESTING INSPECTION JTC inc. GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 046

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 3.3 | 8.5 | 61.9 | 26.1 | 0.2 | |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 96.7 | | |
| #10 | 88.2 | | |
| #20 | 63.5 | | |
| #40 | 26.3 | | |
| #50 | 9.5 | | |
| #100 | 0.6 | | |
| #200 | 0.2 | | |

* (no specification provided)

**Material Description**

Poorly graded sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SP **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 2.2564 $D_{85}$= 1.6821 $D_{60}$= 0.7876
$D_{50}$= 0.6481 $D_{30}$= 0.4539 $D_{15}$= 0.3423
$D_{10}$= 0.3042 $C_u$= 2.59 $C_c$= 0.86

**Remarks**

**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

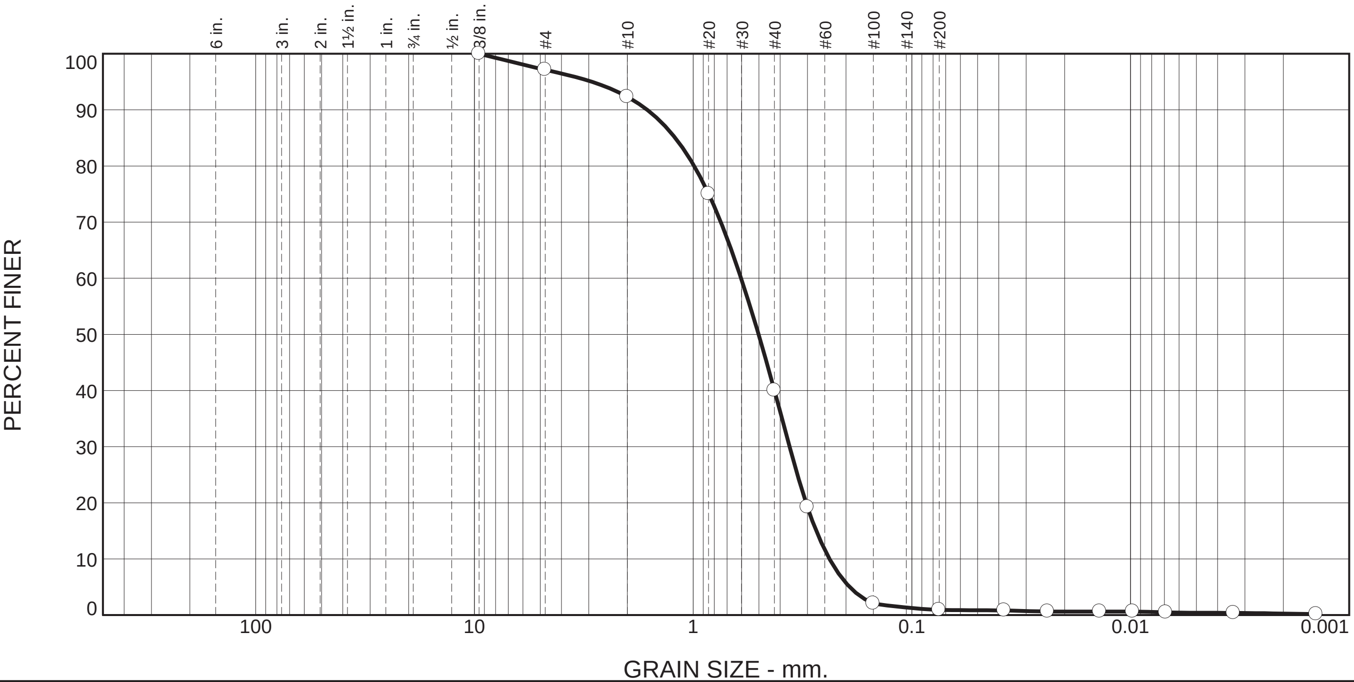
**Location:** 34391-1
**Sample Number:** 15-1156
**Date Sampled:** 9-9-15

CONSULTING TESTING INSPECTION JTC inc. GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 047

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 2.9 | 4.8 | 52.3 | 39.1 | 0.5 | 0.4 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 97.1 | | |
| #10 | 92.3 | | |
| #20 | 75.1 | | |
| #40 | 40.0 | | |
| #50 | 19.2 | | |
| #100 | 2.1 | | |
| #200 | 0.9 | | |
| 0.0378 mm. | 0.8 | | |
| 0.0239 mm. | 0.6 | | |
| 0.0138 mm. | 0.6 | | |
| 0.0098 mm. | 0.6 | | |
| 0.0069 mm. | 0.5 | | |
| 0.0034 mm. | 0.4 | | |
| 0.0014 mm. | 0.2 | | |

* (no specification provided)

**Material Description**

Poorly graded sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SP **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 1.6201 $D_{85}$= 1.2068 $D_{60}$= 0.6035
$D_{50}$= 0.5020 $D_{30}$= 0.3623 $D_{15}$= 0.2735
$D_{10}$= 0.2379 $C_u$= 2.54 $C_c$= 0.91

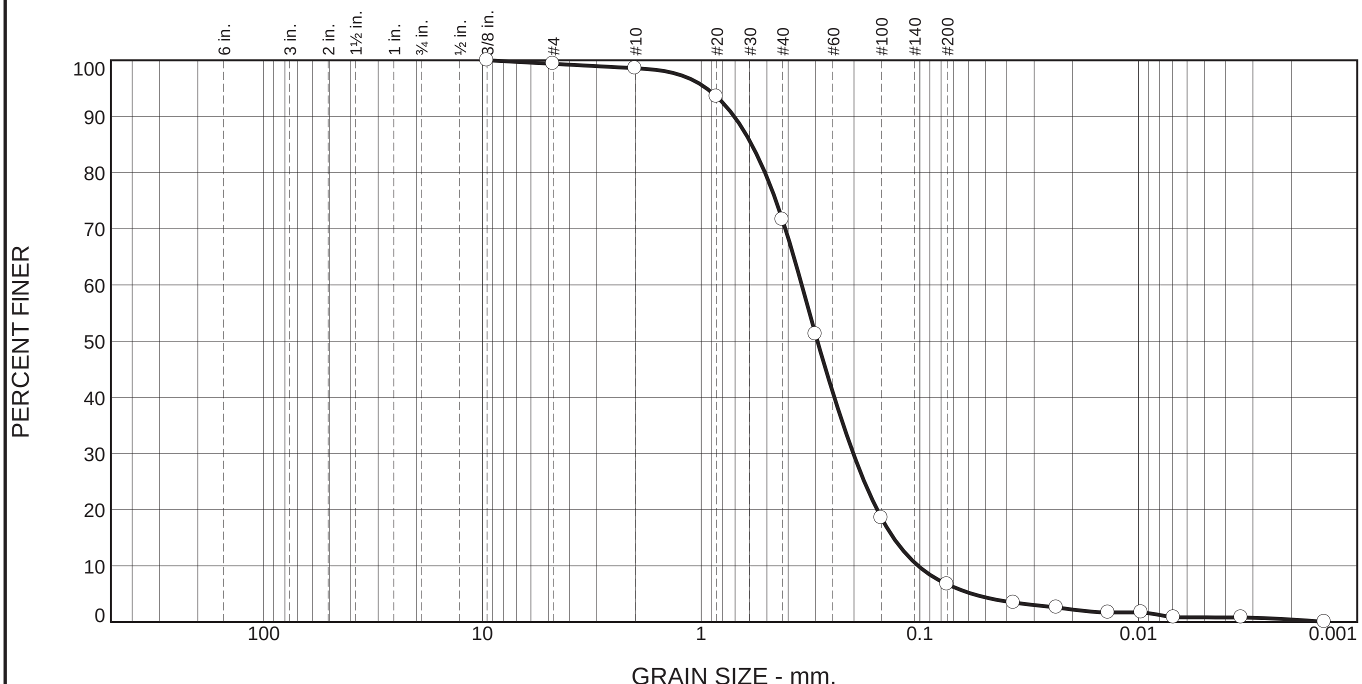
**Remarks**

**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34391-2
**Sample Number:** 15-1157
**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing
**Project No:** 15-25-006 **Figure** 048

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.6 | 0.8 | 27.0 | 64.9 | 5.9 | 0.8 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 99.4 | | |
| #10 | 98.6 | | |
| #20 | 93.5 | | |
| #40 | 71.6 | | |
| #50 | 51.2 | | |
| #100 | 18.6 | | |
| #200 | 6.7 | | |
| 0.0373 mm. | 3.5 | | |
| 0.0237 mm. | 2.6 | | |
| 0.0137 mm. | 1.7 | | |
| 0.0097 mm. | 1.7 | | |
| 0.0069 mm. | 0.8 | | |
| 0.0034 mm. | 0.8 | | |
| 0.0014 mm. | 0.0 | | |

* (no specification provided)

**Material Description**

Poorly graded sand with silt

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SP-SM **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.7058 $D_{85}$= 0.5871 $D_{60}$= 0.3467
$D_{50}$= 0.2938 $D_{30}$= 0.2014 $D_{15}$= 0.1320
$D_{10}$= 0.1018 $C_u$= 3.41 $C_c$= 1.15

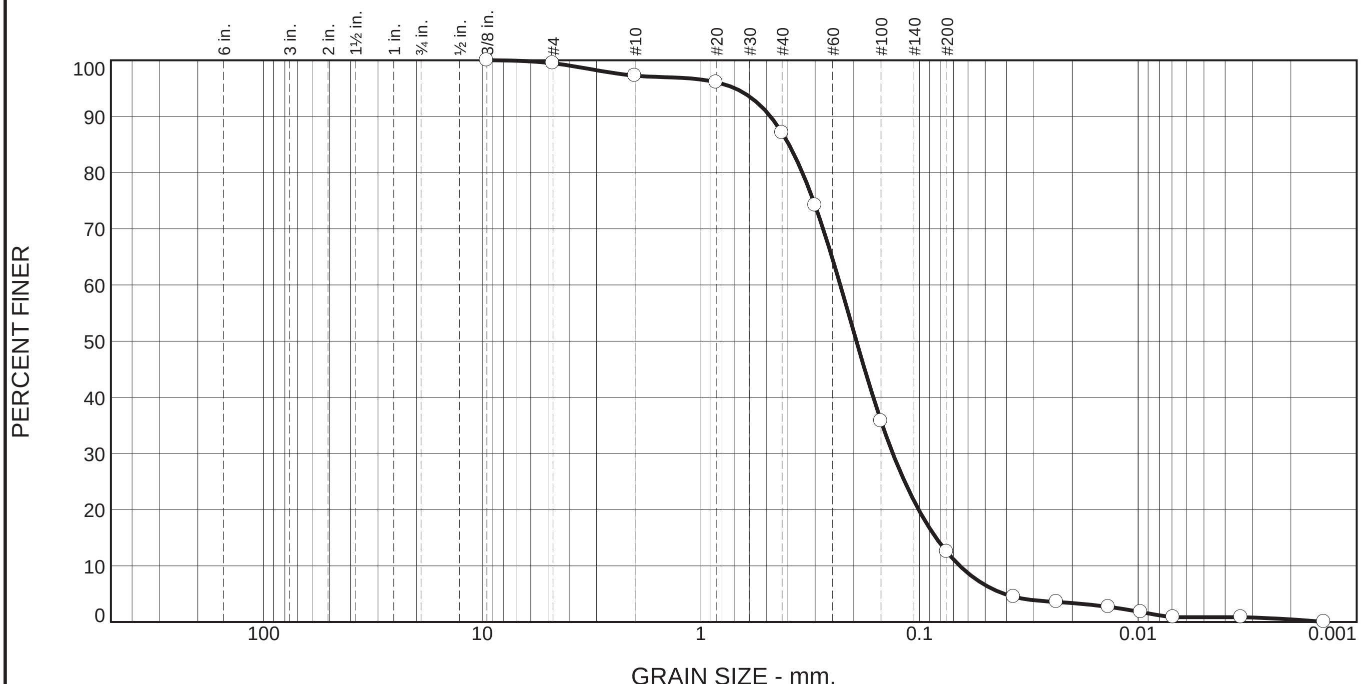
**Remarks**

**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34391-3
**Sample Number:** 15-1158
**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing
**Project No:** 15-25-006 **Figure** 049

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.5 | 2.2 | 10.2 | 74.6 | 11.6 | 0.9 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 99.5 | | |
| #10 | 97.3 | | |
| #20 | 96.1 | | |
| #40 | 87.1 | | |
| #50 | 74.2 | | |
| #100 | 35.8 | | |
| #200 | 12.5 | | |
| 0.0370 mm. | 4.5 | | |
| 0.0236 mm. | 3.6 | | |
| 0.0137 mm. | 2.7 | | |
| 0.0097 mm. | 1.8 | | |
| 0.0069 mm. | 0.9 | | |
| 0.0034 mm. | 0.9 | | |
| 0.0014 mm. | 0.0 | | |

* (no specification provided)

**Material Description**

Poorly graded sand with silt

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SP-SM **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.4805 $D_{85}$= 0.3958 $D_{60}$= 0.2304
$D_{50}$= 0.1942 $D_{30}$= 0.1324 $D_{15}$= 0.0840
$D_{10}$= 0.0653 $C_u$= 3.53 $C_c$= 1.16

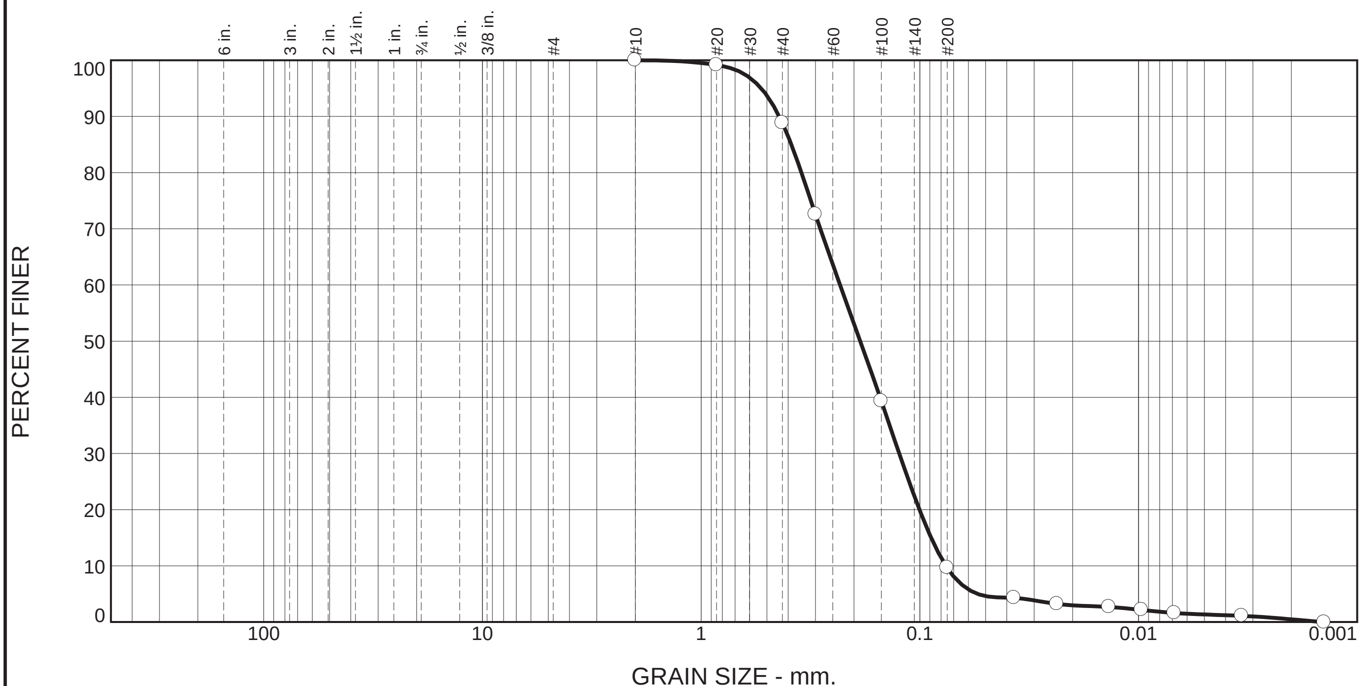
**Remarks**

**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34391-4
**Sample Number:** 15-1159
**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing
**Project No:** 15-25-006 **Figure** 050

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 11.2 | 79.1 | 8.4 | 1.3 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #10 | 100.0 | | |
| #20 | 99.1 | | |
| #40 | 88.8 | | |
| #50 | 72.6 | | |
| #100 | 39.4 | | |
| #200 | 9.7 | | |
| 0.0371 mm. | 4.3 | | |
| 0.0236 mm. | 3.2 | | |
| 0.0136 mm. | 2.7 | | |
| 0.0097 mm. | 2.1 | | |
| 0.0069 mm. | 1.6 | | |
| 0.0034 mm. | 1.1 | | |
| 0.0014 mm. | | | |

* (no specification provided)

**Material Description**

Poorly graded sand with silt

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SP-SM **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.4393 $D_{85}$= 0.3870 $D_{60}$= 0.2316
$D_{50}$= 0.1873 $D_{30}$= 0.1242 $D_{15}$= 0.0887
$D_{10}$= 0.0760 $C_u$= 3.05 $C_c$= 0.88

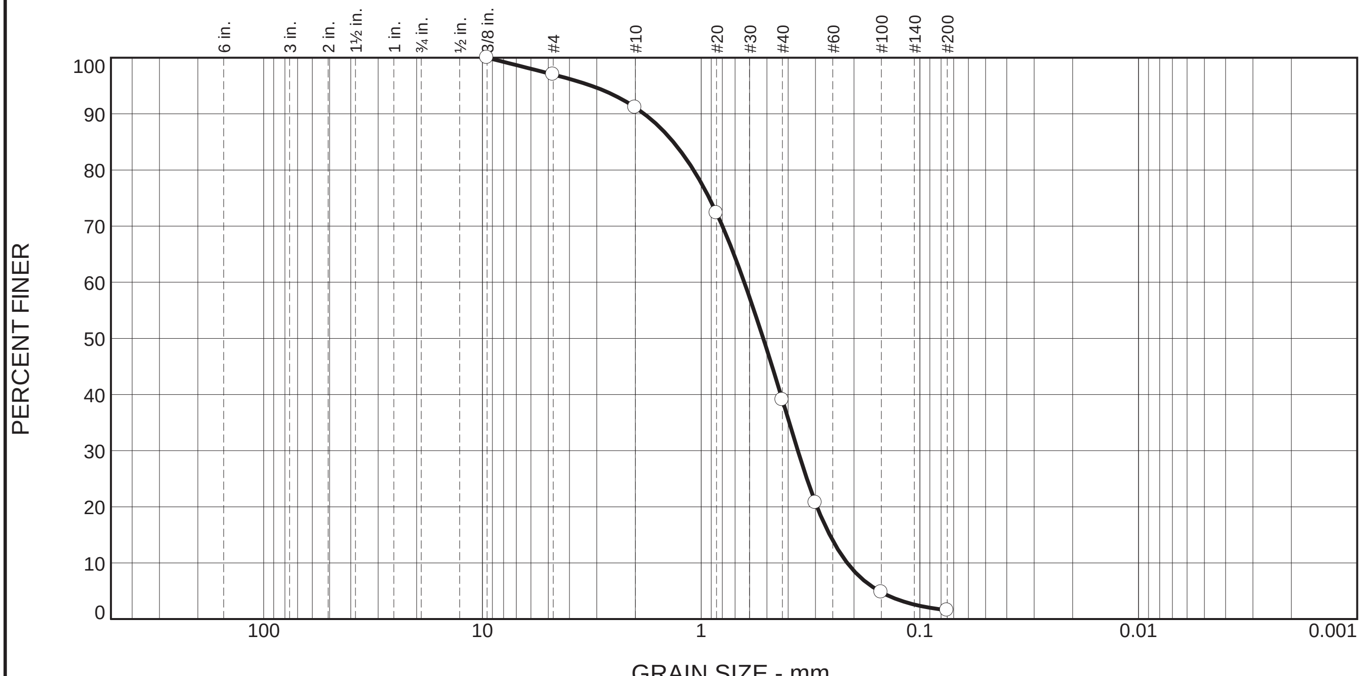
**Remarks**

**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34391-5
**Sample Number:** 15-1160
**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing
**Project No:** 15-25-006 **Figure** 051

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 3.0 | 5.9 | 52.1 | 37.4 | 1.6 | |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 97.0 | | |
| #10 | 91.1 | | |
| #20 | 72.3 | | |
| #40 | 39.0 | | |
| #50 | 20.7 | | |
| #100 | 4.8 | | |
| #200 | 1.6 | | |

* (no specification provided)

**Material Description**

Poorly graded sand

**Atterberg Limits (ASTM D 4318)**

PL= LL= PI=

**Classification**

USCS (D 2487)= SP AASHTO (M 145)=

**Coefficients**

$D_{90}$= 1.8208 $D_{85}$= 1.3400 $D_{60}$= 0.6349
$D_{50}$= 0.5200 $D_{30}$= 0.3613 $D_{15}$= 0.2583
$D_{10}$= 0.2147 $C_u$= 2.96 $C_c$= 0.96

**Remarks**

**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34391-6
**Sample Number:** 15-1161
**Date Sampled:** 9-9-15

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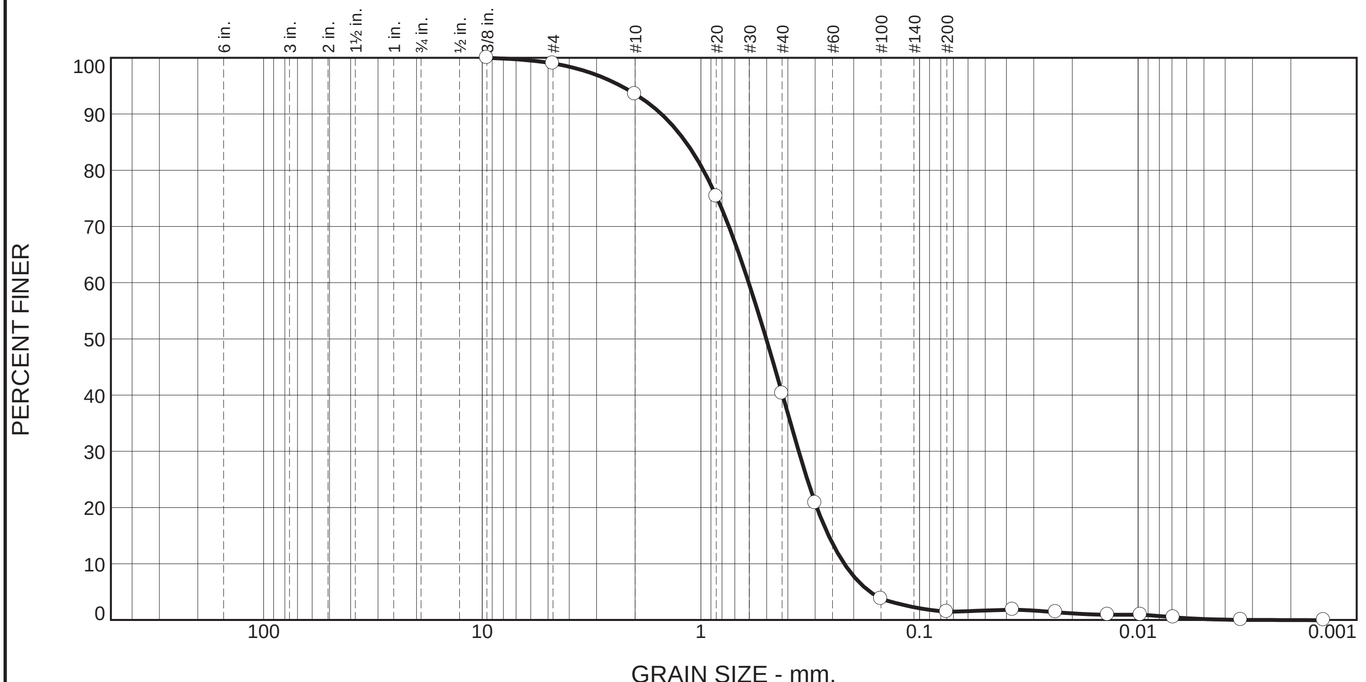
**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing
**Project No:** 15-25-006 **Figure** 052

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.0 | 5.4 | 53.3 | 38.8 | 1.3 | 0.2 |

| TEST RESULTS | | | |
|---|---|---|---|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| 3/8 | 100.0 | | |
| #4 | 99.0 | | |
| #10 | 93.6 | | |
| #20 | 75.4 | | |
| #40 | 40.3 | | |
| #50 | 20.8 | | |
| #100 | 3.8 | | |
| #200 | 1.5 | | |
| 0.0375 mm. | 1.8 | | |
| 0.0238 mm. | 1.4 | | |
| 0.0138 mm. | 0.9 | | |
| 0.0097 mm. | 0.9 | | |
| 0.0069 mm. | 0.5 | | |
| 0.0034 mm. | 0.0 | | |
| 0.0014 mm. | | | |

* (no specification provided)

**Material Description**

Poorly graded sand

**Atterberg Limits (ASTM D 4318)**

PL= LL= PI=

**Classification**

USCS (D 2487)= SP AASHTO (M 145)=

**Coefficients**

$D_{90}$= 1.5166 $D_{85}$= 1.1707 $D_{60}$= 0.6041
$D_{50}$= 0.5023 $D_{30}$= 0.3569 $D_{15}$= 0.2604
$D_{10}$= 0.2207 $C_u$= 2.74 $C_c$= 0.96

**Remarks**

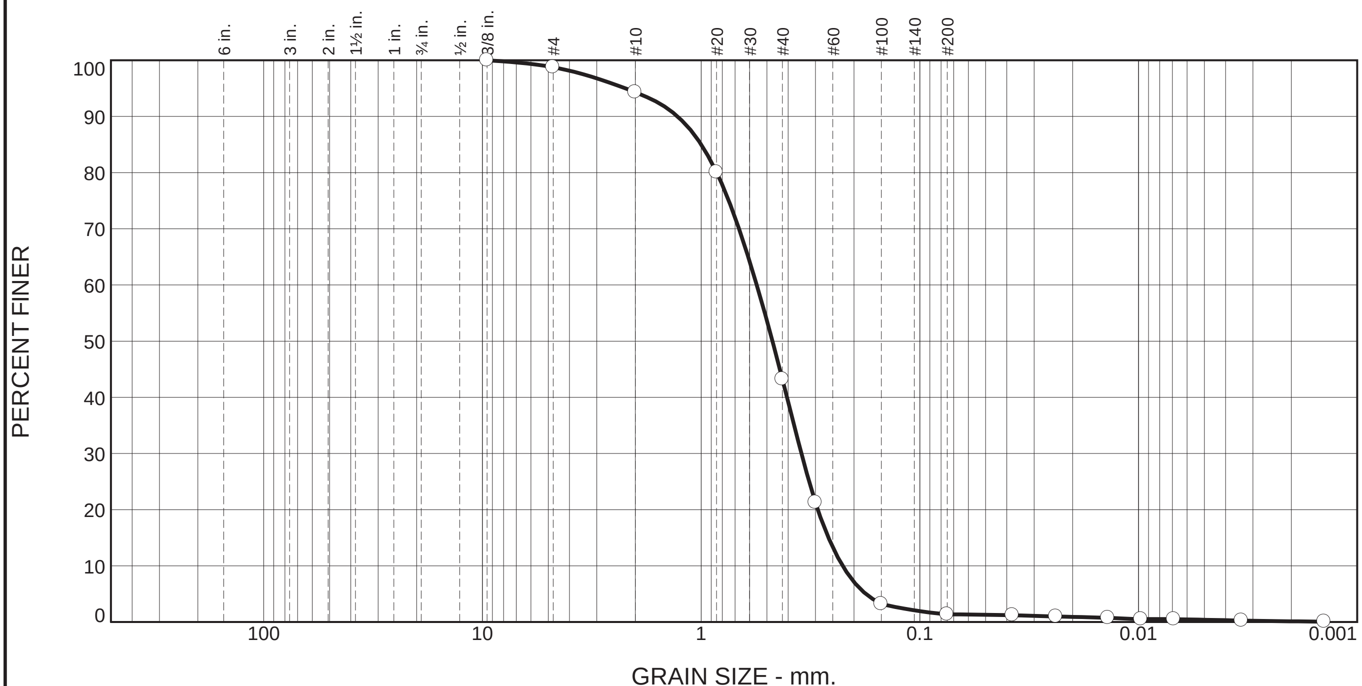
**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34391-7
**Sample Number:** 15-1162
**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 053

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.2 | 4.5 | 51.1 | 41.8 | 1.0 | 0.4 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 98.8 | | |
| #10 | 94.3 | | |
| #20 | 80.1 | | |
| #40 | 43.2 | | |
| #50 | 21.3 | | |
| #100 | 3.2 | | |
| #200 | 1.4 | | |
| 0.0377 mm. | 1.2 | | |
| 0.0238 mm. | 1.0 | | |
| 0.0138 mm. | 0.7 | | |
| 0.0097 mm. | 0.5 | | |
| 0.0069 mm. | 0.5 | | |
| 0.0034 mm. | 0.3 | | |
| 0.0014 mm. | 0.1 | | |

* (no specification provided)

**Material Description**

Poorly graded sand

**Atterberg Limits (ASTM D 4318)**

PL= LL= PI=

**Classification**

USCS (D 2487)= SP AASHTO (M 145)=

**Coefficients**

| | | |
|---|---|---|
| $D_{90}$= 1.2816 | $D_{85}$= 0.9995 | $D_{60}$= 0.5567 |
| $D_{50}$= 0.4720 | $D_{30}$= 0.3480 | $D_{15}$= 0.2617 |
| $D_{10}$= 0.2255 | $C_u$= 2.47 | $C_c$= 0.96 |

**Remarks**

**Date Received:** 9-25-15 **Date Tested:** 10-13-15

**Tested By:** Ted Moody

**Checked By:** Jeff Young

**Title:** Lab Manager

**Location:** 34391-8
**Sample Number:** 15-1163

**Date Sampled:** 9-9-15

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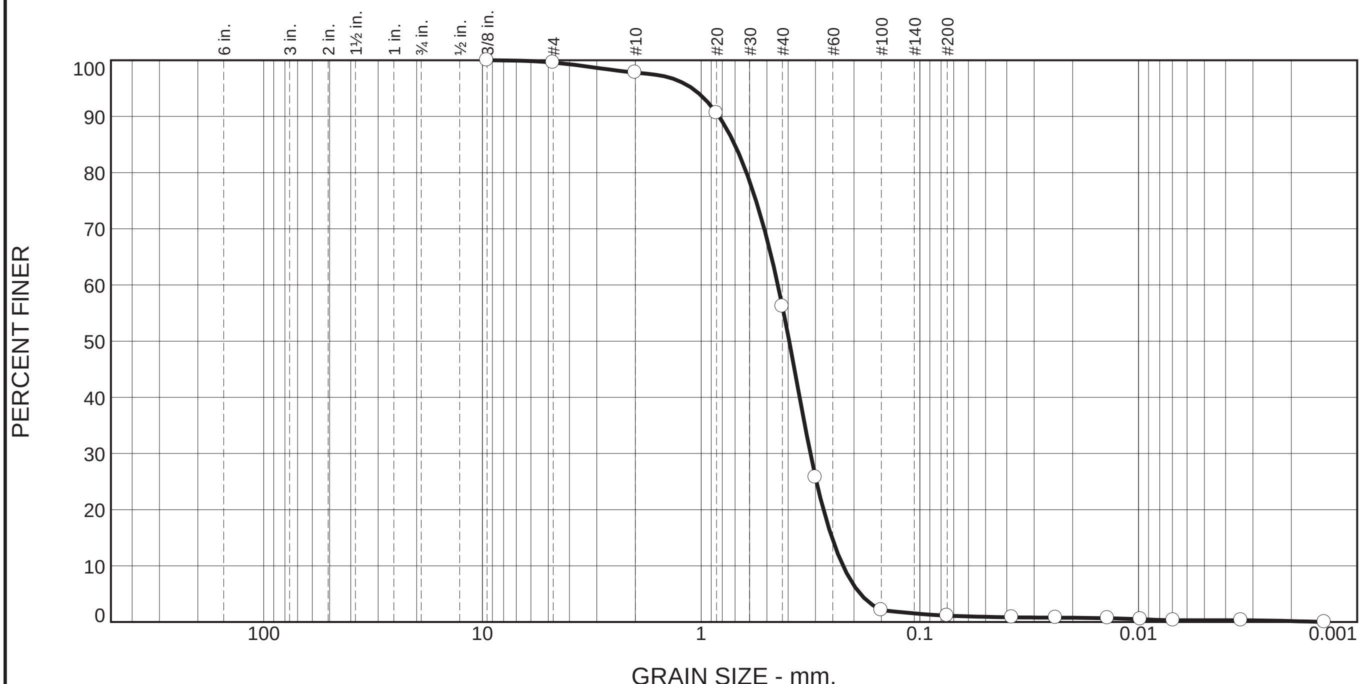
**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 054

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.4 | 1.8 | 41.6 | 55.1 | 0.8 | 0.3 |

| TEST RESULTS | | | |
|---|---|---|---|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| 3/8 | 100.0 | | |
| #4 | 99.6 | | |
| #10 | 97.8 | | |
| #20 | 90.6 | | |
| #40 | 56.2 | | |
| #50 | 25.8 | | |
| #100 | 2.1 | | |
| #200 | 1.1 | | |
| 0.0378 mm. | 0.8 | | |
| 0.0239 mm. | 0.8 | | |
| 0.0138 mm. | 0.7 | | |
| 0.0098 mm. | 0.5 | | |
| 0.0069 mm. | 0.3 | | |
| 0.0034 mm. | 0.3 | | |
| 0.0014 mm. | 0.0 | | |

* (no specification provided)

**Material Description**

Poorly graded sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SP **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.8294 $D_{85}$= 0.7021 $D_{60}$= 0.4457
$D_{50}$= 0.3957 $D_{30}$= 0.3164 $D_{15}$= 0.2523
$D_{10}$= 0.2245 $C_u$= 1.99 $C_c$= 1.00

**Remarks**

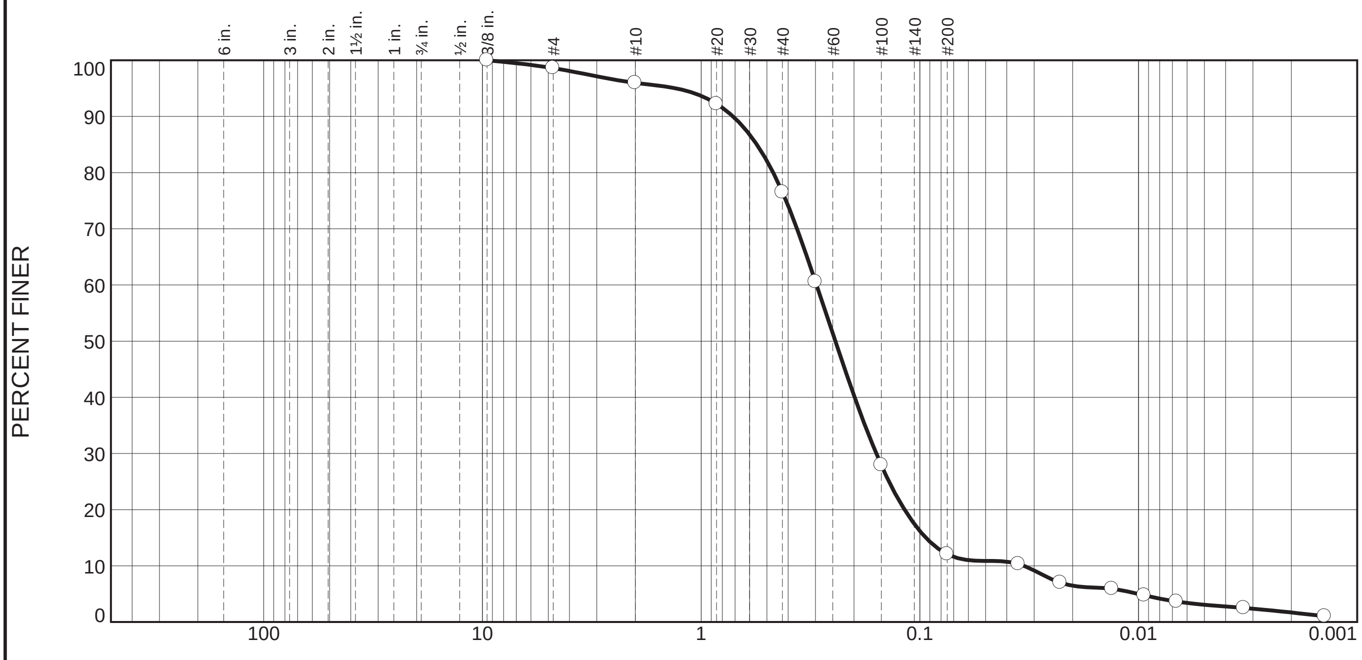
**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34391-9
**Sample Number:** 15-1164
**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 055

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.4 | 2.6 | 19.5 | 64.4 | 9.0 | 3.1 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 98.6 | | |
| #10 | 96.0 | | |
| #20 | 92.2 | | |
| #40 | 76.5 | | |
| #50 | 60.6 | | |
| #100 | 27.9 | | |
| #200 | 12.1 | | |
| 0.0354 mm. | 10.3 | | |
| 0.0228 mm. | 7.0 | | |
| 0.0132 mm. | 5.9 | | |
| 0.0094 mm. | 4.8 | | |
| 0.0067 mm. | 3.6 | | |
| 0.0033 mm. | 2.5 | | |
| 0.0014 mm. | 1.0 | | |

* (no specification provided)

**Material Description**

Well-graded sand with silt

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SW-SM **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.7146 $D_{85}$= 0.5563 $D_{60}$= 0.2966
$D_{50}$= 0.2434 $D_{30}$= 0.1582 $D_{15}$= 0.0938
$D_{10}$= 0.0335 $C_u$= 8.86 $C_c$= 2.52

**Remarks**

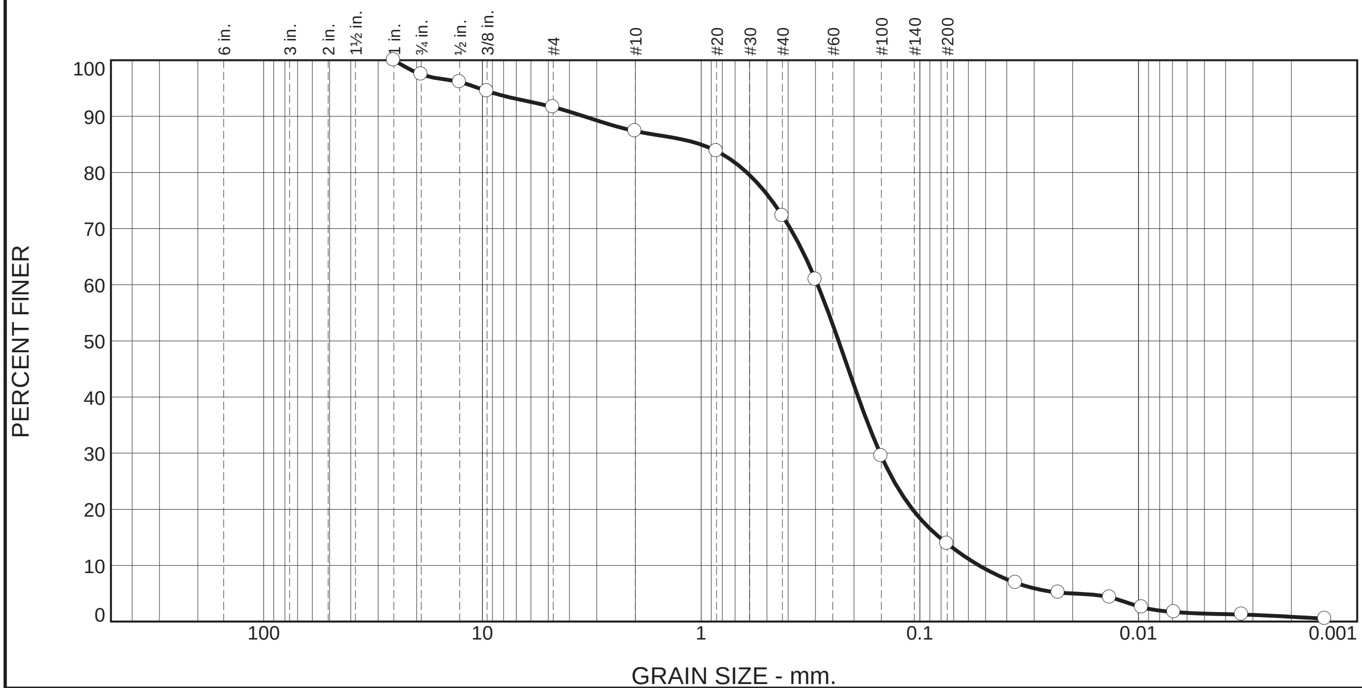
**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34391-10
**Sample Number:** 15-1165
**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 056

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 2.5 | 5.8 | 4.3 | 15.1 | 58.4 | 12.5 | 1.4 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 1 | 100.0 | | |
| 3/4 | 97.5 | | |
| 1/2 | 96.1 | | |
| 3/8 | 94.5 | | |
| #4 | 91.7 | | |
| #10 | 87.4 | | |
| #20 | 83.8 | | |
| #40 | 72.3 | | |
| #50 | 60.9 | | |
| #100 | 29.5 | | |
| #200 | 13.9 | | |
| 0.0364 mm. | 6.9 | | |
| 0.0233 mm. | 5.2 | | |
| 0.0135 mm. | 4.3 | | |
| 0.0097 mm. | 2.6 | | |
| 0.0069 mm. | 1.7 | | |
| 0.0034 mm. | 1.3 | | |
| 0.0014 mm. | 0.5 | | |

* (no specification provided)

**Material Description**

Silty sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SM **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 3.4222 $D_{85}$= 1.0046 $D_{60}$= 0.2932
$D_{50}$= 0.2353 $D_{30}$= 0.1520 $D_{15}$= 0.0813
$D_{10}$= 0.0536 $C_u$= 5.47 $C_c$= 1.47

**Remarks**

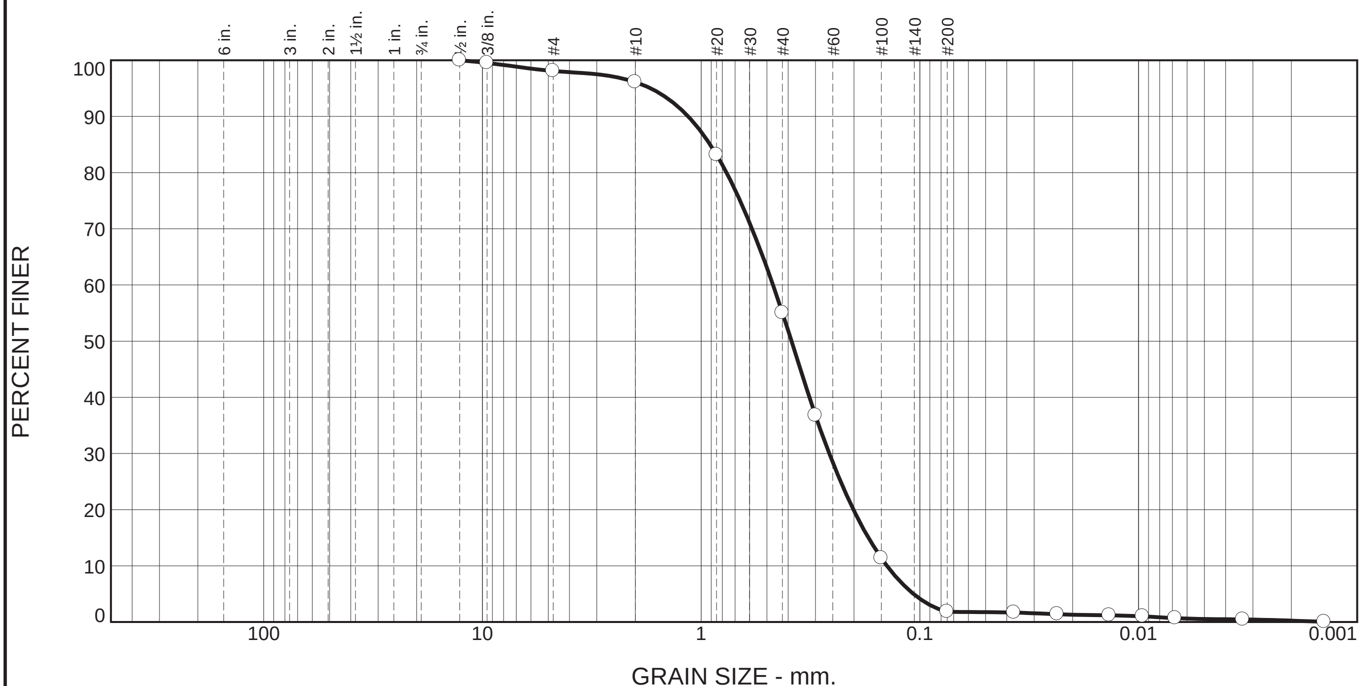
**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34391-11
**Sample Number:** 15-1166
**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 057

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.9 | 2.0 | 41.1 | 53.2 | 1.3 | 0.5 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 1/2 | 100.0 | | |
| 3/8 | 99.5 | | |
| #4 | 98.1 | | |
| #10 | 96.1 | | |
| #20 | 83.2 | | |
| #40 | 55.0 | | |
| #50 | 36.8 | | |
| #100 | 11.4 | | |
| #200 | 1.8 | | |
| 0.0371 mm. | 1.7 | | |
| 0.0235 mm. | 1.4 | | |
| 0.0136 mm. | 1.2 | | |
| 0.0096 mm. | 1.0 | | |
| 0.0068 mm. | 0.7 | | |
| 0.0033 mm. | 0.5 | | |
| 0.0014 mm. | 0.0 | | |

* (no specification provided)

**Material Description**

Poorly graded sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SP **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 1.1458 $D_{85}$= 0.9095 $D_{60}$= 0.4693
$D_{50}$= 0.3862 $D_{30}$= 0.2595 $D_{15}$= 0.1718
$D_{10}$= 0.1413 $C_u$= 3.32 $C_c$= 1.02

**Remarks**

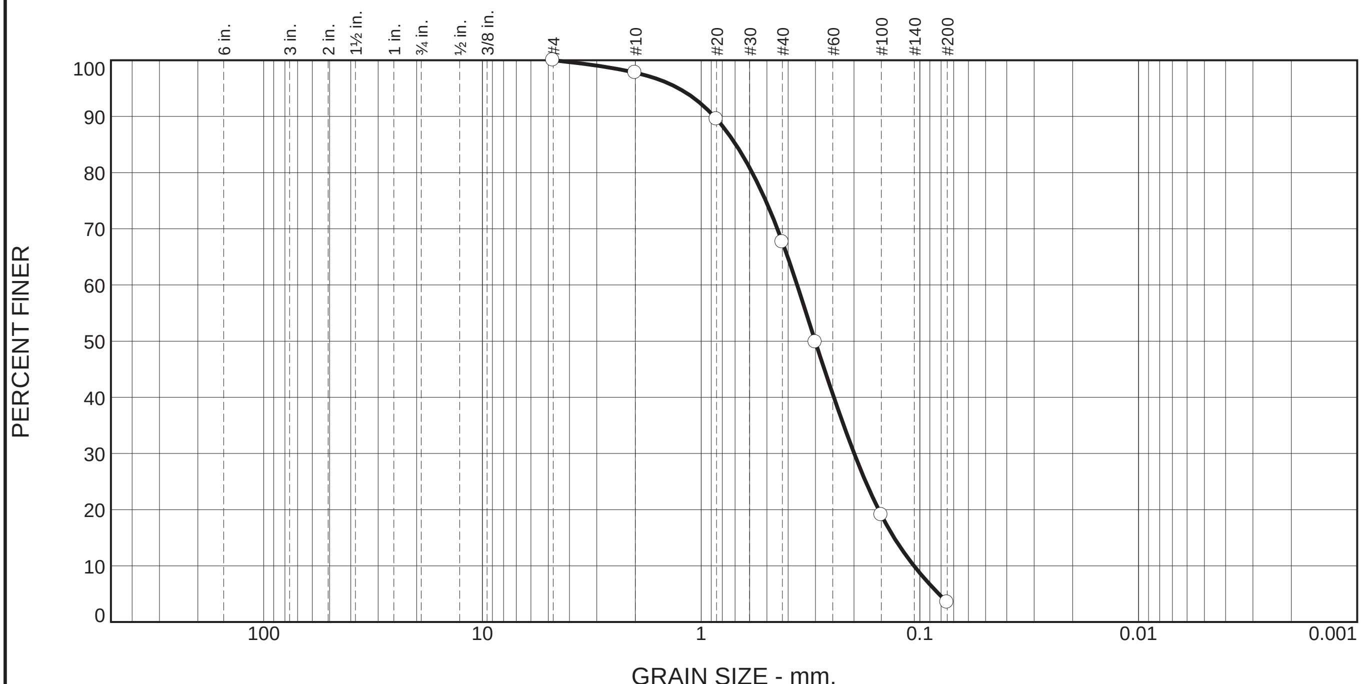
**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34391-12
**Sample Number:** 15-1167
**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 058

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 2.2 | 30.2 | 64.1 | 3.5 | |

| TEST RESULTS | | | |
|---|---|---|---|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| #4 | 100.0 | | |
| #10 | 97.8 | | |
| #20 | 89.5 | | |
| #40 | 67.6 | | |
| #50 | 49.8 | | |
| #100 | 19.0 | | |
| #200 | 3.5 | | |

* (no specification provided)

**Material Description**

Poorly graded sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SP **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.8720 $D_{85}$= 0.6939 $D_{60}$= 0.3640
$D_{50}$= 0.3009 $D_{30}$= 0.1995 $D_{15}$= 0.1310
$D_{10}$= 0.1064 $C_u$= 3.42 $C_c$= 1.03

**Remarks**

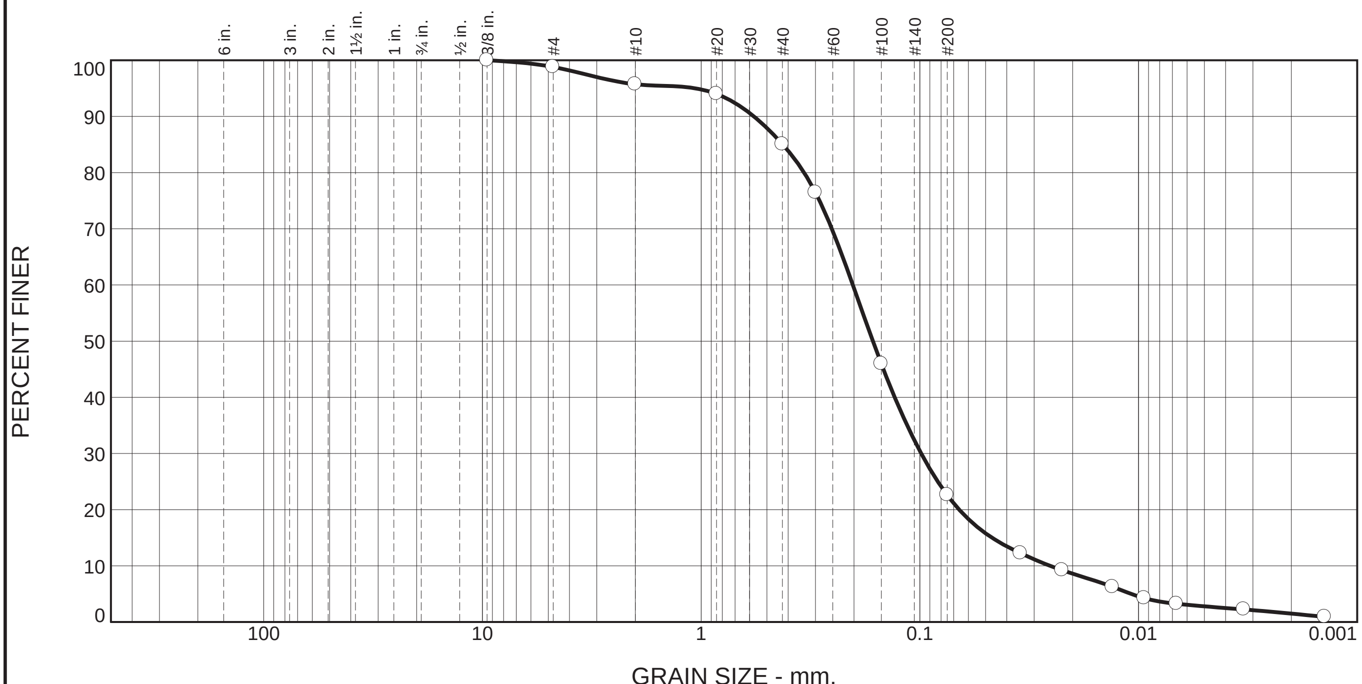
**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34391-13
**Sample Number:** 15-1168
**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 059

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.2 | 3.1 | 10.6 | 62.5 | 19.8 | 2.8 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 98.8 | | |
| #10 | 95.7 | | |
| #20 | 94.0 | | |
| #40 | 85.1 | | |
| #50 | 76.5 | | |
| #100 | 46.0 | | |
| #200 | 22.6 | | |
| 0.0346 mm. | 12.3 | | |
| 0.0224 mm. | 9.2 | | |
| 0.0131 mm. | 6.3 | | |
| 0.0094 mm. | 4.2 | | |
| 0.0067 mm. | 3.3 | | |
| 0.0033 mm. | 2.2 | | |
| 0.0014 mm. | 0.9 | | |

* (no specification provided)

**Material Description**

Silty sand

**Atterberg Limits (ASTM D 4318)**

PL= LL= PI=

**Classification**

USCS (D 2487)= SM AASHTO (M 145)=

**Coefficients**

$D_{90}$= 0.5736 $D_{85}$= 0.4238 $D_{60}$= 0.2024
$D_{50}$= 0.1639 $D_{30}$= 0.0985 $D_{15}$= 0.0467
$D_{10}$= 0.0253 $C_u$= 7.99 $C_c$= 1.90

**Remarks**

**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34391-14
**Sample Number:** 15-1169
**Date Sampled:** 9-9-15

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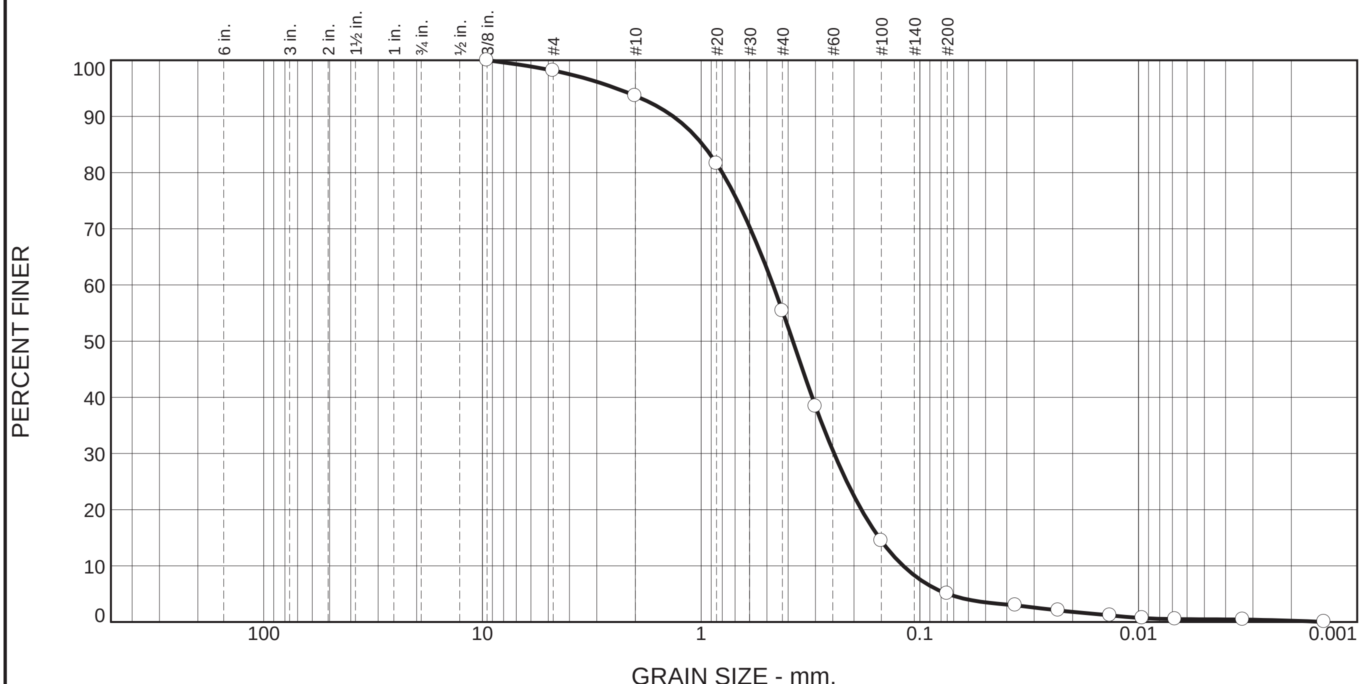
**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 060

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.8 | 4.5 | 38.3 | 50.3 | 4.6 | 0.5 |

| TEST RESULTS | | | |
|---|---|---|---|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| 3/8 | 100.0 | | |
| #4 | 98.2 | | |
| #10 | 93.7 | | |
| #20 | 81.6 | | |
| #40 | 55.4 | | |
| #50 | 38.4 | | |
| #100 | 14.5 | | |
| #200 | 5.1 | | |
| 0.0366 mm. | 3.0 | | |
| 0.0233 mm. | 2.1 | | |
| 0.0135 mm. | 1.2 | | |
| 0.0096 mm. | 0.7 | | |
| 0.0068 mm. | 0.5 | | |
| 0.0033 mm. | 0.4 | | |
| 0.0014 mm. | 0.0 | | |

* (no specification provided)

**Material Description**

Poorly graded sand

**Atterberg Limits (ASTM D 4318)**

PL= LL= PI=

**Classification**

USCS (D 2487)= SP AASHTO (M 145)=

**Coefficients**

$D_{90}$= 1.3406 $D_{85}$= 0.9836 $D_{60}$= 0.4691
$D_{50}$= 0.3807 $D_{30}$= 0.2466 $D_{15}$= 0.1535
$D_{10}$= 0.1191 $C_u$= 3.94 $C_c$= 1.09

**Remarks**

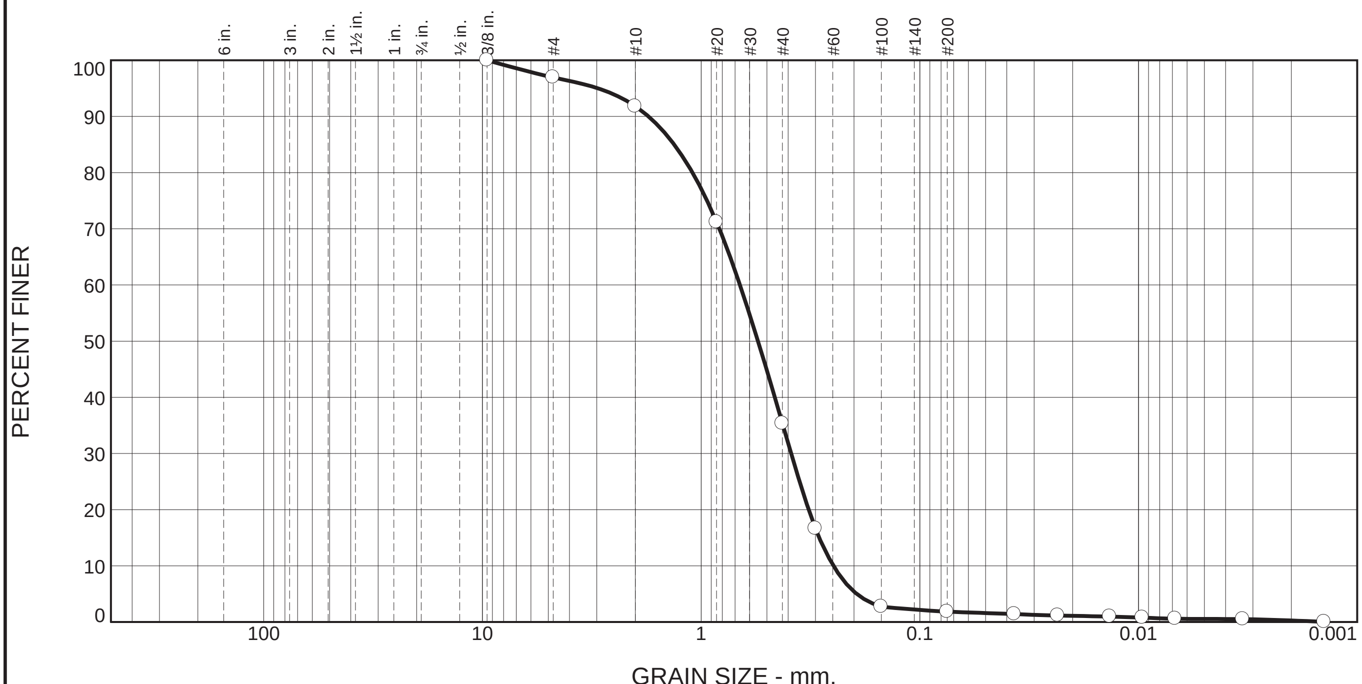
**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34391-15
**Sample Number:** 15-1170
**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 061

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 3.1 | 5.1 | 56.5 | 33.5 | 1.3 | 0.5 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 96.9 | | |
| #10 | 91.8 | | |
| #20 | 71.2 | | |
| #40 | 35.3 | | |
| #50 | 16.7 | | |
| #100 | 2.7 | | |
| #200 | 1.8 | | |
| 0.0369 mm. | 1.4 | | |
| 0.0234 mm. | 1.2 | | |
| 0.0135 mm. | 1.0 | | |
| 0.0096 mm. | 0.8 | | |
| 0.0068 mm. | 0.6 | | |
| 0.0033 mm. | 0.5 | | |
| 0.0014 mm. | 0.0 | | |

* (no specification provided)

**Material Description**

Poorly graded sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SP **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 1.7416 $D_{85}$= 1.3281 $D_{60}$= 0.6645
$D_{50}$= 0.5496 $D_{30}$= 0.3877 $D_{15}$= 0.2882
$D_{10}$= 0.2485 $C_u$= 2.67 $C_c$= 0.91

**Remarks**

**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34391-16
**Sample Number:** 15-1171
**Date Sampled:** 9-9-15

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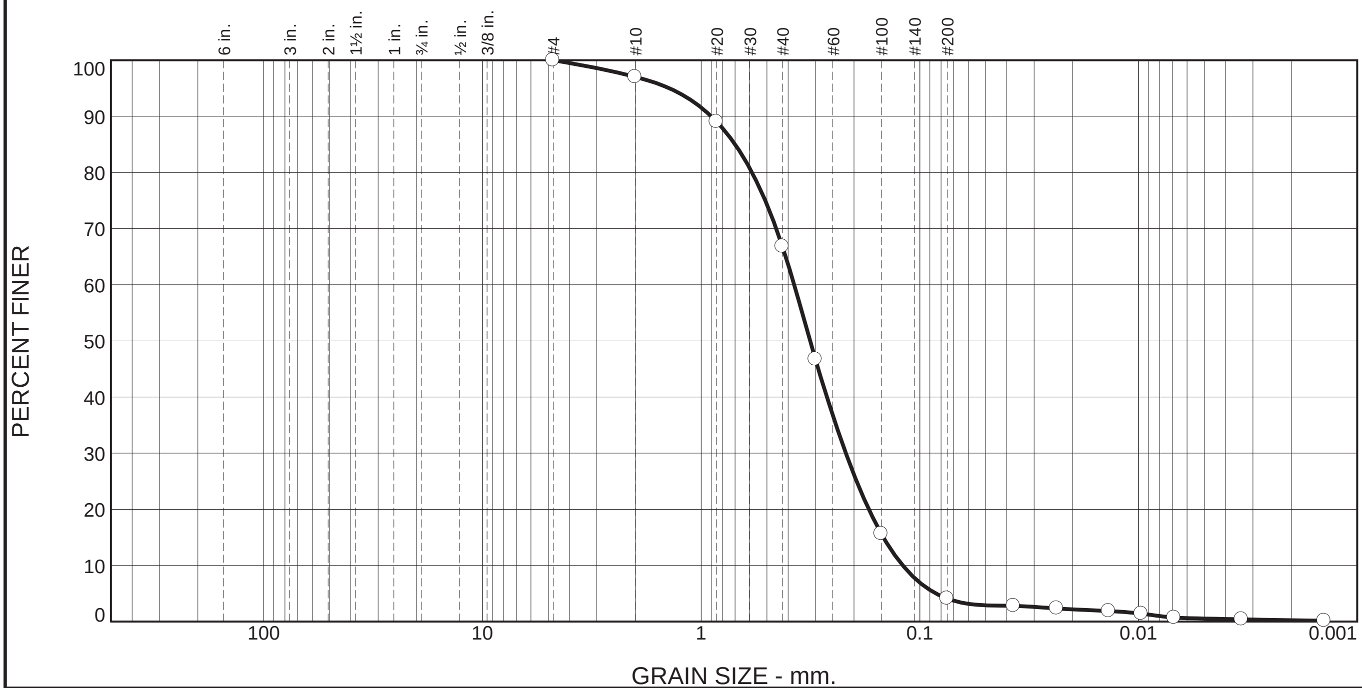
**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 062

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 3.0 | 30.2 | 62.7 | 3.6 | 0.5 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 97.0 | | |
| #20 | 89.1 | | |
| #40 | 66.8 | | |
| #50 | 46.7 | | |
| #100 | 15.6 | | |
| #200 | 4.1 | | |
| 0.0373 mm. | 2.8 | | |
| 0.0237 mm. | 2.3 | | |
| 0.0137 mm. | 1.9 | | |
| 0.0097 mm. | 1.4 | | |
| 0.0069 mm. | 0.7 | | |
| 0.0034 mm. | 0.4 | | |
| 0.0014 mm. | 0.1 | | |

* (no specification provided)

**Material Description**

Poorly graded sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SP **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.8991 $D_{85}$= 0.6991 $D_{60}$= 0.3756
$D_{50}$= 0.3173 $D_{30}$= 0.2179 $D_{15}$= 0.1467
$D_{10}$= 0.1197 $C_u$= 3.14 $C_c$= 1.06

**Remarks**

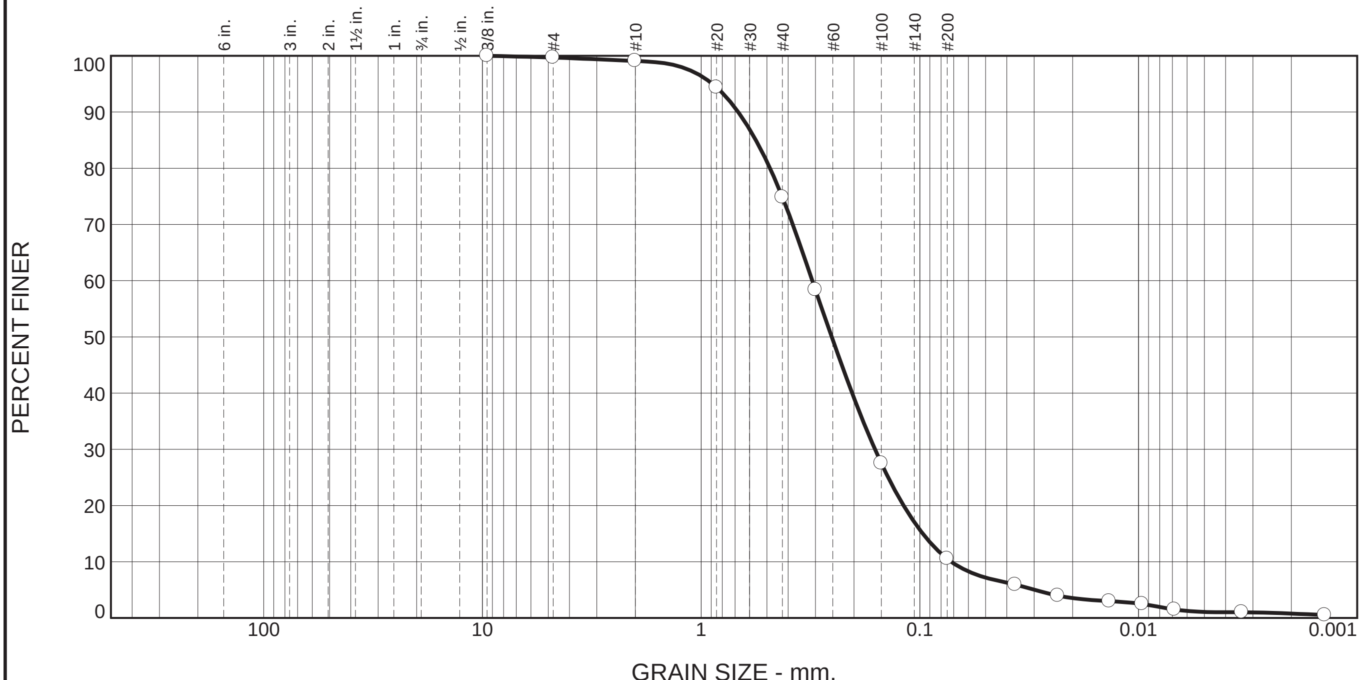
**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34392-1
**Sample Number:** 15-1172
**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 063

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.3 | 0.6 | 24.3 | 64.3 | 9.4 | 1.1 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 99.7 | | |
| #10 | 99.1 | | |
| #20 | 94.4 | | |
| #40 | 74.8 | | |
| #50 | 58.3 | | |
| #100 | 27.5 | | |
| #200 | 10.5 | | |
| 0.0366 mm. | 5.9 | | |
| 0.0234 mm. | 4.0 | | |
| 0.0136 mm. | 3.0 | | |
| 0.0096 mm. | 2.5 | | |
| 0.0068 mm. | 1.5 | | |
| 0.0034 mm. | 1.0 | | |
| 0.0014 mm. | 0.5 | | |

* (no specification provided)

**Material Description**

Poorly graded sand with silt

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SP-SM **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.6766 $D_{85}$= 0.5619 $D_{60}$= 0.3102
$D_{50}$= 0.2529 $D_{30}$= 0.1603 $D_{15}$= 0.0970
$D_{10}$= 0.0718 $C_u$= 4.32 $C_c$= 1.15

**Remarks**

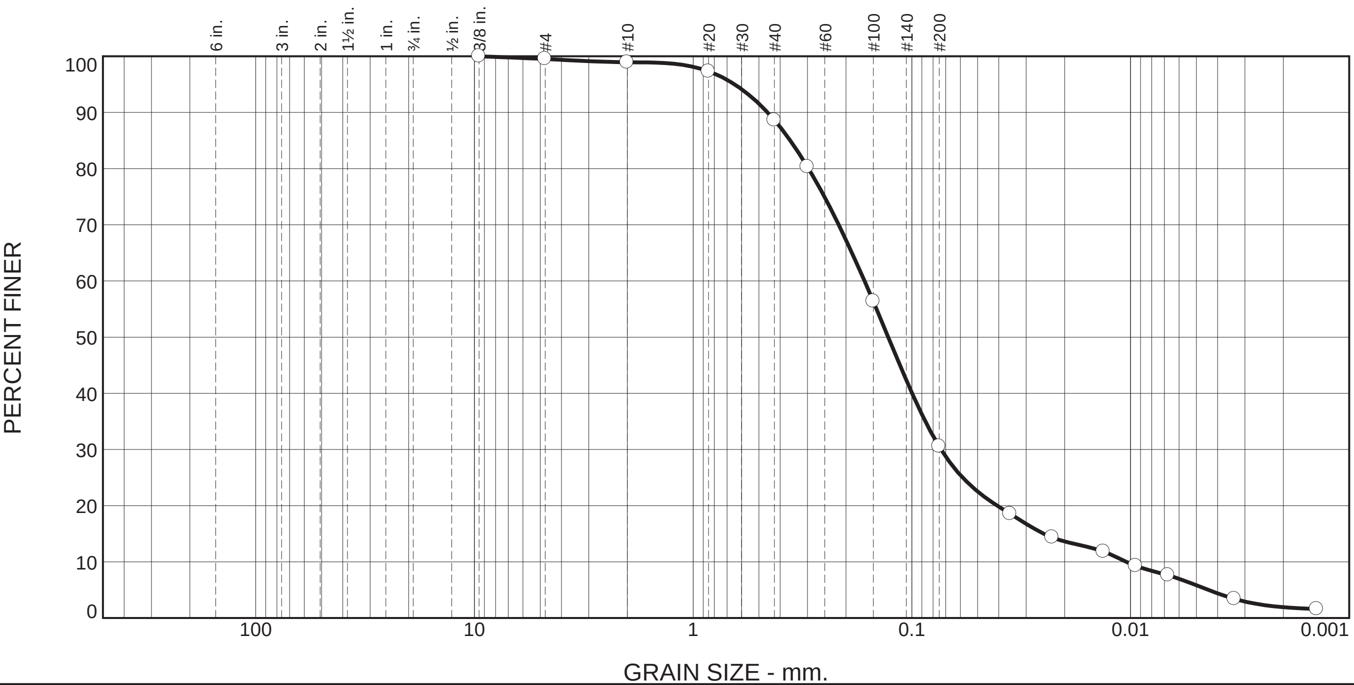
**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34392-2
**Sample Number:** 15-1173
**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 064

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.5 | 0.6 | 10.3 | 58.1 | 24.7 | 5.8 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 99.5 | | |
| #10 | 98.9 | | |
| #20 | 97.3 | | |
| #40 | 88.6 | | |
| #50 | 80.3 | | |
| #100 | 56.4 | | |
| #200 | 30.5 | | |
| 0.0355 mm. | 18.6 | | |
| 0.0228 mm. | 14.4 | | |
| 0.0133 mm. | 11.8 | | |
| 0.0095 mm. | 9.3 | | |
| 0.0067 mm. | 7.6 | | |
| 0.0033 mm. | 3.4 | | |
| 0.0014 mm. | 1.6 | | |

* (no specification provided)

**Material Description**

Silty, clayey sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SC-SM **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.4569 $D_{85}$= 0.3598 $D_{60}$= 0.1645
$D_{50}$= 0.1282 $D_{30}$= 0.0735 $D_{15}$= 0.0249
$D_{10}$= 0.0104 $C_u$= 15.76 $C_c$= 3.15

**Remarks**

**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34392-3
**Sample Number:** 15-1174
**Date Sampled:** 9-9-15

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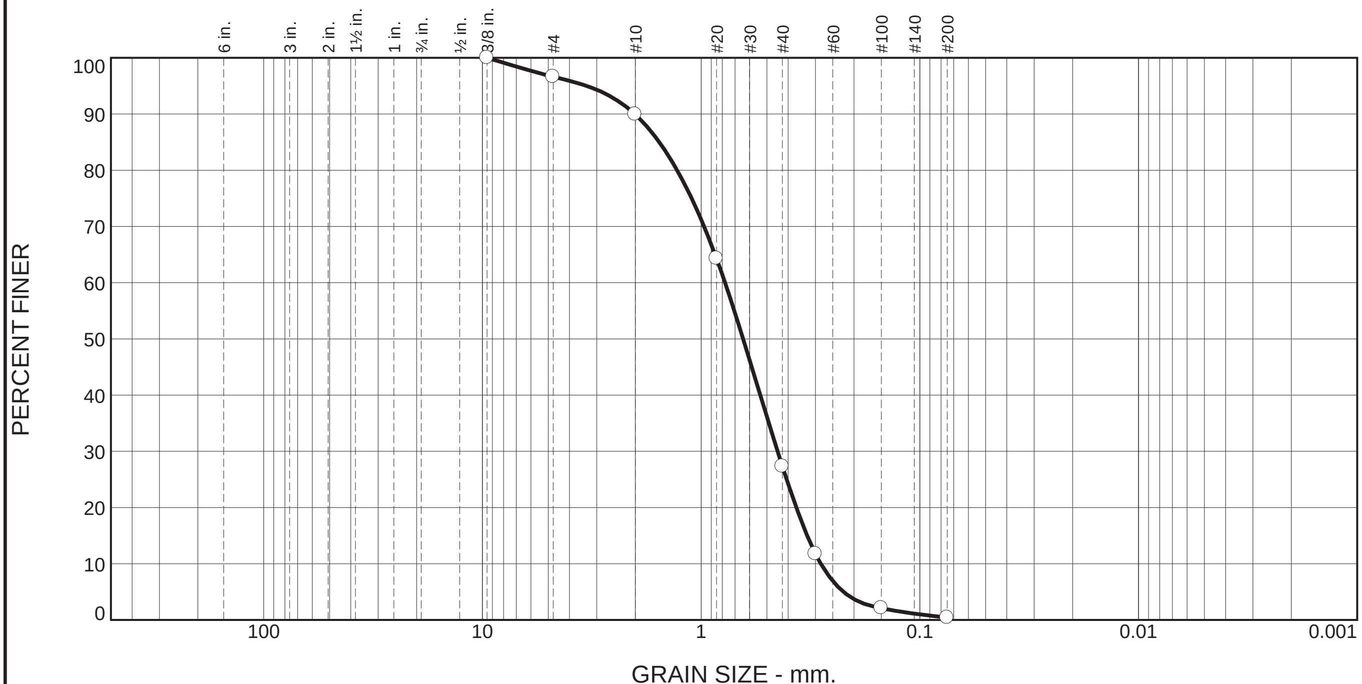
**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 065

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 3.4 | 6.7 | 62.6 | 26.9 | 0.4 | |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 96.6 | | |
| #10 | 89.9 | | |
| #20 | 64.3 | | |
| #40 | 27.3 | | |
| #50 | 11.8 | | |
| #100 | 2.1 | | |
| #200 | 0.4 | | |

* (no specification provided)

**Material Description**

**Atterberg Limits (ASTM D 4318)**

PL= LL= PI=

**Classification**

USCS (D 2487)= AASHTO (M 145)=

**Coefficients**

$D_{90}$= 2.0108 $D_{85}$= 1.5534 $D_{60}$= 0.7776
$D_{50}$= 0.6426 $D_{30}$= 0.4471 $D_{15}$= 0.3274
$D_{10}$= 0.2835 $C_u$= 2.74 $C_c$= 0.91

**Remarks**

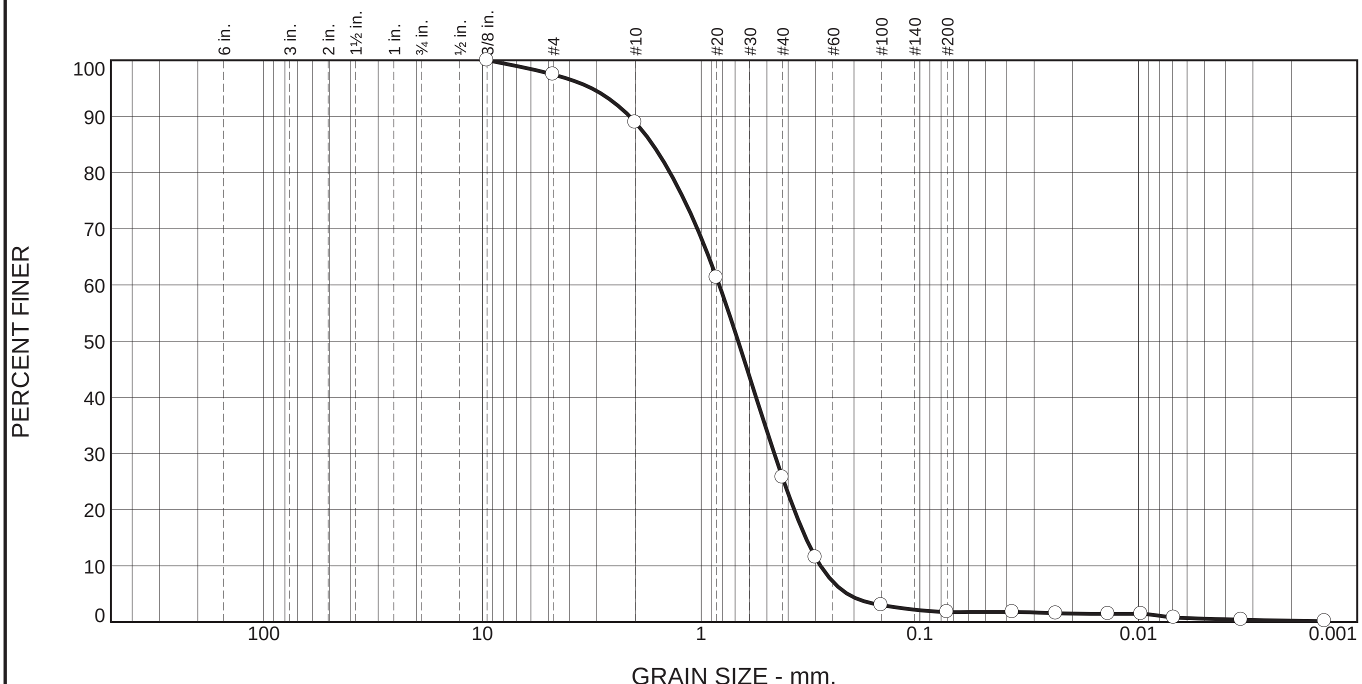
**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34393-4
**Sample Number:** 15-1175
**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 066

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 2.5 | 8.6 | 63.2 | 23.9 | 1.2 | 0.6 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 97.5 | | |
| #10 | 88.9 | | |
| #20 | 61.3 | | |
| #40 | 25.7 | | |
| #50 | 11.5 | | |
| #100 | 3.0 | | |
| #200 | 1.8 | | |
| 0.0376 mm. | 1.8 | | |
| 0.0238 mm. | 1.6 | | |
| 0.0138 mm. | 1.4 | | |
| 0.0097 mm. | 1.5 | | |
| 0.0069 mm. | 0.8 | | |
| 0.0034 mm. | 0.4 | | |
| 0.0014 mm. | 0.2 | | |

* (no specification provided)

**Material Description**

Poorly graded sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SP **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 2.1202 $D_{85}$= 1.6663 $D_{60}$= 0.8268
$D_{50}$= 0.6772 $D_{30}$= 0.4630 $D_{15}$= 0.3324
$D_{10}$= 0.2843 $C_u$= 2.91 $C_c$= 0.91

**Remarks**

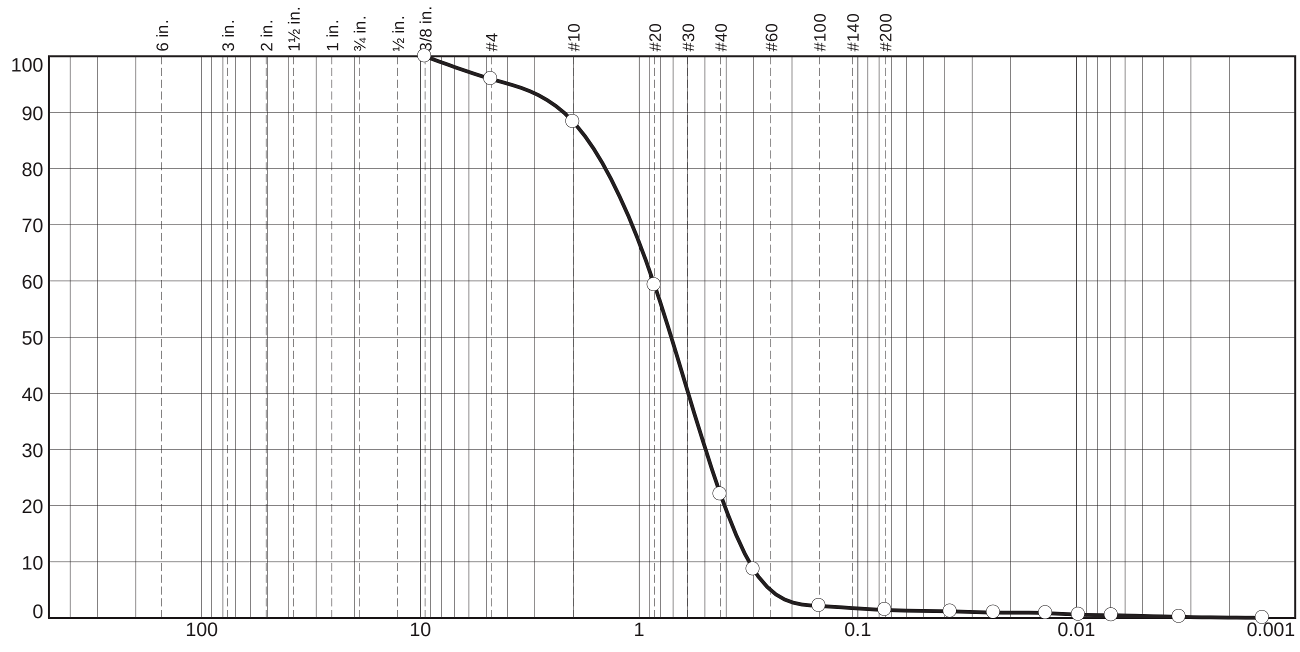
**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34393-5
**Sample Number:** 15-1176
**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 067

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 4.0 | 7.7 | 66.3 | 20.6 | 1.0 | 0.4 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 96.0 | | |
| #10 | 88.3 | | |
| #20 | 59.3 | | |
| #40 | 22.0 | | |
| #50 | 8.7 | | |
| #100 | 2.2 | | |
| #200 | 1.4 | | |
| 0.0377 mm. | 1.2 | | |
| 0.0239 mm. | 1.0 | | |
| 0.0138 mm. | 0.9 | | |
| 0.0098 mm. | 0.6 | | |
| 0.0069 mm. | 0.5 | | |
| 0.0034 mm. | 0.2 | | |
| 0.0014 mm. | 0.0 | | |

* (no specification provided)

**Material Description**

Poorly graded sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SP **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 2.2125 $D_{85}$= 1.7108 $D_{60}$= 0.8629
$D_{50}$= 0.7131 $D_{30}$= 0.4970 $D_{15}$= 0.3622
$D_{10}$= 0.3142 $C_u$= 2.75 $C_c$= 0.91

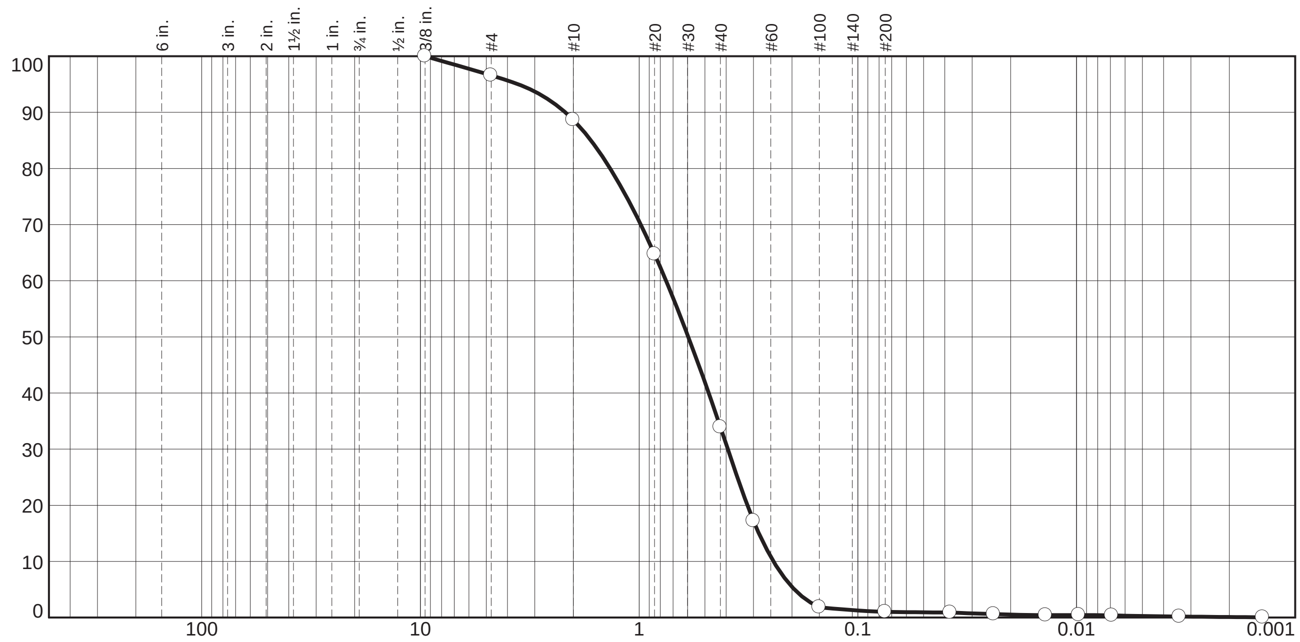
**Remarks**

**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34393-6
**Sample Number:** 15-1177
**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing
**Project No:** 15-25-006 **Figure** 068

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 3.4 | 8.0 | 54.7 | 32.9 | 0.7 | 0.3 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 96.6 | | |
| #10 | 88.6 | | |
| #20 | 64.7 | | |
| #40 | 33.9 | | |
| #50 | 17.2 | | |
| #100 | 1.8 | | |
| #200 | 1.0 | | |
| 0.0378 mm. | 0.9 | | |
| 0.0239 mm. | 0.6 | | |
| 0.0138 mm. | 0.4 | | |
| 0.0098 mm. | 0.4 | | |
| 0.0069 mm. | 0.4 | | |
| 0.0034 mm. | 0.2 | | |
| 0.0014 mm. | 0.0 | | |

* (no specification provided)

**Material Description**

Poorly graded sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SP **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 2.1759 $D_{85}$= 1.6611 $D_{60}$= 0.7535
$D_{50}$= 0.5959 $D_{30}$= 0.3932 $D_{15}$= 0.2834
$D_{10}$= 0.2432 $C_u$= 3.10 $C_c$= 0.84

**Remarks**

**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34393-7
**Sample Number:** 15-1178
**Date Sampled:** 9-9-15

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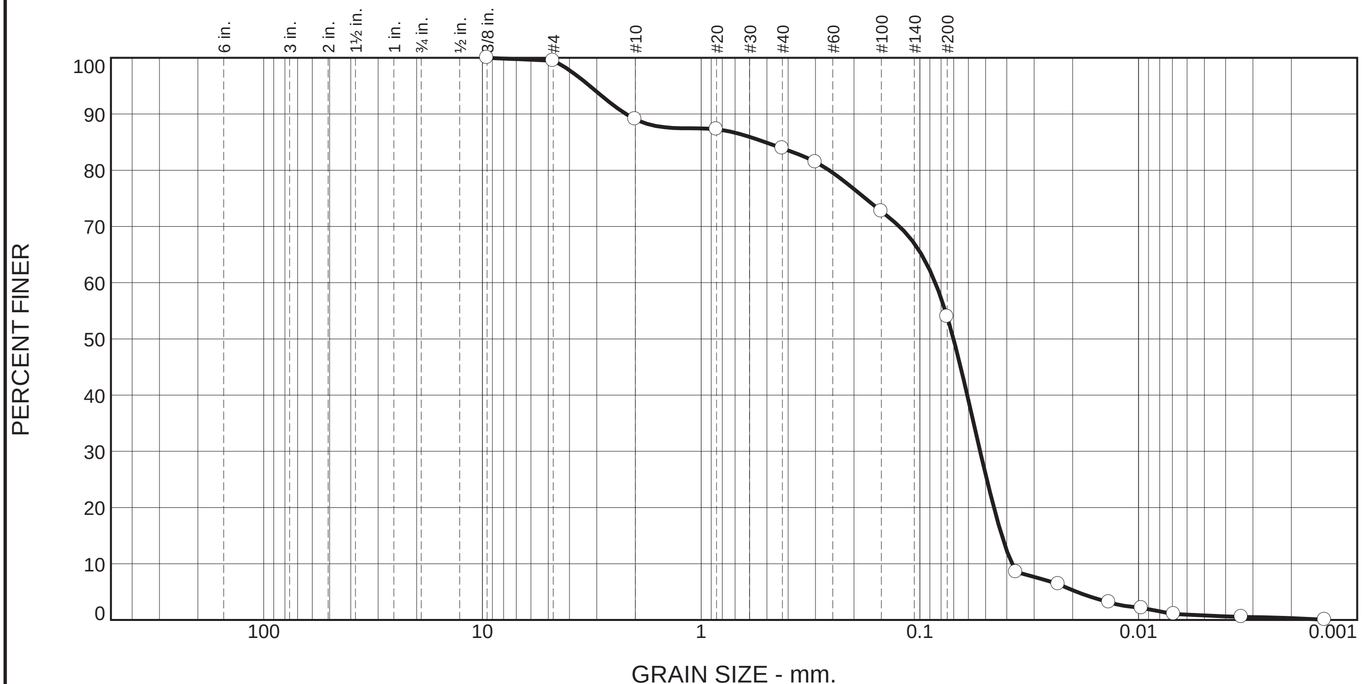
**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 069

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.5 | 10.4 | 5.2 | 29.9 | 53.2 | 0.8 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 99.5 | | |
| #10 | 89.1 | | |
| #20 | 87.3 | | |
| #40 | 83.9 | | |
| #50 | 81.5 | | |
| #100 | 72.7 | | |
| #200 | 54.0 | | |
| 0.0363 mm. | 8.5 | | |
| 0.0232 mm. | 6.4 | | |
| 0.0136 mm. | 3.2 | | |
| 0.0097 mm. | 2.1 | | |
| 0.0069 mm. | 1.0 | | |
| 0.0034 mm. | 0.5 | | |
| 0.0014 mm. | 0.0 | | |

* (no specification provided)

**Material Description**

Sandy silt

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** ML **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 2.2063 $D_{85}$= 0.5096 $D_{60}$= 0.0849
$D_{50}$= 0.0702 $D_{30}$= 0.0530 $D_{15}$= 0.0422
$D_{10}$= 0.0379 $C_u$= 2.24 $C_c$= 0.87

**Remarks**

**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

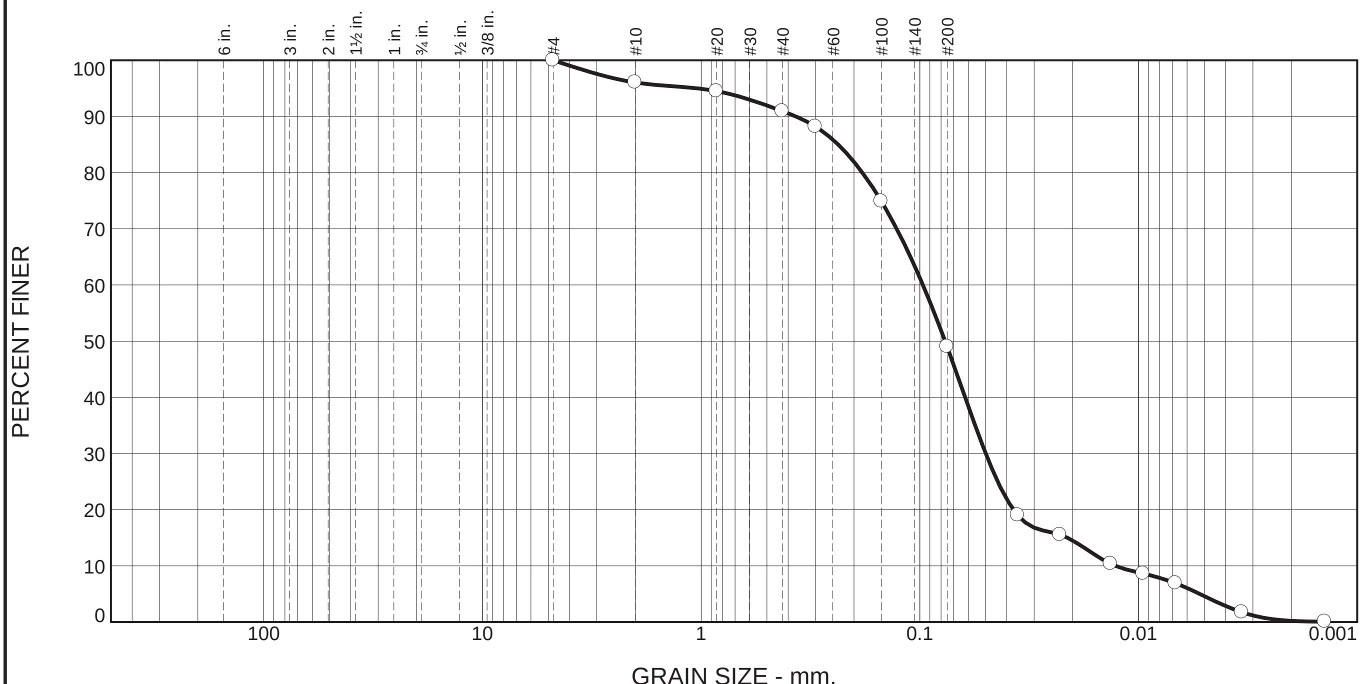
**Location:** 34393-8
**Sample Number:** 15-1179
**Date Sampled:** 9-9-15

CONSULTING TESTING INSPECTION JTC inc. GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 070

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 4.0 | 5.1 | 41.9 | 44.4 | 4.6 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 96.0 | | |
| #20 | 94.5 | | |
| #40 | 90.9 | | |
| #50 | 88.2 | | |
| #100 | 74.9 | | |
| #200 | 49.0 | | |
| 0.0357 mm. | 19.0 | | |
| 0.0228 mm. | 15.5 | | |
| 0.0134 mm. | 10.4 | | |
| 0.0095 mm. | 8.6 | | |
| 0.0068 mm. | 6.9 | | |
| 0.0034 mm. | 1.7 | | |
| 0.0014 mm. | 0.1 | | |

* (no specification provided)

**Material Description**

Silty sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SM **AASHTO (M 145)=**

**Coefficients**

| | | |
|---|---|---|
| $D_{90}$= 0.3695 | $D_{85}$= 0.2365 | $D_{60}$= 0.0968 |
| $D_{50}$= 0.0766 | $D_{30}$= 0.0499 | $D_{15}$= 0.0212 |
| $D_{10}$= 0.0127 | $C_u$= 7.60 | $C_c$= 2.02 |

**Remarks**

**Date Received:** 9-25-15 **Date Tested:** 10-13-15

**Tested By:** Ted Moody

**Checked By:** Jeff Young

**Title:** Lab Manager

**Location:** 34393-9
**Sample Number:** 15-1180

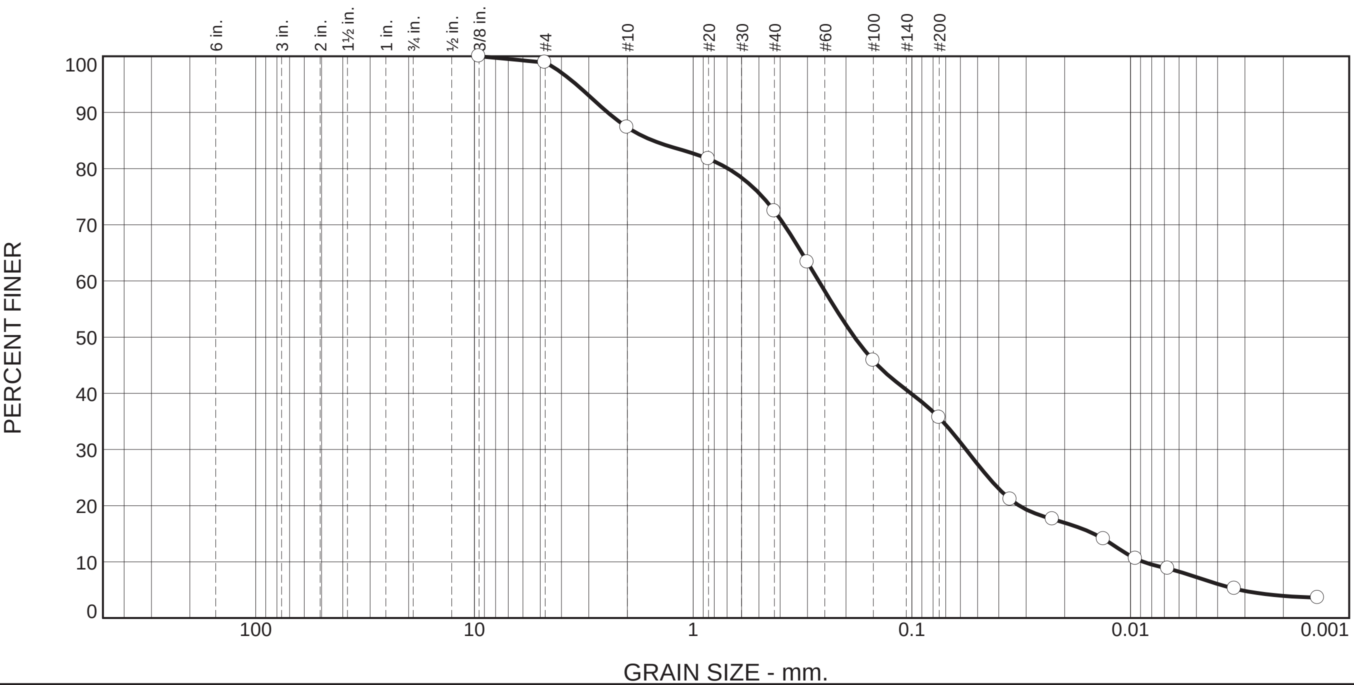
**Date Sampled:** 9-9-15

CONSULTING TESTING INSPECTION JTC inc. GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 071

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.1 | 11.6 | 14.9 | 36.7 | 28.4 | 7.3 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 98.9 | | |
| #10 | 87.3 | | |
| #20 | 81.7 | | |
| #40 | 72.4 | | |
| #50 | 63.3 | | |
| #100 | 45.8 | | |
| #200 | 35.7 | | |
| 0.0355 mm. | 21.1 | | |
| 0.0227 mm. | 17.6 | | |
| 0.0133 mm. | 14.1 | | |
| 0.0095 mm. | 10.6 | | |
| 0.0067 mm. | 8.8 | | |
| 0.0033 mm. | 5.2 | | |
| 0.0014 mm. | 3.6 | | |

* (no specification provided)

**Material Description**

Silty, clayey sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SC-SM **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 2.4571 $D_{85}$= 1.5277 $D_{60}$= 0.2667
$D_{50}$= 0.1827 $D_{30}$= 0.0565 $D_{15}$= 0.0147
$D_{10}$= 0.0087 $C_u$= 30.48 $C_c$= 1.37

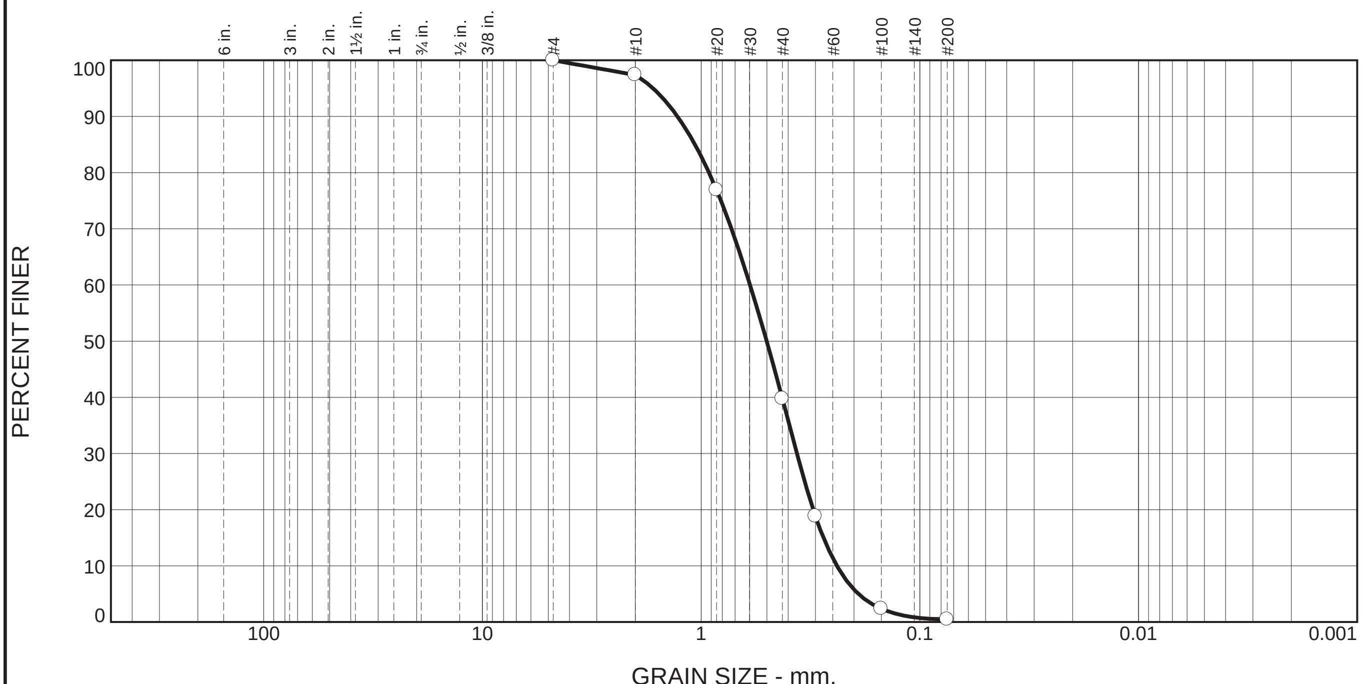
**Remarks**

**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34393-10
**Sample Number:** 15-1181
**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing
**Project No:** 15-25-006 **Figure** 072

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 2.6 | 57.6 | 39.3 | 0.5 | |

| TEST RESULTS | | | |
|---|---|---|---|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| #4 | 100.0 | | |
| #10 | 97.4 | | |
| #20 | 76.9 | | |
| #40 | 39.8 | | |
| #50 | 18.8 | | |
| #100 | 2.4 | | |
| #200 | 0.5 | | |

* (no specification provided)

**Material Description**

Poorly graded sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SP **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 1.2824 $D_{85}$= 1.0672 $D_{60}$= 0.5974
$D_{50}$= 0.5016 $D_{30}$= 0.3648 $D_{15}$= 0.2759
$D_{10}$= 0.2394 $C_u$= 2.50 $C_c$= 0.93

**Remarks**

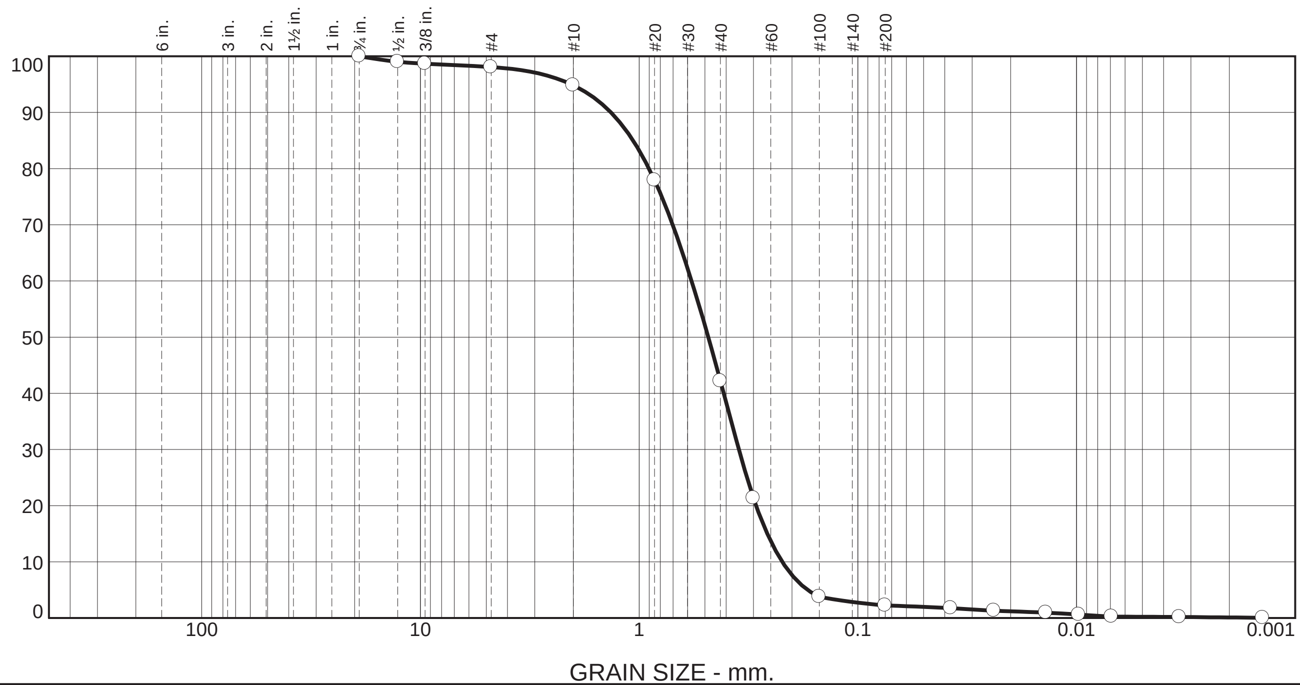
**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34393-11
**Sample Number:** 15-1182
**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 073

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.9 | 3.3 | 52.6 | 40.0 | 2.0 | 0.2 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/4 | 100.0 | | |
| 1/2 | 99.0 | | |
| 3/8 | 98.7 | | |
| #4 | 98.1 | | |
| #10 | 94.8 | | |
| #20 | 77.9 | | |
| #40 | 42.2 | | |
| #50 | 21.4 | | |
| #100 | 3.8 | | |
| #200 | 2.2 | | |
| 0.0376 mm. | 1.8 | | |
| 0.0238 mm. | 1.3 | | |
| 0.0138 mm. | 1.0 | | |
| 0.0098 mm. | 0.6 | | |
| 0.0069 mm. | 0.3 | | |
| 0.0034 mm. | 0.2 | | |
| 0.0014 mm. | 0.0 | | |

* (no specification provided)

**Material Description**

Poorly graded sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SP **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 1.3448 $D_{85}$= 1.0656 $D_{60}$= 0.5755
$D_{50}$= 0.4828 $D_{30}$= 0.3499 $D_{15}$= 0.2594
$D_{10}$= 0.2216 $C_u$= 2.60 $C_c$= 0.96

**Remarks**

**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

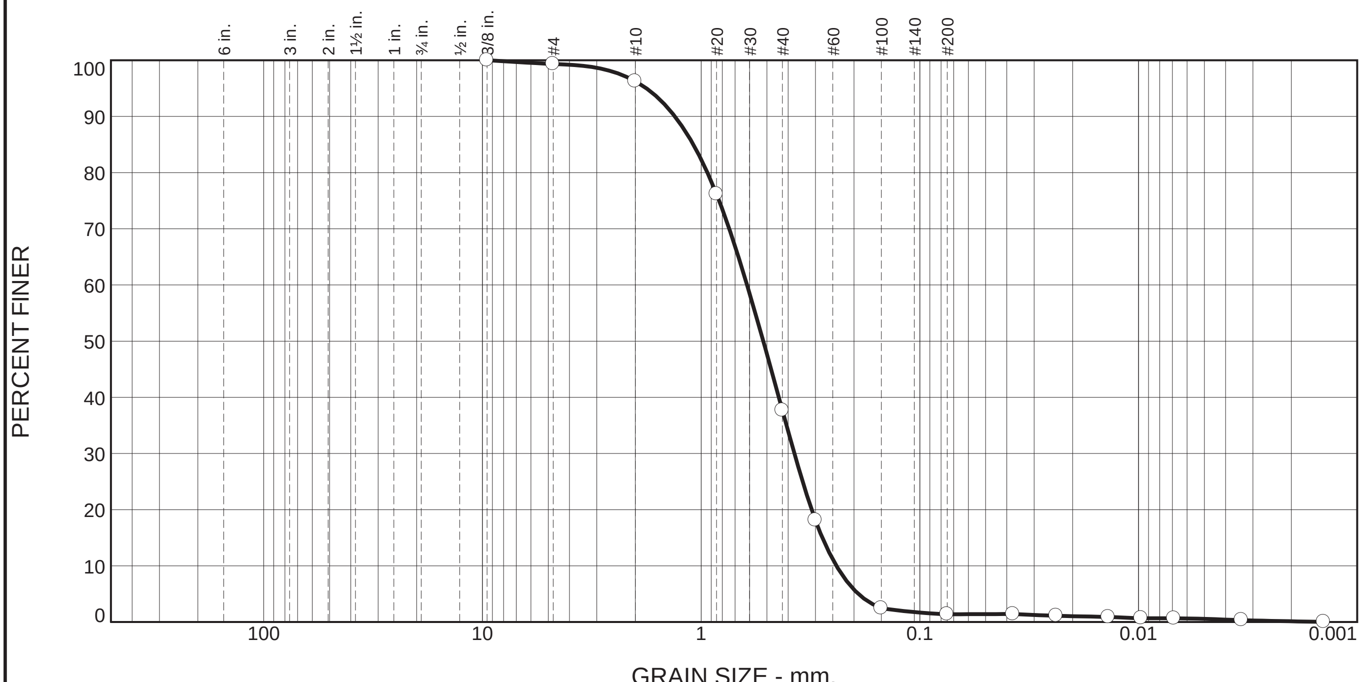
**Location:** 34393-12
**Sample Number:** 15-1183
**Date Sampled:** 9-9-15

CONSULTING TESTING INSPECTION JTC inc. GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 074

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.7 | 3.0 | 58.6 | 36.3 | 0.8 | 0.6 |

| TEST RESULTS | | | |
|---|---|---|---|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| 3/8 | 100.0 | | |
| #4 | 99.3 | | |
| #10 | 96.3 | | |
| #20 | 76.2 | | |
| #40 | 37.7 | | |
| #50 | 18.1 | | |
| #100 | 2.4 | | |
| #200 | 1.4 | | |
| 0.0375 mm. | 1.4 | | |
| 0.0238 mm. | 1.1 | | |
| 0.0137 mm. | 0.9 | | |
| 0.0097 mm. | 0.7 | | |
| 0.0069 mm. | 0.7 | | |
| 0.0034 mm. | 0.3 | | |
| 0.0014 mm. | 0.0 | | |

* (no specification provided)

**Material Description**

Poorly graded sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SP **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 1.3180 $D_{85}$= 1.0855 $D_{60}$= 0.6165
$D_{50}$= 0.5199 $D_{30}$= 0.3747 $D_{15}$= 0.2790
$D_{10}$= 0.2408 $C_u$= 2.56 $C_c$= 0.95

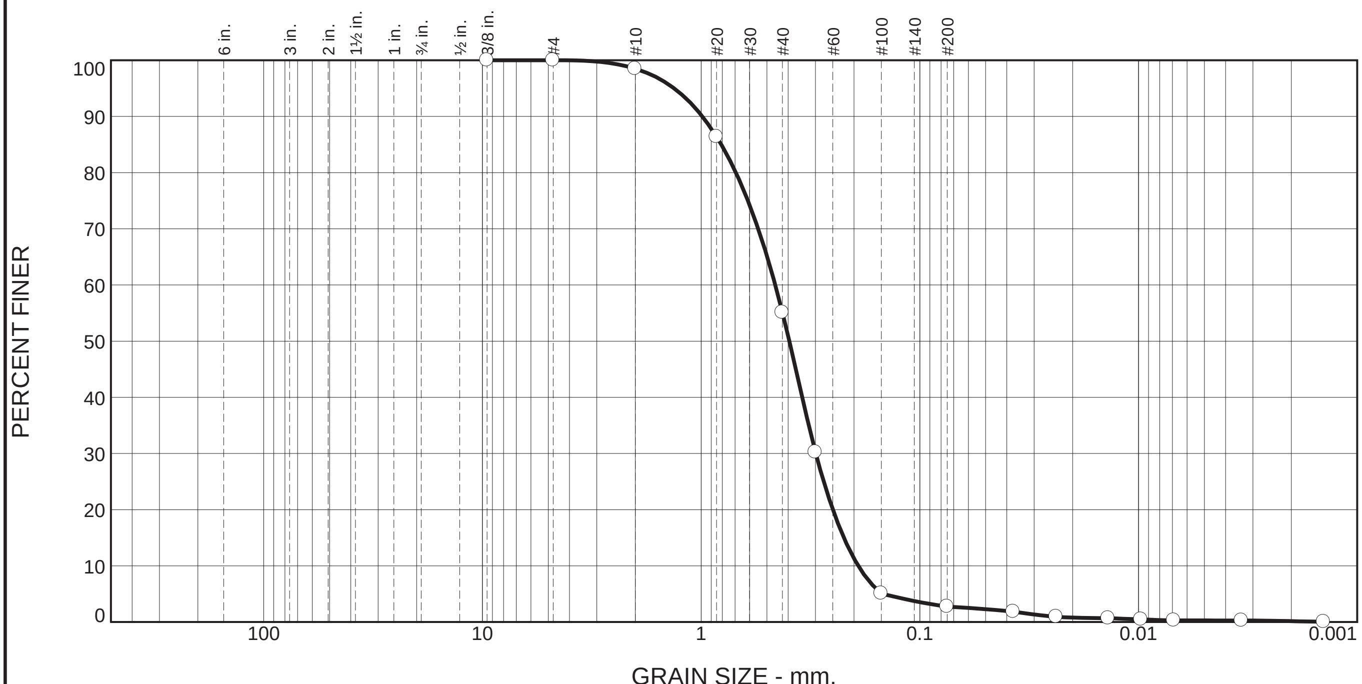
**Remarks**

**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34393-13
**Sample Number:** 15-1184
**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing
**Project No:** 15-25-006 **Figure** 075

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 1.5 | 43.4 | 52.4 | 2.4 | 0.3 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 100.0 | | |
| #10 | 98.5 | | |
| #20 | 86.4 | | |
| #40 | 55.1 | | |
| #50 | 30.2 | | |
| #100 | 5.1 | | |
| #200 | 2.7 | | |
| 0.0374 mm. | 1.8 | | |
| 0.0238 mm. | 0.9 | | |
| 0.0137 mm. | 0.7 | | |
| 0.0097 mm. | 0.5 | | |
| 0.0069 mm. | 0.3 | | |
| 0.0034 mm. | 0.3 | | |
| 0.0014 mm. | 0.0 | | |

* (no specification provided)

**Material Description**

Poorly graded sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SP **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.9877 $D_{85}$= 0.8093 $D_{60}$= 0.4582
$D_{50}$= 0.3952 $D_{30}$= 0.2989 $D_{15}$= 0.2225
$D_{10}$= 0.1911 $C_u$= 2.40 $C_c$= 1.02

**Remarks**

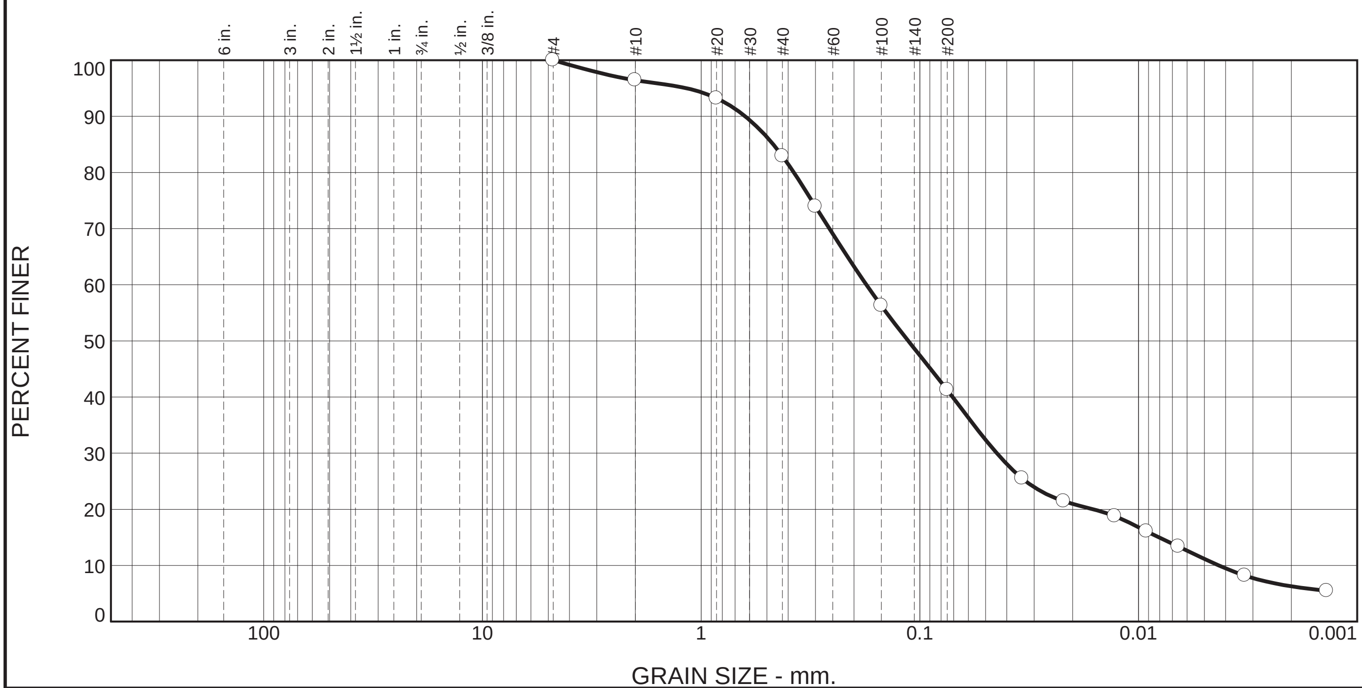
**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34393-14
**Sample Number:** 15-1185
**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 076

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 3.6 | 13.5 | 41.6 | 30.1 | 11.2 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 96.4 | | |
| #20 | 93.2 | | |
| #40 | 82.9 | | |
| #50 | 73.9 | | |
| #100 | 56.3 | | |
| #200 | 41.3 | | |
| 0.0341 mm. | 25.5 | | |
| 0.0220 mm. | 21.5 | | |
| 0.0128 mm. | 18.8 | | |
| 0.0092 mm. | 16.1 | | |
| 0.0066 mm. | 13.4 | | |
| 0.0033 mm. | 8.2 | | |
| 0.0014 mm. | 5.5 | | |

* (no specification provided)

**Material Description**

Silty, clayey sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SC-SM **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.6288 $D_{85}$= 0.4681 $D_{60}$= 0.1755
$D_{50}$= 0.1130 $D_{30}$= 0.0445 $D_{15}$= 0.0081
$D_{10}$= 0.0043 $C_u$= 40.88 $C_c$= 2.63

**Remarks**

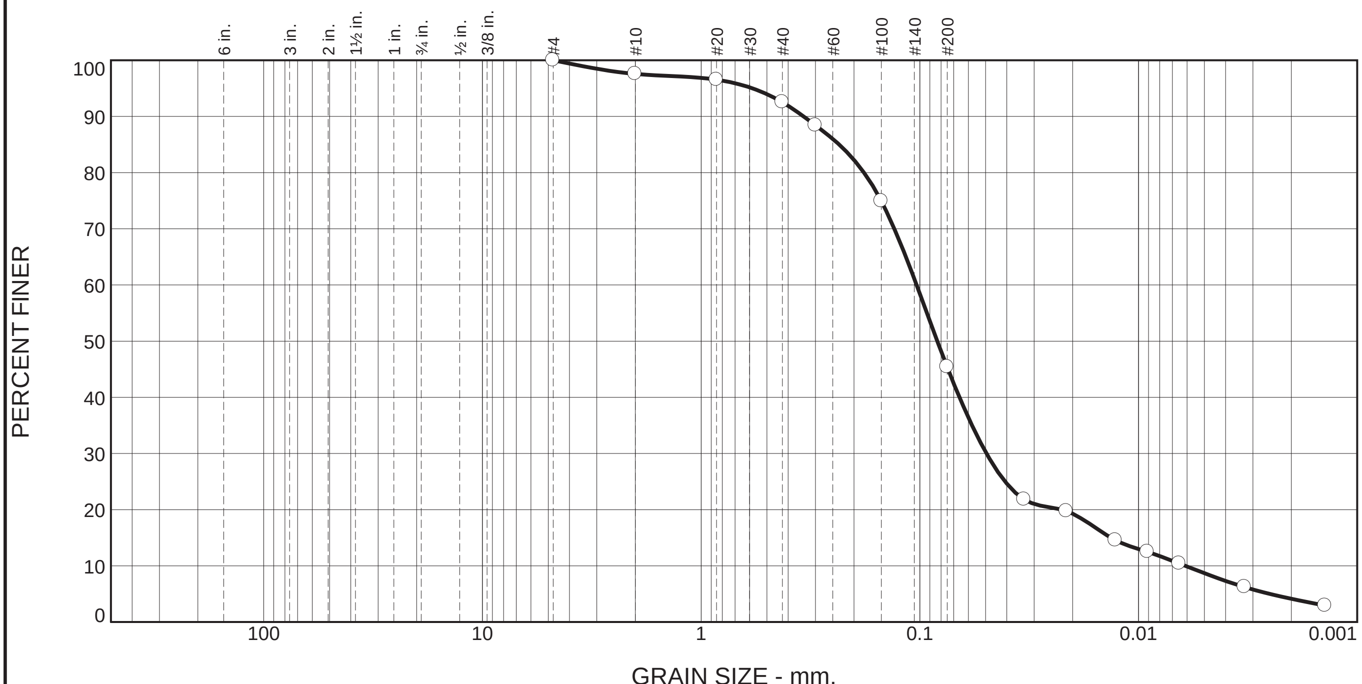
**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34393-15
**Sample Number:** 15-1186
**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 077

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 2.4 | 5.1 | 47.1 | 36.7 | 8.7 |

| TEST RESULTS | | | |
|---|---|---|---|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| #4 | 100.0 | | |
| #10 | 97.6 | | |
| #20 | 96.5 | | |
| #40 | 92.5 | | |
| #50 | 88.4 | | |
| #100 | 74.9 | | |
| #200 | 45.4 | | |
| 0.0333 mm. | 21.8 | | |
| 0.0214 mm. | 19.8 | | |
| 0.0127 mm. | 14.6 | | |
| 0.0091 mm. | 12.5 | | |
| 0.0065 mm. | 10.4 | | |
| 0.0033 mm. | 6.2 | | |
| 0.0014 mm. | 2.9 | | |

* (no specification provided)

**Material Description**

Silty, clayey sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SC-SM **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.3402 $D_{85}$= 0.2339 $D_{60}$= 0.1035
$D_{50}$= 0.0831 $D_{30}$= 0.0495 $D_{15}$= 0.0134
$D_{10}$= 0.0061 $C_u$= 16.94 $C_c$= 3.89

**Remarks**

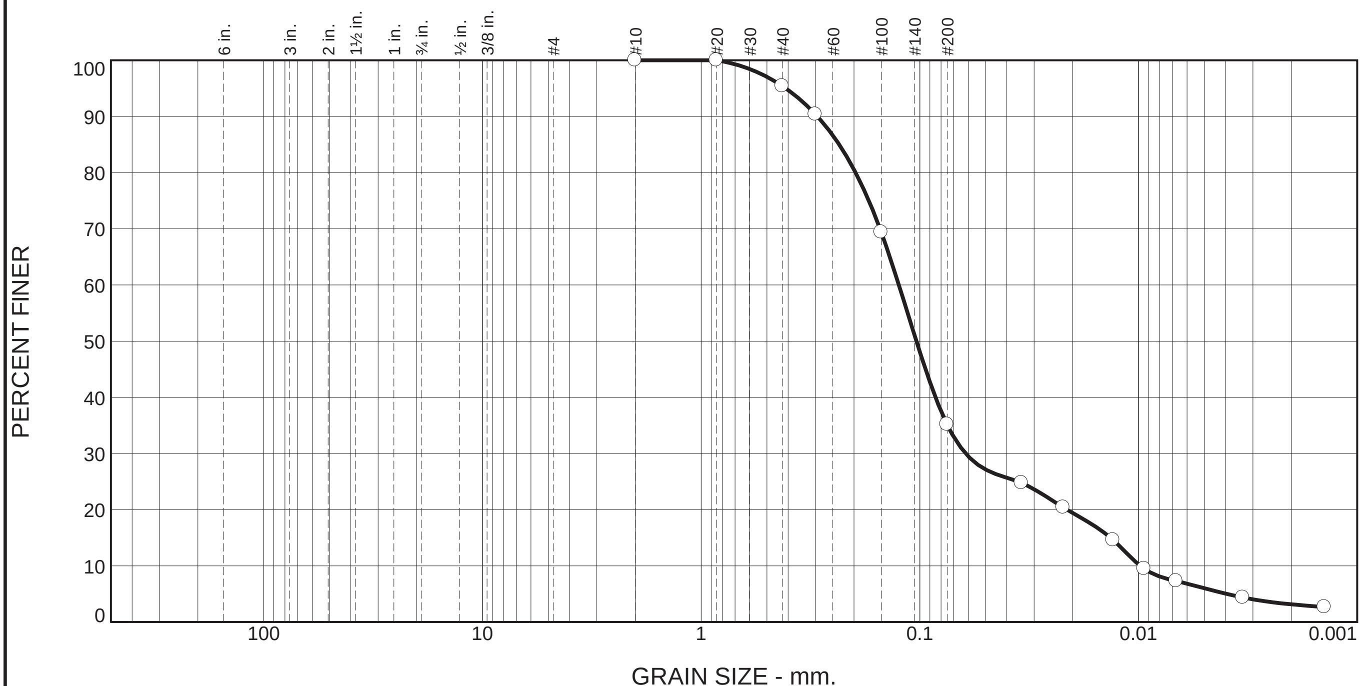
**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34393-16
**Sample Number:** 15-1187
**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 078

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.0 | 4.6 | 60.3 | 29.1 | 6.0 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #10 | 100.0 | | |
| #20 | 100.0 | | |
| #40 | 95.4 | | |
| #50 | 90.4 | | |
| #100 | 69.4 | | |
| #200 | 35.1 | | |
| 0.0342 mm. | 24.8 | | |
| 0.0221 mm. | 20.4 | | |
| 0.0131 mm. | 14.6 | | |
| 0.0094 mm. | 9.5 | | |
| 0.0067 mm. | 7.3 | | |
| 0.0033 mm. | 4.4 | | |
| 0.0014 mm. | 2.7 | | |

* (no specification provided)

**Material Description**

Silty, clayey sand

**Atterberg Limits (ASTM D 4318)**

PL= LL= PI=

**Classification**

USCS (D 2487)= SC-SM AASHTO (M 145)=

**Coefficients**

$D_{90}$= 0.2941 $D_{85}$= 0.2338 $D_{60}$= 0.1247
$D_{50}$= 0.1037 $D_{30}$= 0.0617 $D_{15}$= 0.0134
$D_{10}$= 0.0098 $C_u$= 12.72 $C_c$= 3.12

**Remarks**

**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34393-17
**Sample Number:** 15-1188
**Date Sampled:** 9-9-15

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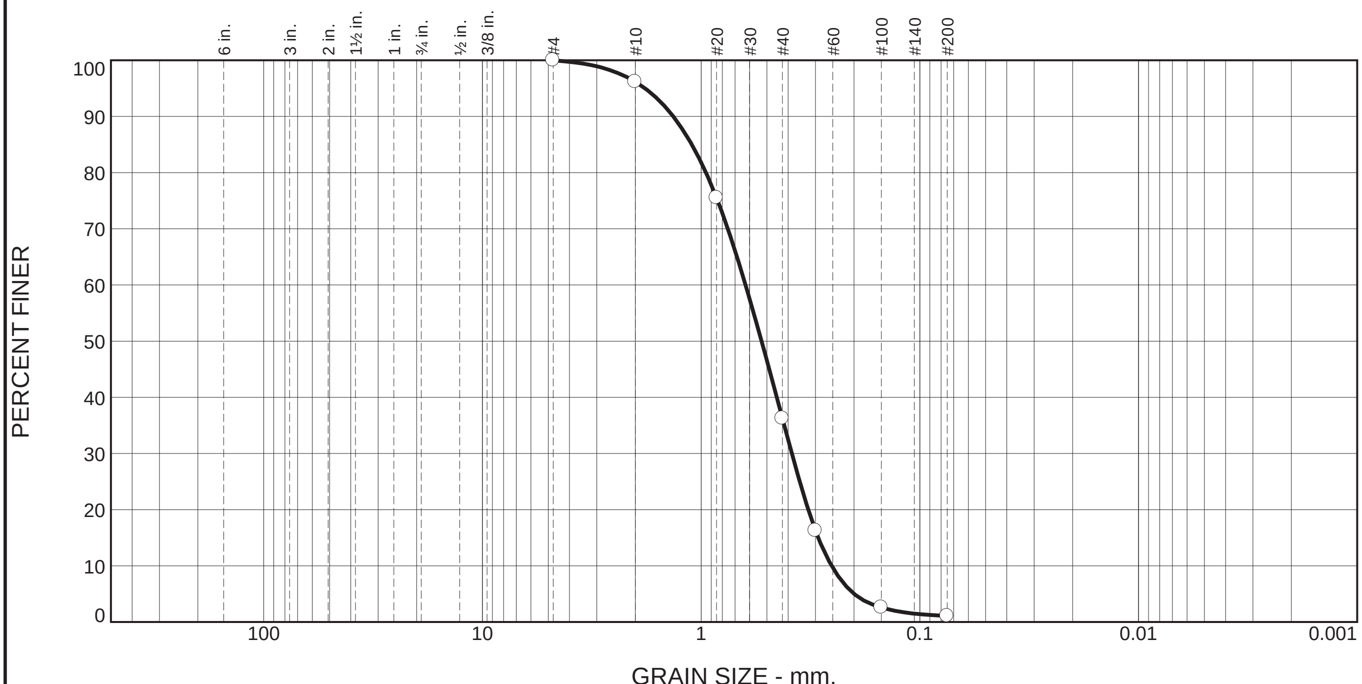
**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing
**Project No:** 15-25-006 **Figure** 079

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 3.8 | 59.9 | 35.2 | 1.1 | |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 96.2 | | |
| #20 | 75.5 | | |
| #40 | 36.3 | | |
| #50 | 16.3 | | |
| #100 | 2.6 | | |
| #200 | 1.1 | | |

* (no specification provided)

**Material Description**

Poorly graded sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SP **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 1.3404 $D_{85}$= 1.1033 $D_{60}$= 0.6264
$D_{50}$= 0.5293 $D_{30}$= 0.3848 $D_{15}$= 0.2914
$D_{10}$= 0.2532 $C_u$= 2.47 $C_c$= 0.93

**Remarks**

**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

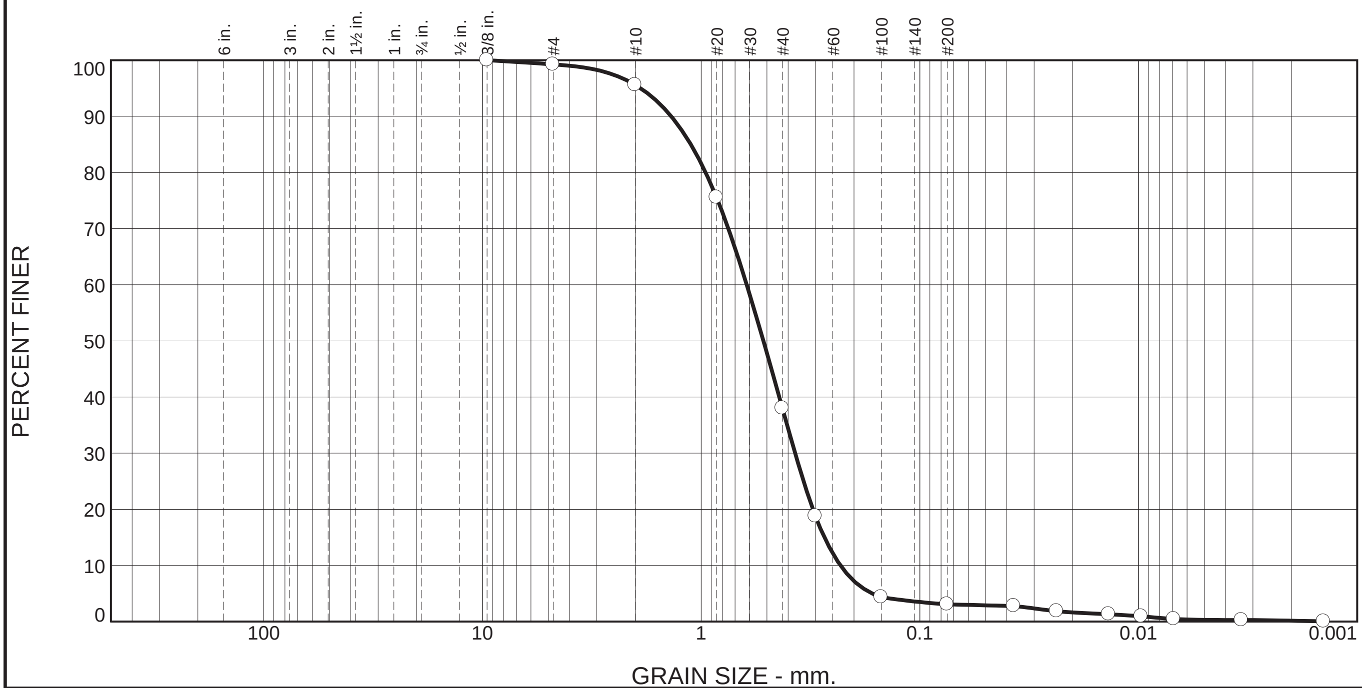
**Location:** 34395-1
**Sample Number:** 15-1189
**Date Sampled:** 9-9-15

CONSULTING TESTING INSPECTION JTC inc. GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 080

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.7 | 3.7 | 57.6 | 34.9 | 2.8 | 0.3 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 99.3 | | |
| #10 | 95.6 | | |
| #20 | 75.5 | | |
| #40 | 38.0 | | |
| #50 | 18.8 | | |
| #100 | 4.3 | | |
| #200 | 3.1 | | |
| 0.0372 mm. | 2.8 | | |
| 0.0236 mm. | 1.9 | | |
| 0.0137 mm. | 1.3 | | |
| 0.0097 mm. | 0.9 | | |
| 0.0069 mm. | 0.5 | | |
| 0.0034 mm. | 0.3 | | |
| 0.0014 mm. | 0.0 | | |

* (no specification provided)

**Material Description**

Poorly graded sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SP **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 1.3700 $D_{85}$= 1.1153 $D_{60}$= 0.6186
$D_{50}$= 0.5192 $D_{30}$= 0.3718 $D_{15}$= 0.2732
$D_{10}$= 0.2308 $C_u$= 2.68 $C_c$= 0.97

**Remarks**

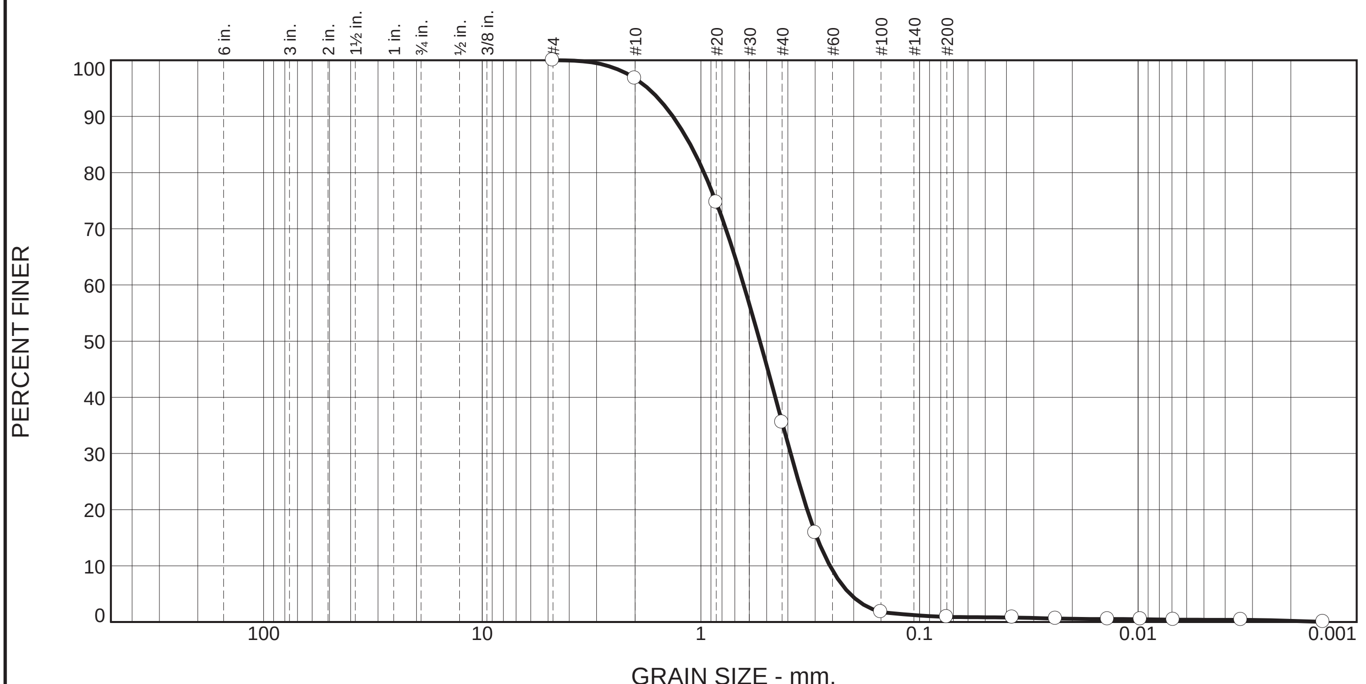
**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34395-2 **Date Sampled:** 9-9-15
**Sample Number:** 15-1190

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 081

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 3.2 | 61.3 | 34.6 | 0.5 | 0.4 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 96.8 | | |
| #20 | 74.7 | | |
| #40 | 35.5 | | |
| #50 | 15.9 | | |
| #100 | 1.8 | | |
| #200 | 0.9 | | |
| 0.0376 mm. | 0.8 | | |
| 0.0238 mm. | 0.6 | | |
| 0.0138 mm. | 0.5 | | |
| 0.0097 mm. | 0.5 | | |
| 0.0069 mm. | 0.4 | | |
| 0.0034 mm. | 0.4 | | |
| 0.0014 mm. | 0.0 | | |

* (no specification provided)

**Material Description**

Poorly graded sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SP **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 1.3422 $D_{85}$= 1.1180 $D_{60}$= 0.6371
$D_{50}$= 0.5372 $D_{30}$= 0.3886 $D_{15}$= 0.2941
$D_{10}$= 0.2569 $C_u$= 2.48 $C_c$= 0.92

**Remarks**

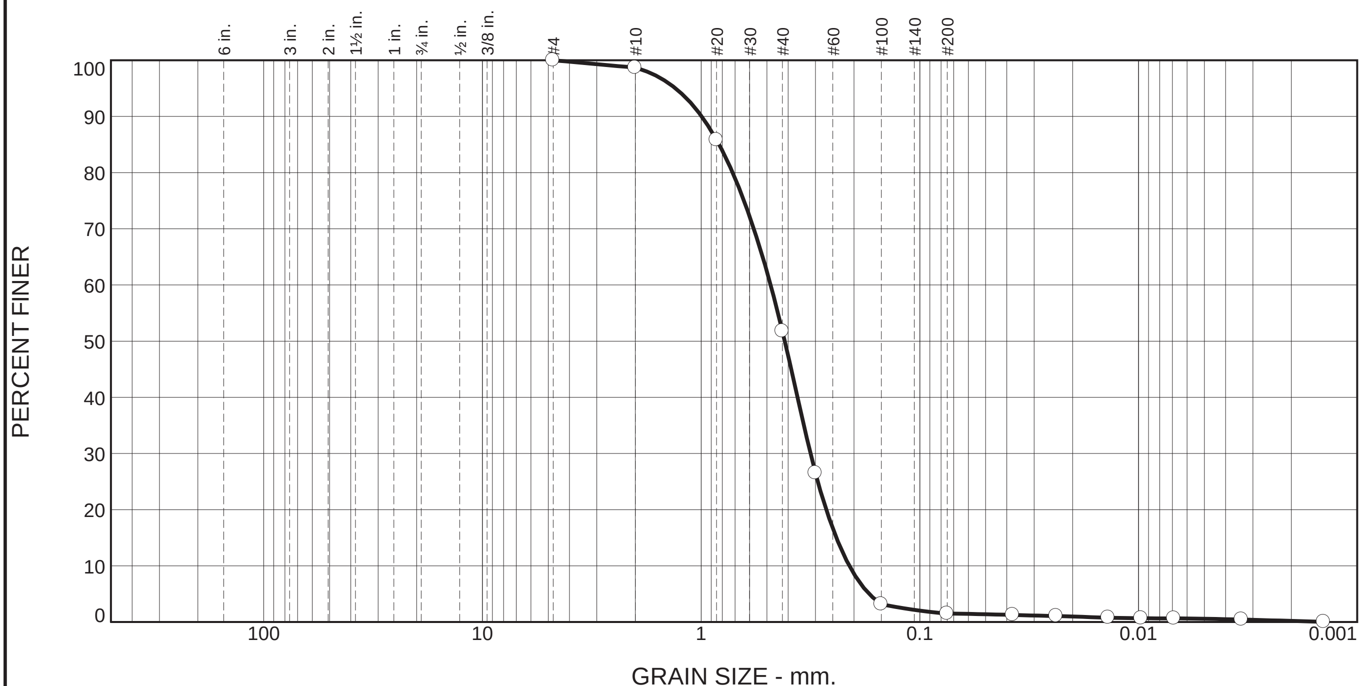
**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34395-3
**Sample Number:** 15-1191
**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 082

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 1.3 | 46.9 | 50.3 | 0.9 | 0.6 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 98.7 | | |
| #20 | 85.8 | | |
| #40 | 51.8 | | |
| #50 | 26.5 | | |
| #100 | 3.2 | | |
| #200 | 1.5 | | |
| 0.0376 mm. | 1.3 | | |
| 0.0238 mm. | 1.1 | | |
| 0.0137 mm. | 0.8 | | |
| 0.0097 mm. | 0.7 | | |
| 0.0069 mm. | 0.6 | | |
| 0.0034 mm. | 0.4 | | |
| 0.0014 mm. | 0.0 | | |

* (no specification provided)

**Material Description**

Poorly graded sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SP **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.9946 $D_{85}$= 0.8278 $D_{60}$= 0.4811
$D_{50}$= 0.4146 $D_{30}$= 0.3161 $D_{15}$= 0.2409
$D_{10}$= 0.2100 $C_u$= 2.29 $C_c$= 0.99

**Remarks**

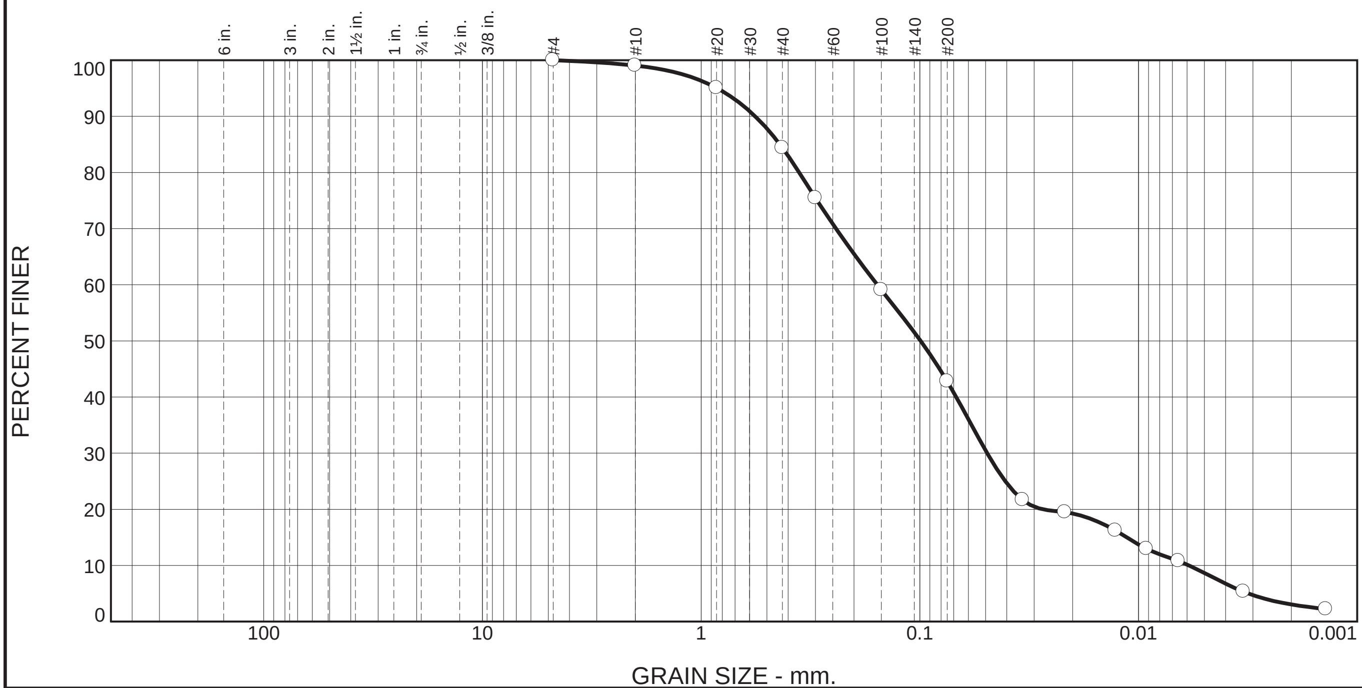
**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34395-4
**Sample Number:** 15-1192
**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 083

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 1.0 | 14.6 | 41.6 | 34.1 | 8.7 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 99.0 | | |
| #20 | 95.1 | | |
| #40 | 84.4 | | |
| #50 | 75.5 | | |
| #100 | 59.1 | | |
| #200 | 42.8 | | |
| 0.0339 mm. | 21.7 | | |
| 0.0217 mm. | 19.5 | | |
| 0.0128 mm. | 16.2 | | |
| 0.0092 mm. | 13.0 | | |
| 0.0066 mm. | 10.8 | | |
| 0.0033 mm. | 5.3 | | |
| 0.0014 mm. | 2.2 | | |

* (no specification provided)

**Material Description**

Silty, clayey sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SC-SM **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.5660 $D_{85}$= 0.4365 $D_{60}$= 0.1565
$D_{50}$= 0.0992 $D_{30}$= 0.0492 $D_{15}$= 0.0113
$D_{10}$= 0.0059 $C_u$= 26.56 $C_c$= 2.62

**Remarks**

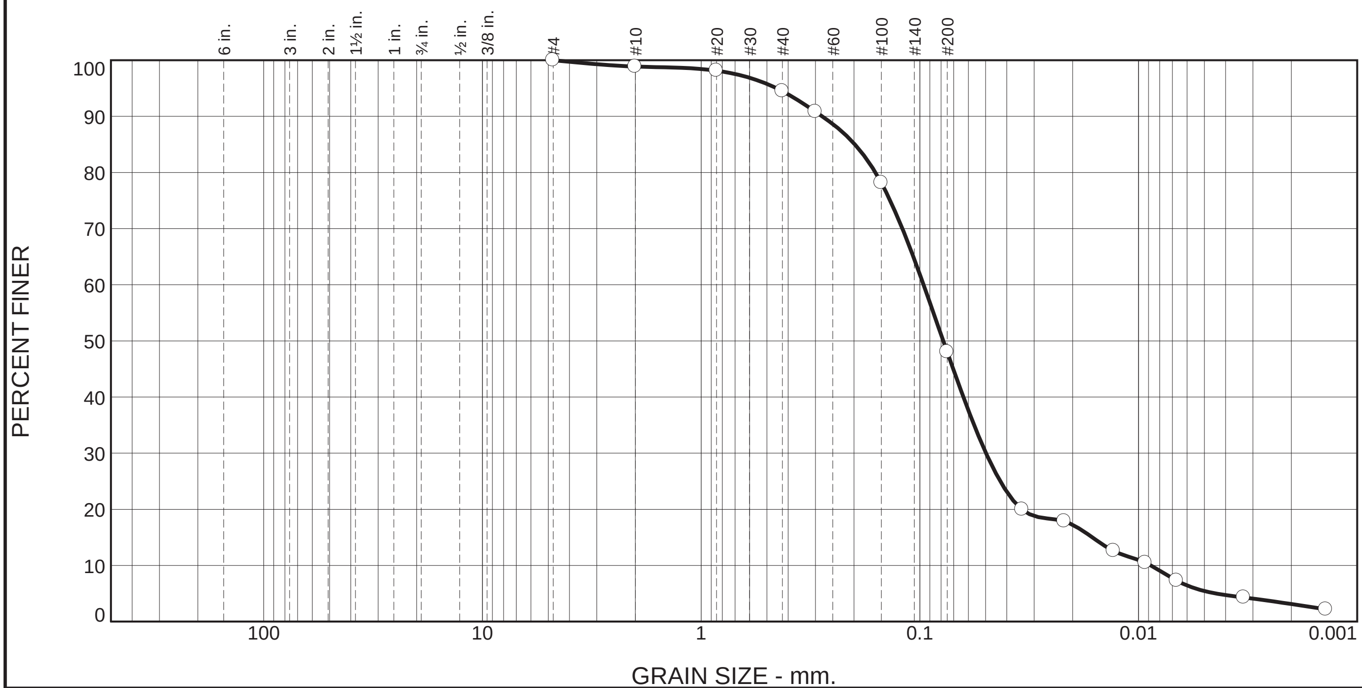
**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34395-5
**Sample Number:** 15-1193
**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 084

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 1.1 | 4.4 | 46.5 | 42.6 | 5.4 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 98.9 | | |
| #20 | 98.1 | | |
| #40 | 94.5 | | |
| #50 | 90.8 | | |
| #100 | 78.2 | | |
| #200 | 48.0 | | |
| 0.0341 mm. | 20.0 | | |
| 0.0218 mm. | 17.9 | | |
| 0.0130 mm. | 12.6 | | |
| 0.0093 mm. | 10.5 | | |
| 0.0067 mm. | 7.3 | | |
| 0.0033 mm. | 4.3 | | |
| 0.0014 mm. | 2.2 | | |

* (no specification provided)

**Material Description**

Silty, clayey sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SC-SM **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.2795 $D_{85}$= 0.1981 $D_{60}$= 0.0961
$D_{50}$= 0.0781 $D_{30}$= 0.0498 $D_{15}$= 0.0163
$D_{10}$= 0.0088 $C_u$= 10.93 $C_c$= 2.93

**Remarks**

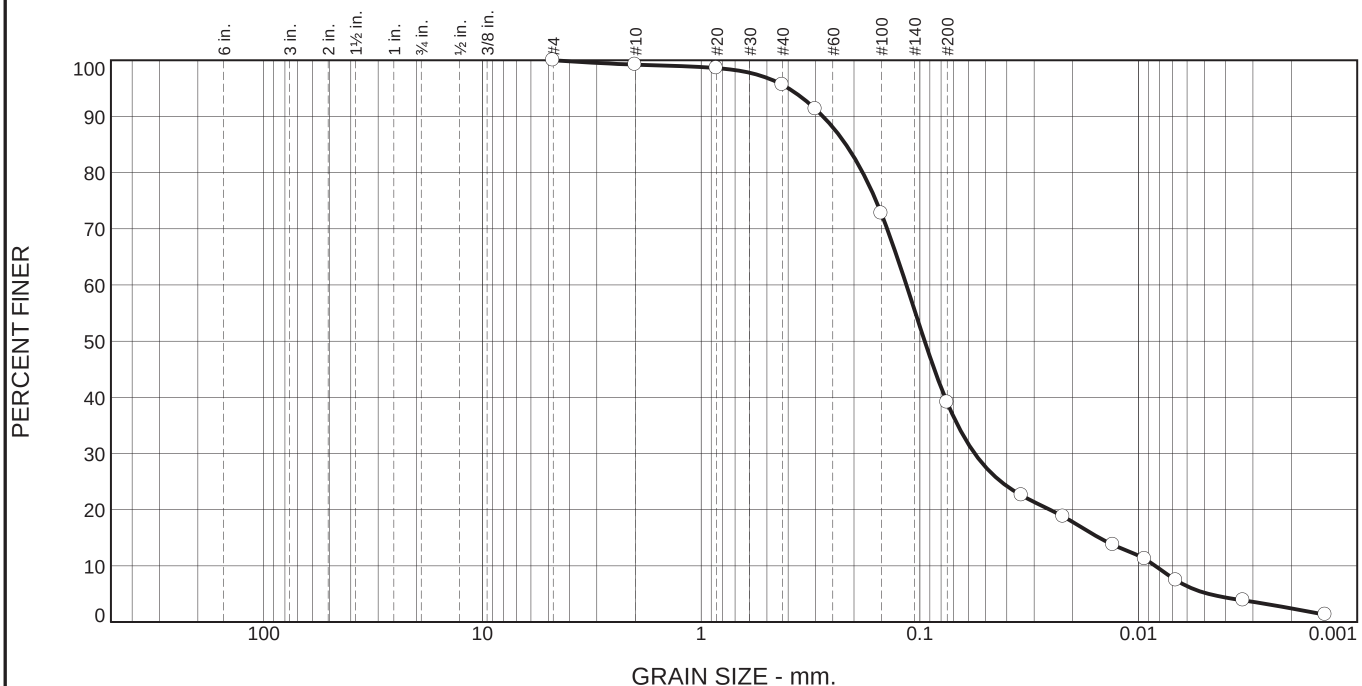
**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34395-6
**Sample Number:** 15-1194
**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 085

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.8 | 3.6 | 56.5 | 33.9 | 5.2 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 99.2 | | |
| #20 | 98.6 | | |
| #40 | 95.6 | | |
| #50 | 91.3 | | |
| #100 | 72.7 | | |
| #200 | 39.1 | | |
| 0.0343 mm. | 22.6 | | |
| 0.0221 mm. | 18.8 | | |
| 0.0131 mm. | 13.7 | | |
| 0.0094 mm. | 11.2 | | |
| 0.0067 mm. | 7.4 | | |
| 0.0033 mm. | 3.9 | | |
| 0.0014 mm. | 1.3 | | |

* (no specification provided)

**Material Description**

Silty, clayey sand

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** SC-SM **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 0.2773 $D_{85}$= 0.2177 $D_{60}$= 0.1152
$D_{50}$= 0.0950 $D_{30}$= 0.0561 $D_{15}$= 0.0151
$D_{10}$= 0.0084 $C_u$= 13.76 $C_c$= 3.26

**Remarks**

**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

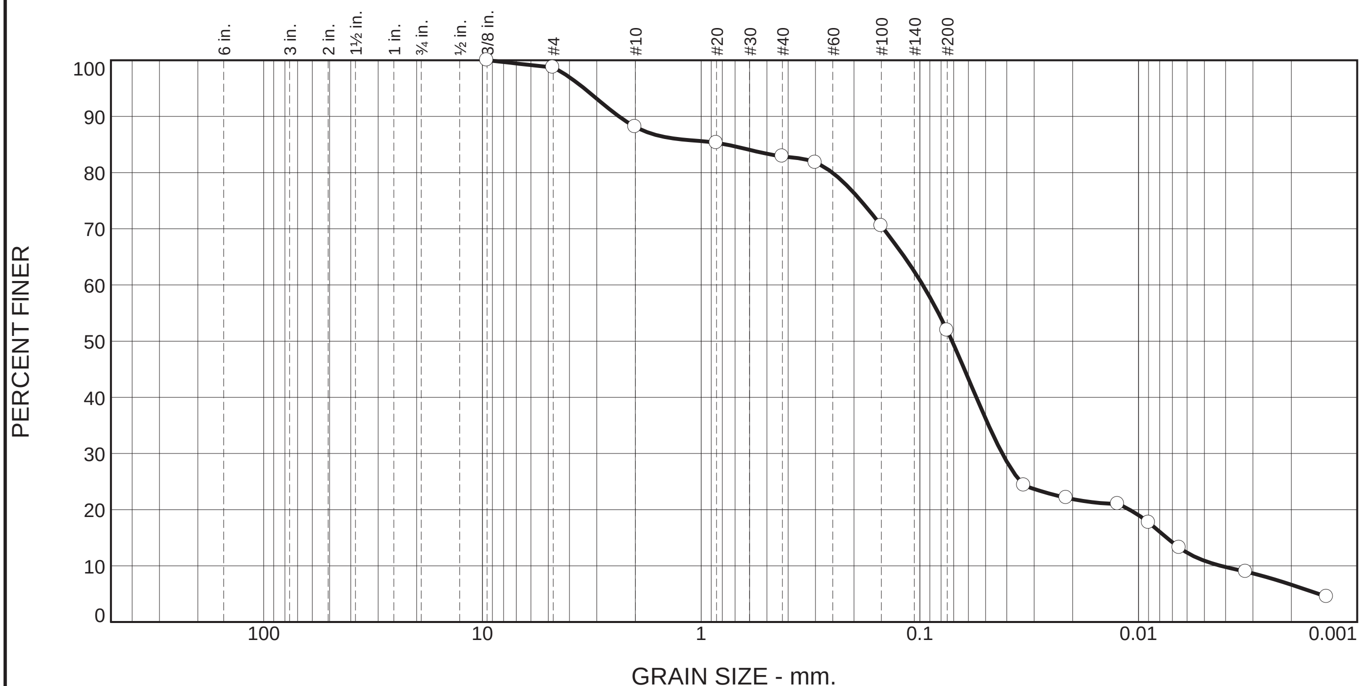
**Location:** 34395-7
**Sample Number:** 15-1195
**Date Sampled:** 9-9-15

CONSULTING TESTING INSPECTION JTC inc. GEOTECHNICAL • CONSTRUCTION

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 086

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 1.3 | 10.6 | 5.2 | 31.0 | 41.0 | 10.9 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| 3/8 | 100.0 | | |
| #4 | 98.7 | | |
| #10 | 88.1 | | |
| #20 | 85.3 | | |
| #40 | 82.9 | | |
| #50 | 81.8 | | |
| #100 | 70.5 | | |
| #200 | 51.9 | | |
| 0.0334 mm. | 24.3 | | |
| 0.0214 mm. | 22.1 | | |
| 0.0124 mm. | 21.0 | | |
| 0.0090 mm. | 17.7 | | |
| 0.0065 mm. | 13.2 | | |
| 0.0032 mm. | 9.0 | | |
| 0.0014 mm. | 4.5 | | |

* (no specification provided)

**Material Description**

Sandy silty clay

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** CL-ML **AASHTO (M 145)=**

**Coefficients**

$D_{90}$= 2.3750 $D_{85}$= 0.7685 $D_{60}$= 0.0970
$D_{50}$= 0.0712 $D_{30}$= 0.0420 $D_{15}$= 0.0074
$D_{10}$= 0.0042 $C_u$= 23.06 $C_c$= 4.32

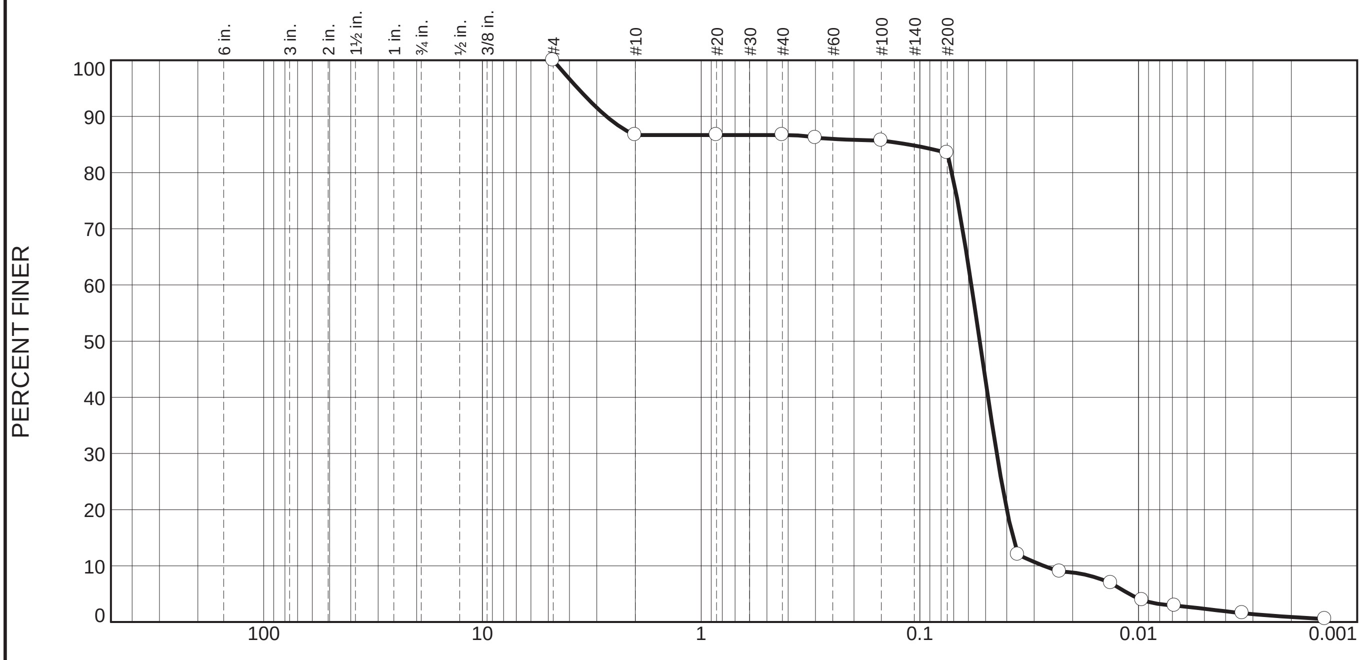
**Remarks**

**Date Received:** 9-25-15 **Date Tested:** 10-13-15
**Tested By:** Ted Moody
**Checked By:** Jeff Young
**Title:** Lab Manager

**Location:** 34395-8
**Sample Number:** 15-1196
**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing
**Project No:** 15-25-006 **Figure** 087

# Particle Size Distribution Report




| % Cobbles | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 13.3 | 0.0 | 3.2 | 81.1 | 2.4 |

**TEST RESULTS**

| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 86.7 | | |
| #20 | 86.7 | | |
| #40 | 86.7 | | |
| #50 | 86.2 | | |
| #100 | 85.7 | | |
| #200 | 83.5 | | |
| 0.0356 mm. | 12.0 | | |
| 0.0229 mm. | 9.0 | | |
| 0.0134 mm. | 7.0 | | |
| 0.0096 mm. | 3.9 | | |
| 0.0068 mm. | 2.9 | | |
| 0.0033 mm. | 1.6 | | |
| 0.0014 mm. | 0.6 | | |

* (no specification provided)

**Material Description**

Sandy silt

**Atterberg Limits (ASTM D 4318)**

**PL=** **LL=** **PI=**

**Classification**

**USCS (D 2487)=** ML **AASHTO (M 145)=**

**Coefficients**

| | | |
|---|---|---|
| $D_{90}$= 2.7077 | $D_{85}$= 0.1124 | $D_{60}$= 0.0581 |
| $D_{50}$= 0.0532 | $D_{30}$= 0.0445 | $D_{15}$= 0.0374 |
| $D_{10}$= 0.0271 | $C_u$= 2.14 | $C_c$= 1.26 |

**Remarks**

**Date Received:** 9-25-15 **Date Tested:** 10-13-15

**Tested By:** Ted Moody

**Checked By:** Jeff Young

**Title:** Lab Manager

**Location:** 34395-9
**Sample Number:** 15-1197

**Date Sampled:** 9-9-15

**Client:** Absolute Resource Associates
**Project:** Miscellaneous Testing

**Project No:** 15-25-006 **Figure** 088

USACE ERDC-EP-C
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

29 November 2016

Bart Chadwick
Navy -- SPAWAR
Environmental Science and Applied System Branch, 536(
San Diego, CA 92152

RE: Quantico

Enclosed are the results of analyses for samples received by the laboratory on 26-Aug-2016. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jenifer Milam For Dale Rosado, Ph. D.
Chemist

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| QT25-1-0002-SedChem | 6082611-01 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-1-0205-SedChem | 6082611-02 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-1-0507-SedChem | 6082611-03 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-1-0002-SedChem-AI | 6082611-04 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-1-0002-SedChem-BI | 6082611-05 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-1-0205-SedChem-BI | 6082611-06 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-1-0507-SedChem-BI | 6082611-07 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-2-0002-SedChem | 6082611-08 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-2-0205-SedChem | 6082611-09 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-2-0507-SedChem | 6082611-10 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-2-0002-SedChem-AI | 6082611-11 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-2-0002-SedChem-BI | 6082611-12 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-2-0205-SedChem-BI | 6082611-13 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-2-0507-SedChem-BI | 6082611-14 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-3-0002-SedChem | 6082611-15 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-3-0205-SedChem | 6082611-16 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-3-0507-SedChem | 6082611-17 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-3-0002-SedChem-AI | 6082611-18 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-3-0002-SedChem-BI | 6082611-19 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-3-0205-SedChem-BI | 6082611-20 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-3-0507-SedChem-BI | 6082611-21 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-4-0002-SedChem | 6082611-22 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-4-0205-SedChem | 6082611-23 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-4-0507-SedChem | 6082611-24 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-4-0002-SedChem-AI | 6082611-25 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-4-0002-SedChem-BI | 6082611-26 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-4-0205-SedChem-BI | 6082611-27 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-4-0507-SedChem-BI | 6082611-28 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-5-0002-SedChem | 6082611-29 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-5-0205-SedChem | 6082611-30 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-5-0507-SedChem | 6082611-31 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| QT25-5-0002-SedChem-AI | 6082611-32 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-5-0002-SedChem-BI | 6082611-33 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-5-0205-SedChem-BI | 6082611-34 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-5-0507-SedChem-BI | 6082611-35 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-5DUP-0002-SedChem | 6082611-36 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-5DUP-0205-SedChem | 6082611-37 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-5DUP-0507-SedChem | 6082611-38 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-5DUP-002-SedChem-AI | 6082611-39 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-5DUP-002-SedChem-BI | 6082611-40 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-5DUP-0205-SedChem-BI | 6082611-41 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-5DUP-0507-SedChem-BI | 6082611-42 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-6-GRAB-SedChem | 6082611-43 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |
| QT25-7-GRAB-SedChem | 6082611-44 | Soil/Sediment | 24-Aug-2016 | 26-Aug-2016 |

USACE ERDC-EP-C
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## Case Narrative

No issues were experienced during the analysis of Work Order 6082611 unless specified below.

Surrogate was inadvertently left out of sample 6082600-08, however, there was no sample to re-extract.

In many samples, the 4,4-DDT values between the primary and confirmation columns had RPDs >40%. This also occured in a few samples for 2,4-DDE and 2,4-DDT. Many samples also had PCBs present which could be responsible for the differences in the the concentrations. Per SW 846, the lower value was reported.

Congener data will be sent as a separate excel file.

QT25-1-0002-SedChem-AI 6082611-04, QT25-2-0002-SedChem 6082611-08, QT25-5-0507-SedChem-BI 6082611-35 were analyzed by both TOCWalkey Black and TOC9060.

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| RPD-04 | RPD between primary and confirmation column values >40%. Per SW846 8000C, the lower result has been reported. |
| QM-08 | Spike or surrogate was inadvertently left out of this sample. |
| P | Duplicate analysis does not meet the acceptance criteria for precision |
| M2 | Sample was diluted due to matrix interference. |
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration. |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-1-0002-SedChem

### 6082611-01 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC-EL-EP-C** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **76.5** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **20.4** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **10.5** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDT** | **0.24** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDD** | **23.6** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **16.7** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **46.1** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.70** | | *50.0 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.42** | | *71.0 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-1-0002-SedChem

### 6082611-01RE1 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Air Water and Soil Laboratories, Inc.** | | | | | | | | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **1820** | 800 | 1000 | mg/kg | 15-Sep-2016 | 15-Sep-2016 | SW9060A | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-1-0205-SedChem

**6082611-02 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **72.9** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **11.6** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **3.74** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDT** | **0.18** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | J |
| **4,4´-DDD** | **58.2** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **11.4** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **5.50** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.75** | | *50.5 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.72** | | *78.5 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-1-0205-SedChem

### 6082611-02RE1 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **Air Water and Soil Laboratories, Inc.** | | | | | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **1860** | 800 | 1000 | mg/kg | 15-Sep-2016 | 15-Sep-2016 | SW9060A | |

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|---|---|---|
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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-1-0507-SedChem

**6082611-03 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **75.3** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **12.5** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **5.73** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDT** | **0.35** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDD** | **66.2** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **12.2** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **4.15** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.75** | | *51.8 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.47** | | *73.0 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-1-0507-SedChem

**6082611-03RE1 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Air Water and Soil Laboratories, Inc.** | | | | | | | | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **1790** | 800 | 1000 | mg/kg | 15-Sep-2016 | 15-Sep-2016 | SW9060A | |

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|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-1-0002-SedChem-AI

**6082611-04 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **85.5** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **3.34** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **1.30** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| 2,4´-DDT | ND | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | U |
| **4,4´-DDD** | **14.6** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **2.87** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.48** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.67** | | *55.8 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.18** | | *73.0 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| TOC | ND | 500 | 500 | mg/kg | 15-Sep-2016 | 15-Sep-2016 | SW9060A | |
| **WALKLEY BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| Total Organic Carbon | ND | 67 | 250 | mg/Kg | | 21-Sep-2016 | WALKLEY BLACK | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
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## QT25-1-0002-SedChem-BI

**6082611-05 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **78.5** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **21.8** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **11.6** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | U |
| **4,4´-DDD** | **685** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **15.9** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **8.52** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.72** | | *52.4 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.99** | | *60.4 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **1460** | 800 | 1000 | mg/kg | 15-Sep-2016 | 15-Sep-2016 | SW9060A | |

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## QT25-1-0205-SedChem-BI

**6082611-06 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **77.2** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **12.4** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **3.90** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDT** | **1.54** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDD** | **52.7** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **10.7** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **3.96** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.70** | | *50.6 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.18** | | *65.0 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **1700** | 800 | 1000 | mg/kg | 15-Sep-2016 | 15-Sep-2016 | SW9060A | |

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| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-1-0507-SedChem-BI

**6082611-07 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **77.1** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **7.58** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **3.29** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | U |
| **4,4´-DDD** | **29.7** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **5.42** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **1.02** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.54** | | *44.8 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.48** | | *72.2 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **1700** | 800 | 1000 | mg/kg | 15-Sep-2016 | 15-Sep-2016 | SW9060A | |

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## QT25-2-0002-SedChem

### 6082611-08 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **86.8** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **1.01** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **0.15** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | U |
| **4,4´-DDD** | **3.93** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.16** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | J |
| **4,4´-DDT** | **0.09** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **ND** | | *%* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | *QM-08, U* |
| *Surrogate: Decachlorobiphenyl* | **ND** | | *%* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | *QM-08, U* |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **455** | 80.0 | 100 | mg/kg | 15-Sep-2016 | 15-Sep-2016 | SW9060A | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **340** | 67 | 250 | mg/Kg | | 21-Sep-2016 | WALKLEY BLACK | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-2-0205-SedChem

**6082611-09 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **86.1** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **1.48** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **0.53** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | U |
| **4,4´-DDD** | **7.60** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.99** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.21** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.57** | | *52.5 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.92** | | *64.4 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **477** | 80.0 | 100 | mg/kg | 15-Sep-2016 | 15-Sep-2016 | SW9060A | |

| | | |
|---|---|---|
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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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# QT25-2-0507-SedChem

**6082611-10 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **87.4** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.85** | 0.06 | 0.18 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **0.34** | 0.06 | 0.18 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.06 | 0.18 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | U |
| **4,4´-DDD** | **3.51** | 0.06 | 0.18 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.54** | 0.06 | 0.18 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.18** | 0.06 | 0.18 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.70** | | *57.5 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.05** | | *69.3 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **245** | 80.0 | 100 | mg/kg | 15-Sep-2016 | 15-Sep-2016 | SW9060A | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
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# QT25-2-0002-SedChem-AI

**6082611-11 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **86.9** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.10** | 0.06 | 0.18 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.14** | 0.06 | 0.18 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04, J |
| 2,4´-DDT | ND | 0.06 | 0.18 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | U |
| **4,4´-DDD** | **3.83** | 0.06 | 0.18 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.07** | 0.06 | 0.18 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | J |
| **4,4´-DDT** | **0.12** | 0.06 | 0.18 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.53** | | *52.9 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.93** | | *66.4 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **107** | 80.0 | 100 | mg/kg | 19-Sep-2016 | 19-Sep-2016 | SW9060A | |

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| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-2-0002-SedChem-BI

**6082611-12 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **79.9** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **20.6** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **22.7** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDT** | **0.51** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| **4,4´-DDD** | **159** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **10.6** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **16.5** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.60** | | *50.6 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.33** | | *73.6 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **1090** | 80.0 | 100 | mg/kg | 19-Sep-2016 | 19-Sep-2016 | SW9060A | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-2-0205-SedChem-BI

**6082611-13 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **75.8** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **39.5** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **20.0** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | U |
| **4,4´-DDD** | **257** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **23.3** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **21.4** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.78** | | *80.5 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.86** | | *83.0 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-2-0205-SedChem-BI

**6082611-13RE1 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**Air Water and Soil Laboratories, Inc.**

**Wet Chemistry Analysis**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **TOC** | **2740** | 400 | 500 | mg/kg | 19-Sep-2016 | 19-Sep-2016 | SW9060A | |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

# QT25-2-0507-SedChem-BI

**6082611-14 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **78.2** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **25.5** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **31.6** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| **2,4´-DDT** | **1.32** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDD** | **2570** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **17.3** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **47.5** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.66** | | *50.1 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.79** | | *84.3 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-2-0507-SedChem-BI

### 6082611-14RE1 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**Air Water and Soil Laboratories, Inc.**

**Wet Chemistry Analysis**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **TOC** | **2020** | 400 | 500 | mg/kg | 19-Sep-2016 | 19-Sep-2016 | SW9060A | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

# QT25-3-0002-SedChem

## 6082611-15 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **68.0** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **11.2** | 0.08 | 0.24 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **2.63** | 0.08 | 0.24 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDT** | **0.55** | 0.08 | 0.24 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDD** | **59.0** | 0.08 | 0.24 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **10.3** | 0.08 | 0.24 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **20.4** | 0.08 | 0.24 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.31** | | *34.1 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.36** | | *61.5 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-3-0002-SedChem

**6082611-15RE1 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Air Water and Soil Laboratories, Inc.** | | | | | | | | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **2300** | 400 | 500 | mg/kg | 19-Sep-2016 | 19-Sep-2016 | SW9060A | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-3-0205-SedChem
### 6082611-16 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **74.8** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **10.8** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **4.98** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDT** | **0.25** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDD** | **52.1** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **11.1** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **4.07** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.79** | | *52.0 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.71** | | *78.7 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **1490** | 80.0 | 100 | mg/kg | 19-Sep-2016 | 19-Sep-2016 | SW9060A | |

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|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-3-0507-SedChem

**6082611-17 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **72.4** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **21.1** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **4.77** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDT** | **0.28** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDD** | **98.2** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **17.6** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **2.89** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.97** | | *55.6 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.37** | | *67.0 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **1550** | 80.0 | 100 | mg/kg | 19-Sep-2016 | 19-Sep-2016 | SW9060A | |

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| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-3-0002-SedChem-AI

**6082611-18 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **87.8** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **2.32** | 0.06 | 0.18 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **0.96** | 0.06 | 0.18 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.06 | 0.18 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | U |
| **4,4´-DDD** | **7.55** | 0.06 | 0.18 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **1.49** | 0.06 | 0.18 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.44** | 0.06 | 0.18 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.51** | | *52.1 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.92** | | *66.2 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **147** | 80.0 | 100 | mg/kg | 19-Sep-2016 | 19-Sep-2016 | SW9060A | |

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| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-3-0002-SedChem-BI

**6082611-19 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **81.4** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **65.1** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **18.7** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDT** | **0.99** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| **4,4´-DDD** | **399** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **19.8** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **27.0** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.68** | | *53.7 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.24** | | *71.4 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **552** | 80.0 | 100 | mg/kg | 19-Sep-2016 | 19-Sep-2016 | SW9060A | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-3-0205-SedChem-BI

**6082611-20 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **79.0** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **31.2** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **9.90** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDT** | **0.14** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04, J |
| **4,4´-DDD** | **158** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **16.8** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **3.27** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.52** | | *47.1 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.00** | | *61.7 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **686** | 80.0 | 100 | mg/kg | 19-Sep-2016 | 19-Sep-2016 | SW9060A | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-3-0507-SedChem-BI

**6082611-21 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **81.0** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **27.8** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **13.4** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDT** | **0.42** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDD** | **109** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **25.2** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **5.54** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.67** | | *53.5 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.24** | | *71.7 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **1810** | 400 | 500 | mg/kg | 20-Sep-2016 | 20-Sep-2016 | SW9060A | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

# USACE ERDC-EP-C
# 3909 Halls Ferry Road
# Vicksburg, MS 39180-6199

| Navy -- SPAWAR | Project: Quantico | |
|---|---|---|
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-4-0002-SedChem

**6082611-22 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **83.2** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **4.72** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **1.43** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | U |
| **4,4´-DDD** | **19.1** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **3.61** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.51** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.38** | | *45.2 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.98** | | *64.8 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **599** | 80.0 | 100 | mg/kg | 20-Sep-2016 | 20-Sep-2016 | SW9060A | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-4-0205-SedChem

**6082611-23 (Soil/Sediment)**

**ERDC-EL-EP-C**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **82.4** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **6.47** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **1.79** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| **2,4´-DDT** | **0.09** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | J |
| **4,4´-DDD** | **22.4** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **9.85** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.65** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.58** | | *50.1 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.27** | | *72.2 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **772** | 80.0 | 100 | mg/kg | 20-Sep-2016 | 20-Sep-2016 | SW9060A | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-4-0507-SedChem

### 6082611-24 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **84.8** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **4.69** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **1.26** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDT** | **0.06** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04, J |
| **4,4´-DDD** | **18.1** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **3.37** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.58** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.69** | | *54.7 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.15** | | *69.5 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **379** | 80.0 | 100 | mg/kg | 20-Sep-2016 | 20-Sep-2016 | SW9060A | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-4-0002-SedChem-AI

**6082611-25 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Classical Chemistry Parameters**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **% Solids** | **83.9** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |

**Organochlorine Pesticides by EPA Method 8081A**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **1.11** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **0.57** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | U |
| **4,4´-DDD** | **4.08** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.92** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.15** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04, J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.52** | | *50.5 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.99** | | *66.0 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |

**Wet Chemistry Analysis**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **TOC** | **157** | 80.0 | 100 | mg/kg | 20-Sep-2016 | 20-Sep-2016 | SW9060A | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-4-0002-SedChem-BI

### 6082611-26 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC-EL-EP-C** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **63.2** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **18.5** | 0.08 | 0.26 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **5.55** | 0.08 | 0.26 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDT** | **0.35** | 0.08 | 0.26 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDD** | **84.0** | 0.08 | 0.26 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **20.3** | 0.08 | 0.26 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **3.31** | 0.08 | 0.26 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.95** | | *47.0 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.31** | | *79.8 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **2650** | 800 | 1000 | mg/kg | 20-Sep-2016 | 20-Sep-2016 | SW9060A | |

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|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-4-0205-SedChem-BI

**6082611-27 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **51.7** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **11.7** | 0.10 | 0.32 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **4.73** | 0.10 | 0.32 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDT** | **0.33** | 0.10 | 0.32 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDD** | **72.9** | 0.10 | 0.32 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **26.2** | 0.10 | 0.32 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **5.47** | 0.10 | 0.32 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.78** | | *54.2 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **4.30** | | *83.7 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **3940** | 800 | 1000 | mg/kg | 20-Sep-2016 | 20-Sep-2016 | SW9060A | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

# QT25-4-0507-SedChem-BI

## 6082611-28 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC-EL-EP-C** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **48.4** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **12.9** | 0.11 | 0.33 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **4.52** | 0.11 | 0.33 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDT** | **1.22** | 0.11 | 0.33 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDD** | **80.6** | 0.11 | 0.33 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **36.4** | 0.11 | 0.33 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **7.48** | 0.11 | 0.33 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.38** | | *64.2 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **4.45** | | *84.4 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **4230** | 800 | 1000 | mg/kg | 20-Sep-2016 | 20-Sep-2016 | SW9060A | |

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| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-5-0002-SedChem

**6082611-29 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **83.1** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.23** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **0.07** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04, J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.86** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.37** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.06** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04, J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.47** | | *47.2 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.98** | | *63.8 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **360** | 80.0 | 100 | mg/kg | 20-Sep-2016 | 20-Sep-2016 | SW9060A | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-5-0205-SedChem

### 6082611-30 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **83.8** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.38** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **0.21** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | U |
| **4,4´-DDD** | **1.70** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.93** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.27** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.61** | | *51.5 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.09** | | *66.9 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **214** | 80.0 | 100 | mg/kg | 20-Sep-2016 | 20-Sep-2016 | SW9060A | |

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| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-5-0507-SedChem

**6082611-31 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **84.8** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.20** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **0.09** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.82** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.41** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.09** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.41** | | *46.7 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.81** | | *60.1 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **185** | 80.0 | 100 | mg/kg | 20-Sep-2016 | 20-Sep-2016 | SW9060A | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

# QT25-5-0002-SedChem-AI

**6082611-32 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **84.8** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.29** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **0.14** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | U |
| **4,4´-DDD** | **1.05** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.26** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.06** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04, J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.06** | | *35.0 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.63** | | *53.5 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **138** | 80.0 | 100 | mg/kg | 20-Sep-2016 | 20-Sep-2016 | SW9060A | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

# QT25-5-0002-SedChem-BI

**6082611-33 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **72.8** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **17.9** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **8.29** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDT** | **0.45** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDD** | **81.5** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **20.2** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **3.43** | 0.07 | 0.22 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.42** | | *40.4 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.59** | | *73.5 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **2600** | 800 | 1000 | mg/kg | 21-Sep-2016 | 21-Sep-2016 | SW9060A | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-5-0205-SedChem-BI

**6082611-34 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **63.4** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **62.2** | 0.08 | 0.25 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **35.9** | 0.08 | 0.25 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDT** | **1.16** | 0.08 | 0.25 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDD** | **286** | 0.08 | 0.25 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **61.6** | 0.08 | 0.25 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **15.6** | 0.08 | 0.25 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.17** | | *54.0 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.33** | | *58.0 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **2890** | 800 | 1000 | mg/kg | 21-Sep-2016 | 21-Sep-2016 | SW9060A | |

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| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-5-0507-SedChem-BI

### 6082611-35 (Soil/Sediment)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC-EL-EP-C** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **63.2** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **30.0** | 0.08 | 0.25 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **21.7** | 0.08 | 0.25 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDT** | **0.47** | 0.08 | 0.25 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDD** | **205** | 0.08 | 0.25 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **49.9** | 0.08 | 0.25 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **8.45** | 0.08 | 0.25 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.50** | | *37.4 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.41** | | *60.0 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **2680** | 800 | 1000 | mg/kg | 21-Sep-2016 | 21-Sep-2016 | SW9060A | |
| **WALKLEY_BLACK Organic Carbon, Total (TOC)** | | | | | | | | |
| **Total Organic Carbon** | **9100** | 67 | 250 | mg/Kg | | 21-Sep-2016 | WALKLEY BLACK | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-5DUP-0002-SedChem

**6082611-36 (Soil/Sediment)**

**ERDC-EL-EP-C**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **84.2** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.28** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **0.13** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | U |
| **4,4´-DDD** | **1.15** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.45** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.07** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04, J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.28** | | *42.8 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.72** | | *57.5 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **562** | 400 | 500 | mg/kg | 21-Sep-2016 | 21-Sep-2016 | SW9060A | |

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| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-5DUP-0205-SedChem

**6082611-37 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC-EL-EP-C** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **82.7** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.27** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **0.12** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | U |
| **4,4´-DDD** | **1.04** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.48** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.06** | 0.06 | 0.20 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04, J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.38** | | *43.6 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.85** | | *58.5 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **327** | 80.0 | 100 | mg/kg | 20-Sep-2016 | 20-Sep-2016 | SW9060A | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-5DUP-0507-SedChem

**6082611-38 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **84.7** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.18** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.09** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.71** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.46** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.08** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.41** | | *46.2 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.10** | | *68.5 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **225** | 80.0 | 100 | mg/kg | 20-Sep-2016 | 20-Sep-2016 | SW9060A | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

# QT25-5DUP-002-SedChem-AI

**6082611-39 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **85.6** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.11** | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | J |
| 4,4´-DDE | ND | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.30** | | *43.8 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.03** | | *68.0 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **112** | 80.0 | 100 | mg/kg | 20-Sep-2016 | 20-Sep-2016 | SW9060A | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-5DUP-002-SedChem-BI

**6082611-40 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **76.8** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **25.5** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **14.1** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDT** | **0.51** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDD** | **140** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **27.7** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **13.9** | 0.07 | 0.21 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.54** | | *46.0 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.12** | | *63.5 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **2080** | 800 | 1000 | mg/kg | 21-Sep-2016 | 21-Sep-2016 | SW9060A | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## QT25-5DUP-0205-SedChem-BI

**6082611-41 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **65.7** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **57.8** | 0.08 | 0.25 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **28.9** | 0.08 | 0.25 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDT** | **0.67** | 0.08 | 0.25 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDD** | **257** | 0.08 | 0.25 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **60.9** | 0.08 | 0.25 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **9.98** | 0.08 | 0.25 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.04** | | *52.0 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.38** | | *60.5 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **2840** | 800 | 1000 | mg/kg | 21-Sep-2016 | 21-Sep-2016 | SW9060A | |

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| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-5DUP-0507-SedChem-BI

**6082611-42 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **64.4** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **36.8** | 0.08 | 0.25 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **27.1** | 0.08 | 0.25 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDT** | **0.66** | 0.08 | 0.25 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDD** | **223** | 0.08 | 0.25 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **45.3** | 0.08 | 0.25 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **10.8** | 0.08 | 0.25 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.29** | | *56.5 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.65** | | *65.5 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **2410** | 800 | 1000 | mg/kg | 21-Sep-2016 | 21-Sep-2016 | SW9060A | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-6-GRAB-SedChem

**6082611-43 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC-EL-EP-C** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **39.1** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **2.43** | 0.14 | 0.42 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **1.06** | 0.14 | 0.42 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDT** | **0.16** | 0.14 | 0.42 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | J |
| **4,4´-DDD** | **12.4** | 0.14 | 0.42 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **5.61** | 0.14 | 0.42 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.81** | 0.14 | 0.42 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.98** | | *58.5 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **4.89** | | *72.0 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **2740** | 800 | 1000 | mg/kg | 21-Sep-2016 | 21-Sep-2016 | SW9060A | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## QT25-7-GRAB-SedChem

**6082611-44 (Soil/Sediment)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **28.8** | 0.500 | 0.500 | % Solids | 26-Sep-2016 | 26-Sep-2016 | % Calculation | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **2.08** | 0.18 | 0.56 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **2,4´-DDE** | **0.77** | 0.18 | 0.56 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| **2,4´-DDT** | **1.94** | 0.18 | 0.56 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDD** | **7.91** | 0.18 | 0.56 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDE** | **5.15** | 0.18 | 0.56 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.73** | 0.18 | 0.56 | ug/kg dry | 19-Sep-2016 | 11-Oct-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **4.56** | | *50.5 %* | *40-125* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **7.05** | | *78.0 %* | *40-130* | *19-Sep-2016* | *11-Oct-2016* | *EPA 8081A* | |
| **Wet Chemistry Analysis** | | | | | | | | |
| **TOC** | **3770** | 800 | 1000 | mg/kg | 21-Sep-2016 | 21-Sep-2016 | SW9060A | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC-EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B609299 - EPA 3545** | | | | | | | | | | | |
| **Blank (B609299-BLK1)** | | | | | Prepared: 19-Sep-2016 Analyzed: 11-Oct-2016 | | | | | | |
| 2,4′-DDD | ND | 0.08 | 0.25 | ug/kg wet | | | | | | | U |
| 2,4′-DDE | ND | 0.08 | 0.25 | ug/kg wet | | | | | | | U |
| 2,4′-DDT | ND | 0.08 | 0.25 | ug/kg wet | | | | | | | U |
| 4,4′-DDD | ND | 0.08 | 0.25 | ug/kg wet | | | | | | | U |
| 4,4′-DDE | ND | 0.08 | 0.25 | ug/kg wet | | | | | | | U |
| 4,4′-DDT | ND | 0.08 | 0.25 | ug/kg wet | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *2.14* | | | *ug/kg wet* | *4.000* | | *53.5* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.64* | | | *ug/kg wet* | *4.000* | | *66.0* | *40-130* | | | |
| **Blank (B609299-BLK2)** | | | | | Prepared: 19-Sep-2016 Analyzed: 11-Oct-2016 | | | | | | |
| 2,4′-DDD | ND | 0.08 | 0.25 | ug/kg wet | | | | | | | U |
| 2,4′-DDE | ND | 0.08 | 0.25 | ug/kg wet | | | | | | | U |
| 2,4′-DDT | ND | 0.08 | 0.25 | ug/kg wet | | | | | | | U |
| 4,4′-DDD | ND | 0.08 | 0.25 | ug/kg wet | | | | | | | U |
| 4,4′-DDE | ND | 0.08 | 0.25 | ug/kg wet | | | | | | | U |
| 4,4′-DDT | ND | 0.08 | 0.25 | ug/kg wet | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *2.62* | | | *ug/kg wet* | *4.000* | | *65.5* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.96* | | | *ug/kg wet* | *4.000* | | *74.0* | *40-130* | | | |
| **Blank (B609299-BLK3)** | | | | | Prepared: 19-Sep-2016 Analyzed: 11-Oct-2016 | | | | | | |
| 2,4′-DDD | ND | 0.08 | 0.25 | ug/kg wet | | | | | | | U |
| 2,4′-DDE | ND | 0.08 | 0.25 | ug/kg wet | | | | | | | U |
| 2,4′-DDT | ND | 0.08 | 0.25 | ug/kg wet | | | | | | | U |
| 4,4′-DDD | ND | 0.08 | 0.25 | ug/kg wet | | | | | | | U |
| 4,4′-DDE | ND | 0.08 | 0.25 | ug/kg wet | | | | | | | U |
| 4,4′-DDT | ND | 0.08 | 0.25 | ug/kg wet | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *2.50* | | | *ug/kg wet* | *4.000* | | *62.5* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.94* | | | *ug/kg wet* | *4.000* | | *73.5* | *40-130* | | | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC-EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B609299 - EPA 3545** | | | | | | | | | | | |
| **LCS (B609299-BS1)** | | | | | Prepared: 19-Sep-2016 Analyzed: 11-Oct-2016 | | | | | | |
| 2,4′-DDD | 2.7 | 0.08 | 0.25 | ug/kg wet | 4.000 | | 67.0 | 40-125 | | | |
| 2,4′-DDE | 2.7 | 0.08 | 0.25 | ug/kg wet | 4.000 | | 68.5 | 40-125 | | | |
| 2,4′-DDT | 2.4 | 0.08 | 0.25 | ug/kg wet | 4.000 | | 60.0 | 40-125 | | | |
| 4,4′-DDD | 2.6 | 0.08 | 0.25 | ug/kg wet | 4.000 | | 64.0 | 40-125 | | | |
| 4,4′-DDE | 2.6 | 0.08 | 0.25 | ug/kg wet | 4.000 | | 64.5 | 40-125 | | | |
| 4,4′-DDT | 2.2 | 0.08 | 0.25 | ug/kg wet | 4.000 | | 55.0 | 45-125 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.92* | | | *ug/kg wet* | *4.000* | | *47.9* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.54* | | | *ug/kg wet* | *4.000* | | *63.5* | *40-130* | | | |
| **LCS (B609299-BS2)** | | | | | Prepared: 19-Sep-2016 Analyzed: 11-Oct-2016 | | | | | | |
| 2,4′-DDD | 3.0 | 0.08 | 0.25 | ug/kg wet | 4.000 | | 74.0 | 40-125 | | | |
| 2,4′-DDE | 3.2 | 0.08 | 0.25 | ug/kg wet | 4.000 | | 79.0 | 40-125 | | | |
| 2,4′-DDT | 2.7 | 0.08 | 0.25 | ug/kg wet | 4.000 | | 67.0 | 40-125 | | | |
| 4,4′-DDD | 3.0 | 0.08 | 0.25 | ug/kg wet | 4.000 | | 74.0 | 40-125 | | | |
| 4,4′-DDE | 3.0 | 0.08 | 0.25 | ug/kg wet | 4.000 | | 75.5 | 40-125 | | | |
| 4,4′-DDT | 2.4 | 0.08 | 0.25 | ug/kg wet | 4.000 | | 61.0 | 45-125 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *2.04* | | | *ug/kg wet* | *4.000* | | *51.0* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.82* | | | *ug/kg wet* | *4.000* | | *70.5* | *40-130* | | | |
| **LCS (B609299-BS3)** | | | | | Prepared: 19-Sep-2016 Analyzed: 11-Oct-2016 | | | | | | |
| 2,4′-DDD | 3.2 | 0.08 | 0.25 | ug/kg wet | 4.000 | | 80.0 | 40-125 | | | |
| 2,4′-DDE | 3.3 | 0.08 | 0.25 | ug/kg wet | 4.000 | | 83.0 | 40-125 | | | |
| 2,4′-DDT | 3.0 | 0.08 | 0.25 | ug/kg wet | 4.000 | | 74.5 | 40-125 | | | |
| 4,4′-DDD | 3.1 | 0.08 | 0.25 | ug/kg wet | 4.000 | | 77.0 | 40-125 | | | |
| 4,4′-DDE | 3.2 | 0.08 | 0.25 | ug/kg wet | 4.000 | | 80.0 | 40-125 | | | |
| 4,4′-DDT | 2.7 | 0.08 | 0.25 | ug/kg wet | 4.000 | | 67.0 | 45-125 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *2.58* | | | *ug/kg wet* | *4.000* | | *64.5* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.04* | | | *ug/kg wet* | *4.000* | | *76.0* | *40-130* | | | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC-EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B609299 - EPA 3545** | | | | | | | | | | | |
| **LCS Dup (B609299-BSD1)** | | | | | Prepared: 19-Sep-2016 Analyzed: 11-Oct-2016 | | | | | | |
| 2,4′-DDD | ND | 0.08 | 0.25 | ug/kg wet | 4.000 | | | 40-125 | | 30 | U |
| 2,4′-DDE | ND | 0.08 | 0.25 | ug/kg wet | 4.000 | | | 40-125 | | 30 | U |
| 2,4′-DDT | ND | 0.08 | 0.25 | ug/kg wet | 4.000 | | | 40-125 | | 30 | U |
| 4,4′-DDD | ND | 0.08 | 0.25 | ug/kg wet | 4.000 | | | 40-125 | | 30 | U |
| 4,4′-DDE | ND | 0.08 | 0.25 | ug/kg wet | 4.000 | | | 40-125 | | 30 | U |
| 4,4′-DDT | ND | 0.08 | 0.25 | ug/kg wet | 4.000 | | | 45-125 | | 30 | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *ND* | | | *ug/kg wet* | *4.000* | | | *40-125* | | | *U* |
| *Surrogate: Decachlorobiphenyl* | *ND* | | | *ug/kg wet* | *4.000* | | | *40-130* | | | *U* |
| **Matrix Spike (B609299-MS2)** | | **Source: 6082611-43** | | | Prepared: 19-Sep-2016 Analyzed: 11-Oct-2016 | | | | | | |
| 2,4′-DDD | 9.5 | 0.19 | 0.60 | ug/kg dry | 9.610 | 2.4 | 73.2 | 40-125 | | | |
| 2,4′-DDE | 9.0 | 0.19 | 0.60 | ug/kg dry | 9.610 | 1.1 | 82.5 | 40-125 | | | |
| 2,4′-DDT | 5.1 | 0.19 | 0.60 | ug/kg dry | 9.610 | 0.2 | 53.5 | 40-125 | | | |
| 4,4′-DDD | 15.8 | 0.19 | 0.60 | ug/kg dry | 9.610 | 12.4 | 34.5 | 40-125 | | | |
| 4,4′-DDE | 13.3 | 0.19 | 0.60 | ug/kg dry | 9.610 | 5.6 | 80.1 | 40-125 | | | |
| 4,4′-DDT | 9.1 | 0.19 | 0.60 | ug/kg dry | 9.610 | 0.8 | 86.6 | 45-125 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *4.95* | | | *ug/kg dry* | *9.610* | | *51.5* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *7.06* | | | *ug/kg dry* | *9.610* | | *73.5* | *40-130* | | | |
| **Matrix Spike (B609299-MS3)** | | **Source: 6082611-44** | | | Prepared: 19-Sep-2016 Analyzed: 11-Oct-2016 | | | | | | |
| 2,4′-DDD | 11.6 | 0.27 | 0.84 | ug/kg dry | 13.36 | 2.1 | 71.4 | 40-125 | | | |
| 2,4′-DDE | 10.2 | 0.27 | 0.84 | ug/kg dry | 13.36 | 0.8 | 70.3 | 40-125 | | | |
| 2,4′-DDT | 7.4 | 0.27 | 0.84 | ug/kg dry | 13.36 | 1.9 | 41.0 | 40-125 | | | |
| 4,4′-DDD | 18.0 | 0.27 | 0.84 | ug/kg dry | 13.36 | 7.9 | 75.3 | 40-125 | | | |
| 4,4′-DDE | 15.0 | 0.27 | 0.84 | ug/kg dry | 13.36 | 5.2 | 73.9 | 40-125 | | | |
| 4,4′-DDT | 9.2 | 0.27 | 0.84 | ug/kg dry | 13.36 | 0.7 | 63.0 | 45-125 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *6.88* | | | *ug/kg dry* | *13.36* | | *51.5* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *9.82* | | | *ug/kg dry* | *13.36* | | *73.5* | *40-130* | | | |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC-EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B609299 - EPA 3545** | | | | | | | | | | | |
| **Matrix Spike Dup (B609299-MSD2)** | **Source: 6082611-43** | | Prepared: 19-Sep-2016 Analyzed: 11-Oct-2016 | | | | | | | | |
| 2,4′-DDD | 8.6 | 0.19 | 0.58 | ug/kg dry | 9.321 | 2.4 | 66.4 | 40-125 | 9.33 | 30 | |
| 2,4′-DDE | 7.3 | 0.19 | 0.58 | ug/kg dry | 9.321 | 1.1 | 67.1 | 40-125 | 20.5 | 30 | |
| 2,4′-DDT | 4.5 | 0.19 | 0.58 | ug/kg dry | 9.321 | 0.2 | 48.5 | 40-125 | 12.8 | 30 | |
| 4,4′-DDD | 15.8 | 0.19 | 0.58 | ug/kg dry | 9.321 | 12.4 | 36.5 | 40-125 | 0.539 | 30 | |
| 4,4′-DDE | 11.0 | 0.19 | 0.58 | ug/kg dry | 9.321 | 5.6 | 58.3 | 40-125 | 18.6 | 30 | |
| 4,4′-DDT | 5.9 | 0.19 | 0.58 | ug/kg dry | 9.321 | 0.8 | 54.9 | 45-125 | 42.7 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *4.66* | | | *ug/kg dry* | *9.321* | | *50.0* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *6.57* | | | *ug/kg dry* | *9.321* | | *70.5* | *40-130* | | | |
| **Matrix Spike Dup (B609299-MSD3)** | **Source: 6082611-44** | | Prepared: 19-Sep-2016 Analyzed: 11-Oct-2016 | | | | | | | | |
| 2,4′-DDD | 12.2 | 0.26 | 0.83 | ug/kg dry | 13.23 | 2.1 | 76.3 | 40-125 | 4.63 | 30 | |
| 2,4′-DDE | 11.0 | 0.26 | 0.83 | ug/kg dry | 13.23 | 0.8 | 77.2 | 40-125 | 7.85 | 30 | |
| 2,4′-DDT | 7.9 | 0.26 | 0.83 | ug/kg dry | 13.23 | 1.9 | 45.4 | 40-125 | 6.84 | 30 | |
| 4,4′-DDD | 18.1 | 0.26 | 0.83 | ug/kg dry | 13.23 | 7.9 | 77.2 | 40-125 | 0.886 | 30 | |
| 4,4′-DDE | 16.3 | 0.26 | 0.83 | ug/kg dry | 13.23 | 5.2 | 84.6 | 40-125 | 8.37 | 30 | |
| 4,4′-DDT | 9.1 | 0.26 | 0.83 | ug/kg dry | 13.23 | 0.7 | 63.0 | 45-125 | 0.956 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *7.15* | | | *ug/kg dry* | *13.23* | | *54.0* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *9.86* | | | *ug/kg dry* | *13.23* | | *74.5* | *40-130* | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**


| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## Wet Chemistry Analysis - Quality Control

## Air Water and Soil Laboratories, Inc.

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BZI0443 - No Prep Halides** | | | | | | | | | | | |
| **Blank (BZI0443-BLK1)** | | | | | Prepared & Analyzed: 15-Sep-2016 | | | | | | |
| TOC | ND | 80.0 | 100 | mg/kg | | | | - | | | |
| **LCS (BZI0443-BS1)** | | | | | Prepared & Analyzed: 15-Sep-2016 | | | | | | |
| TOC | 978 | 80.0 | 100 | mg/kg | 954 | | 102 | 80-120 | | | |
| **LCS Dup (BZI0443-BSD1)** | | | | | Prepared & Analyzed: 15-Sep-2016 | | | | | | |
| TOC | 915 | 80.0 | 100 | mg/kg | 890 | | 103 | 80-120 | 6.58 | 20 | |
| **Matrix Spike (BZI0443-MS1)** | | **Source: 6082611-10** | | | Prepared & Analyzed: 15-Sep-2016 | | | | | | |
| TOC | 1060 | 80.0 | 100 | mg/kg | 894 | 245 | 91.4 | 75-125 | | | |
| **Matrix Spike Dup (BZI0443-MSD1)** | | **Source: 6082611-10** | | | Prepared & Analyzed: 15-Sep-2016 | | | | | | |
| TOC | 1030 | 80.0 | 100 | mg/kg | 882 | 245 | 89.1 | 75-125 | 3.06 | 20 | |
| **Batch BZI0518 - No Prep Halides** | | | | | | | | | | | |
| **Blank (BZI0518-BLK1)** | | | | | Prepared & Analyzed: 20-Sep-2016 | | | | | | |
| TOC | ND | 80.0 | 100 | mg/kg | | | | - | | | |
| **LCS (BZI0518-BS1)** | | | | | Prepared & Analyzed: 20-Sep-2016 | | | | | | |
| TOC | 937 | 80.0 | 100 | mg/kg | 893 | | 105 | 80-120 | | | |
| **LCS Dup (BZI0518-BSD1)** | | | | | Prepared & Analyzed: 20-Sep-2016 | | | | | | |
| TOC | 1020 | 80.0 | 100 | mg/kg | 962 | | 106 | 80-120 | 8.09 | 20 | |
| **Matrix Spike (BZI0518-MS1)** | | **Source: 6082611-30** | | | Prepared & Analyzed: 20-Sep-2016 | | | | | | |
| TOC | 1110 | 80.0 | 100 | mg/kg | 909 | 214 | 98.7 | 75-125 | | | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## Wet Chemistry Analysis - Quality Control

## Air Water and Soil Laboratories, Inc.

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BZI0518 - No Prep Halides** | | | | | | | | | | | |
| **Matrix Spike Dup (BZI0518-MSD1)** | | **Source: 6082611-30** | | | Prepared & Analyzed: 20-Sep-2016 | | | | | | |
| TOC | 978 | 80.0 | 100 | mg/kg | 820 | 214 | 93.2 | 75-125 | 12.8 | 20 | |
| **Batch BZI0520 - No Prep Halides** | | | | | | | | | | | |
| **Blank (BZI0520-BLK1)** | | | | | Prepared & Analyzed: 20-Sep-2016 | | | | | | |
| TOC | ND | 80.0 | 100 | mg/kg | | | | - | | | |
| **LCS (BZI0520-BS1)** | | | | | Prepared & Analyzed: 20-Sep-2016 | | | | | | |
| TOC | 849 | 80.0 | 100 | mg/kg | 847 | | 100 | 80-120 | | | |
| **LCS Dup (BZI0520-BSD1)** | | | | | Prepared & Analyzed: 20-Sep-2016 | | | | | | |
| TOC | 948 | 80.0 | 100 | mg/kg | 943 | | 101 | 80-120 | 11.1 | 20 | |
| **Matrix Spike (BZI0520-MS1)** | | **Source: 6082611-31** | | | Prepared & Analyzed: 20-Sep-2016 | | | | | | |
| TOC | 845 | 80.0 | 100 | mg/kg | 704 | 185 | 93.8 | 75-125 | | | |
| **Matrix Spike Dup (BZI0520-MSD1)** | | **Source: 6082611-31** | | | Prepared & Analyzed: 20-Sep-2016 | | | | | | |
| TOC | 1110 | 80.0 | 100 | mg/kg | 962 | 185 | 96.4 | 75-125 | 27.3 | 20 | P |
| **Batch BZI0521 - No Prep Halides** | | | | | | | | | | | |
| **Blank (BZI0521-BLK1)** | | | | | Prepared & Analyzed: 19-Sep-2016 | | | | | | |
| TOC | ND | 80.0 | 100 | mg/kg | | | | - | | | |
| **LCS (BZI0521-BS1)** | | | | | Prepared & Analyzed: 19-Sep-2016 | | | | | | |
| TOC | 928 | 80.0 | 100 | mg/kg | 940 | | 98.7 | 80-120 | | | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## Wet Chemistry Analysis - Quality Control

## Air Water and Soil Laboratories, Inc.

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BZI0521 - No Prep Halides** | | | | | | | | | | | |
| **LCS Dup (BZI0521-BSD1)** | | | | | Prepared & Analyzed: 19-Sep-2016 | | | | | | |
| TOC | 931 | 80.0 | 100 | mg/kg | 929 | | 100 | 80-120 | 0.363 | 20 | |
| **Matrix Spike (BZI0521-MS1)** | | **Source: 6082611-20** | | | Prepared & Analyzed: 19-Sep-2016 | | | | | | |
| TOC | 1570 | 80.0 | 100 | mg/kg | 998 | 686 | 88.9 | 75-125 | | | |
| **Matrix Spike Dup (BZI0521-MSD1)** | | **Source: 6082611-20** | | | Prepared & Analyzed: 19-Sep-2016 | | | | | | |
| TOC | 1430 | 80.0 | 100 | mg/kg | 931 | 686 | 79.4 | 75-125 | 9.90 | 20 | |
| **Batch BZI0542 - No Prep Halides** | | | | | | | | | | | |
| **Blank (BZI0542-BLK1)** | | | | | Prepared & Analyzed: 21-Sep-2016 | | | | | | |
| TOC | ND | 80.0 | 100 | mg/kg | | | | - | | | |
| **LCS (BZI0542-BS1)** | | | | | Prepared & Analyzed: 21-Sep-2016 | | | | | | |
| TOC | 876 | 80.0 | 100 | mg/kg | 867 | | 101 | 80-120 | | | |
| **LCS Dup (BZI0542-BSD1)** | | | | | Prepared & Analyzed: 21-Sep-2016 | | | | | | |
| TOC | 859 | 80.0 | 100 | mg/kg | 856 | | 100 | 80-120 | 1.88 | 20 | |
| **Matrix Spike (BZI0542-MS1)** | | **Source: 6082611-41** | | | Prepared & Analyzed: 21-Sep-2016 | | | | | | |
| TOC | 3000 | 800 | 1000 | mg/kg | 947 | 2840 | 17.4 | 75-125 | | | M2 |
| **Matrix Spike Dup (BZI0542-MSD1)** | | **Source: 6082611-41** | | | Prepared & Analyzed: 21-Sep-2016 | | | | | | |
| TOC | 3450 | 800 | 1000 | mg/kg | 919 | 2840 | 67.0 | 75-125 | 14.0 | 20 | M2 |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 29-Nov-2016 |

## WALKLEY_BLACK Organic Carbon, Total (TOC) - Quality Control

## TestAmerica Pittsburgh

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 188635 -** | | | | | | | | | | | |
| **LCS (180-1886351)** | | | | | Prepared: Analyzed: 21-Sep-2016 | | | | | | |
| Total Organic Carbon | 481000 | 67 | 250 | mg/Kg | 471000 | | 102 | 80-120 | | | |
| **MB (180-1886352)** | | | | | Prepared: Analyzed: 21-Sep-2016 | | | | | | |
| Total Organic Carbon | ND | 67 | 250 | mg/Kg | | | | - | | | |
| **DU (180-58707-1DU)** | | **Source: 6082611-04** | | | Prepared: Analyzed: 21-Sep-2016 | | | | | | |
| Total Organic Carbon | 797 | 67 | 250 | mg/Kg | | ND | | - | NC | 20 | |

3 608264

# CHAIN OF CUSTODY RECORD

Page 1 of 4

| | | | | | |
|---|---|---|---|---|---|
| Sampling Company: | Ramboll-Environ | Client: | SPAWAR Systems Center Pacific | Laboratory: | USACE ERDC-EP-C |
| POC: | Melissa Grover | POC: | Dr. Bart Chadwick | POC: | Madeline Tarasar |
| Address: | 16644 West Bernardo Drive, Suite 301 | Address: | 53475 Strothe Road | Address: | 3909 Halls Ferry RD Bldg 3299 |
| | San Diego, California 92127 | | San Diego, CA 92152 | | Vicksburg, MS 39180 |
| Email: | mgrover@geosyntec.com; kfetters@ramboll.com | Email: | bart.chadwick@navy.mil | Email: | madeline..k.tarasar@usace.army.mil |
| Phone: | 858-716-2928 | Phone: | 619-553-5333 | Phone: | 601-634-3966 |
| Project Name/Location: | Quantico 25-Month; Quantico, VA. | Project Number: | | | |

Sampler: MGrover Signature: [signature]

| Sample ID | Sample Date | Sample Time | Sample Depth (ft) | Matrix Sediment (S), Benthos (B), SPME (SP) | # of Containers | Preservation | DDx EPA 8081A | TOC EPA 9060 | ASTM D422 Grain Size | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT25-1-0002-SEDCHEM | 8/24/16 | 8:50 | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-1-0205-SEDCHEM | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-1-0507-SEDCHEM | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-1-0002-SEDCHEM-AI | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-1-0002-SEDCHEM-BI | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-1-0205-SEDCHEM-BI | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-1-0507-SEDCHEM-BI | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-2-0002-SEDCHEM | | 1030 | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-2-0205-SEDCHEM | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-2-0507-SEDCHEM | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-2-0002-SEDCHEM-AI | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-2-0002-SEDCHEM-BI | | | na | S | 1 | N.P. | x | x | | | | | | | |
| Total | | | | | 12 | | 12 | 12 | 0 | | | | | | |

**Please return coolers to :**

1. I hereby transfer the sample containers to ERDC. Samples have been properly labeled and kept on ice or refrigerated.

12 — **Total # of Containers** | M. Grover — **Name** | 8-25-16 — **Date** | 13:30 — **Time**

2. I accept these samples for transfer to ERDC:

**Total # of Containers** | MP — **Name** | **Date** | **Time**

3. Condition of samples upon arrival at ERDC:

4. Cooler temperature upon arrival at ERDC:

5. Additional Information:
N.P. = not preserved, HNO3 = preserved with nitric acid, H2SO4 = preserved with sulfuric acid
Alison Holman to work with contractor to run TOC (EPA TOC 9060)

**6. Send Copy of COC** USACE-ERDC-EP-C
POC: Amber Russell, Madeline Tarasar and Jenifer Milam
Email: amber.l.russell@usace.army.mil
madeline.k.tarasar@usace.army.mil
jenifer.milam@usace.army.mil
Phone: 601-634-4302 & 601-634-7431

3

# CHAIN OF CUSTODY RECORD

Page 2 of 4

| | | | | | |
|---|---|---|---|---|---|
| Sampling Company: | Ramboll-Environ | Client: | SPAWAR Systems Center Pacific | Laboratory: | USACE ERDC-EP-C |
| POC: | Melissa Grover | POC: | Dr. Bart Chadwick | POC: | Madeline Tarasar |
| Address: | 16644 West Bernardo Drive, Suite 301<br>San Diego, California 92127 | Address: | 53475 Strothe Road<br>San Diego, CA 92152 | Address: | 3909 Halls Ferry RD Bldg 3299<br>Vicksburg, MS 39180 |
| Email: | mgrover@geosyntec.com;<br>kfetters@ramboll.com | Email: | bart.chadwick@navy.mil | Email: | madeline..k.tarasar@usace.army.mil |
| Phone: | 858-716-2928 | Phone: | 619-553-5333 | Phone: | 601-634-3966 |
| Project Name/Location: | Quantico 25-Month; Quantico, VA. | Project Number: | | | |

Sampler: M. Grover Signature: [signature]

Requested Analyses

| Sample ID | Sample Date | Sample Time | Sample Depth (ft) | Matrix Sediment (S), Benthos (B), SPME (SP) | # of Containers | Preservation | DDx EPA 8081A | TOC EPA 9060 | ASTM D422 Grain Size | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT25-2-0205-SEDCHEM-BI | 8/24/16 | 10:30 | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-2-0507-SEDCHEM-BI | ↓ | ↓ | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-3-0002-SEDCHEM | | 11:05 | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-3-0205-SEDCHEM | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-3-0507-SEDCHEM | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-3-0002-SEDCHEM-AI | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-3-0002-SEDCHEM-BI | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-3-0205-SEDCHEM-BI | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-3-0507-SEDCHEM-BI | | ↓ | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-4-0002-SEDCHEM | | 11:30 | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-4-0205-SEDCHEM | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-4-0507-SEDCHEM | ↓ | ↓ | na | S | 1 | N.P. | x | x | | | | | | | |
| Total | | | | | 12 | | 12 | 12 | 0 | | | | | | |

Please return coolers to :

1. I hereby transfer the sample containers to ERDC. Samples have been properly labeled and kept on ice or refrigerated.

12 — Total # of Containers; M. Grover — Name; 8-25-16 — Date; 13:30 — Time

2. I accept these samples for transfer to ERDC:

Total # of Containers; MP — Name; Date; Time

3. Condition of samples upon arrival at ERDC:

4 Cooler temperature upon arrival at ERDC:

5. Additional Information:
N.P. = no preserved, HNO3 = preserved with nitric acid, H2SO4 = preserved with sulfuric acid
Alison Holman to work with contractor to run TOC (EPA TOC 9060)

6. Send Copy of COC: USACE-ERDC-EP-C
POC: Amber Russell, Madeline Tarasar and Jenifer Milam
Email: amber.l.russell@usace.army.mil
madeline.k.tarasar@usace.army.mil
jenifer.milam@usace.army.mil
Phone: 601-634-4302 & 601-634-7431

3

# CHAIN OF CUSTODY RECORD



| | | | | | |
|---|---|---|---|---|---|
| Sampling Company: | Ramboll-Environ | Client: | SPAWAR Systems Center Pacific | Laboratory: | USACE ERDC-EP-C |
| POC: | Melissa Grover | POC: | Dr. Bart Chadwick | POC: | Madeline Tarasar |
| Address: | 16644 West Bernardo Drive, Suite 301 | Address: | 53475 Strothe Road | Address: | 3909 Halls Ferry RD Bldg 3299 |
| | San Diego, California 92127 | | San Diego, CA 92152 | | Vicksburg, MS 39180 |
| Email: | mgrover@geosyntec.com; kfetters@ramboll.com | Email: | bart.chadwick@navy.mil | Email: | madeline..k.tarasar@usace.army.mil |
| Phone: | 858-716-2928 | Phone: | 619-553-5333 | Phone: | 601-634-3966 |
| Project Name/Location: | Quantico 25-Month; Quantico, VA. | Project Number: | | | |

Sampler: M. Grover Signature: M Gr

| Sample ID | Sample Date | Sample Time | Sample Depth (ft) | Matrix Sediment (S), Benthos (B), SPME (SP) | # of Containers | Preservation | DDx EPA 8081A | TOC EPA 9060 | ASTM D422 Grain Size | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT25-4-0002-SEDCHEM-AI | 8/24/16 | 11:30 | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-4-0002-SEDCHEM-BI | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-4-0205-SEDCHEM-BI | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-4-0507-SEDCHEM-BI | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-5-0002-SEDCHEM | | 1340 | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-5-0205-SEDCHEM | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-5-0507-SEDCHEM | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-5-0002-SEDCHEM-AI | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-5-0002-SEDCHEM-BI | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-5-0205-SEDCHEM-BI | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-5-0507-SEDCHEM-BI | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-5DUP-0002-SEDCHEM | | | na | S | 1 | N.P. | x | x | | | | | | | |
| Total | | | | | 12 | | 12 | 12 | 0 | | | | | | |

Please return coolers to :

1. I hereby transfer the sample containers to ERDC. Samples have been properly labeled and kept on ice or refrigerated.
12 | M. Grover | 8-25-16 | 13:30
Total # of Containers | Name | Date | Time

2. I accept these samples for transfer to ERDC:
| KP | |
Total # of Containers | Name | Date | Time

3. Condition of samples upon arrival at ERDC:

4. Cooler temperature upon arrival at ERDC:

5. Additional Information:
N.P. = no preserved, HNO3 = preserved with nitric acid, H2SO4 = preserved with sulfuric acid
Alison Holman to work with contractor to run TOC (EPA TOC 9060)

6. Send Copy of COC: USACE-ERDC-EP-C
POC: Amber Russell, Madeline Tarasar and Jenifer Milam
Email: amber.l.russell@usace.army.mil
madeline.k.tarasar@usace.army.mil
jenifer.milam@usace.army.mil
Phone: 601-634-4302 & 601-634-7431

# CHAIN OF CUSTODY RECORD

3



| | | | | | |
|---|---|---|---|---|---|
| **Sampling Company:** | **Ramboll-Environ** | **Client:** | **SPAWAR Systems Center Pacific** | **Laboratory:** | **USACE ERDC-EP-C** |
| **POC:** | **Melissa Grover** | **POC:** | **Dr. Bart Chadwick** | **POC:** | **Madeline Tarasar** |
| **Address:** | **16644 West Bernardo Drive, Suite 301** | **Address:** | **53475 Strothe Road** | **Address:** | **3909 Halls Ferry RD Bldg 3299** |
| | **San Diego, California 92127** | | **San Diego, CA 92152** | | **Vicksburg, MS 39180** |
| **Email:** | mgrover@geosyntec.com; kfetters@ramboll.com | **Email:** | bart.chadwick@navy.mil | **Email:** | madeline..k.tarasar@usace.army.mil |
| **Phone:** | **858-716-2928** | **Phone:** | **619-553-5333** | **Phone:** | **601-634-3966** |
| **Project Name/Location:** | **Quantico 25-Month; Quantico, VA.** | **Project Number:** | | | |

Sampler: M. Grover Signature: M Grover

| Sample ID | Sample Date | Sample Time | Sample Depth (ft) | Matrix Sediment (S), Benthos (B), SPME (SP) | # of Containers | Preservation | DDx EPA 8081A | TOC EPA 9060 | ASTM D422 Grain Size | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT25-5DUP-0205-SEDCHEM | 8/24/16 | 13:40 | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-5DUP-0507-SEDCHEM | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-5DUP-0002-SEDCHEM-AI | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-5DUP-0002-SEDCHEM-BI | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-5DUP-0205-SEDCHEM-BI | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-5DUP-0507-SEDCHEM-BI | | | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-6-GRAB-SEDCHEM | | 15:40 | na | S | 1 | N.P. | x | x | | | | | | | |
| QT25-7-GRAB-SEDCHEM | | 15:22 | na | S | 1 | N.P. | x | x | | | | | | | |
| ~~QT25-1-0002-GS~~ | | | ~~na~~ | ~~S~~ | ~~1~~ | ~~N.P.~~ | | | ~~x~~ | | | | | | |
| ~~QT25-1-0205-GS~~ | | | ~~na~~ | ~~S~~ | ~~1~~ | ~~N.P.~~ | | | ~~x~~ | | | | | | |
| ~~QT25-1-0507-GS~~ | | | ~~na~~ | ~~S~~ | ~~1~~ | ~~N.P.~~ | | | ~~x~~ | | | | | | |
| ~~QT25-1-0002-GS-AI~~ | | | ~~na~~ | ~~S~~ | ~~1~~ | ~~N.P.~~ | | | ~~x~~ | | | | | | |
| Total | | | | | 8 ~~12~~ | | 8 | 8 | ~~4~~ | | | | | | |

**Please return coolers to :**

1. I hereby transfer the sample containers to ERDC. Samples have been properly labeled and kept on ice or refrigerated.

8 — M. Grover — 8-25-16 — 13:30

**Total # of Containers** Name Date Time

2. I accept these samples for transfer to ERDC:

NP

**Total # of Containers** Name Date Time

3. Condition of samples upon arrival at ERDC:

4. Cooler temperature upon arrival at ERDC:

5. Additional Information:
N.P. = no preserved, HNO3 = preserved with nitric acid, H2SO4 = preserved with sulfuric acid
Alison Holman to work with contractor to run TOC (EPA TOC 9060)

**6. Send Copy of COC** **USACE-ERDC-EP-C**
POC: **Amber Russell, Madeline Tarasar and Jenifer Milam**
Email: amber.l.russell@usace.army.mil
madeline.k.tarasar@usace.army.mil
jenifer.milam@usace.army.mil
Phone: **601-634-4302 & 601-634-7431**

## Items for Project Manager Review

| LabNumber | Analysis | Analyte | Exception |
|---|---|---|---|
| | | | Data included from: W:\TransferIn\6082611 TRANSFER 22 Nov 2016 1503.mdb |
| | | | Data included from: W:\TransferIn\6082611 TRANSFER 31 Oct 2016 1411.mdb |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

24 February 2017

Bart Chadwick
Navy -- SPAWAR
Environmental Science and Applied System Branch, 536(
San Diego, CA 92152

RE: Quantico

Enclosed are the results of analyses for samples received by the laboratory on 26-Aug-2016. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Madeline Tarasar For Dale Rosado, Ph. D.
Chemist

6082610



# CHAIN OF CUSTODY RECORD

| | | | | | |
|---|---|---|---|---|---|
| Sampling Company: | Ramboll-Environ | Client: | SPAWAR Systems Center Pacific | Laboratory: | USACE ERDC-EP-C |
| POC: | Melissa Grover | POC: | Dr. Bart Chadwick | POC: | Madeline Tarasar |
| Address: | 16644 West Bernardo Drive, Suite 301<br>San Diego, California 92127 | Address: | 53475 Strothe Road<br>San Diego, CA 92152 | Address: | 3909 Halls Ferry RD Bldg 3299<br>Vicksburg, MS 39180 |
| Email: | mgrover@geosyntec.com; kfetters@ramboll.com | Email: | bart.chadwick@navy.mil | Email: | madeline..k.tarasar@usace.army.mil |
| Phone: | 858-716-2928 | Phone: | 619-553-5333 | Phone: | 601-634-3966 |
| Project Name/Location: | Quantico 25-Month; Quantico, VA. | Project Number: | | | |

Sampler: M. Grover Signature: MGrover

| Sample ID | Sample Date | Sample Time | Sample Depth (ft) | Matrix Sediment (S), Benthos (B), SPME (SP) | # of Containers | Preservation | DDx EPA 8081A | TOC EPA 9060 | ASTM D422 Grain Size | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT25-1-0002-GS-BI | 8-24-16 | 850 | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-1-0205-GS-BI | 8-24-16 | ↓ | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-1-0507-GS-BI | 8-24-16 | ↓ | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-2-0002-GS | 8-24-16 | 10:30 | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-2-0205-GS | 8-24-16 | ↓ | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-2-0507-GS | ↓ | ↓ | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-2-0002-GS-AI | ↓ | ↓ | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-2-0002-GS-BI | ↓ | ↓ | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-2-0205-GS-BI | ↓ | ↓ | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-2-0507-GS-BI | ↓ | ↓ | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-3-0002-GS | ↓ | 11:05 | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-3-0205-GS | ↓ | ↓ | na | S | 1 | N.P. | | | x | | | | | | |
| Total | | | | | 12 | | 0 | 0 | 12 | | | | | | |

Requested Analyses: DDx EPA 8081A, TOC EPA 9060, ASTM D422 Grain Size

Please return coolers to :

1. I hereby transfer the sample containers to ERDC. Samples have been properly labeled and kept on ice or refrigerated.

| Total # of Containers | Name | Date | Time |
|---|---|---|---|
| 12 | M. Grover | 8-25-16 | 13:30 |

2. I accept these samples for transfer to ERDC:

| Total # of Containers | Name | Date | Time |
|---|---|---|---|
| | MJ | | |

3. Condition of samples upon arrival at ERDC:

4 Cooler temperature upon arrival at ERDC:

5. Additional Information:
N.P. = no preserved, HNO3 = preserved with nitric acid, H2SO4 = preserved with sulfuric acid
Alison Holman to work with contractor to run TOC (EPA TOC 9060)

6. Send Copy of COC USACE-ERDC-EP-C
POC: Amber Russell, Madeline Tarasar and Jenifer Milam
Email: amber.l.russell@usace.army.mil
madeline.k.tarasar@usace.army.mil
jenifer.milam@usace.army.mil
Phone: 601-634-4302 & 601-634-7431

# CHAIN OF CUSTODY RECORD

2



| | | | | | |
|---|---|---|---|---|---|
| Sampling Company: | Ramboll-Environ | Client: | SPAWAR Systems Center Pacific | Laboratory: | USACE ERDC-EP-C |
| POC: | Melissa Grover | POC: | Dr. Bart Chadwick | POC: | Madeline Tarasar |
| Address: | 16644 West Bernardo Drive, Suite 301 | Address: | 53475 Strothe Road | Address: | 3909 Halls Ferry RD Bldg 3299 |
| | San Diego, California 92127 | | San Diego, CA 92152 | | Vicksburg, MS 39180 |
| Email: | mgrover@geosyntec.com; kfetters@ramboll.com | Email: | bart.chadwick@navy.mil | Email: | madeline..k.tarasar@usace.army.mil |
| Phone: | 858-716-2928 | Phone: | 619-553-5333 | Phone: | 601-634-3966 |
| Project Name/Location: | Quantico 25-Month; Quantico, VA. | Project Number: | | | |

Sampler: M. Grover  Signature: [signature]

| Sample ID | Sample Date | Sample Time | Sample Depth (ft) | Matrix Sediment (S), Benthos (B), SPME (SP) | # of Containers | Preservation | DDx EPA 8081A | TOC EPA 9060 | ASTM D422 Grain Size | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Requested Analyses | | | | | | | | |
| QT25-3-0507-GS | 8/24/16 | 11:05 | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-3-0002-GS-AI | | | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-3-0002-GS-BI | | | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-3-0205-GS-BI | | | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-3-0507-GS-BI | | | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-4-0002-GS | | 11:30 | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-4-0205-GS | | | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-4-0507-GS | | | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-4-0002-GS-AI | | | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-4-0002-GS-BI | | | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-4-0205-GS-BI | | | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-4-0507-GS-BI | | | na | S | 1 | N.P. | | | x | | | | | | |
| Total | | | | | 12 | | 0 | 0 | 12 | | | | | | |

**Please return coolers to :**

1. I hereby transfer the sample containers to ERDC. Samples have been properly labeled and kept on ice or refrigerated.

12
**Total # of Containers** — M. Grover (Name) — 8-25-16 (Date) — 13:30 (Time)

2. I accept these samples for transfer to ERDC:

**Total # of Containers** — [signature] (Name) — Date — Time

3. Condition of samples upon arrival at ERDC:

4 Cooler temperature upon arrival at ERDC:

5. Additional Information:
N.P. = no preserved, HNO3 = preserved with nitric acid, H2SO4 = preserved with sulfuric acid
Alison Holman to work with contractor to run TOC (EPA TOC 9060)

**6. Send Copy of COC** USACE-ERDC-EP-C
POC: Amber Russell, Madeline Tarasar and Jenifer Milam
Email: amber.l.russell@usace.army.mil
madeline.k.tarasar@usace.army.mil
jenifer.milam@usace.army.mil
Phone: 601-634-4302 & 601-634-7431

# CHAIN OF CUSTODY RECORD

2

Page 7 3 of 4

| | | | | | |
|---|---|---|---|---|---|
| pling Company: | ambol-Environ | Client: | SPAWAR Systems Center Pacific | Laboratory: | USACE ERDC-EP-C |
| : | elissa Grover | POC: | Dr. Bart Chadwick | POC: | Madeline Tarasar |
| ress: | 644 West Bernardo Drive, Suite 301 | Address: | 53475 Strothe Road | Address: | 3909 Halls Ferry RD Bldg 3299 |
| | an Diego, California 92127 | | San Diego, CA 92152 | | Vicksburg, MS 39180 |
| ail: | grover@geosyntec.com; fetters@ramboll.com | Email: | bart.chadwick@navy.mil | Email: | madeline..k.tarasar@usace.army.mil |
| one: | 58-716-2928 | Phone: | 619-553-5333 | Phone: | 601-634-3966 |
| oject Name/Location: | Quantico 25-Month; Quantico, VA. | Project Number: | | | |

mpler: M. Grover Signature M Grover

| ample ID | Sample Date | Sample Time | Sample Depth (ft) | Matrix Sediment (S), Benthos (B), SPME (SP) | # of Containers | Preservation | DDx EPA 8081A | TOC EPA 9060 | ASTM D422 Grain Size | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT25-5DUP05-GS-BI | 8/24/16 | 1340 | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-5DUP07-GS-BI | ↓ | ↓ | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-6-AB-GS | | 1540 | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-7-AB-GS | ↓ | 1522 | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-1-002-GS | 8/24/16 | 8:50 | na | S | ~~1~~ 1 | N.P. | | | X | | | | | | |
| QT25-1-205-GS | | | na | S | ~~1~~ 1 | N.P. | | | X | | | | | | |
| QT25-1-0507-GS | | | na | S | ~~1~~ 1 | N.P. | | | X | | | | | | |
| QT25-10002-GS-AI | ↓ | ↓ | na | S | ~~1~~ 1 | N.P. | | | X | | | | | | |
| | | | na | S | ~~1~~ | N.P. | | | | | | | | | |
| | | | na | S | ~~1~~ | N.P. | | | | | | | | | |
| | | | na | S | ~~1~~ | N.P. | | | | | | | | | |
| | | | na | S | ~~1~~ | N.P. | | | | | | | | | |
| Total | | | | | 8 ~~12~~ | | 0 | 0 | 8 ~~4~~ | | | | | | |

Please return coolers to :

1. I hereby transfer the samp containers to ERDC. Samples have been properly labeled and kept on ice or refrigerated.

Total # containers 8 — Name: M. Grover — Date: 8-25-16 — Time: 13:30

2. I accept these samples for nsfer to ERDC: — Name: MT — Date — Time

Total # containers

3. Condition of samples upon rival at ERDC:

4. Cooler temperature upon aal at ERDC:

5. Additional Information:
N.P. = no preserved, HNO3 = preserved with nitric acid, H2SO4 = preserved with sulfuric acid
Alison Holman to work with contractor to run TOC (EPA TOC 9060)

6. Send Copy of COC: USACE-ERDC-EP-C
POC: Amber Russell, Madeline Tarasar and Jenifer Milam
Email: amber.l.russell@usace.army.mil, madeline.k.tarasar@usace.army.mil, jenifer.milam@usace.army.mil
Phone: 601-634-4302 & 601-634-7431

2

# CHAIN OF CUSTODY RECORD

Page 4 of 4

| | | | | | |
|---|---|---|---|---|---|
| Sampling Company: | Ramboll-Environ | Client: | SPAWAR Systems Center Pacific | Laboratory: | USACE ERDC-EP-C |
| POC: | Melissa Grover | POC: | Dr. Bart Chadwick | POC: | Madeline Tarasar |
| Address: | 16644 West Bernardo Drive, Suite 301<br>San Diego, California 92127 | Address: | 53475 Strothe Road<br>San Diego, CA 92152 | Address: | 3909 Halls Ferry RD Bldg 3299<br>Vicksburg, MS 39180 |
| Email: | mgrover@geosyntec.com; kfetters@ramboll.com | Email: | bart.chadwick@navy.mil | Email: | madeline..k.tarasar@usace.army.mil |
| Phone: | 858-716-2928 | Phone: | 619-553-5333 | Phone: | 601-634-3966 |
| Project Name/Location: | Quantico 25-Month; Quantico, VA. | Project Number: | | | |

Sampler: M. Grover Signature: M Grover

Requested Analyses

| Sample ID | Sample Date | Sample Time | Sample Depth (ft) | Matrix Sediment (S), Benthos (B), SPME (SP) | # of Containers | Preservation | DDx EPA 8081A | TOC EPA 9060 | ASTM D422 Grain Size | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT25-5-0002-GS | 8/24/16 | 1340 | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-5-0205-GS | | | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-5-0507-GS | | | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-5-0002-GS-AI | | | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-5-0002-GS-BI | | | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-5-0205-GS-BI | | | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-5-0507-GS-BI | | | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-5DUP-0002-GS | | | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-5DUP-0205-GS | | | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-5DUP-0507-GS | | | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-5DUP-0002-GS-AI | | | na | S | 1 | N.P. | | | x | | | | | | |
| QT25-5DUP-0002-GS-BI | | | na | S | 1 | N.P. | | | x | | | | | | |
| Total | | | | | 12 | | 0 | 0 | 12 | | | | | | |

**Please return coolers to :**

1. I hereby transfer the sample containers to ERDC. Samples have been properly labeled and kept on ice or refrigerated.

12 — **Total # of Containers** — Name: M. Grover — Date: 8-25-16 — Time: 13:30

2. I accept these samples for transfer to ERDC:

**Total # of Containers** — Name: [signature] — Date — Time

3. Condition of samples upon arrival at ERDC:

4 Cooler temperature upon arrival at ERDC:

5. Additional Information:
N.P. = no preserved, HNO3 = preserved with nitric acid, H2SO4 = preserved with sulfuric acid
Alison Holman to work with contractor to run TOC (EPA TOC 9060)

**6. Send Copy of COC** USACE-ERDC-EP-C
POC: Amber Russell, Madeline Tarasar and Jenifer Milam
Email: amber.l.russell@usace.army.mil
madeline.k.tarasar@usace.army.mil
jenifer.milam@usace.army.mil
Phone: 601-634-4302 & 601-634-7431

# PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-1 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 002-GS-BI |
| | | Lab Sample | 37829001 |

Sample Color: **BROWN**
USCS Group Name: **SILTY SAND**
USCS Group Symbol: **sm** USDA: **NA** AASHTO: **NA**

## *MECHANICAL SIEVE*

| Total Sample | |
|---|---|
| Total Sample Wet Wt, gm (-3") | 63 |
| Sample Split on Sieve | No. 4 |
| Coarse Washed Dry Sample, gm | 0 |
| Wet Wt Passing Split, gm | 63 |
| Dry Wt. Passing Split, gm | 49 |
| Total Sample Dry Wt, gm | 49 |
| **Split Sample - Passing No. 4** | |
| Tare No. | 14 |
| Tare + WS., gm | 144.16 |
| Tare + DS., gm | 130.19 |
| Tare, gm | 81.48 |
| **Water Content of Split Sample** | **28.7%** |
| Wt. of DS., gm | 48.71 |
| Wt. of +#200 Sample, gm | 42.27 |

| Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|
| 3" | 75 | 0 | 0.0% | 100.0% | |
| 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| 2" | 50 | 0 | 0.0% | 100.0% | |
| 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| 1" | 25 | 0 | 0.0% | 100.0% | |
| 3/4" | 19 | 0 | 0.0% | 100.0% | |
| 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| No. 4 | 4.75 | 0 | 0.0% | 100.0% | |
| No. 10 | 2 | 1.21 | 2.5% | 97.5% | |
| No. 20 | 0.85 | 3.81 | 7.8% | 89.7% | |
| No. 40 | 0.425 | 8.46 | 17.4% | 72.3% | |
| No. 60 | 0.25 | 8.45 | 17.3% | 55.0% | |
| No. 140 | 0.106 | 14.38 | 29.5% | 25.5% | |
| No. 200 | 0.075 | 5.96 | 12.2% | 13.2% | |

## *USCS SOIL CLASSIFICATION*

*Corrected For 100% Passing a 3" Sieve*

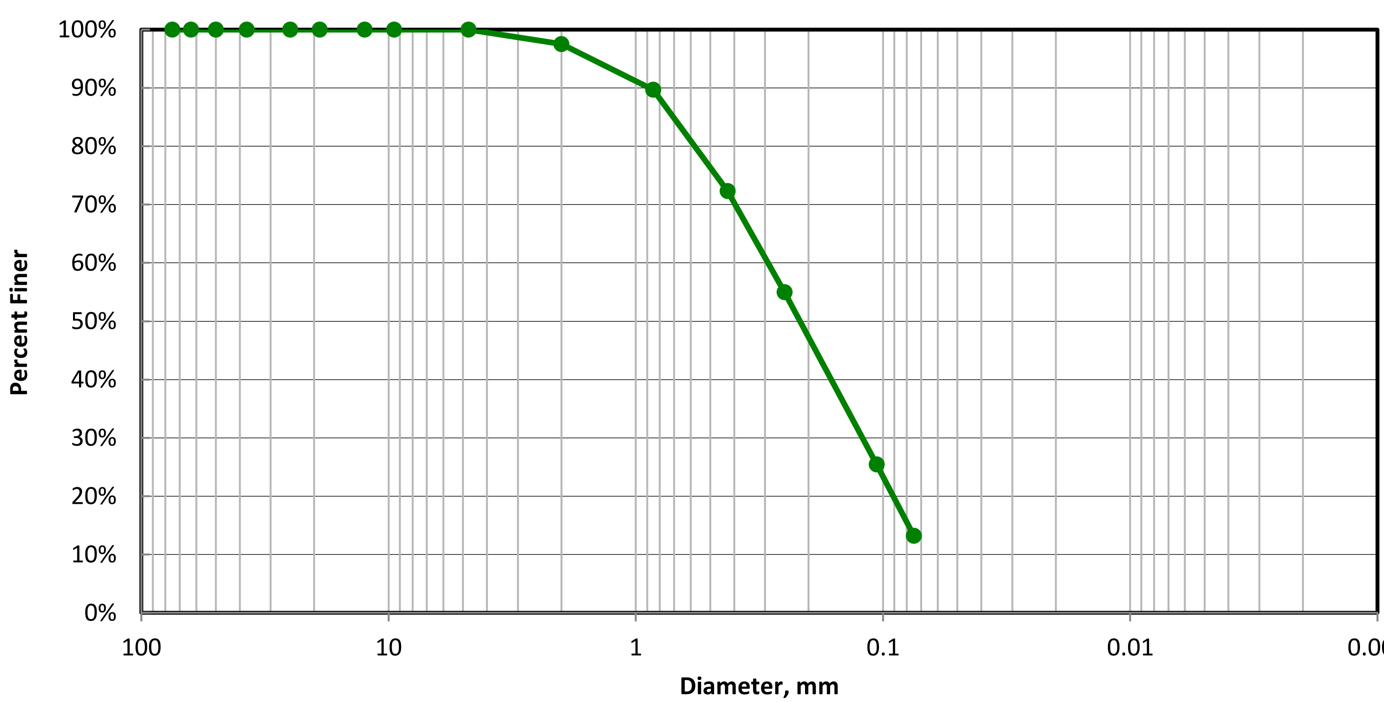
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **0.0** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=0* | | D60, mm | NA |
| **% Sand (-#4 & +#200)** | **86.8** | D30, mm | NA |
| *Coarse=2.5; Medium=25.2; Fine=59.1* | | D10, mm | NA |
| **% Fines (-#200)** | **13.2** | Cc | NA |
| **% Plus #200 (-3")** | **86.8** | Cu | NA |

**USCS Description**

**SILTY SAND**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| **sm** | **np - Non-Plastic (assumed)** |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




| | | | |
|---|---|---|---|
| Input Validation | tmp | Reviewed By: tmp | Date Tested 9/6/2016 |

## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-1 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0205-GS-BI |
| | | Lab Sample | 37829002 |

Sample Color: **BROWN**
USCS Group Name: **SILTY SAND**
USCS Group Symbol: **sm** USDA: **NA** AASHTO: **NA**

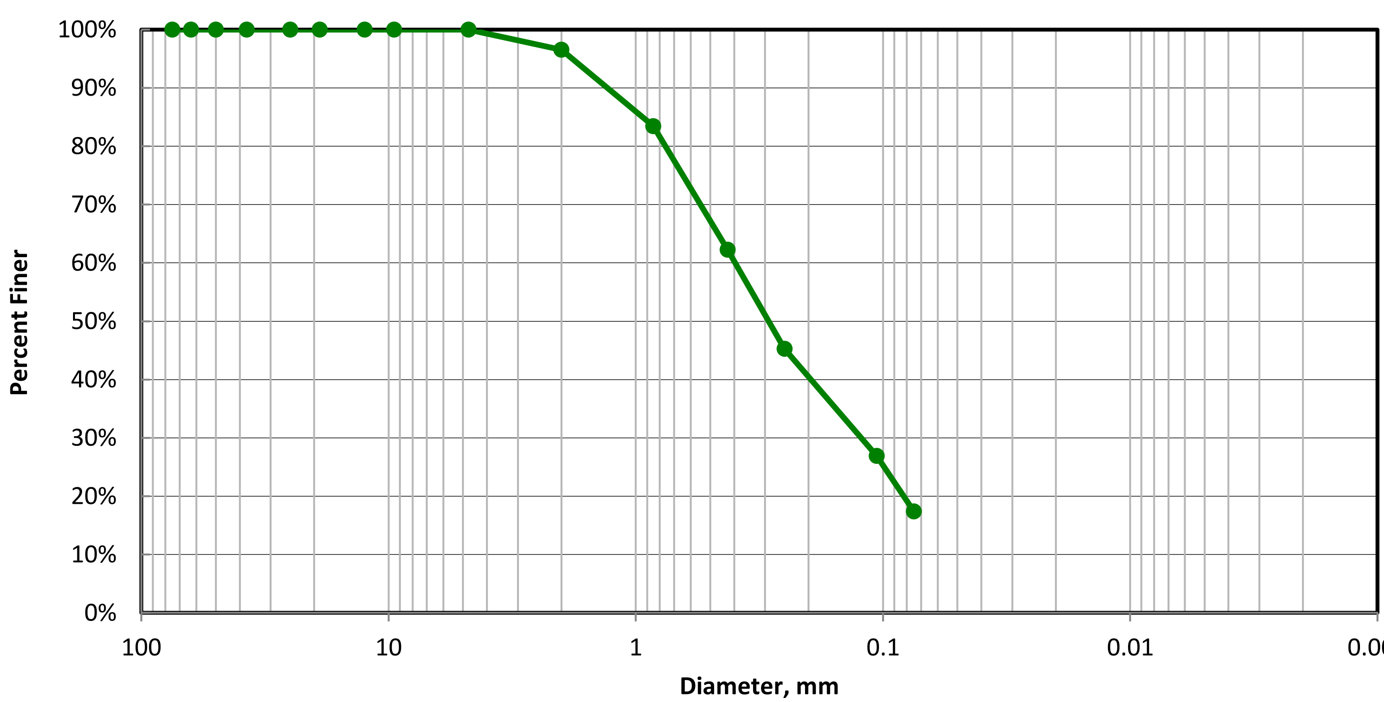
### *MECHANICAL SIEVE*

| Total Sample | | Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | % Finer | Project Specifications |
|---|---|---|---|---|---|---|---|
| Total Sample Wet Wt, gm (-3") | 55 | 3" | 75 | 0 | 0.0% | 100.0% | |
| Sample Split on Sieve | No. 4 | 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| Coarse Washed Dry Sample, gm | 0 | 2" | 50 | 0 | 0.0% | 100.0% | |
| Wet Wt Passing Split, gm | 55 | 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| Dry Wt. Passing Split, gm | 41 | 1" | 25 | 0 | 0.0% | 100.0% | |
| Total Sample Dry Wt, gm | 41 | 3/4" | 19 | 0 | 0.0% | 100.0% | |
| **Split Sample - Passing No. 4** | | 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| Tare No. | 109 | 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| Tare + WS., gm | 138.46 | No. 4 | 4.75 | 0 | 0.0% | 100.0% | |
| Tare + DS., gm | 125.03 | No. 10 | 2 | 1.43 | 3.4% | 96.6% | |
| Tare, gm | 83.53 | No. 20 | 0.85 | 5.44 | 13.1% | 83.4% | |
| **Water Content of Split Sample** | **32.4%** | No. 40 | 0.425 | 8.79 | 21.2% | 62.3% | |
| Wt. of DS., gm | 41.50 | No. 60 | 0.25 | 7.05 | 17.0% | 45.3% | |
| | | No. 140 | 0.106 | 7.62 | 18.4% | 26.9% | |
| Wt. of +#200 Sample, gm | 34.28 | No. 200 | 0.075 | 3.95 | 9.5% | 17.4% | |

### *USCS SOIL CLASSIFICATION*

| *Corrected For 100% Passing a 3" Sieve* | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **0.0** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=0* | | D60, mm | NA |
| **% Sand (-#4 & +#200)** | **82.6** | D30, mm | NA |
| *Coarse=3.4; Medium=34.3; Fine=44.9* | | D10, mm | NA |
| **% Fines (-#200)** | **17.4** | Cc | NA |
| **% Plus #200 (-3")** | **82.6** | Cu | NA |

| USCS Description | | | |
|---|---|---|---|
| SILTY SAND | | | |
| **USCS Group Symbol** | **Atterberg Limits Group Symbol** | | |
| **sm** | **np - Non-Plastic (assumed)** | | |
| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-1 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0507-GS-BI |
| | | Lab Sample | 37829003 |

Sample Color: **BROWN**
USCS Group Name: **SILTY SAND**
USCS Group Symbol: **sm** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | | Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|---|---|
| Total Sample Wet Wt, gm (-3") | 105 | 3" | 75 | 0 | 0.0% | 100.0% | |
| Sample Split on Sieve | No. 4 | 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| Coarse Washed Dry Sample, gm | 3 | 2" | 50 | 0 | 0.0% | 100.0% | |
| Wet Wt Passing Split, gm | 102 | 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| Dry Wt. Passing Split, gm | 81 | 1" | 25 | 0 | 0.0% | 100.0% | |
| Total Sample Dry Wt, gm | 84 | 3/4" | 19 | 0 | 0.0% | 100.0% | |
| **Split Sample - Passing No. 4** | | 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| Tare No. | 20 | 3/8" | 9.5 | 2.28 | 2.7% | 97.3% | |
| Tare + WS., gm | 181.6 | No. 4 | 4.75 | 0.98 | 1.2% | 96.1% | |
| Tare + DS., gm | 160.5 | No. 10 | 2 | 1.14 | 1.4% | 94.7% | |
| Tare, gm | 80.72 | No. 20 | 0.85 | 3.58 | 4.3% | 90.4% | |
| **Water Content of Split Sample** | **26.4%** | No. 40 | 0.425 | 10.92 | 13.2% | 77.3% | |
| Wt. of DS., gm | 79.78 | No. 60 | 0.25 | 9.03 | 10.9% | 66.4% | |
| | | No. 140 | 0.106 | 21.47 | 25.9% | 40.5% | |
| Wt. of +#200 Sample, gm | 60.88 | No. 200 | 0.075 | 14.74 | 17.8% | 22.8% | |

### *USCS SOIL CLASSIFICATION*

*Corrected For 100% Passing a 3" Sieve*

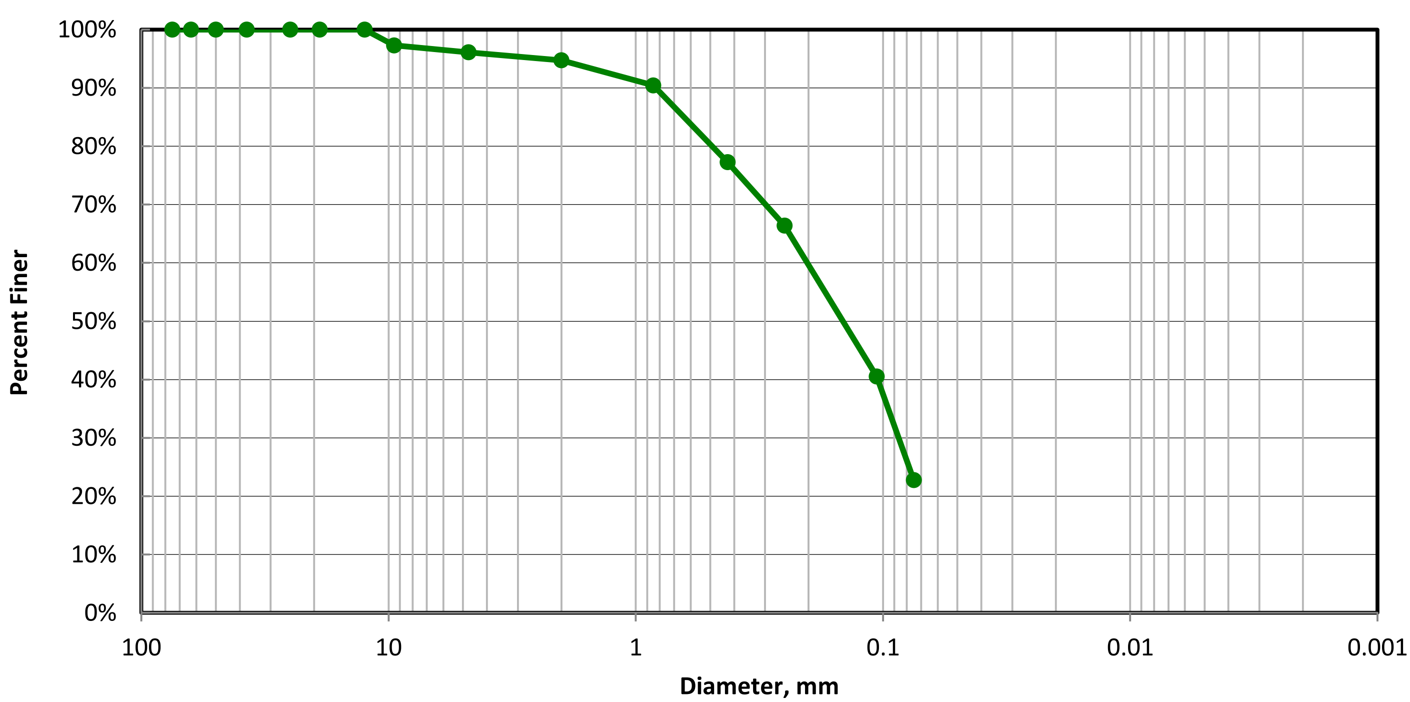
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **3.9** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=3.9* | | D60, mm | NA |
| **% Sand (-#4 & +#200)** | **73.3** | D30, mm | NA |
| *Coarse=1.4; Medium=17.5; Fine=54.5* | | D10, mm | NA |
| **% Fines (-#200)** | **22.8** | Cc | NA |
| **% Plus #200 (-3")** | **77.2** | Cu | NA |

**USCS Description**

SILTY SAND

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| sm | np - Non-Plastic (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-2 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0002-GS |
| | | Lab Sample | 37829004 |

Sample Color: **BROWN**
USCS Group Name: **POORLY GRADED SAND**
USCS Group Symbol: **sp** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | | Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|---|---|
| Total Sample Wet Wt, gm (-3") | 123 | 3" | 75 | 0 | 0.0% | 100.0% | |
| Sample Split on Sieve | No. 4 | 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| Coarse Washed Dry Sample, gm | 5 | 2" | 50 | 0 | 0.0% | 100.0% | |
| Wet Wt Passing Split, gm | 118 | 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| Dry Wt. Passing Split, gm | 101 | 1" | 25 | 0 | 0.0% | 100.0% | |
| Total Sample Dry Wt, gm | 106 | 3/4" | 19 | 0 | 0.0% | 100.0% | |
| **Split Sample - Passing No. 4** | | 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| Tare No. | 101 | 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| Tare + WS., gm | 194.06 | No. 4 | 4.75 | 4.51 | 4.3% | 95.7% | |
| Tare + DS., gm | 178.29 | No. 10 | 2 | 6.81 | 6.8% | 88.9% | |
| Tare, gm | 83.02 | No. 20 | 0.85 | 15.24 | 15.3% | 73.6% | |
| **Water Content of Split Sample** | **16.6%** | No. 40 | 0.425 | 30.03 | 30.2% | 43.4% | |
| Wt. of DS., gm | 95.27 | No. 60 | 0.25 | 28.27 | 28.4% | 15.0% | |
| | | No. 140 | 0.106 | 11.48 | 11.5% | 3.5% | |
| Wt. of +#200 Sample, gm | 93.04 | No. 200 | 0.075 | 1.21 | 1.2% | 2.2% | |

### *USCS SOIL CLASSIFICATION*

*Corrected For 100% Passing a 3" Sieve*

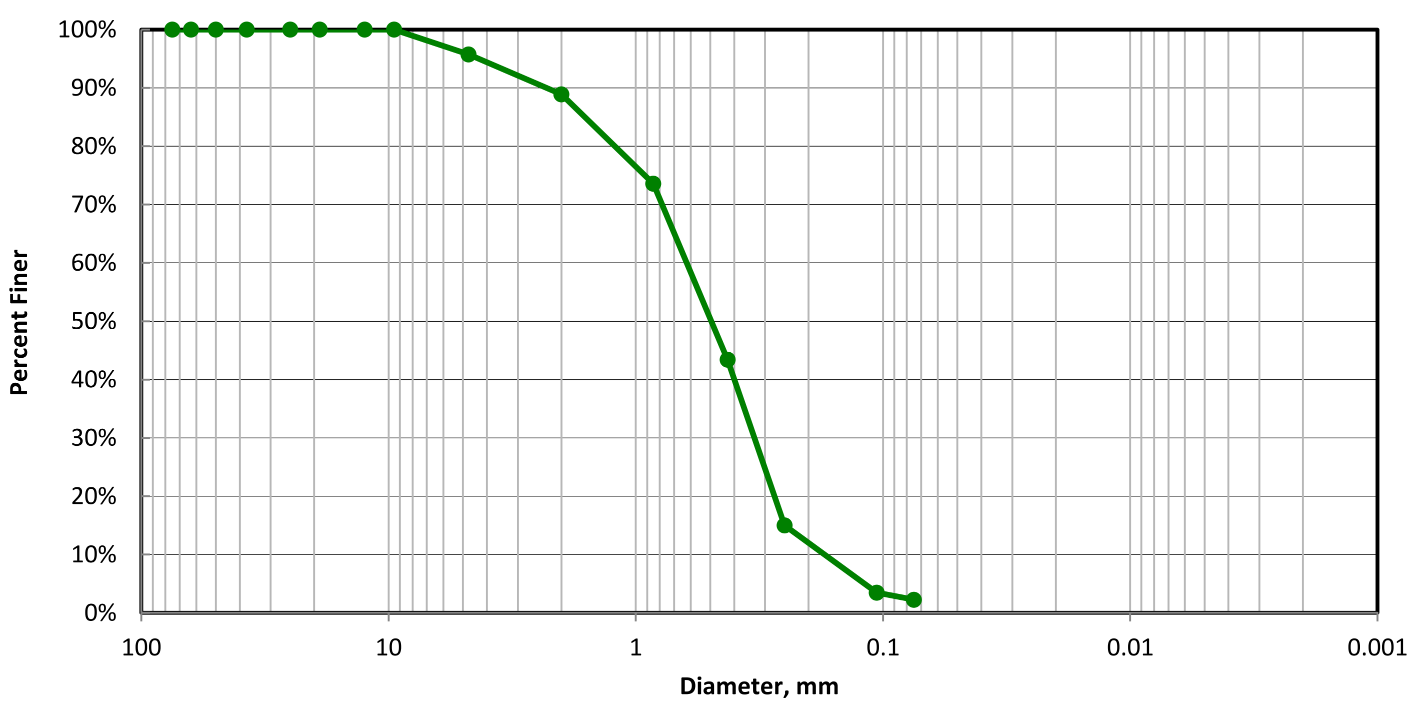
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **4.3** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=4.3* | | D60, mm | 0.62 |
| **% Sand (-#4 & +#200)** | **93.5** | D30, mm | 0.33 |
| *Coarse=6.8; Medium=45.5; Fine=41.2* | | D10, mm | 0.17 |
| **% Fines (-#200)** | **2.2** | Cc | 1.02 |
| **% Plus #200 (-3")** | **97.8** | Cu | 3.61 |

**USCS Description**

**POORLY GRADED SAND**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| sp | np - Non-Plastic (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

# PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-2 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0205-GS |
| | | Lab Sample | 37829005 |

Sample Color: **BROWN**
USCS Group Name: **POORLY GRADED SAND**
USCS Group Symbol: **sp** USDA: **NA** AASHTO: **NA**

## MECHANICAL SIEVE

| Total Sample | |
|---|---|
| Total Sample Wet Wt, gm (-3") | 242 |
| Sample Split on Sieve | No. 4 |
| Coarse Washed Dry Sample, gm | 8 |
| Wet Wt Passing Split, gm | 233 |
| Dry Wt. Passing Split, gm | 200 |
| Total Sample Dry Wt, gm | 208 |

| Split Sample - Passing No. 4 | |
|---|---|
| Tare No. | 46 |
| Tare + WS., gm | 302.41 |
| Tare + DS., gm | 271.25 |
| Tare, gm | 84.84 |
| **Water Content of Split Sample** | **16.7%** |
| Wt. of DS., gm | 186.41 |
| Wt. of +#200 Sample, gm | 183.49 |

| Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|
| 3" | 75 | 0 | 0.0% | 100.0% | |
| 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| 2" | 50 | 0 | 0.0% | 100.0% | |
| 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| 1" | 25 | 0 | 0.0% | 100.0% | |
| 3/4" | 19 | 0 | 0.0% | 100.0% | |
| 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| No. 4 | 4.75 | 8.26 | 4.0% | 96.0% | |
| No. 10 | 2 | 14.8 | 7.6% | 88.4% | |
| No. 20 | 0.85 | 33.32 | 17.2% | 71.2% | |
| No. 40 | 0.425 | 60.16 | 31.0% | 40.2% | |
| No. 60 | 0.25 | 55.14 | 28.4% | 11.8% | |
| No. 140 | 0.106 | 18.88 | 9.7% | 2.1% | |
| No. 200 | 0.075 | 1.19 | 0.6% | 1.5% | |

## USCS SOIL CLASSIFICATION

*Corrected For 100% Passing a 3" Sieve*

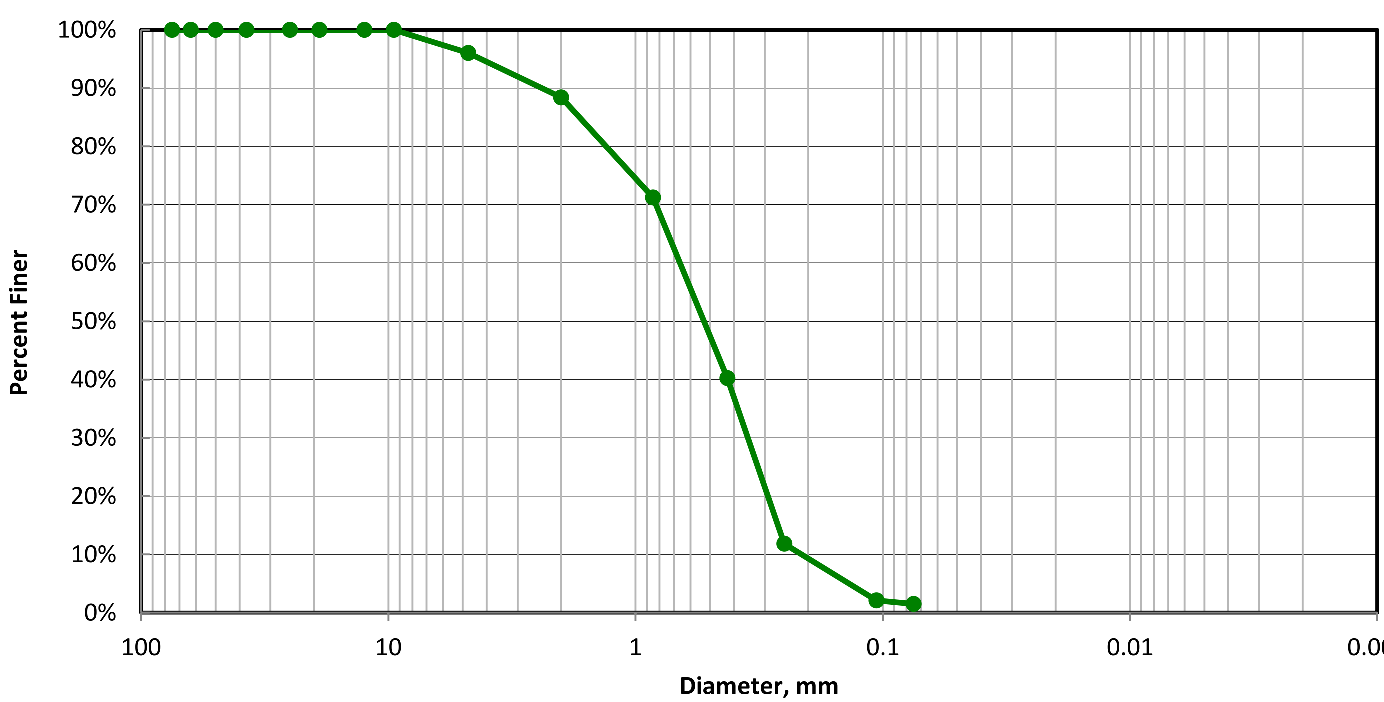
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **4.0** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=4* | | D60, mm | 0.66 |
| **% Sand (-#4 & +#200)** | **94.5** | D30, mm | 0.35 |
| *Coarse=7.6; Medium=48.2; Fine=38.7* | | D10, mm | 0.21 |
| **% Fines (-#200)** | **1.5** | Cc | 0.88 |
| **% Plus #200 (-3")** | **98.5** | Cu | 3.11 |

**USCS Description**

POORLY GRADED SAND

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| sp | np - Non-Plastic (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

# PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-2 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0507-GS |
| | | Lab Sample | 37829006 |

Sample Color: **BROWN**
USCS Group Name: **POORLY GRADED SAND**
USCS Group Symbol: **sp** USDA: **NA** AASHTO: **NA**

## MECHANICAL SIEVE

| Total Sample | |
|---|---|
| Total Sample Wet Wt, gm (-3") | 188 |
| Sample Split on Sieve | No. 4 |
| Coarse Washed Dry Sample, gm | 8 |
| Wet Wt Passing Split, gm | 180 |
| Dry Wt. Passing Split, gm | 156 |
| Total Sample Dry Wt, gm | 164 |

| Split Sample - Passing No. 4 | |
|---|---|
| Tare No. | B11 |
| Tare + WS., gm | 249.47 |
| Tare + DS., gm | 227.79 |
| Tare, gm | 84.88 |
| **Water Content of Split Sample** | **15.2%** |
| Wt. of DS., gm | 142.91 |
| Wt. of +#200 Sample, gm | 140.60 |

| Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|
| 3" | 75 | 0 | 0.0% | 100.0% | |
| 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| 2" | 50 | 0 | 0.0% | 100.0% | |
| 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| 1" | 25 | 0 | 0.0% | 100.0% | |
| 3/4" | 19 | 0 | 0.0% | 100.0% | |
| 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| No. 4 | 4.75 | 7.59 | 4.6% | 95.4% | |
| No. 10 | 2 | 12.55 | 8.4% | 87.0% | |
| No. 20 | 0.85 | 29.57 | 19.7% | 67.3% | |
| No. 40 | 0.425 | 47.68 | 31.8% | 35.4% | |
| No. 60 | 0.25 | 38.24 | 25.5% | 9.9% | |
| No. 140 | 0.106 | 11.39 | 7.6% | 2.3% | |
| No. 200 | 0.075 | 1.17 | 0.8% | 1.5% | |

## USCS SOIL CLASSIFICATION

*Corrected For 100% Passing a 3" Sieve*

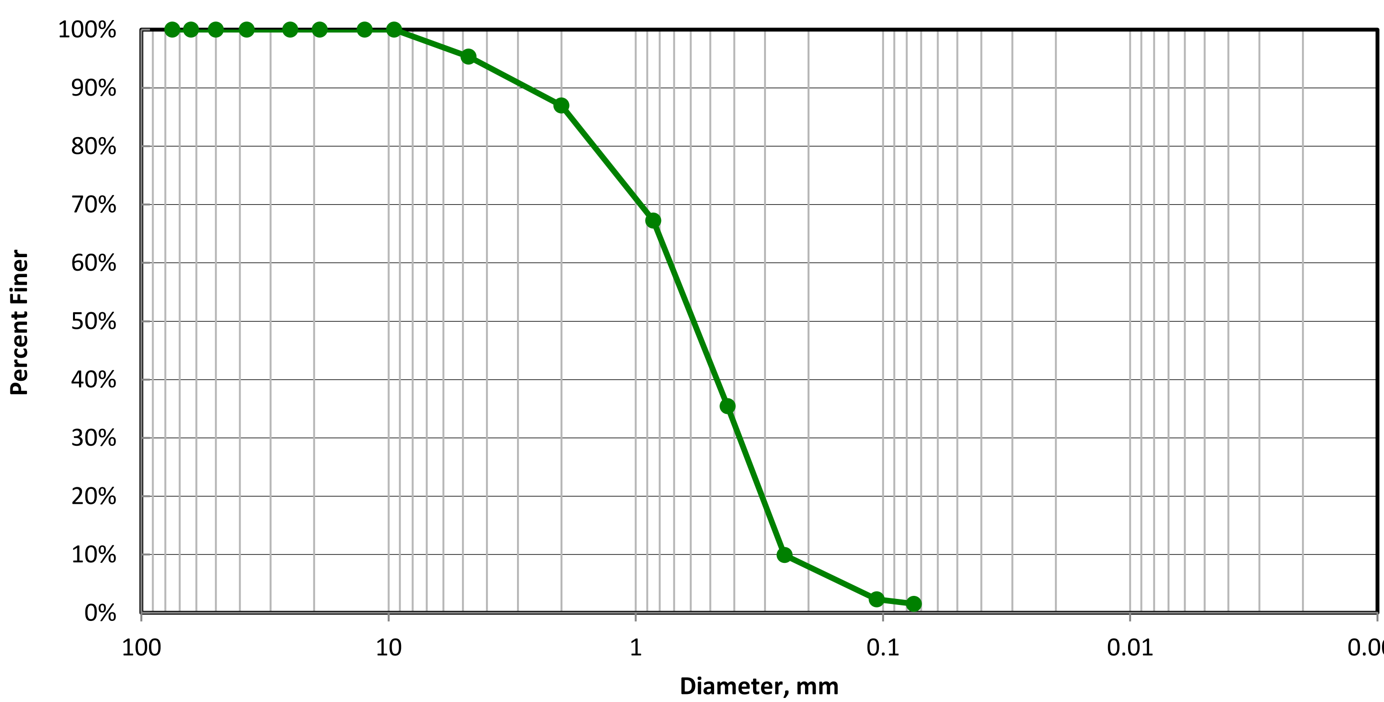
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **4.6** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=4.6* | | D60, mm | 0.73 |
| **% Sand (-#4 & +#200)** | **93.8** | D30, mm | 0.38 |
| *Coarse=8.4; Medium=51.6; Fine=33.9* | | D10, mm | 0.25 |
| **% Fines (-#200)** | **1.5** | Cc | 0.79 |
| **% Plus #200 (-3")** | **98.5** | Cu | 2.90 |

**USCS Description**

**POORLY GRADED SAND**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| sp | np - Non-Plastic (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-2 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0002-GS-AI |
| | | Lab Sample | 37829007 |

Sample Color: **BROWN**
USCS Group Name: **POORLY GRADED SAND**
USCS Group Symbol: **sp** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | |
|---|---|
| Total Sample Wet Wt, gm (-3") | 130 |
| Sample Split on Sieve | No. 4 |
| Coarse Washed Dry Sample, gm | 9 |
| Wet Wt Passing Split, gm | 121 |
| Dry Wt. Passing Split, gm | 105 |
| Total Sample Dry Wt, gm | 114 |
| **Split Sample - Passing No. 4** | |
| Tare No. | 119 |
| Tare + WS., gm | 196 |
| Tare + DS., gm | 180.87 |
| Tare, gm | 83.75 |
| **Water Content of Split Sample** | **15.6%** |
| Wt. of DS., gm | 97.12 |
| Wt. of +#200 Sample, gm | 96.64 |

| Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|
| 3" | 75 | 0 | 0.0% | 100.0% | |
| 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| 2" | 50 | 0 | 0.0% | 100.0% | |
| 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| 1" | 25 | 0 | 0.0% | 100.0% | |
| 3/4" | 19 | 0 | 0.0% | 100.0% | |
| 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| No. 4 | 4.75 | 9.24 | 8.1% | 91.9% | |
| No. 10 | 2 | 9.33 | 8.8% | 83.1% | |
| No. 20 | 0.85 | 13.7 | 13.0% | 70.1% | |
| No. 40 | 0.425 | 27.44 | 26.0% | 44.1% | |
| No. 60 | 0.25 | 34.49 | 32.6% | 11.5% | |
| No. 140 | 0.106 | 11.43 | 10.8% | 0.7% | |
| No. 200 | 0.075 | 0.25 | 0.2% | 0.5% | |

### *USCS SOIL CLASSIFICATION*

*Corrected For 100% Passing a 3" Sieve*

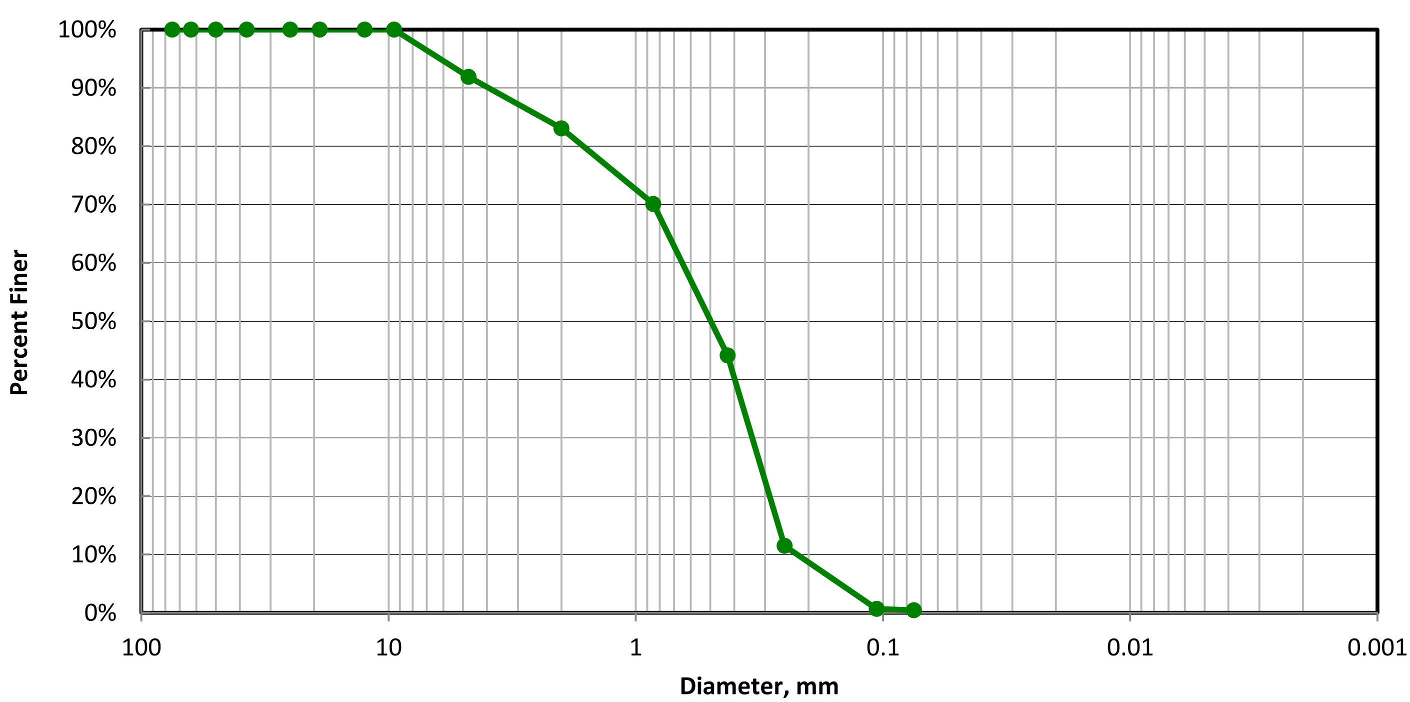
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **8.1** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=8.1* | | D60, mm | 0.65 |
| **% Sand (-#4 & +#200)** | **91.4** | D30, mm | 0.34 |
| *Coarse=8.8; Medium=38.9; Fine=43.7* | | D10, mm | 0.22 |
| **% Fines (-#200)** | **0.5** | Cc | 0.79 |
| **% Plus #200 (-3")** | **99.5** | Cu | 2.93 |

**USCS Description**

**POORLY GRADED SAND**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| sp | np - Non-Plastic (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-2 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0002-GS-BI |
| | | Lab Sample | 37829008 |

Sample Color: **GRAY**
USCS Group Name: **POORLY GRADED SAND WITH SILT**
USCS Group Symbol: **sp-sm** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | | Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|---|---|
| Total Sample Wet Wt, gm (-3") | 159 | 3" | 75 | 0 | 0.0% | 100.0% | |
| Sample Split on Sieve | No. 4 | 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| Coarse Washed Dry Sample, gm | 5 | 2" | 50 | 0 | 0.0% | 100.0% | |
| Wet Wt Passing Split, gm | 154 | 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| Dry Wt. Passing Split, gm | 123 | 1" | 25 | 0 | 0.0% | 100.0% | |
| Total Sample Dry Wt, gm | 128 | 3/4" | 19 | 0 | 0.0% | 100.0% | |
| **Split Sample - Passing No. 4** | | 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| Tare No. | 462 | 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| Tare + WS., gm | 226.88 | No. 4 | 4.75 | 5.33 | 4.2% | 95.8% | |
| Tare + DS., gm | 198.29 | No. 10 | 2 | 2.2 | 1.9% | 94.0% | |
| Tare, gm | 85.57 | No. 20 | 0.85 | 7.35 | 6.2% | 87.7% | |
| **Water Content of Split Sample** | **25.4%** | No. 40 | 0.425 | 19.95 | 17.0% | 70.8% | |
| Wt. of DS., gm | 112.72 | No. 60 | 0.25 | 29.74 | 25.3% | 45.5% | |
| | | No. 140 | 0.106 | 34.8 | 29.6% | 15.9% | |
| Wt. of +#200 Sample, gm | 101.93 | No. 200 | 0.075 | 7.89 | 6.7% | 9.2% | |

### *USCS SOIL CLASSIFICATION*

*Corrected For 100% Passing a 3" Sieve*

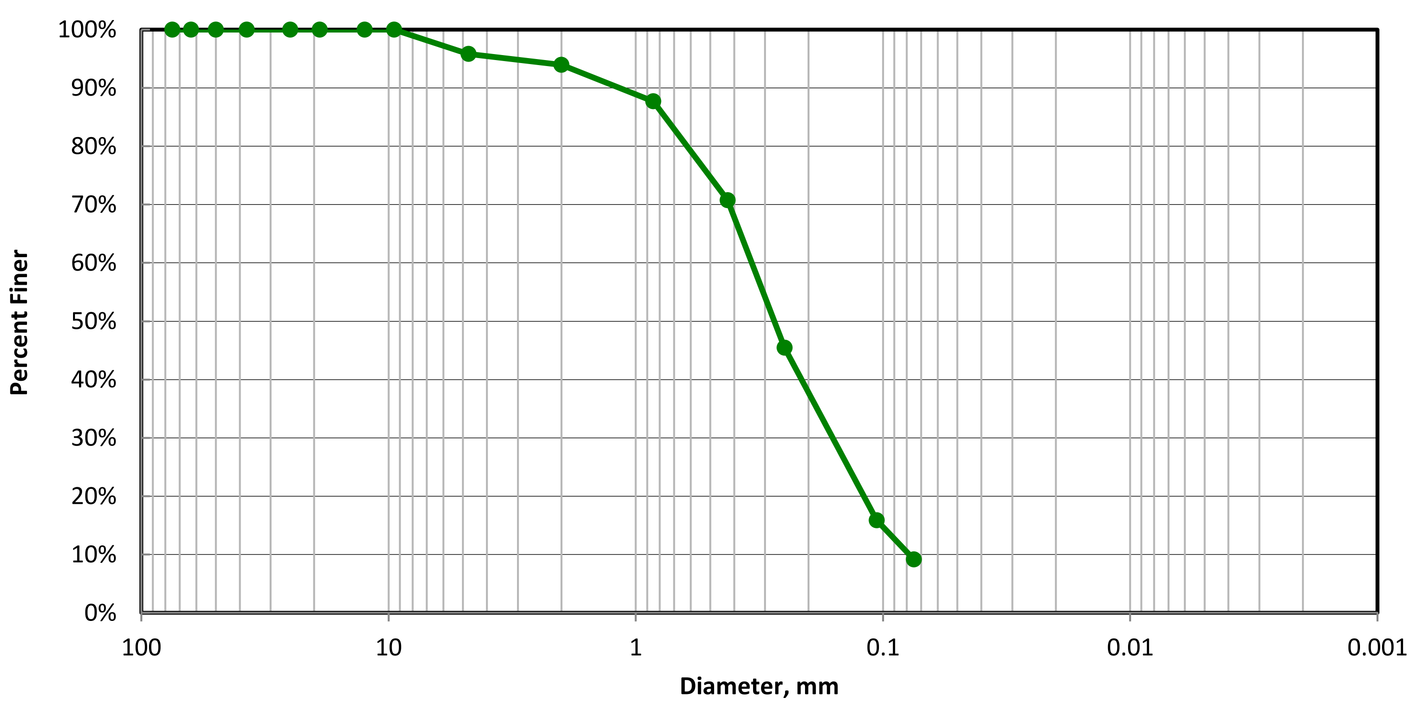
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **4.2** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=4.2* | | D60, mm | 0.34 |
| **% Sand (-#4 & +#200)** | **86.7** | D30, mm | 0.16 |
| *Coarse=1.9; Medium=23.2; Fine=61.6* | | D10, mm | 0.08 |
| **% Fines (-#200)** | **9.2** | Cc | 0.96 |
| **% Plus #200 (-3")** | **90.8** | Cu | 4.33 |

**USCS Description**

**POORLY GRADED SAND WITH SILT**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| sp-sm | np - Non-Plastic (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-2 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0205-GS-BI |
| | | Lab Sample | 37829009 |

Sample Color: **GRAY**
USCS Group Name: **SILTY SAND**
USCS Group Symbol: **sm** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | | Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|---|---|
| Total Sample Wet Wt, gm (-3") | 245 | 3" | 75 | 0 | 0.0% | 100.0% | |
| Sample Split on Sieve | No. 4 | 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| Coarse Washed Dry Sample, gm | 1 | 2" | 50 | 0 | 0.0% | 100.0% | |
| Wet Wt Passing Split, gm | 245 | 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| Dry Wt. Passing Split, gm | 187 | 1" | 25 | 0 | 0.0% | 100.0% | |
| Total Sample Dry Wt, gm | 188 | 3/4" | 19 | 0 | 0.0% | 100.0% | |
| **Split Sample - Passing No. 4** | | 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| Tare No. | 33 | 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| Tare + WS., gm | 312.24 | No. 4 | 4.75 | 0.6 | 0.3% | 99.7% | |
| Tare + DS., gm | 258.65 | No. 10 | 2 | 2.09 | 1.2% | 98.5% | |
| Tare, gm | 84.03 | No. 20 | 0.85 | 4.02 | 2.3% | 96.2% | |
| **Water Content of Split Sample** | **30.7%** | No. 40 | 0.425 | 14.33 | 8.2% | 88.0% | |
| Wt. of DS., gm | 174.62 | No. 60 | 0.25 | 34.23 | 19.5% | 68.5% | |
| | | No. 140 | 0.106 | 75.01 | 42.8% | 25.7% | |
| Wt. of +#200 Sample, gm | 145.91 | No. 200 | 0.075 | 16.23 | 9.3% | 16.4% | |

### *USCS SOIL CLASSIFICATION*

*Corrected For 100% Passing a 3" Sieve*

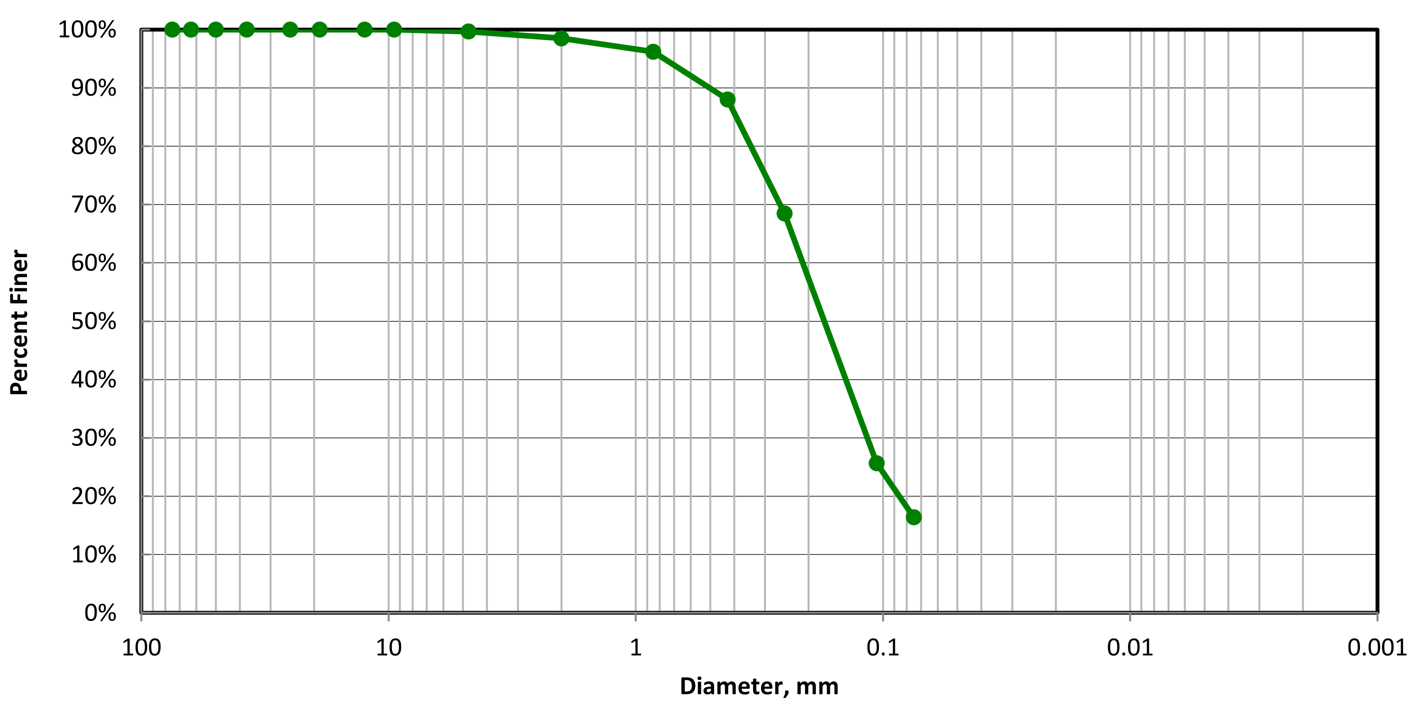
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **0.3** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=0.3* | | D60, mm | NA |
| **% Sand (-#4 & +#200)** | **83.3** | D30, mm | NA |
| *Coarse=1.2; Medium=10.5; Fine=71.6* | | D10, mm | NA |
| **% Fines (-#200)** | **16.4** | Cc | NA |
| **% Plus #200 (-3")** | **83.6** | Cu | NA |

**USCS Description**

**SILTY SAND**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| **sm** | **np - Non-Plastic (assumed)** |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-2 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0507-GS-BI |
| | | Lab Sample | 37829010 |

Sample Color: **GRAY**
USCS Group Name: **SILTY SAND**
USCS Group Symbol: **sm** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | | Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | % Finer | Project Specifications |
|---|---|---|---|---|---|---|---|
| Total Sample Wet Wt, gm (-3") | 168 | 3" | 75 | 0 | 0.0% | 100.0% | |
| Sample Split on Sieve | No. 4 | 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| Coarse Washed Dry Sample, gm | 1 | 2" | 50 | 0 | 0.0% | 100.0% | |
| Wet Wt Passing Split, gm | 167 | 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| Dry Wt. Passing Split, gm | 129 | 1" | 25 | 0 | 0.0% | 100.0% | |
| Total Sample Dry Wt, gm | 130 | 3/4" | 19 | 0 | 0.0% | 100.0% | |
| **Split Sample - Passing No. 4** | | 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| Tare No. | 441 | 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| Tare + WS., gm | 238.26 | No. 4 | 4.75 | 1.12 | 0.9% | 99.1% | |
| Tare + DS., gm | 203.2 | No. 10 | 2 | 2.22 | 1.8% | 97.3% | |
| Tare, gm | 83.7 | No. 20 | 0.85 | 4.19 | 3.5% | 93.8% | |
| **Water Content of Split Sample** | **29.3%** | No. 40 | 0.425 | 11.59 | 9.6% | 84.2% | |
| Wt. of DS., gm | 119.50 | No. 60 | 0.25 | 21.65 | 18.0% | 66.2% | |
| | | No. 140 | 0.106 | 49.6 | 41.1% | 25.1% | |
| Wt. of +#200 Sample, gm | 99.82 | No. 200 | 0.075 | 10.57 | 8.8% | 16.3% | |

### *USCS SOIL CLASSIFICATION*

*Corrected For 100% Passing a 3" Sieve*

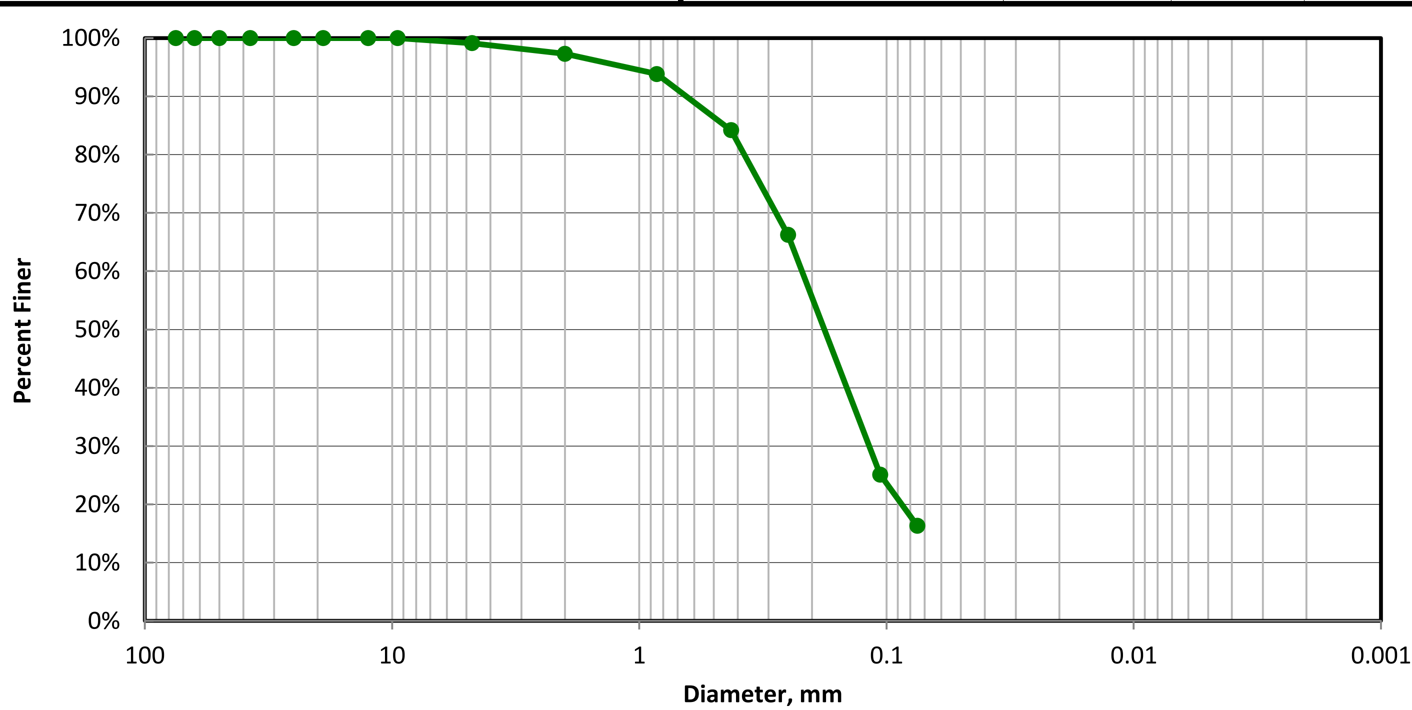
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **0.9** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=0.9* | | D60, mm | NA |
| **% Sand (-#4 & +#200)** | **82.8** | D30, mm | NA |
| *Coarse=1.8; Medium=13.1; Fine=67.9* | | D10, mm | NA |
| **% Fines (-#200)** | **16.3** | Cc | NA |
| **% Plus #200 (-3")** | **83.7** | Cu | NA |

**USCS Description**

**SILTY SAND**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| **sm** | **np - Non-Plastic (assumed)** |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-3 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0002-GS |
| | | Lab Sample | 37829011 |

Sample Color: **BROWN**
USCS Group Name: **SILTY SAND**
USCS Group Symbol: **sm** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | | Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|---|---|
| Total Sample Wet Wt, gm (-3") | 25 | 3" | 75 | 0 | 0.0% | 100.0% | |
| Sample Split on Sieve | No. 4 | 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| Coarse Washed Dry Sample, gm | 2 | 2" | 50 | 0 | 0.0% | 100.0% | |
| Wet Wt Passing Split, gm | 24 | 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| Dry Wt. Passing Split, gm | 16 | 1" | 25 | 0 | 0.0% | 100.0% | |
| Total Sample Dry Wt, gm | 18 | 3/4" | 19 | 0 | 0.0% | 100.0% | |
| **Split Sample - Passing No. 4** | | 1/2" | 12.5 | 1.55 | 8.5% | 91.5% | |
| Tare No. | 451 | 3/8" | 9.5 | 0 | 0.0% | 91.5% | |
| Tare + WS., gm | 104.5 | No. 4 | 4.75 | 0.43 | 2.3% | 89.2% | |
| Tare + DS., gm | 98.18 | No. 10 | 2 | 0.71 | 4.4% | 84.8% | |
| Tare, gm | 83.7 | No. 20 | 0.85 | 1.95 | 12.0% | 72.8% | |
| **Water Content of Split Sample** | **43.6%** | No. 40 | 0.425 | 3.29 | 20.3% | 52.5% | |
| Wt. of DS., gm | 14.48 | No. 60 | 0.25 | 2.53 | 15.6% | 37.0% | |
| | | No. 140 | 0.106 | 1.75 | 10.8% | 26.2% | |
| Wt. of +#200 Sample, gm | 10.98 | No. 200 | 0.075 | 0.75 | 4.6% | 21.6% | |

### *USCS SOIL CLASSIFICATION*

*Corrected For 100% Passing a 3" Sieve*

| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **10.8** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=10.8* | | D60, mm | NA |
| **% Sand (-#4 & +#200)** | **67.6** | D30, mm | NA |
| *Coarse=4.4; Medium=32.3; Fine=31* | | D10, mm | NA |
| **% Fines (-#200)** | **21.6** | Cc | NA |
| **% Plus #200 (-3")** | **78.4** | Cu | NA |

**USCS Description**

SILTY SAND

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| sm | ml - Silt (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |


Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-3 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0205-GS |
| | | Lab Sample | 37829012 |

Sample Color: **GRAY**
USCS Group Name: **SILTY SAND**
USCS Group Symbol: **sm** USDA: **NA** AASHTO: **NA**

### MECHANICAL SIEVE

| Total Sample | | Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|---|---|
| Total Sample Wet Wt, gm (-3") | 67 | 3" | 75 | 0 | 0.0% | 100.0% | |
| Sample Split on Sieve | No. 4 | 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| Coarse Washed Dry Sample, gm | 5 | 2" | 50 | 0 | 0.0% | 100.0% | |
| Wet Wt Passing Split, gm | 62 | 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| Dry Wt. Passing Split, gm | 49 | 1" | 25 | 0 | 0.0% | 100.0% | |
| Total Sample Dry Wt, gm | 54 | 3/4" | 19 | 0 | 0.0% | 100.0% | |
| **Split Sample - Passing No. 4** | | 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| Tare No. | 67 | 3/8" | 9.5 | 1.83 | 3.4% | 96.6% | |
| Tare + WS., gm | 139.97 | No. 4 | 4.75 | 2.67 | 5.0% | 91.6% | |
| Tare + DS., gm | 128.43 | No. 10 | 2 | 3.49 | 7.2% | 84.4% | |
| Tare, gm | 84.32 | No. 20 | 0.85 | 9.12 | 18.9% | 65.4% | |
| **Water Content of Split Sample** | **26.2%** | No. 40 | 0.425 | 12.85 | 26.7% | 38.7% | |
| Wt. of DS., gm | 44.11 | No. 60 | 0.25 | 7.5 | 15.6% | 23.2% | |
| | | No. 140 | 0.106 | 4.28 | 8.9% | 14.3% | |
| Wt. of +#200 Sample, gm | 38.32 | No. 200 | 0.075 | 1.08 | 2.2% | 12.0% | |

### USCS SOIL CLASSIFICATION

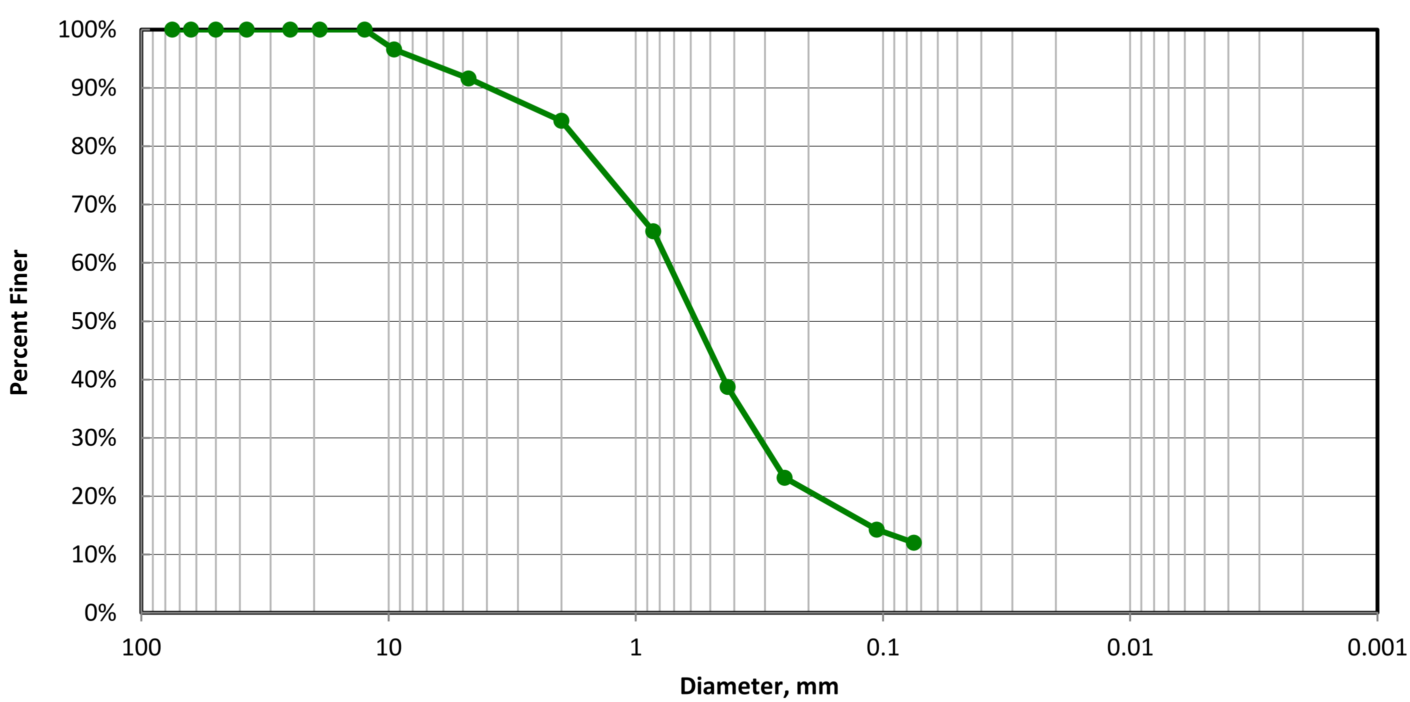
*Corrected For 100% Passing a 3" Sieve*

| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **8.4** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=8.4* | | D60, mm | NA |
| **% Sand (-#4 & +#200)** | **79.6** | D30, mm | NA |
| *Coarse=7.2; Medium=45.6; Fine=26.7* | | D10, mm | NA |
| **% Fines (-#200)** | **12.0** | Cc | NA |
| **% Plus #200 (-3")** | **88.0** | Cu | NA |

**USCS Description**
**SILTY SAND**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| sm | np - Non-Plastic (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |

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## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-3 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0507-GS |
| | | Lab Sample | 37829013 |

Sample Color: **BROWN**
USCS Group Name: **SILTY SAND**
USCS Group Symbol: **sm** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | | Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | % Finer | Project Specifications |
|---|---|---|---|---|---|---|---|
| Total Sample Wet Wt, gm (-3") | 38 | 3" | 75 | 0 | 0.0% | 100.0% | |
| Sample Split on Sieve | No. 4 | 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| Coarse Washed Dry Sample, gm | 1 | 2" | 50 | 0 | 0.0% | 100.0% | |
| Wet Wt Passing Split, gm | 37 | 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| Dry Wt. Passing Split, gm | 27 | 1" | 25 | 0 | 0.0% | 100.0% | |
| Total Sample Dry Wt, gm | 28 | 3/4" | 19 | 0 | 0.0% | 100.0% | |
| **Split Sample - Passing No. 4** | | 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| Tare No. | 455 | 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| Tare + WS., gm | 118.95 | No. 4 | 4.75 | 0.74 | 2.6% | 97.4% | |
| Tare + DS., gm | 110.29 | No. 10 | 2 | 1.2 | 4.7% | 92.7% | |
| Tare, gm | 85.44 | No. 20 | 0.85 | 4.29 | 16.8% | 75.8% | |
| **Water Content of Split Sample** | **34.8%** | No. 40 | 0.425 | 7.06 | 27.7% | 48.2% | |
| Wt. of DS., gm | 24.85 | No. 60 | 0.25 | 4.49 | 17.6% | 30.6% | |
| | | No. 140 | 0.106 | 2.84 | 11.1% | 19.5% | |
| Wt. of +#200 Sample, gm | 21.24 | No. 200 | 0.075 | 1.36 | 5.3% | 14.1% | |

### *USCS SOIL CLASSIFICATION*

*Corrected For 100% Passing a 3" Sieve*

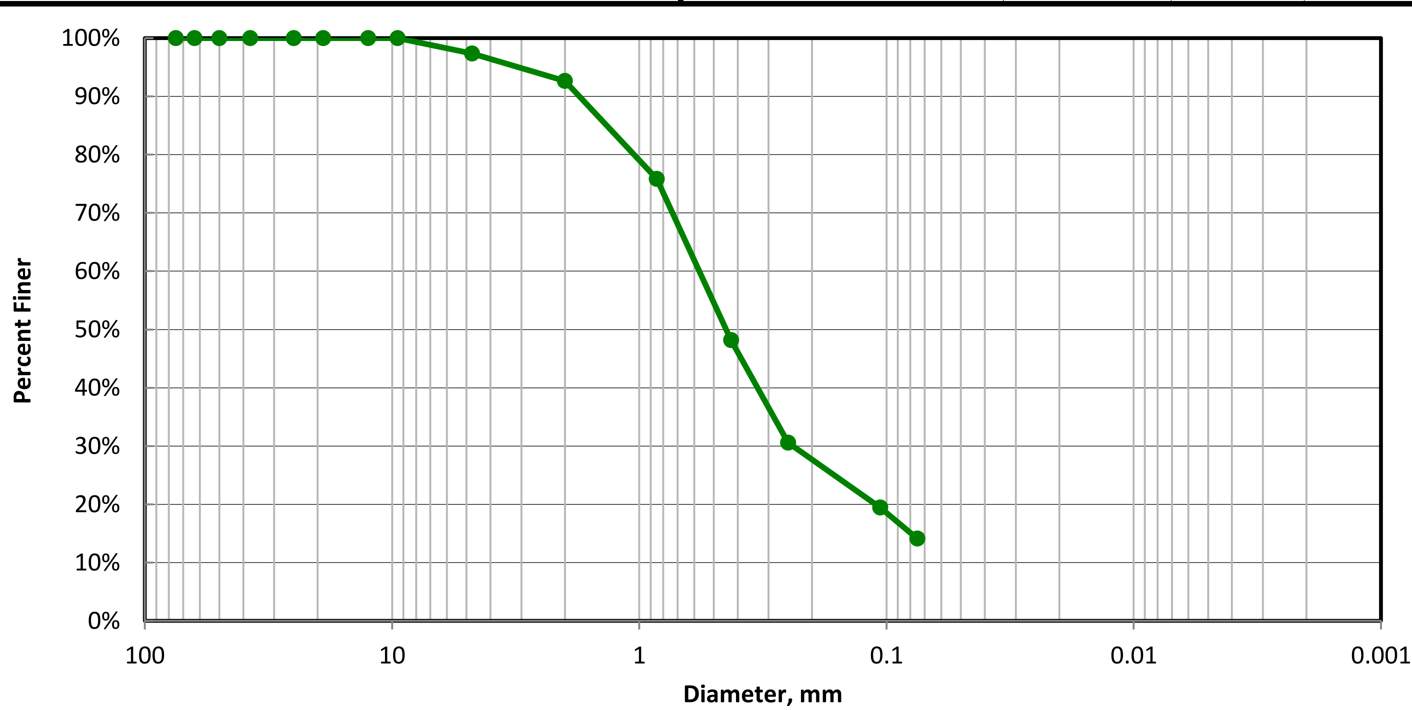
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **2.6** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=2.6* | | D60, mm | NA |
| **% Sand (-#4 & +#200)** | **83.2** | D30, mm | NA |
| *Coarse=4.7; Medium=44.5; Fine=34* | | D10, mm | NA |
| **% Fines (-#200)** | **14.1** | Cc | NA |
| **% Plus #200 (-3")** | **85.9** | Cu | NA |

**USCS Description**

**SILTY SAND**

| **USCS Group Symbol** | **Atterberg Limits Group Symbol** |
|---|---|
| **sm** | **np - Non-Plastic (assumed)** |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |

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## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-3 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0002-GS-AI |
| | | Lab Sample | 37829014 |

Sample Color: **BROWN**
USCS Group Name: **POORLY GRADED SAND**
USCS Group Symbol: **sp** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | | Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | % Finer | Project Specifications |
|---|---|---|---|---|---|---|---|
| Total Sample Wet Wt, gm (-3") | 114 | 3" | 75 | 0 | 0.0% | 100.0% | |
| Sample Split on Sieve | No. 4 | 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| Coarse Washed Dry Sample, gm | 3 | 2" | 50 | 0 | 0.0% | 100.0% | |
| Wet Wt Passing Split, gm | 111 | 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| Dry Wt. Passing Split, gm | 97 | 1" | 25 | 0 | 0.0% | 100.0% | |
| Total Sample Dry Wt, gm | 100 | 3/4" | 19 | 0 | 0.0% | 100.0% | |
| **Split Sample - Passing No. 4** | | 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| Tare No. | 461 | 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| Tare + WS., gm | 190.81 | No. 4 | 4.75 | 2.67 | 2.7% | 97.3% | |
| Tare + DS., gm | 177.99 | No. 10 | 2 | 10.15 | 10.9% | 86.5% | |
| Tare, gm | 87.02 | No. 20 | 0.85 | 27.65 | 29.6% | 56.9% | |
| **Water Content of Split Sample** | **14.1%** | No. 40 | 0.425 | 31.06 | 33.2% | 23.7% | |
| Wt. of DS., gm | 90.97 | No. 60 | 0.25 | 16.33 | 17.5% | 6.2% | |
| | | No. 140 | 0.106 | 4.66 | 5.0% | 1.2% | |
| Wt. of +#200 Sample, gm | 90.13 | No. 200 | 0.075 | 0.28 | 0.3% | 0.9% | |

### *USCS SOIL CLASSIFICATION*

*Corrected For 100% Passing a 3" Sieve*

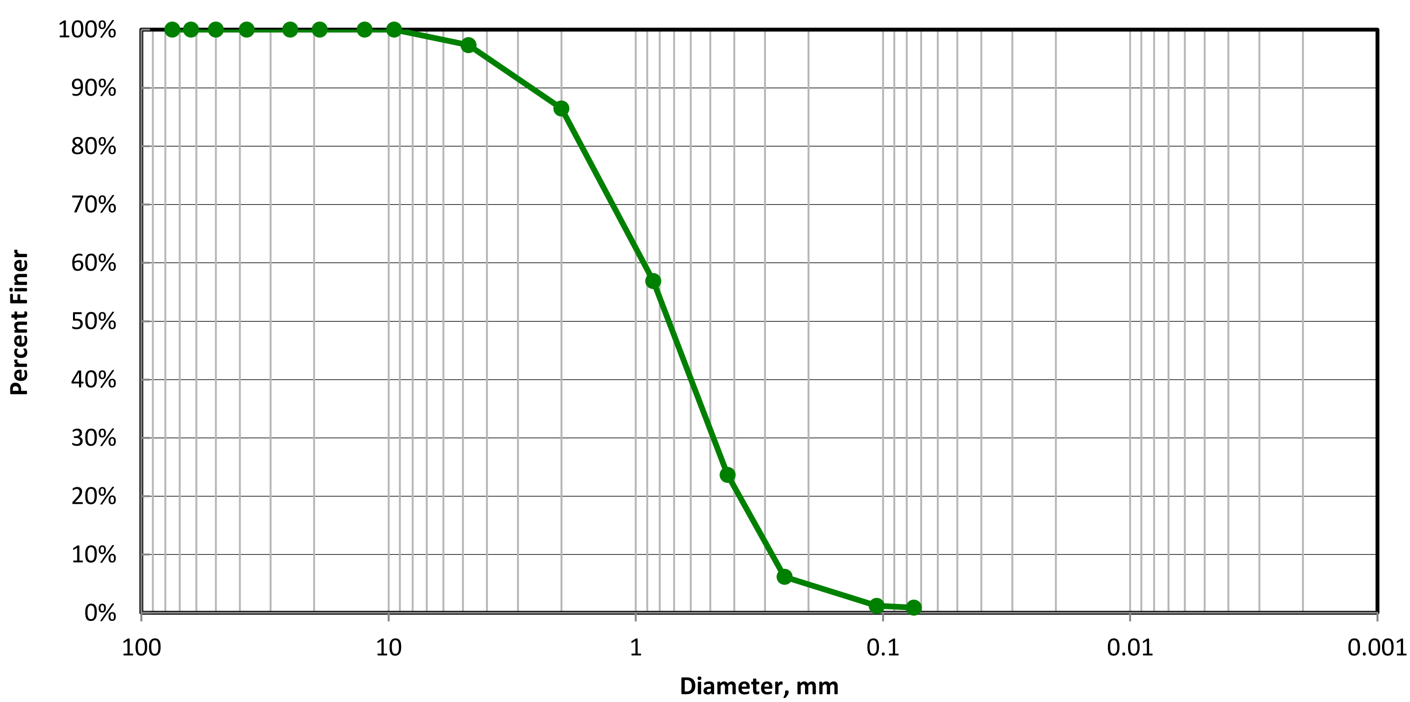
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **2.7** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=2.7* | | D60, mm | 0.93 |
| **% Sand (-#4 & +#200)** | **96.4** | D30, mm | 0.49 |
| *Coarse=10.9; Medium=62.8; Fine=22.8* | | D10, mm | 0.28 |
| **% Fines (-#200)** | **0.9** | Cc | 0.90 |
| **% Plus #200 (-3")** | **99.1** | Cu | 3.31 |

**USCS Description**

**POORLY GRADED SAND**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| **sp** | **np - Non-Plastic (assumed)** |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |

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## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-3 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0002-GS-BI |
| | | Lab Sample | 37829015 |

Sample Color: **GRAY**
USCS Group Name: **SILTY SAND**
USCS Group Symbol: **sm** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | | Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|---|---|
| Total Sample Wet Wt, gm (-3") | 141 | 3" | 75 | 0 | 0.0% | 100.0% | |
| Sample Split on Sieve | No. 4 | 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| Coarse Washed Dry Sample, gm | 3 | 2" | 50 | 0 | 0.0% | 100.0% | |
| Wet Wt Passing Split, gm | 138 | 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| Dry Wt. Passing Split, gm | 113 | 1" | 25 | 0 | 0.0% | 100.0% | |
| Total Sample Dry Wt, gm | 116 | 3/4" | 19 | 0 | 0.0% | 100.0% | |
| **Split Sample - Passing No. 4** | | 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| Tare No. | 38 | 3/8" | 9.5 | 1.15 | 1.0% | 99.0% | |
| Tare + WS., gm | 208.89 | No. 4 | 4.75 | 2.05 | 1.8% | 97.2% | |
| Tare + DS., gm | 186.25 | No. 10 | 2 | 8.21 | 7.8% | 89.4% | |
| Tare, gm | 84.12 | No. 20 | 0.85 | 17.91 | 17.1% | 72.4% | |
| **Water Content of Split Sample** | **22.2%** | No. 40 | 0.425 | 26.23 | 25.0% | 47.4% | |
| Wt. of DS., gm | 102.13 | No. 60 | 0.25 | 16.54 | 15.7% | 31.7% | |
| | | No. 140 | 0.106 | 13.15 | 12.5% | 19.1% | |
| Wt. of +#200 Sample, gm | 84.46 | No. 200 | 0.075 | 2.42 | 2.3% | 16.8% | |

### *USCS SOIL CLASSIFICATION*

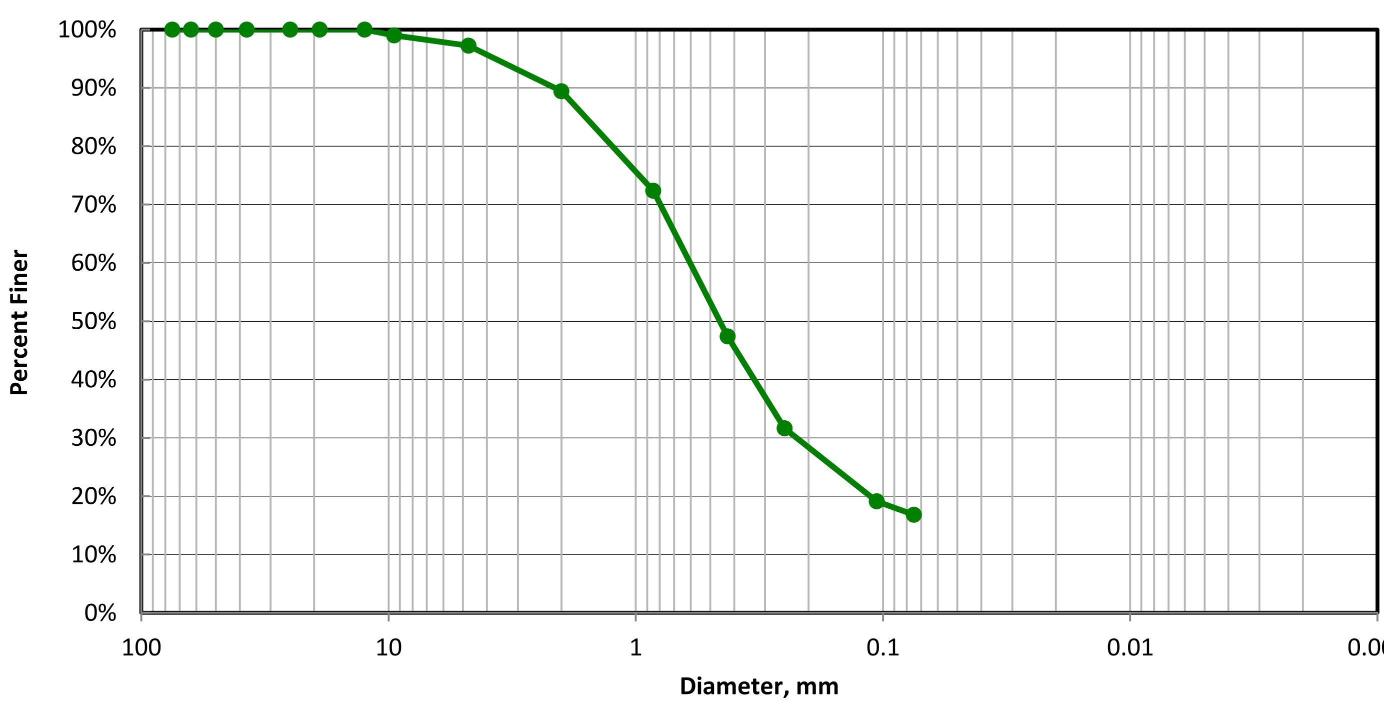
*Corrected For 100% Passing a 3" Sieve*

| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **2.8** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=2.8* | | D60, mm | NA |
| **% Sand (-#4 & +#200)** | **80.4** | D30, mm | NA |
| *Coarse=7.8; Medium=42; Fine=30.6* | | D10, mm | NA |
| **% Fines (-#200)** | **16.8** | Cc | NA |
| **% Plus #200 (-3")** | **83.2** | Cu | NA |

**USCS Description**: SILTY SAND

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| sm | np - Non-Plastic (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-3 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0205-GS-BI |
| | | Lab Sample | 37829016 |

Sample Color: **GRAY**
USCS Group Name: **SILTY SAND**
USCS Group Symbol: **sm** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | | Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|---|---|
| Total Sample Wet Wt, gm (-3") | 169 | 3" | 75 | 0 | 0.0% | 100.0% | |
| Sample Split on Sieve | No. 4 | 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| Coarse Washed Dry Sample, gm | 1 | 2" | 50 | 0 | 0.0% | 100.0% | |
| Wet Wt Passing Split, gm | 168 | 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| Dry Wt. Passing Split, gm | 135 | 1" | 25 | 0 | 0.0% | 100.0% | |
| Total Sample Dry Wt, gm | 136 | 3/4" | 19 | 0 | 0.0% | 100.0% | |
| **Split Sample - Passing No. 4** | | 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| Tare No. | 62 | 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| Tare + WS., gm | 238.36 | No. 4 | 4.75 | 1.43 | 1.1% | 98.9% | |
| Tare + DS., gm | 208.05 | No. 10 | 2 | 5.71 | 4.6% | 94.4% | |
| Tare, gm | 85.12 | No. 20 | 0.85 | 19.45 | 15.7% | 78.7% | |
| **Water Content of Split Sample** | **24.7%** | No. 40 | 0.425 | 35.92 | 28.9% | 49.8% | |
| Wt. of DS., gm | 122.93 | No. 60 | 0.25 | 19.63 | 15.8% | 34.0% | |
| | | No. 140 | 0.106 | 14.88 | 12.0% | 22.0% | |
| Wt. of +#200 Sample, gm | 98.43 | No. 200 | 0.075 | 2.84 | 2.3% | 19.7% | |

### *USCS SOIL CLASSIFICATION*

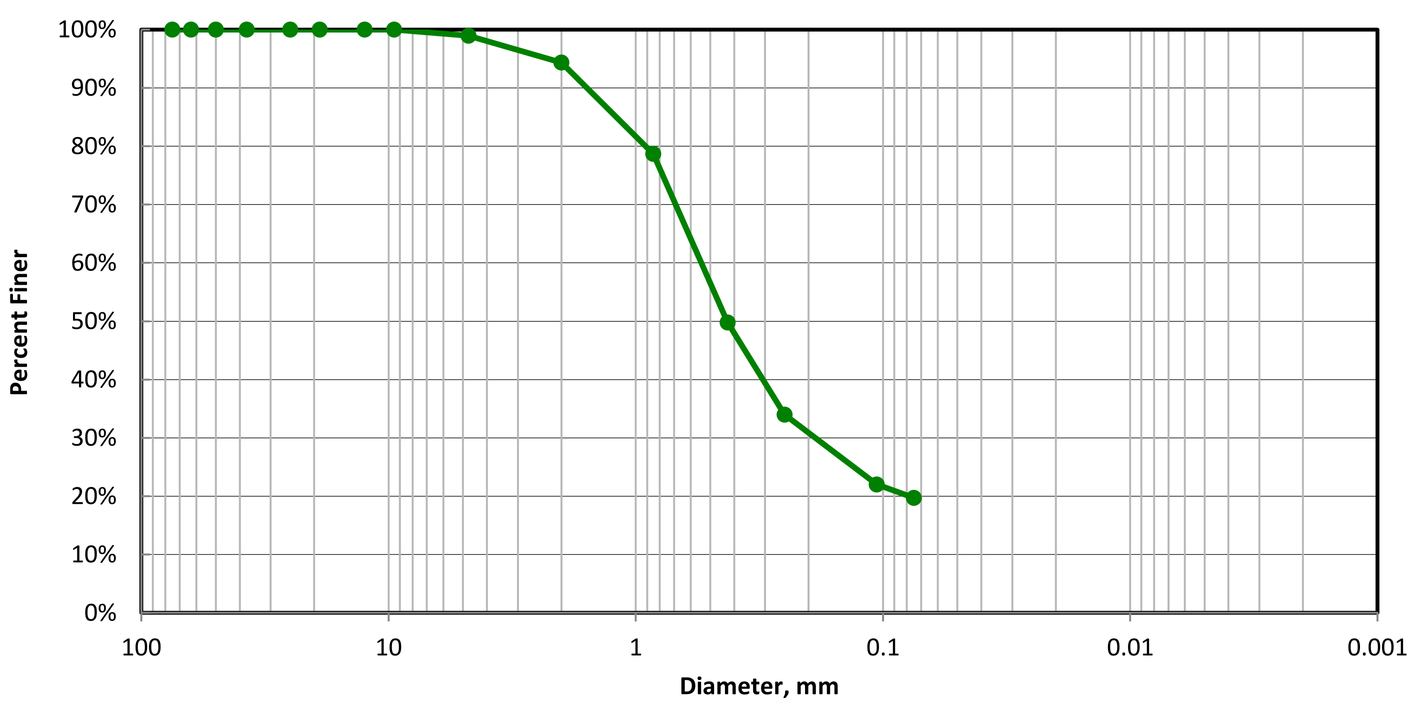
*Corrected For 100% Passing a 3" Sieve*

| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **1.1** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=1.1* | | D60, mm | NA |
| **% Sand (-#4 & +#200)** | **79.2** | D30, mm | NA |
| *Coarse=4.6; Medium=44.6; Fine=30.1* | | D10, mm | NA |
| **% Fines (-#200)** | **19.7** | Cc | NA |
| **% Plus #200 (-3")** | **80.3** | Cu | NA |

**USCS Description**

**SILTY SAND**

| USCS Group Symbol | Atterberg Limits Group Symbol | | |
|---|---|---|---|
| sm | ml - Silt (assumed) | | |
| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-3 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0507-GS-BI |
| | | Lab Sample | 37829017 |

Sample Color: **GRAY**
USCS Group Name: **SILTY SAND**
USCS Group Symbol: **sm** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | |
|---|---|
| Total Sample Wet Wt, gm (-3") | 141 |
| Sample Split on Sieve | No. 4 |
| Coarse Washed Dry Sample, gm | 3 |
| Wet Wt Passing Split, gm | 138 |
| Dry Wt. Passing Split, gm | 111 |
| Total Sample Dry Wt, gm | 114 |

| Split Sample - Passing No. 4 | |
|---|---|
| Tare No. | 2061 |
| Tare + WS., gm | 271.72 |
| Tare + DS., gm | 248.13 |
| Tare, gm | 150.93 |
| **Water Content of Split Sample** | **24.3%** |
| Wt. of DS., gm | 97.20 |
| Wt. of +#200 Sample, gm | 81.52 |

| Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|
| 3" | 75 | 0 | 0.0% | 100.0% | |
| 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| 2" | 50 | 0 | 0.0% | 100.0% | |
| 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| 1" | 25 | 0 | 0.0% | 100.0% | |
| 3/4" | 19 | 0 | 0.0% | 100.0% | |
| 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| No. 4 | 4.75 | 2.79 | 2.5% | 97.5% | |
| No. 10 | 2 | 4.39 | 4.4% | 93.1% | |
| No. 20 | 0.85 | 16.45 | 16.5% | 76.6% | |
| No. 40 | 0.425 | 30.62 | 30.7% | 45.9% | |
| No. 60 | 0.25 | 17.24 | 17.3% | 28.6% | |
| No. 140 | 0.106 | 10.34 | 10.4% | 18.2% | |
| No. 200 | 0.075 | 2.48 | 2.5% | 15.7% | |

### *USCS SOIL CLASSIFICATION*

*Corrected For 100% Passing a 3" Sieve*

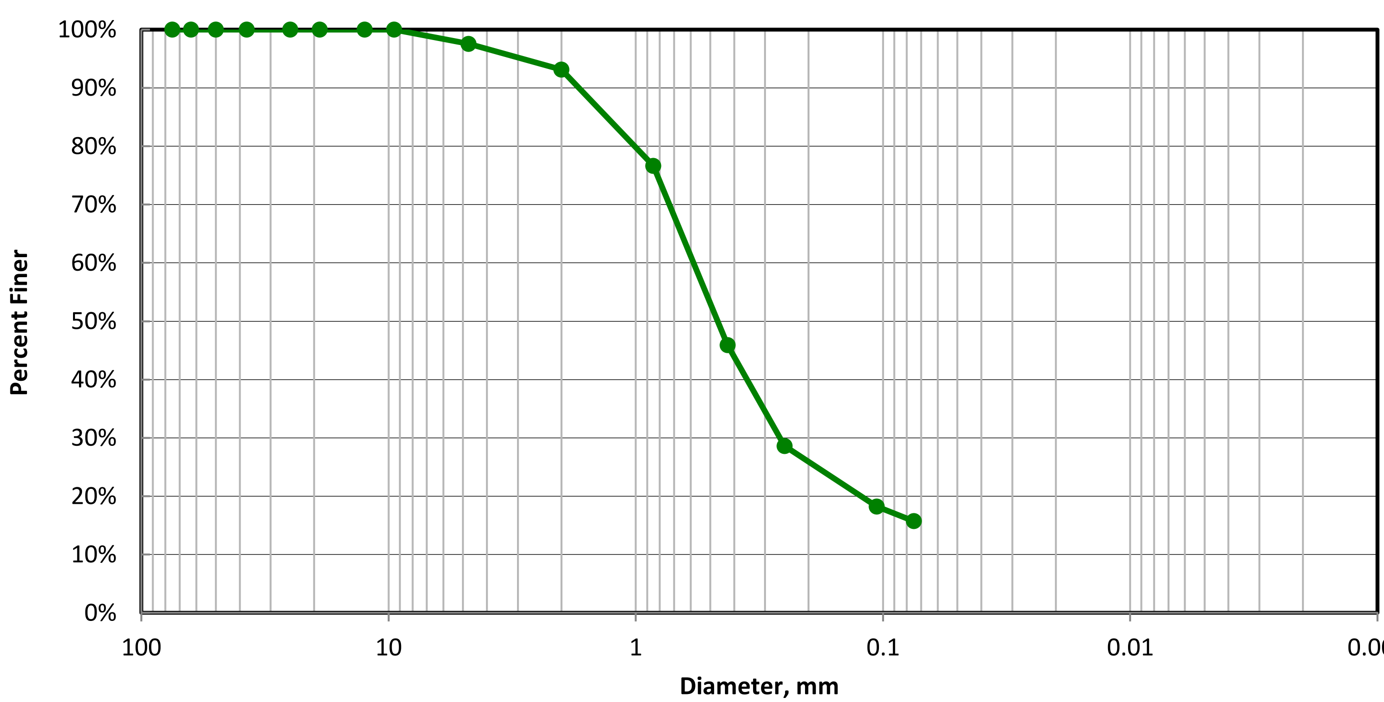
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **2.5** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=2.5* | | D60, mm | NA |
| **% Sand (-#4 & +#200)** | **81.8** | D30, mm | NA |
| *Coarse=4.4; Medium=47.2; Fine=30.2* | | D10, mm | NA |
| **% Fines (-#200)** | **15.7** | Cc | NA |
| **% Plus #200 (-3")** | **84.3** | Cu | NA |

**USCS Description**

**SILTY SAND**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| sm | np - Non-Plastic (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

# PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-4 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0002-GS |
| | | Lab Sample | 37829018 |

Sample Color: **BROWN**
USCS Group Name: **POORLY GRADED SAND WITH SILT**
USCS Group Symbol: **sp-sm** USDA: **NA** AASHTO: **NA**

## *MECHANICAL SIEVE*

| Total Sample | | Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|---|---|
| Total Sample Wet Wt, gm (-3") | 44 | 3" | 75 | 0 | 0.0% | 100.0% | |
| Sample Split on Sieve | No. 4 | 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| Coarse Washed Dry Sample, gm | 1 | 2" | 50 | 0 | 0.0% | 100.0% | |
| Wet Wt Passing Split, gm | 43 | 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| Dry Wt. Passing Split, gm | 35 | 1" | 25 | 0 | 0.0% | 100.0% | |
| Total Sample Dry Wt, gm | 36 | 3/4" | 19 | 0 | 0.0% | 100.0% | |
| **Split Sample - Passing No. 4** | | 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| Tare No. | 2073 | 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| Tare + WS., gm | 193.6 | No. 4 | 4.75 | 0.52 | 1.4% | 98.6% | |
| Tare + DS., gm | 185.99 | No. 10 | 2 | 1.61 | 4.6% | 93.9% | |
| Tare, gm | 151.79 | No. 20 | 0.85 | 5.25 | 15.1% | 78.8% | |
| **Water Content of Split Sample** | **22.3%** | No. 40 | 0.425 | 9.01 | 26.0% | 52.8% | |
| Wt. of DS., gm | 34.20 | No. 60 | 0.25 | 9.95 | 28.7% | 24.1% | |
| | | No. 140 | 0.106 | 5.65 | 16.3% | 7.9% | |
| Wt. of +#200 Sample, gm | 32.37 | No. 200 | 0.075 | 0.9 | 2.6% | 5.3% | |

## *USCS SOIL CLASSIFICATION*

*Corrected For 100% Passing a 3" Sieve*

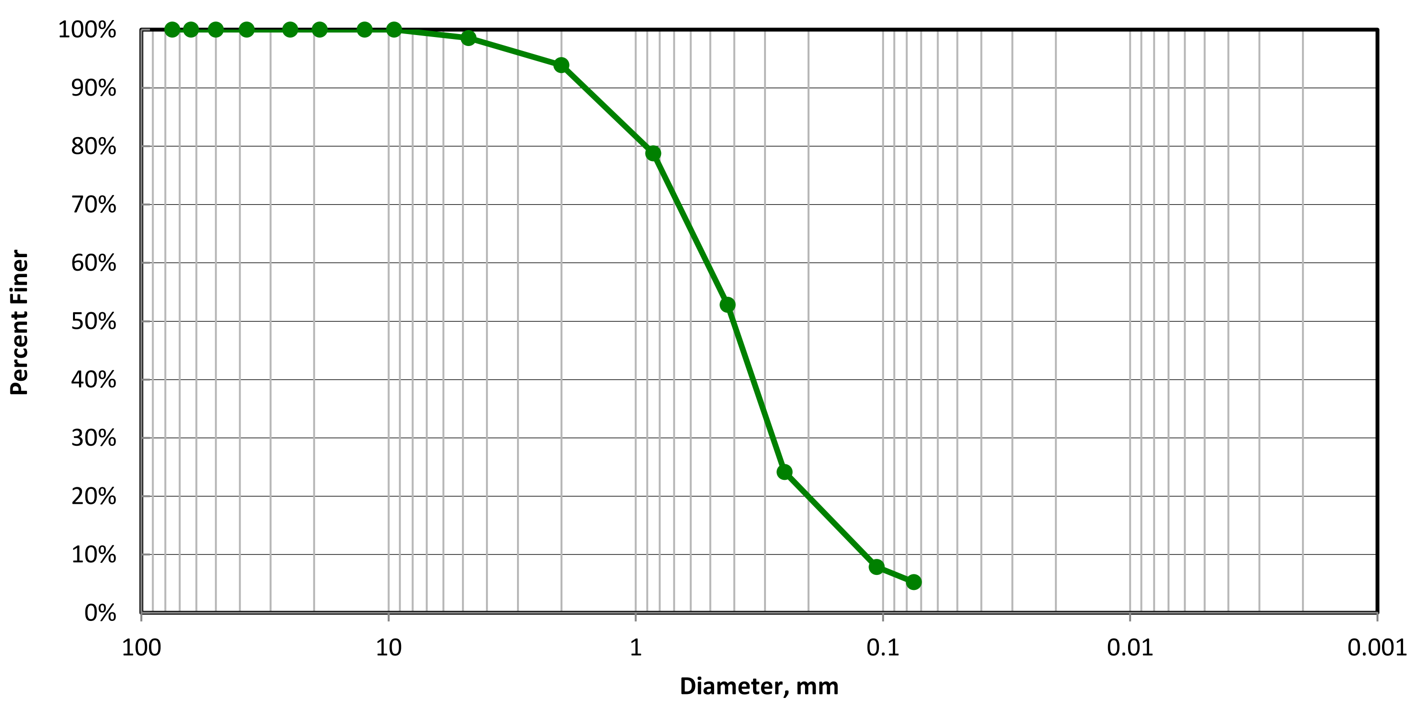
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **1.4** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=1.4* | | D60, mm | 0.52 |
| **% Sand (-#4 & +#200)** | **93.3** | D30, mm | 0.28 |
| *Coarse=4.6; Medium=41.1; Fine=47.5* | | D10, mm | 0.12 |
| **% Fines (-#200)** | **5.3** | Cc | 1.27 |
| **% Plus #200 (-3")** | **94.7** | Cu | 4.34 |

**USCS Description**

**POORLY GRADED SAND WITH SILT**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| sp-sm | np - Non-Plastic (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

# PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-4 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0205-GS |
| | | Lab Sample | 37829019 |

Sample Color: **BROWN**
USCS Group Name: **POORLY GRADED SAND**
USCS Group Symbol: **sp** USDA: **NA** AASHTO: **NA**

## *MECHANICAL SIEVE*

| **Total Sample** | | **Sieve Size** | **Nominal Opening, mm** | **Dry Wt, gm** | **Split Normalized % Retained** | **Split Normalized % Finer** | **Project Specifications** |
|---|---|---|---|---|---|---|---|
| Total Sample Wet Wt, gm (-3") | 189 | 3" | 75 | 0 | 0.0% | 100.0% | |
| Sample Split on Sieve | No. 4 | 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| Coarse Washed Dry Sample, gm | 4 | 2" | 50 | 0 | 0.0% | 100.0% | |
| Wet Wt Passing Split, gm | 185 | 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| Dry Wt. Passing Split, gm | 156 | 1" | 25 | 0 | 0.0% | 100.0% | |
| Total Sample Dry Wt, gm | 159 | 3/4" | 19 | 0 | 0.0% | 100.0% | |
| **Split Sample - Passing No. 4** | | 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| Tare No. | 2012 | 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| Tare + WS., gm | 324.29 | No. 4 | 4.75 | 3.6 | 2.3% | 97.7% | |
| Tare + DS., gm | 296.91 | No. 10 | 2 | 8.14 | 5.5% | 92.3% | |
| Tare, gm | 151.75 | No. 20 | 0.85 | 28.59 | 19.3% | 73.0% | |
| **Water Content of Split Sample** | **18.9%** | No. 40 | 0.425 | 42.6 | 28.7% | 44.3% | |
| Wt. of DS., gm | 145.16 | No. 60 | 0.25 | 38.24 | 25.7% | 18.6% | |
| | | No. 140 | 0.106 | 18.3 | 12.3% | 6.3% | |
| Wt. of +#200 Sample, gm | 138.48 | No. 200 | 0.075 | 2.61 | 1.8% | 4.5% | |

## *USCS SOIL CLASSIFICATION*

*Corrected For 100% Passing a 3" Sieve*

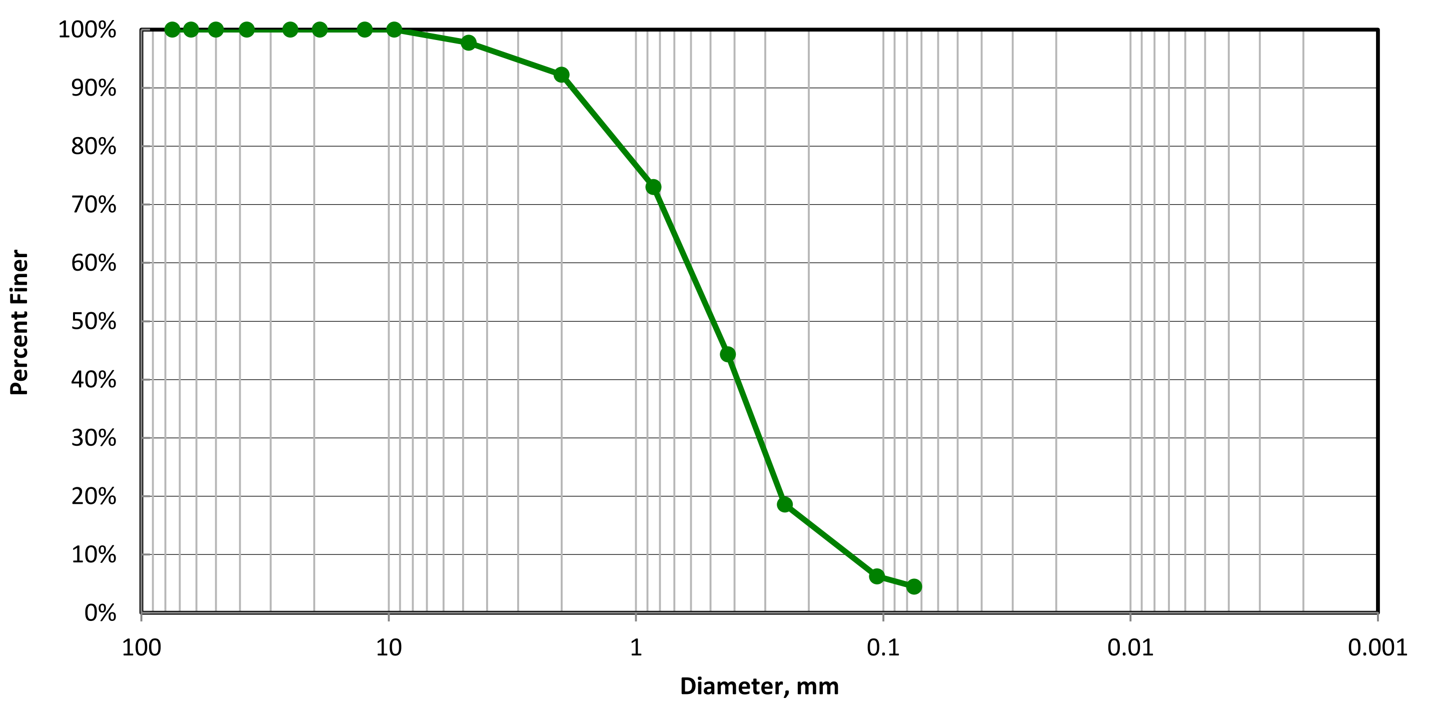
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **2.3** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=2.3* | | D60, mm | 0.62 |
| **% Sand (-#4 & +#200)** | **93.2** | D30, mm | 0.32 |
| *Coarse=5.5; Medium=47.9; Fine=39.8* | | D10, mm | 0.14 |
| **% Fines (-#200)** | **4.5** | Cc | 1.17 |
| **% Plus #200 (-3")** | **95.5** | Cu | 4.51 |

**USCS Description**

**POORLY GRADED SAND**

| **USCS Group Symbol** | **Atterberg Limits Group Symbol** |
|---|---|
| **sp** | **np - Non-Plastic (assumed)** |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |

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## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-4 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0507-GS |
| | | Lab Sample | 37829020 |

Sample Color: **BROWN**
USCS Group Name: **POORLY GRADED SAND**
USCS Group Symbol: **sp** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | |
|---|---|
| Total Sample Wet Wt, gm (-3") | 130 |
| Sample Split on Sieve | No. 4 |
| Coarse Washed Dry Sample, gm | 2 |
| Wet Wt Passing Split, gm | 128 |
| Dry Wt. Passing Split, gm | 108 |
| Total Sample Dry Wt, gm | 110 |
| **Split Sample - Passing No. 4** | |
| Tare No. | 2055 |
| Tare + WS., gm | 270.72 |
| Tare + DS., gm | 252.78 |
| Tare, gm | 153.96 |
| **Water Content of Split Sample** | **18.2%** |
| Wt. of DS., gm | 98.82 |
| Wt. of +#200 Sample, gm | 95.90 |

| Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|
| 3" | 75 | 0 | 0.0% | 100.0% | |
| 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| 2" | 50 | 0 | 0.0% | 100.0% | |
| 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| 1" | 25 | 0 | 0.0% | 100.0% | |
| 3/4" | 19 | 0 | 0.0% | 100.0% | |
| 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| No. 4 | 4.75 | 2.04 | 1.8% | 98.2% | |
| No. 10 | 2 | 6.62 | 6.6% | 91.6% | |
| No. 20 | 0.85 | 20.64 | 20.5% | 71.1% | |
| No. 40 | 0.425 | 29.8 | 29.6% | 41.5% | |
| No. 60 | 0.25 | 26.06 | 25.9% | 15.6% | |
| No. 140 | 0.106 | 11.43 | 11.4% | 4.2% | |
| No. 200 | 0.075 | 1.35 | 1.3% | 2.9% | |

### *USCS SOIL CLASSIFICATION*

*Corrected For 100% Passing a 3" Sieve*

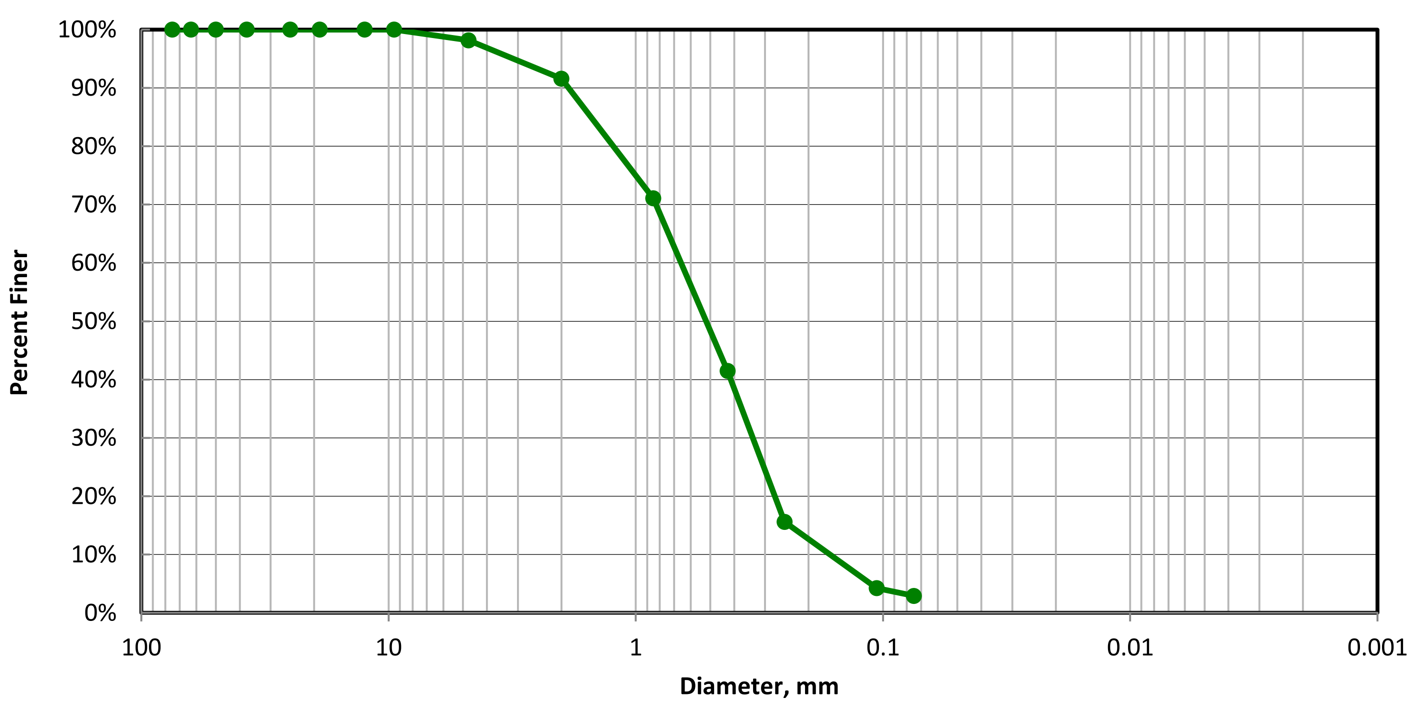
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **1.8** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=1.8* | | D60, mm | 0.66 |
| **% Sand (-#4 & +#200)** | **95.3** | D30, mm | 0.34 |
| *Coarse=6.6; Medium=50.1; Fine=38.6* | | D10, mm | 0.16 |
| **% Fines (-#200)** | **2.9** | Cc | 1.05 |
| **% Plus #200 (-3")** | **97.1** | Cu | 4.00 |

**USCS Description**

**POORLY GRADED SAND**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| sp | np - Non-Plastic (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-4 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0002-GS-AI |
| | | Lab Sample | 37829021 |

Sample Color: **BROWN**
USCS Group Name: **POORLY GRADED SAND**
USCS Group Symbol: **sp** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | |
|---|---|
| Total Sample Wet Wt, gm (-3") | 57 |
| Sample Split on Sieve | No. 4 |
| Coarse Washed Dry Sample, gm | 1 |
| Wet Wt Passing Split, gm | 56 |
| Dry Wt. Passing Split, gm | 47 |
| Total Sample Dry Wt, gm | 48 |
| **Split Sample - Passing No. 4** | |
| Tare No. | K16 |
| Tare + WS., gm | 117.8 |
| Tare + DS., gm | 109.85 |
| Tare, gm | 65.29 |
| **Water Content of Split Sample** | **17.8%** |
| Wt. of DS., gm | 44.56 |
| Wt. of +#200 Sample, gm | 44.07 |

| Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|
| 3" | 75 | 0 | 0.0% | 100.0% | |
| 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| 2" | 50 | 0 | 0.0% | 100.0% | |
| 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| 1" | 25 | 0 | 0.0% | 100.0% | |
| 3/4" | 19 | 0 | 0.0% | 100.0% | |
| 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| No. 4 | 4.75 | 0.78 | 1.6% | 98.4% | |
| No. 10 | 2 | 2.06 | 4.5% | 93.8% | |
| No. 20 | 0.85 | 7.03 | 15.5% | 78.3% | |
| No. 40 | 0.425 | 12.96 | 28.6% | 49.7% | |
| No. 60 | 0.25 | 15.61 | 34.5% | 15.2% | |
| No. 140 | 0.106 | 6.2 | 13.7% | 1.5% | |
| No. 200 | 0.075 | 0.21 | 0.5% | 1.1% | |

### *USCS SOIL CLASSIFICATION*

*Corrected For 100% Passing a 3" Sieve*

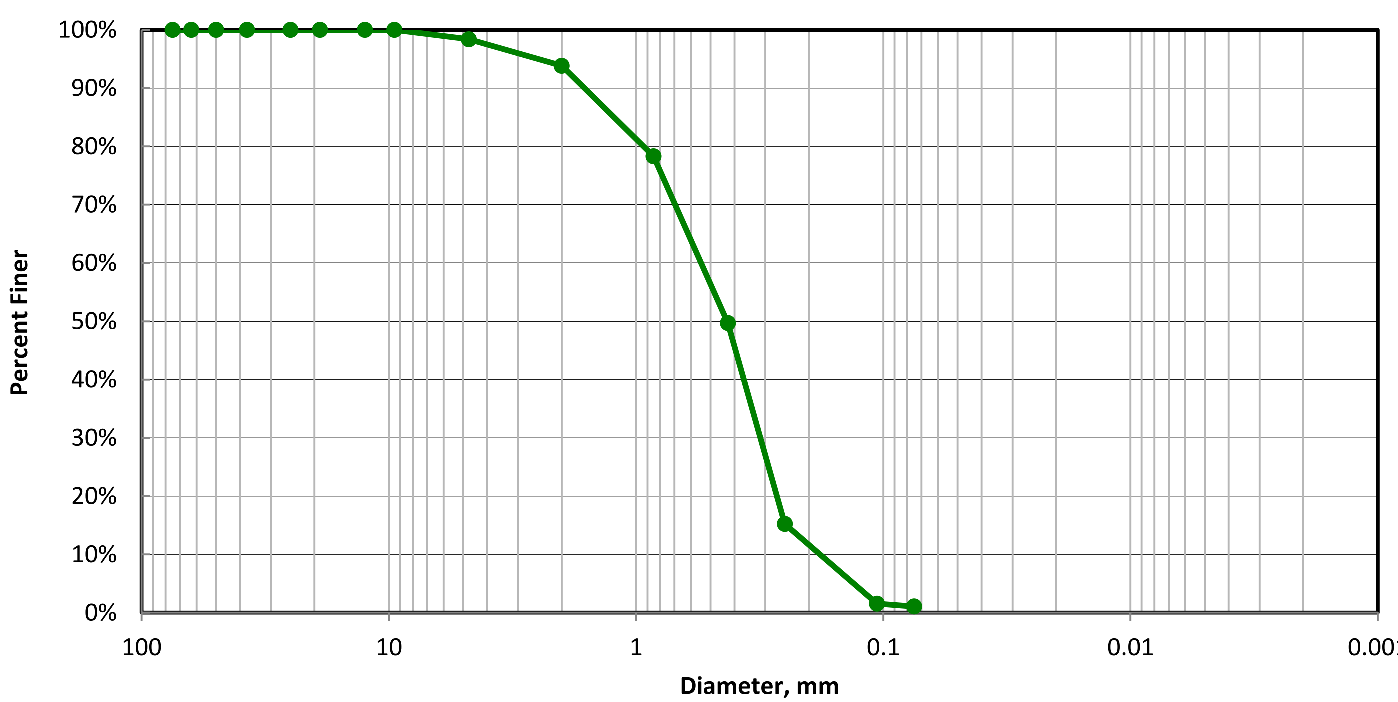
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **1.6** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=1.6* | | D60, mm | 0.55 |
| **% Sand (-#4 & +#200)** | **97.3** | D30, mm | 0.31 |
| *Coarse=4.5; Medium=44.1; Fine=48.6* | | D10, mm | 0.18 |
| **% Fines (-#200)** | **1.1** | Cc | 1.00 |
| **% Plus #200 (-3")** | **98.9** | Cu | 3.03 |

**USCS Description**

**POORLY GRADED SAND**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| sp | np - Non-Plastic (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |

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## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-4 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0002-GS-BI |
| | | Lab Sample | 37829022 |

Sample Color: **GRAY**
USCS Group Name: **SILTY SAND**
USCS Group Symbol: **sm** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | | Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|---|---|
| Total Sample Wet Wt, gm (-3") | 84 | 3" | 75 | 0 | 0.0% | 100.0% | |
| Sample Split on Sieve | No. 4 | 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| Coarse Washed Dry Sample, gm | 1 | 2" | 50 | 0 | 0.0% | 100.0% | |
| Wet Wt Passing Split, gm | 83 | 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| Dry Wt. Passing Split, gm | 54 | 1" | 25 | 0 | 0.0% | 100.0% | |
| Total Sample Dry Wt, gm | 55 | 3/4" | 19 | 0 | 0.0% | 100.0% | |
| **Split Sample - Passing No. 4** | | 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| Tare No. | K22 | 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| Tare + WS., gm | 145.44 | No. 4 | 4.75 | 0.85 | 1.5% | 98.5% | |
| Tare + DS., gm | 117.58 | No. 10 | 2 | 0.7 | 1.3% | 97.1% | |
| Tare, gm | 65.53 | No. 20 | 0.85 | 2.53 | 4.8% | 92.3% | |
| **Water Content of Split Sample** | **53.5%** | No. 40 | 0.425 | 7.81 | 14.8% | 77.6% | |
| Wt. of DS., gm | 52.05 | No. 60 | 0.25 | 12.01 | 22.7% | 54.9% | |
| | | No. 140 | 0.106 | 7.36 | 13.9% | 40.9% | |
| Wt. of +#200 Sample, gm | 34.70 | No. 200 | 0.075 | 4.29 | 8.1% | 32.8% | |

### *USCS SOIL CLASSIFICATION*

*Corrected For 100% Passing a 3" Sieve*

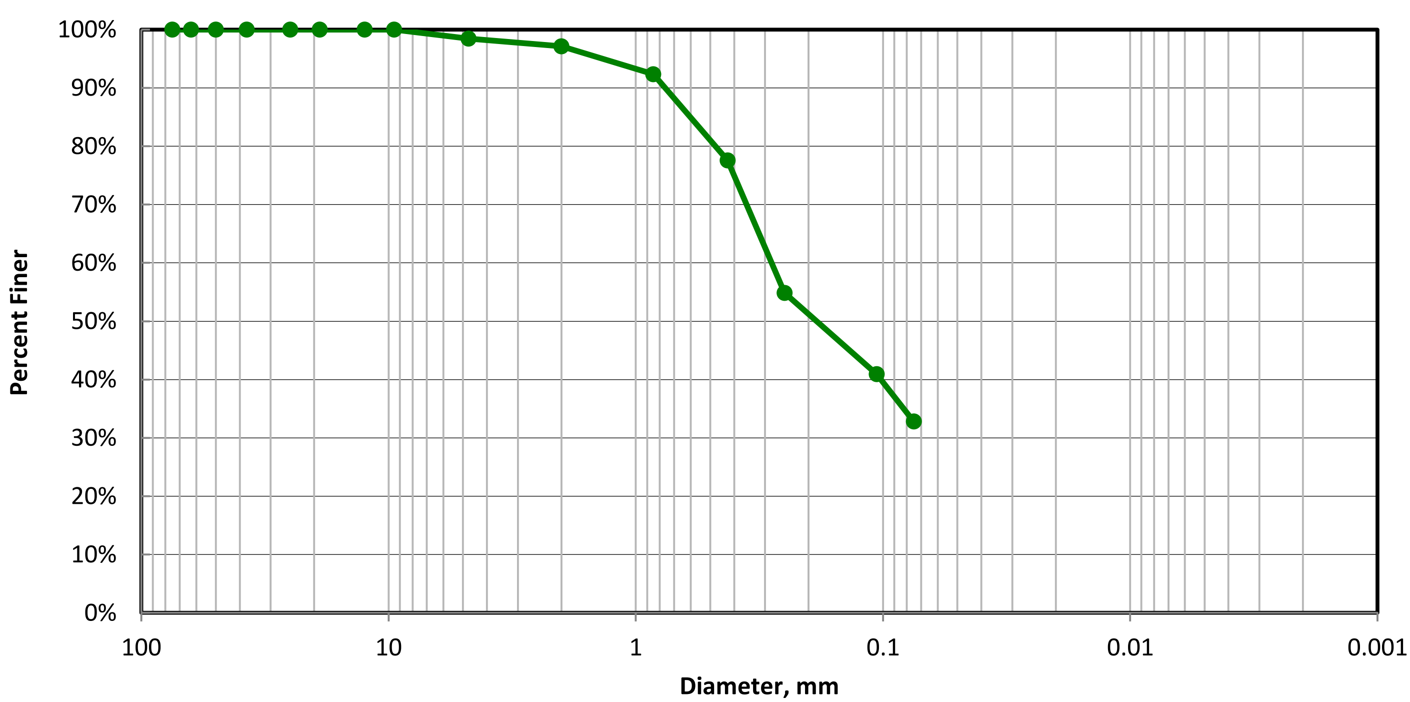
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **1.5** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=1.5* | | D60, mm | NA |
| **% Sand (-#4 & +#200)** | **65.6** | D30, mm | NA |
| *Coarse=1.3; Medium=19.6; Fine=44.8* | | D10, mm | NA |
| **% Fines (-#200)** | **32.8** | Cc | NA |
| **% Plus #200 (-3")** | **67.2** | Cu | NA |

**USCS Description**

**SILTY SAND**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| sm | ml - Silt (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-4 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0205-GS-BI |
| | | Lab Sample | 37829023 |

Sample Color: **GRAY**
USCS Group Name: **SANDY SILT**
USCS Group Symbol: **ml** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | |
|---|---|
| Total Sample Wet Wt, gm (-3") | 155 |
| Sample Split on Sieve | No. 4 |
| Coarse Washed Dry Sample, gm | 0 |
| Wet Wt Passing Split, gm | 155 |
| Dry Wt. Passing Split, gm | 81 |
| Total Sample Dry Wt, gm | 81 |
| **Split Sample - Passing No. 4** | |
| Tare No. | K38 |
| Tare + WS., gm | 219.48 |
| Tare + DS., gm | 145.69 |
| Tare, gm | 64.95 |
| **Water Content of Split Sample** | **91.4%** |
| Wt. of DS., gm | 80.74 |
| Wt. of +#200 Sample, gm | 24.47 |

| Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|
| 3" | 75 | 0 | 0.0% | 100.0% | |
| 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| 2" | 50 | 0 | 0.0% | 100.0% | |
| 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| 1" | 25 | 0 | 0.0% | 100.0% | |
| 3/4" | 19 | 0 | 0.0% | 100.0% | |
| 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| No. 4 | 4.75 | 0 | 0.0% | 100.0% | |
| No. 10 | 2 | 0.13 | 0.2% | 99.8% | |
| No. 20 | 0.85 | 1.17 | 1.4% | 98.4% | |
| No. 40 | 0.425 | 3.48 | 4.3% | 94.1% | |
| No. 60 | 0.25 | 4.78 | 5.9% | 88.2% | |
| No. 140 | 0.106 | 8.06 | 10.0% | 78.2% | |
| No. 200 | 0.075 | 6.85 | 8.5% | 69.7% | |

### *USCS SOIL CLASSIFICATION*

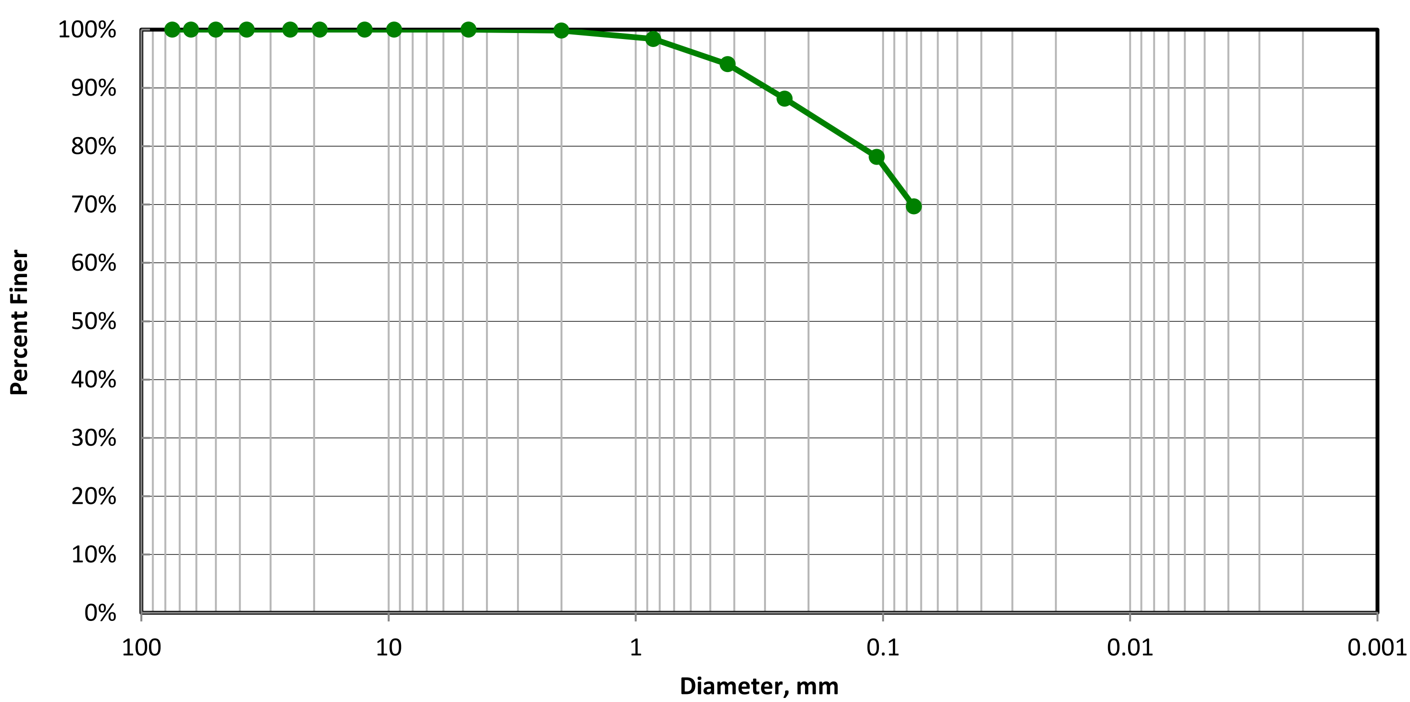
*Corrected For 100% Passing a 3" Sieve*

| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **0.0** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=0* | | D60, mm | NA |
| **% Sand (-#4 & +#200)** | **30.3** | D30, mm | NA |
| *Coarse=0.2; Medium=5.8; Fine=24.4* | | D10, mm | NA |
| **% Fines (-#200)** | **69.7** | Cc | NA |
| **% Plus #200 (-3")** | **30.3** | Cu | NA |

**USCS Description**: SANDY SILT

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| ml | ml - Silt (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-4 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0507-GS-BI |
| | | Lab Sample | 37829024 |

Sample Color: **GRAY**
USCS Group Name: **SILT WITH SAND**
USCS Group Symbol: **ml** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | |
|---|---|
| Total Sample Wet Wt, gm (-3") | 62 |
| Sample Split on Sieve | No. 4 |
| Coarse Washed Dry Sample, gm | 0 |
| Wet Wt Passing Split, gm | 62 |
| Dry Wt. Passing Split, gm | 32 |
| Total Sample Dry Wt, gm | 32 |

| Split Sample - Passing No. 4 | |
|---|---|
| Tare No. | K9 |
| Tare + WS., gm | 127.4 |
| Tare + DS., gm | 97.55 |
| Tare, gm | 65.44 |
| **Water Content of Split Sample** | **93.0%** |
| Wt. of DS., gm | 32.11 |
| Wt. of +#200 Sample, gm | 6.19 |

| Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|
| 3" | 75 | 0 | 0.0% | 100.0% | |
| 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| 2" | 50 | 0 | 0.0% | 100.0% | |
| 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| 1" | 25 | 0 | 0.0% | 100.0% | |
| 3/4" | 19 | 0 | 0.0% | 100.0% | |
| 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| No. 4 | 4.75 | 0 | 0.0% | 100.0% | |
| No. 10 | 2 | 0 | 0.0% | 100.0% | |
| No. 20 | 0.85 | 0.24 | 0.7% | 99.3% | |
| No. 40 | 0.425 | 0.62 | 1.9% | 97.3% | |
| No. 60 | 0.25 | 0.74 | 2.3% | 95.0% | |
| No. 140 | 0.106 | 1.92 | 6.0% | 89.0% | |
| No. 200 | 0.075 | 2.67 | 8.3% | 80.7% | |

### *USCS SOIL CLASSIFICATION*

*Corrected For 100% Passing a 3" Sieve*

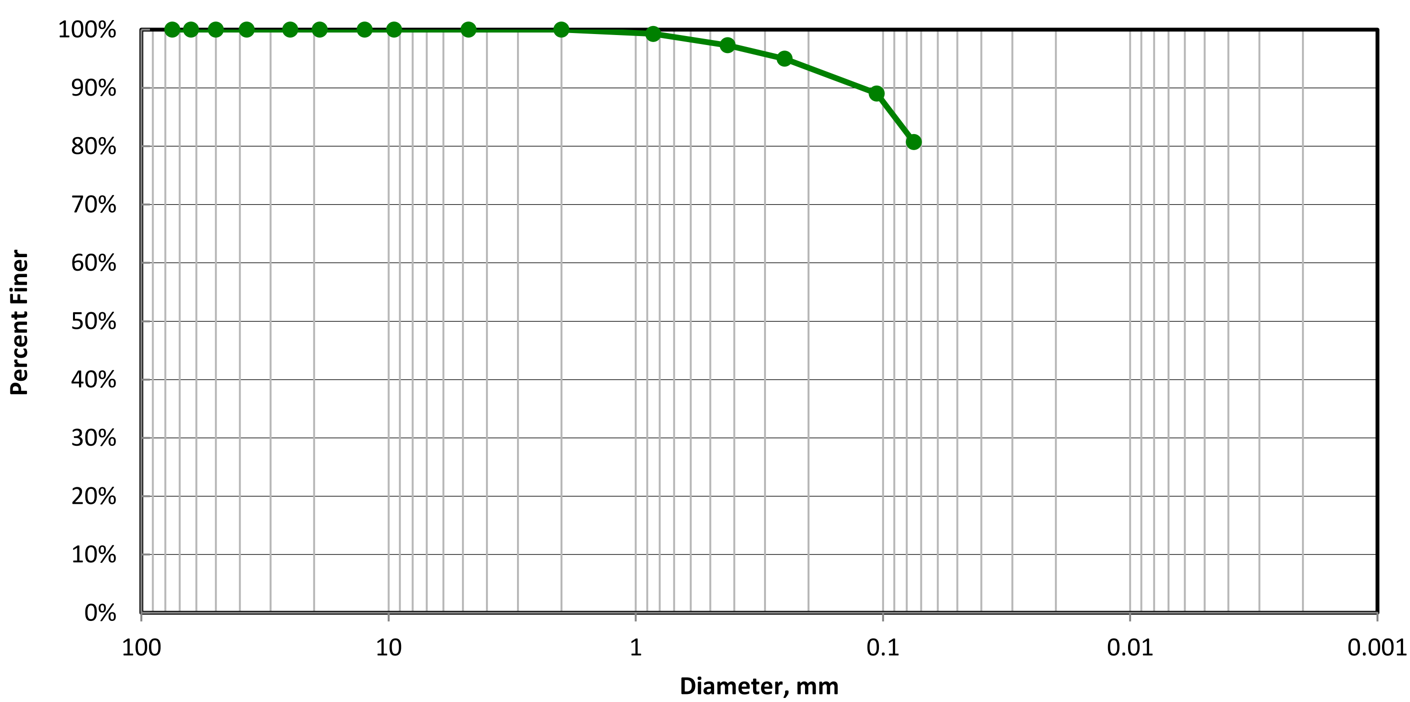
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **0.0** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=0* | | D60, mm | NA |
| **% Sand (-#4 & +#200)** | **19.3** | D30, mm | NA |
| *Coarse=0; Medium=2.7; Fine=16.6* | | D10, mm | NA |
| **% Fines (-#200)** | **80.7** | Cc | NA |
| **% Plus #200 (-3")** | **19.3** | Cu | NA |

**USCS Description**

**SILT WITH SAND**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| **ml** | **ml - Silt (assumed)** |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-5DUP |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0205-GS-BI |
| | | Lab Sample | 37829025 |

Sample Color: **GRAY**
USCS Group Name: **SANDY SILT**
USCS Group Symbol: **ml** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | | Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|---|---|
| Total Sample Wet Wt, gm (-3") | 158 | 3" | 75 | 0 | 0.0% | 100.0% | |
| Sample Split on Sieve | No. 4 | 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| Coarse Washed Dry Sample, gm | 0 | 2" | 50 | 0 | 0.0% | 100.0% | |
| Wet Wt Passing Split, gm | 158 | 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| Dry Wt. Passing Split, gm | 101 | 1" | 25 | 0 | 0.0% | 100.0% | |
| Total Sample Dry Wt, gm | 101 | 3/4" | 19 | 0 | 0.0% | 100.0% | |
| **Split Sample - Passing No. 4** | | 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| Tare No. | K39 | 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| Tare + WS., gm | 222.98 | No. 4 | 4.75 | 0 | 0.0% | 100.0% | |
| Tare + DS., gm | 165.99 | No. 10 | 2 | 0.82 | 0.8% | 99.2% | |
| Tare, gm | 64.9 | No. 20 | 0.85 | 1.58 | 1.6% | 97.6% | |
| **Water Content of Split Sample** | **56.4%** | No. 40 | 0.425 | 4.68 | 4.6% | 93.0% | |
| Wt. of DS., gm | 101.09 | No. 60 | 0.25 | 7.14 | 7.1% | 85.9% | |
| | | No. 140 | 0.106 | 18.63 | 18.4% | 67.5% | |
| Wt. of +#200 Sample, gm | 46.85 | No. 200 | 0.075 | 14 | 13.8% | 53.7% | |

### *USCS SOIL CLASSIFICATION*

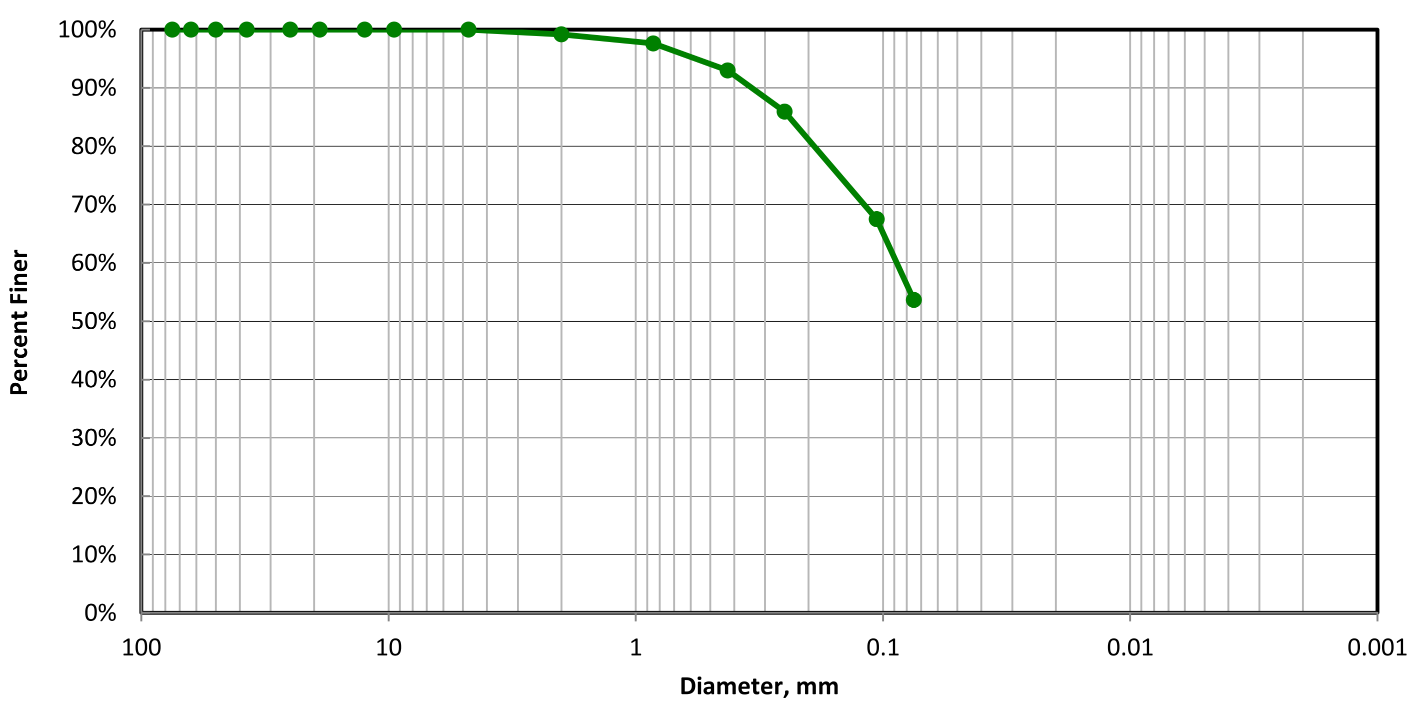
*Corrected For 100% Passing a 3" Sieve*

| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **0.0** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=0* | | D60, mm | NA |
| **% Sand (-#4 & +#200)** | **46.3** | D30, mm | NA |
| *Coarse=0.8; Medium=6.2; Fine=39.3* | | D10, mm | NA |
| **% Fines (-#200)** | **53.7** | Cc | NA |
| **% Plus #200 (-3")** | **46.3** | Cu | NA |

**USCS Description**: **SANDY SILT**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| **ml** | **ml - Silt (assumed)** |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |

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## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-5DUP |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0507-GS-BI |
| | | Lab Sample | 37829026 |

Sample Color: **GRAY**
USCS Group Name: **SANDY SILT**
USCS Group Symbol: **ml** USDA: **NA** AASHTO: **NA**

### MECHANICAL SIEVE

| Total Sample | |
|---|---|
| Total Sample Wet Wt, gm (-3") | 141 |
| Sample Split on Sieve | No. 4 |
| Coarse Washed Dry Sample, gm | 0 |
| Wet Wt Passing Split, gm | 141 |
| Dry Wt. Passing Split, gm | 94 |
| Total Sample Dry Wt, gm | 94 |
| **Split Sample - Passing No. 4** | |
| Tare No. | K36 |
| Tare + WS., gm | 206.19 |
| Tare + DS., gm | 158.81 |
| Tare, gm | 64.75 |
| **Water Content of Split Sample** | **50.4%** |
| Wt. of DS., gm | 94.06 |
| Wt. of +#200 Sample, gm | 35.02 |

| Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|
| 3" | 75 | 0 | 0.0% | 100.0% | |
| 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| 2" | 50 | 0 | 0.0% | 100.0% | |
| 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| 1" | 25 | 0 | 0.0% | 100.0% | |
| 3/4" | 19 | 0 | 0.0% | 100.0% | |
| 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| No. 4 | 4.75 | 0 | 0.0% | 100.0% | |
| No. 10 | 2 | 0.25 | 0.3% | 99.7% | |
| No. 20 | 0.85 | 0.76 | 0.8% | 98.9% | |
| No. 40 | 0.425 | 2.85 | 3.0% | 95.9% | |
| No. 60 | 0.25 | 4.05 | 4.3% | 91.6% | |
| No. 140 | 0.106 | 13.24 | 14.1% | 77.5% | |
| No. 200 | 0.075 | 13.87 | 14.7% | 62.8% | |

### USCS SOIL CLASSIFICATION

*Corrected For 100% Passing a 3" Sieve*

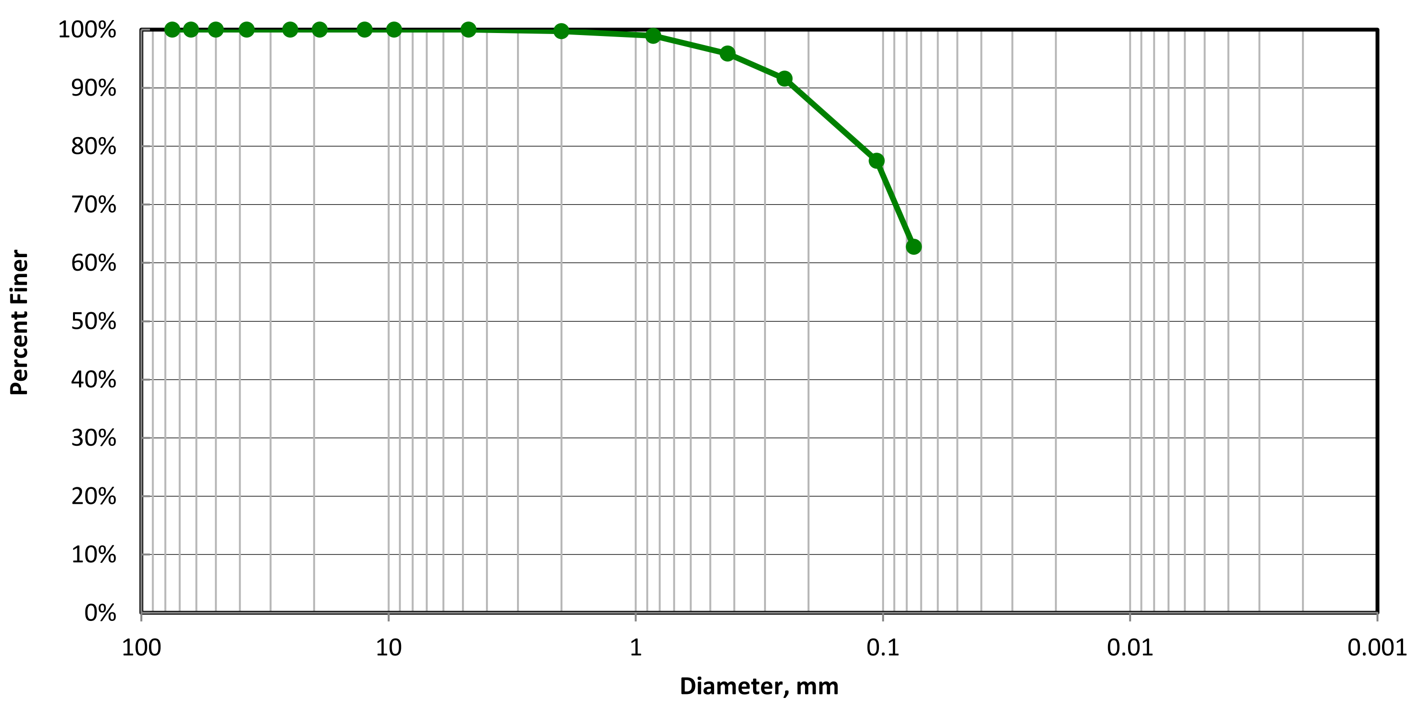
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **0.0** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=0* | | D60, mm | NA |
| **% Sand (-#4 & +#200)** | **37.2** | D30, mm | NA |
| *Coarse=0.3; Medium=3.8; Fine=33.1* | | D10, mm | NA |
| **% Fines (-#200)** | **62.8** | Cc | NA |
| **% Plus #200 (-3")** | **37.2** | Cu | NA |

**USCS Description**

SANDY SILT

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| ml | ml - Silt (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |

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## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-6 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | GRAB-GS |
| | | Lab Sample | 37829027 |

Sample Color: **GRAY**
USCS Group Name: **SANDY SILT**
USCS Group Symbol: **ml** USDA: **NA** AASHTO: **NA**

### MECHANICAL SIEVE

| Total Sample | | Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|---|---|
| Total Sample Wet Wt, gm (-3") | 861 | 3" | 75 | 0 | 0.0% | 100.0% | |
| Sample Split on Sieve | No. 4 | 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| Coarse Washed Dry Sample, gm | 2 | 2" | 50 | 0 | 0.0% | 100.0% | |
| Wet Wt Passing Split, gm | 859 | 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| Dry Wt. Passing Split, gm | 350 | 1" | 25 | 0 | 0.0% | 100.0% | |
| Total Sample Dry Wt, gm | 352 | 3/4" | 19 | 0 | 0.0% | 100.0% | |
| **Split Sample - Passing No. 4** | | 1/2" | 12.5 | 1.15 | 0.3% | 99.7% | |
| Tare No. | 548 | 3/8" | 9.5 | 0 | 0.0% | 99.7% | |
| Tare + WS., gm | 1059.3 | No. 4 | 4.75 | 1.17 | 0.3% | 99.3% | |
| Tare + DS., gm | 548.91 | No. 10 | 2 | 0.87 | 0.2% | 99.1% | |
| Tare, gm | 198.11 | No. 20 | 0.85 | 4.22 | 1.2% | 97.9% | |
| **Water Content of Split Sample** | **145.5%** | No. 40 | 0.425 | 6.17 | 1.7% | 96.2% | |
| Wt. of DS., gm | 350.80 | No. 60 | 0.25 | 4.99 | 1.4% | 94.7% | |
| | | No. 140 | 0.106 | 77.91 | 22.1% | 72.7% | |
| Wt. of +#200 Sample, gm | 124.00 | No. 200 | 0.075 | 29.84 | 8.5% | 64.2% | |

### USCS SOIL CLASSIFICATION

*Corrected For 100% Passing a 3" Sieve*

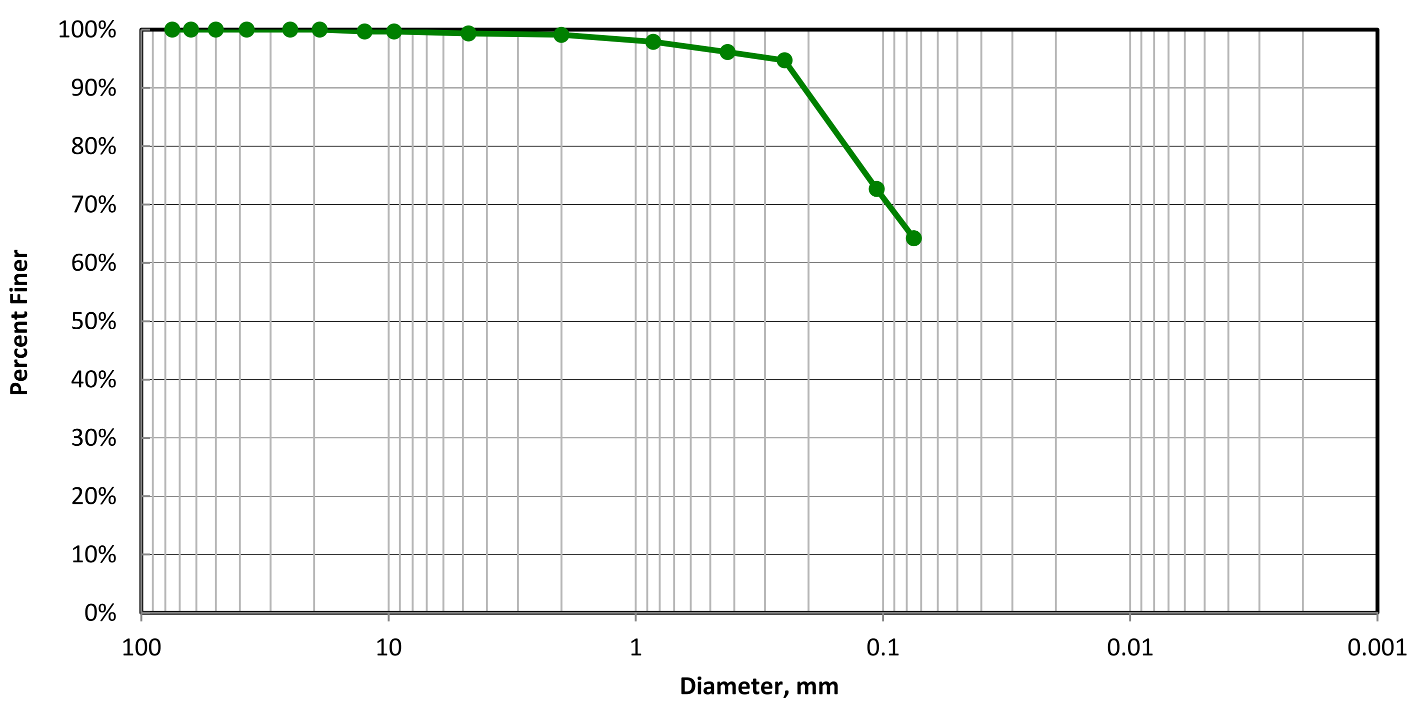
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **0.7** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=0.7* | | D60, mm | NA |
| **% Sand (-#4 & +#200)** | **35.1** | D30, mm | NA |
| *Coarse=0.2; Medium=2.9; Fine=31.9* | | D10, mm | NA |
| **% Fines (-#200)** | **64.2** | Cc | NA |
| **% Plus #200 (-3")** | **35.8** | Cu | NA |

**USCS Description**

**SANDY SILT**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| ml | ml - Silt (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |

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## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-7 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0002-GS |
| | | Lab Sample | 37829028 |

Sample Color: **GRAY**
USCS Group Name: **SILT**
USCS Group Symbol: **ml** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | |
|---|---|
| Total Sample Wet Wt, gm (-3") | 981 |
| Sample Split on Sieve | No. 4 |
| Coarse Washed Dry Sample, gm | 0 |
| Wet Wt Passing Split, gm | 981 |
| Dry Wt. Passing Split, gm | 293 |
| Total Sample Dry Wt, gm | 293 |
| **Split Sample - Passing No. 4** | |
| Tare No. | 558 |
| Tare + WS., gm | 1173.32 |
| Tare + DS., gm | 485.08 |
| Tare, gm | 192.06 |
| **Water Content of Split Sample** | **234.9%** |
| Wt. of DS., gm | 293.02 |
| Wt. of +#200 Sample, gm | 24.57 |

| Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|
| 3" | 75 | 0 | 0.0% | 100.0% | |
| 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| 2" | 50 | 0 | 0.0% | 100.0% | |
| 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| 1" | 25 | 0 | 0.0% | 100.0% | |
| 3/4" | 19 | 0 | 0.0% | 100.0% | |
| 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| No. 4 | 4.75 | 0 | 0.0% | 100.0% | |
| No. 10 | 2 | 0.2 | 0.1% | 99.9% | |
| No. 20 | 0.85 | 2.44 | 0.8% | 99.1% | |
| No. 40 | 0.425 | 4.04 | 1.4% | 97.7% | |
| No. 60 | 0.25 | 2.78 | 0.9% | 96.8% | |
| No. 140 | 0.106 | 6.27 | 2.1% | 94.6% | |
| No. 200 | 0.075 | 8.84 | 3.0% | 91.6% | |

### *USCS SOIL CLASSIFICATION*

*Corrected For 100% Passing a 3" Sieve*

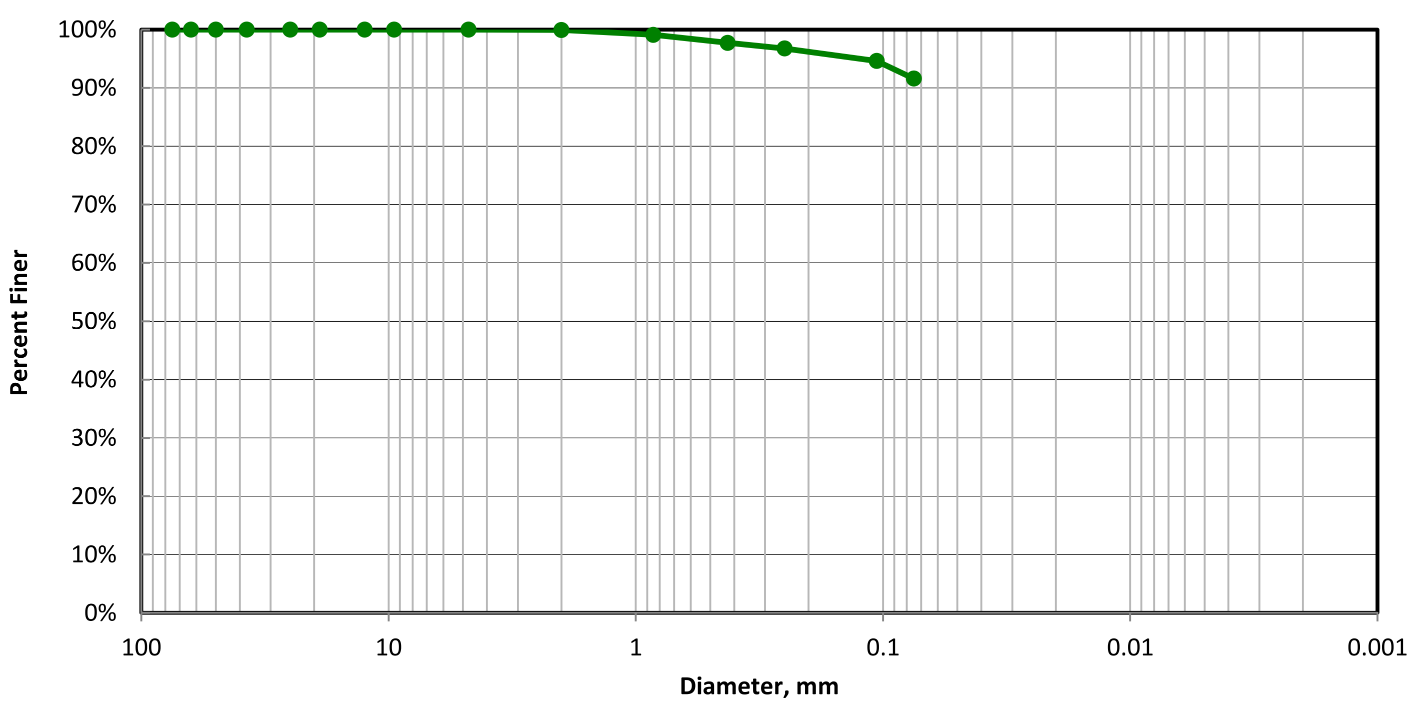
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **0.0** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=0* | | D60, mm | NA |
| **% Sand (-#4 & +#200)** | **8.4** | D30, mm | NA |
| *Coarse=0.1; Medium=2.2; Fine=6.1* | | D10, mm | NA |
| **% Fines (-#200)** | **91.6** | Cc | NA |
| **% Plus #200 (-3")** | **8.4** | Cu | NA |

**USCS Description**

**SILT**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| **ml** | **ml - Silt (assumed)** |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |

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## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

Client Air Water & Soil Laboratories, Inc. Boring QT25-1

Group Name: **POORLY GRADED SAND WITH SILT**

USCS Group Symbol: **sp-sm** USDA: **NA** AASHTO: **NA**

### MECHANICAL SIEVE

| Total Sample | |
|---|---|
| Total Sample Wet Wt, gm (-3") | 128 |
| Sample Split on Sieve | No. 4 |
| Coarse Washed Dry Sample, gm | 1 |
| Wet Wt Passing Split, gm | 128 |
| Dry Wt. Passing Split, gm | 103 |
| Total Sample Dry Wt, gm | 103 |

| Split Sample - Passing No. 4 | |
|---|---|
| Tare No. | K20 |
| Tare + WS., gm | 190.2 |
| Tare + DS., gm | 165.67 |
| Tare, gm | 65.28 |
| **Water Content of Split Sample** | **24.4%** |
| Wt. of DS., gm | 100.39 |
| Wt. of +#200 Sample, gm | 88.73 |

| Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|
| 3" | 75 | 0 | 0.0% | 100.0% | |
| 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| 2" | 50 | 0 | 0.0% | 100.0% | |
| 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| 1" | 25 | 0 | 0.0% | 100.0% | |
| 3/4" | 19 | 0 | 0.0% | 100.0% | |
| 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| 3/8" | 9.5 | 0.5 | 0.5% | 99.5% | |
| No. 4 | 4.75 | 0 | 0.0% | 99.5% | |
| No. 10 | 2 | 4.04 | 4.0% | 95.5% | |
| No. 20 | 0.85 | 10.39 | 10.3% | 85.2% | |
| No. 40 | 0.425 | 19.06 | 18.9% | 66.3% | |
| No. 60 | 0.25 | 19.27 | 19.1% | 47.2% | |
| No. 140 | 0.106 | 28.29 | 28.0% | 19.2% | |
| No. 200 | 0.075 | 7.68 | 7.6% | 11.6% | |

### USCS SOIL CLASSIFICATION

*Corrected For 100% Passing a 3" Sieve*

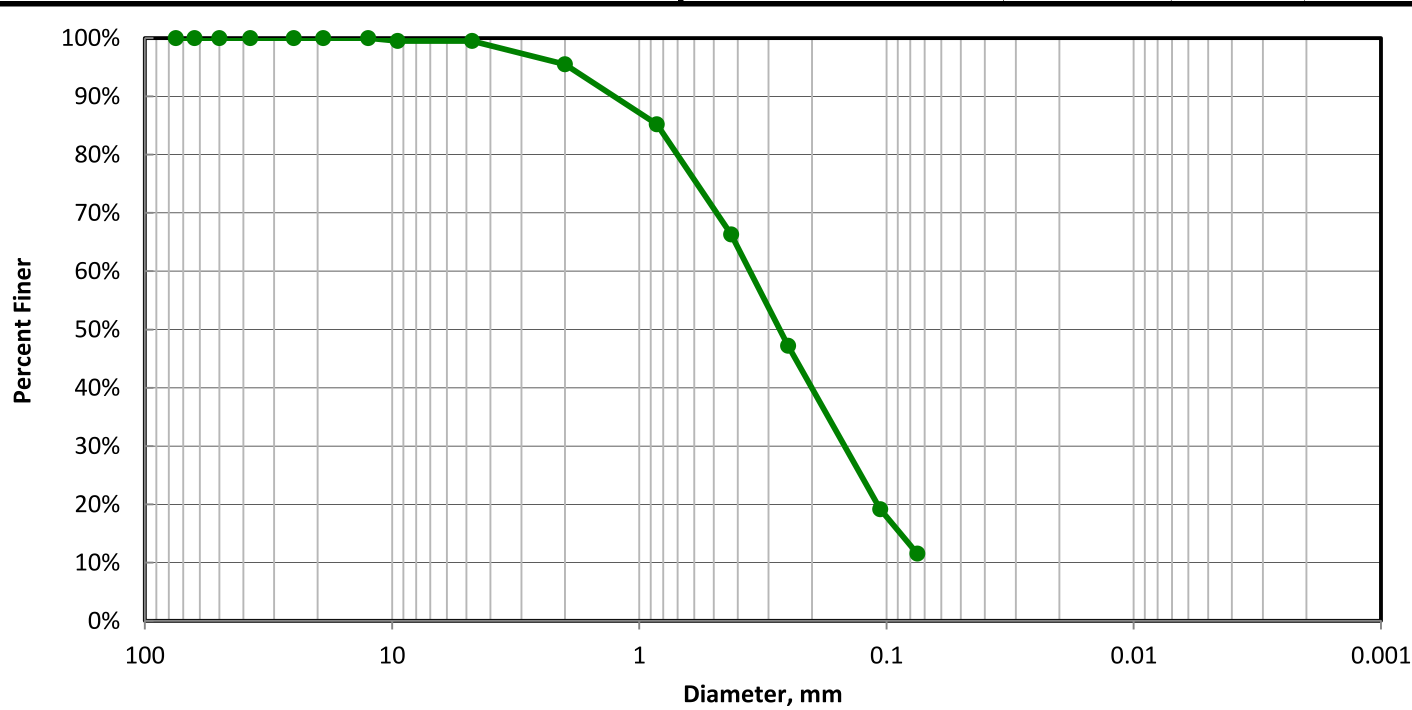
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **0.5** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=0.5* | | D60, mm | 0.36 |
| **% Sand (-#4 & +#200)** | **88.0** | D30, mm | 0.15 |
| *Coarse=4; Medium=29.2; Fine=54.8* | | D10, mm | 0.07 |
| **% Fines (-#200)** | **11.6** | Cc | 0.87 |
| **% Plus #200 (-3")** | **88.4** | Cu | 5.10 |

**USCS Description**

**POORLY GRADED SAND WITH SILT**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| sp-sm | np - Non-Plastic (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-1 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0205-GS |
| | | Lab Sample | 37829030 |

Sample Color: **GRAY**
USCS Group Name: **SILTY SAND**
USCS Group Symbol: **sm** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | | Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | % Finer | Project Specifications |
|---|---|---|---|---|---|---|---|
| Total Sample Wet Wt, gm (-3") | 139 | 3" | 75 | 0 | 0.0% | 100.0% | |
| Sample Split on Sieve | No. 4 | 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| Coarse Washed Dry Sample, gm | 1 | 2" | 50 | 0 | 0.0% | 100.0% | |
| Wet Wt Passing Split, gm | 138 | 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| Dry Wt. Passing Split, gm | 109 | 1" | 25 | 0 | 0.0% | 100.0% | |
| Total Sample Dry Wt, gm | 110 | 3/4" | 19 | 0 | 0.0% | 100.0% | |
| **Split Sample - Passing No. 4** | | 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| Tare No. | K26 | 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| Tare + WS., gm | 202.2 | No. 4 | 4.75 | 0.75 | 0.7% | 99.3% | |
| Tare + DS., gm | 173.7 | No. 10 | 2 | 2.2 | 2.0% | 97.3% | |
| Tare, gm | 66.73 | No. 20 | 0.85 | 7.48 | 6.9% | 90.3% | |
| **Water Content of Split Sample** | **26.6%** | No. 40 | 0.425 | 22.07 | 20.5% | 69.8% | |
| Wt. of DS., gm | 106.97 | No. 60 | 0.25 | 17.93 | 16.6% | 53.2% | |
| | | No. 140 | 0.106 | 24.37 | 22.6% | 30.6% | |
| Wt. of +#200 Sample, gm | 86.44 | No. 200 | 0.075 | 12.39 | 11.5% | 19.1% | |

### *USCS SOIL CLASSIFICATION*

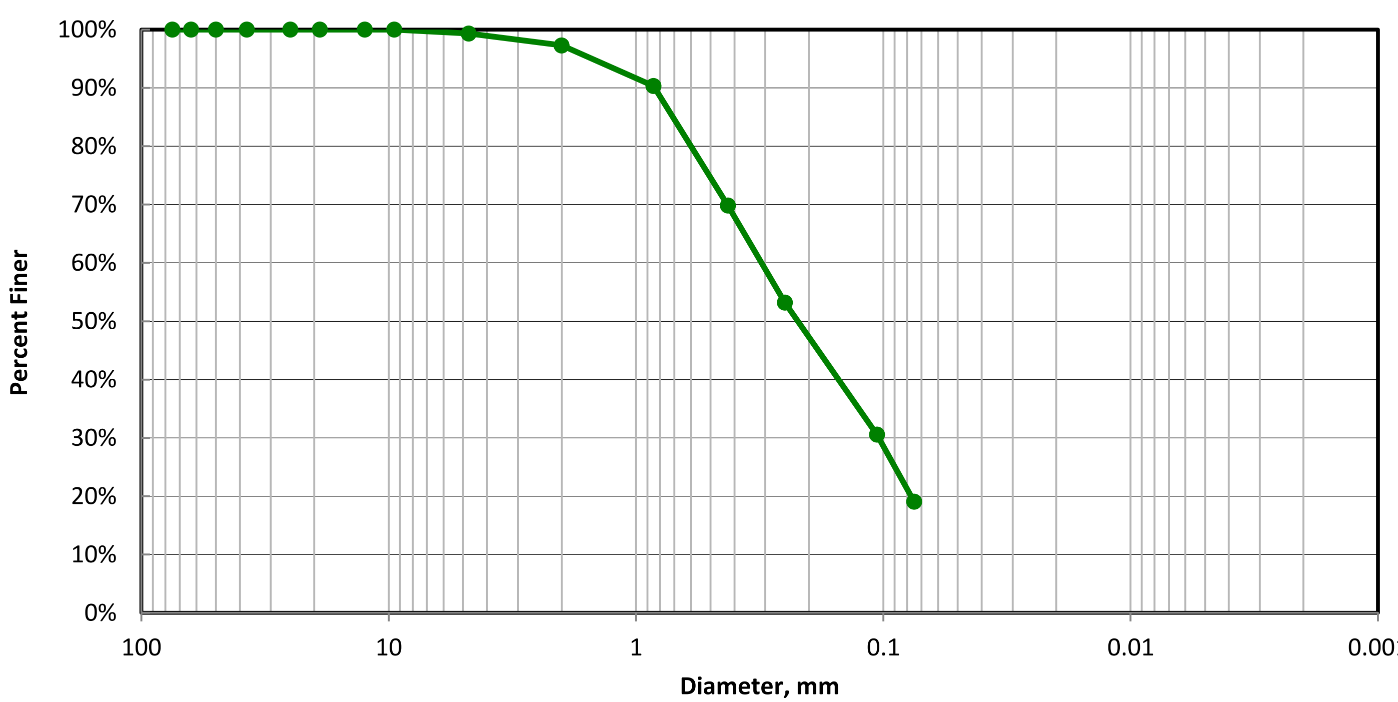
*Corrected For 100% Passing a 3" Sieve*

| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **0.7** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=0.7* | | D60, mm | NA |
| **% Sand (-#4 & +#200)** | **80.3** | D30, mm | NA |
| *Coarse=2; Medium=27.4; Fine=50.8* | | D10, mm | NA |
| **% Fines (-#200)** | **19.1** | Cc | NA |
| **% Plus #200 (-3")** | **80.9** | Cu | NA |

**USCS Description**

**SILTY SAND**

| USCS Group Symbol | Atterberg Limits Group Symbol | | |
|---|---|---|---|
| sm | ml - Silt (assumed) | | |
| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

# PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-1 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0507-GS |
| | | Lab Sample | 37829031 |

Sample Color: **GRAY**
USCS Group Name: **SILTY SAND**
USCS Group Symbol: **sm** USDA: **NA** AASHTO: **NA**

***MECHANICAL SIEVE***

| Total Sample | | Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | % Finer | Project Specifications |
|---|---|---|---|---|---|---|---|
| Total Sample Wet Wt, gm (-3") | 65 | 3" | 75 | 0 | 0.0% | 100.0% | |
| Sample Split on Sieve | No. 4 | 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| Coarse Washed Dry Sample, gm | 0 | 2" | 50 | 0 | 0.0% | 100.0% | |
| Wet Wt Passing Split, gm | 65 | 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| Dry Wt. Passing Split, gm | 52 | 1" | 25 | 0 | 0.0% | 100.0% | |
| Total Sample Dry Wt, gm | 52 | 3/4" | 19 | 0 | 0.0% | 100.0% | |
| **Split Sample - Passing No. 4** | | 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| Tare No. | 115 | 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| Tare + WS., gm | 144.56 | No. 4 | 4.75 | 0 | 0.0% | 100.0% | |
| Tare + DS., gm | 132.5 | No. 10 | 2 | 1.62 | 3.4% | 96.6% | |
| Tare, gm | 85 | No. 20 | 0.85 | 6.24 | 13.1% | 83.5% | |
| **Water Content of Split Sample** | **25.4%** | No. 40 | 0.425 | 11.27 | 23.7% | 59.7% | |
| Wt. of DS., gm | 47.50 | No. 60 | 0.25 | 10.01 | 21.1% | 38.7% | |
| | | No. 140 | 0.106 | 9.39 | 19.8% | 18.9% | |
| Wt. of +#200 Sample, gm | 41.21 | No. 200 | 0.075 | 2.68 | 5.6% | 13.2% | |

***USCS SOIL CLASSIFICATION***

*Corrected For 100% Passing a 3" Sieve*

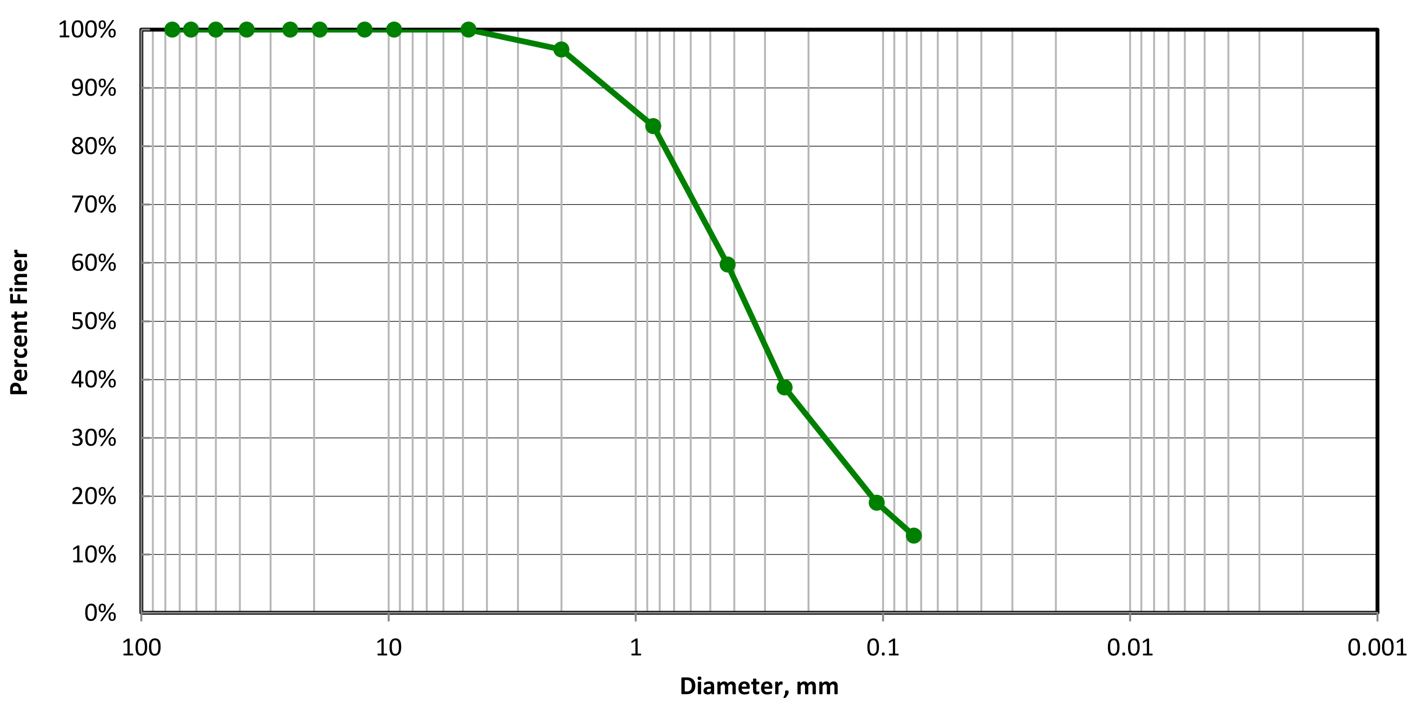
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **0.0** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=0* | | D60, mm | NA |
| **% Sand (-#4 & +#200)** | **86.8** | D30, mm | NA |
| *Coarse=3.4; Medium=36.9; Fine=46.5* | | D10, mm | NA |
| **% Fines (-#200)** | **13.2** | Cc | NA |
| **% Plus #200 (-3")** | **86.8** | Cu | NA |

**USCS Description**

**SILTY SAND**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| **sm** | **np - Non-Plastic (assumed)** |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-5 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0002-GS |
| | | Lab Sample | 37829032 |

Sample Color: **BROWN**
USCS Group Name: **POORLY GRADED SAND**
USCS Group Symbol: **sp** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | |
|---|---|
| Total Sample Wet Wt, gm (-3") | 60 |
| Sample Split on Sieve | No. 4 |
| Coarse Washed Dry Sample, gm | 1 |
| Wet Wt Passing Split, gm | 59 |
| Dry Wt. Passing Split, gm | 50 |
| Total Sample Dry Wt, gm | 51 |

| Split Sample - Passing No. 4 | |
|---|---|
| Tare No. | K5 |
| Tare + WS., gm | 121.19 |
| Tare + DS., gm | 112.67 |
| Tare, gm | 65.54 |
| **Water Content of Split Sample** | **18.1%** |
| Wt. of DS., gm | 47.13 |
| Wt. of +#200 Sample, gm | 45.95 |

| Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|
| 3" | 75 | 0 | 0.0% | 100.0% | |
| 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| 2" | 50 | 0 | 0.0% | 100.0% | |
| 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| 1" | 25 | 0 | 0.0% | 100.0% | |
| 3/4" | 19 | 0 | 0.0% | 100.0% | |
| 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| No. 4 | 4.75 | 0.6 | 1.2% | 98.8% | |
| No. 10 | 2 | 2.46 | 5.2% | 93.7% | |
| No. 20 | 0.85 | 6.21 | 13.0% | 80.6% | |
| No. 40 | 0.425 | 16.4 | 34.4% | 46.3% | |
| No. 60 | 0.25 | 16.8 | 35.2% | 11.0% | |
| No. 140 | 0.106 | 3.45 | 7.2% | 3.8% | |
| No. 200 | 0.075 | 0.63 | 1.3% | 2.5% | |

### *USCS SOIL CLASSIFICATION*

*Corrected For 100% Passing a 3" Sieve*

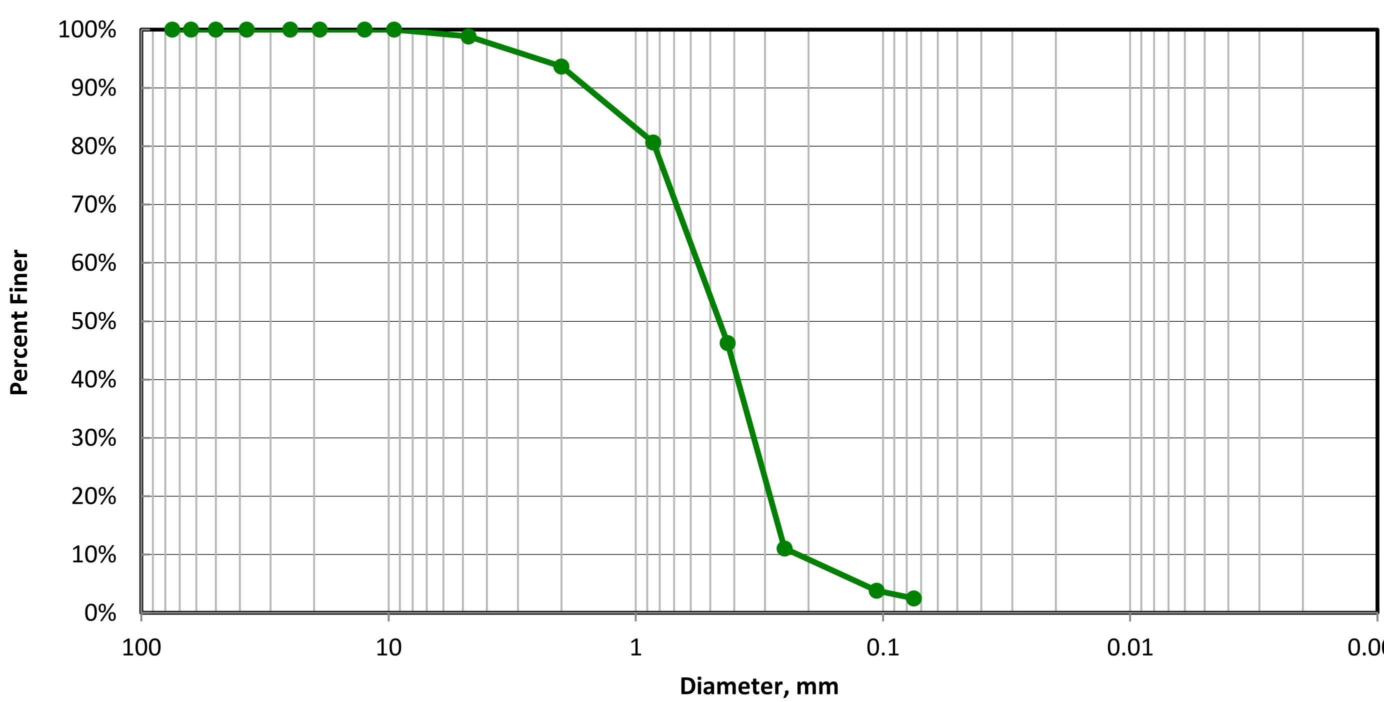
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **1.2** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=1.2* | | D60, mm | 0.56 |
| **% Sand (-#4 & +#200)** | **96.3** | D30, mm | 0.33 |
| *Coarse=5.2; Medium=47.4; Fine=43.8* | | D10, mm | 0.22 |
| **% Fines (-#200)** | **2.5** | Cc | 0.89 |
| **% Plus #200 (-3")** | **97.5** | Cu | 2.53 |

**USCS Description**

POORLY GRADED SAND

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| sp | np - Non-Plastic (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |

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## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-5 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0205-GS |
| | | Lab Sample | 37829033 |

Sample Color: **BROWN**
USCS Group Name: **POORLY GRADED SAND**
USCS Group Symbol: **sp** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | |
|---|---|
| Total Sample Wet Wt, gm (-3") | 183 |
| Sample Split on Sieve | No. 4 |
| Coarse Washed Dry Sample, gm | 2 |
| Wet Wt Passing Split, gm | 181 |
| Dry Wt. Passing Split, gm | 153 |
| Total Sample Dry Wt, gm | 155 |
| **Split Sample - Passing No. 4** | |
| Tare No. | K24 |
| Tare + WS., gm | 230.59 |
| Tare + DS., gm | 205.1 |
| Tare, gm | 64.37 |
| **Water Content of Split Sample** | **18.1%** |
| Wt. of DS., gm | 140.73 |
| Wt. of +#200 Sample, gm | 139.14 |

| Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|
| 3" | 75 | 0 | 0.0% | 100.0% | |
| 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| 2" | 50 | 0 | 0.0% | 100.0% | |
| 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| 1" | 25 | 0 | 0.0% | 100.0% | |
| 3/4" | 19 | 0 | 0.0% | 100.0% | |
| 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| No. 4 | 4.75 | 2.29 | 1.5% | 98.5% | |
| No. 10 | 2 | 6.89 | 4.8% | 93.7% | |
| No. 20 | 0.85 | 20.1 | 14.1% | 79.6% | |
| No. 40 | 0.425 | 48.6 | 34.0% | 45.6% | |
| No. 60 | 0.25 | 52.7 | 36.9% | 8.7% | |
| No. 140 | 0.106 | 10.61 | 7.4% | 1.3% | |
| No. 200 | 0.075 | 0.24 | 0.2% | 1.1% | |

### *USCS SOIL CLASSIFICATION*

*Corrected For 100% Passing a 3" Sieve*

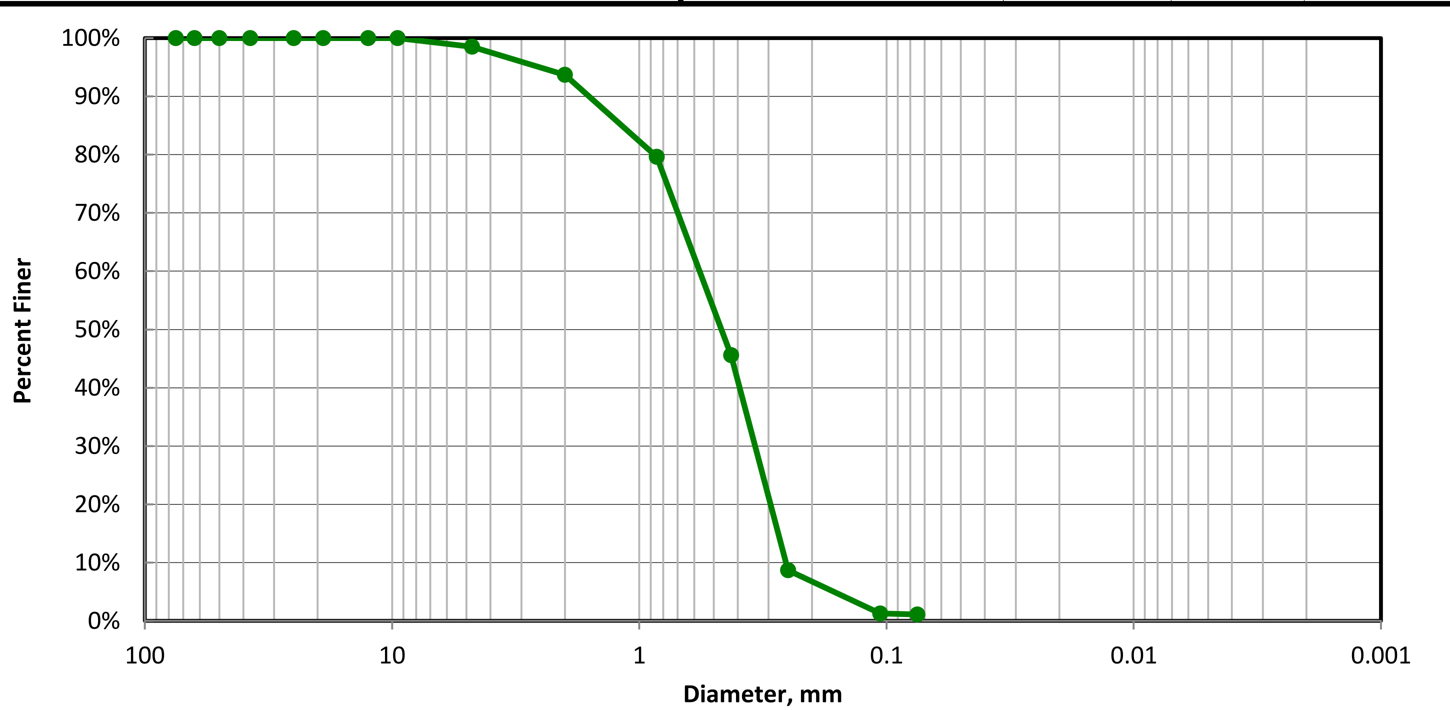
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **1.5** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=1.5* | | D60, mm | 0.57 |
| **% Sand (-#4 & +#200)** | **97.4** | D30, mm | 0.34 |
| *Coarse=4.8; Medium=48.1; Fine=44.5* | | D10, mm | 0.26 |
| **% Fines (-#200)** | **1.1** | Cc | 0.79 |
| **% Plus #200 (-3")** | **98.9** | Cu | 2.24 |

**USCS Description**

**POORLY GRADED SAND**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| sp | np - Non-Plastic (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |

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## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-5 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0507-GS |
| | | Lab Sample | 37829034 |

Sample Color: **BROWN**
USCS Group Name: **POORLY GRADED SAND**
USCS Group Symbol: **sp** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | | Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | % Finer | Project Specifications |
|---|---|---|---|---|---|---|---|
| Total Sample Wet Wt, gm (-3") | 133 | 3" | 75 | 0 | 0.0% | 100.0% | |
| Sample Split on Sieve | No. 4 | 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| Coarse Washed Dry Sample, gm | 2 | 2" | 50 | 0 | 0.0% | 100.0% | |
| Wet Wt Passing Split, gm | 131 | 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| Dry Wt. Passing Split, gm | 110 | 1" | 25 | 0 | 0.0% | 100.0% | |
| Total Sample Dry Wt, gm | 113 | 3/4" | 19 | 0 | 0.0% | 100.0% | |
| **Split Sample - Passing No. 4** | | 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| Tare No. | K23 | 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| Tare + WS., gm | 186.3 | No. 4 | 4.75 | 2.4 | 2.1% | 97.9% | |
| Tare + DS., gm | 167.03 | No. 10 | 2 | 4.02 | 3.8% | 94.0% | |
| Tare, gm | 64.67 | No. 20 | 0.85 | 15.62 | 14.9% | 79.1% | |
| **Water Content of Split Sample** | **18.8%** | No. 40 | 0.425 | 36.94 | 35.3% | 43.8% | |
| Wt. of DS., gm | 102.36 | No. 60 | 0.25 | 36.73 | 35.1% | 8.7% | |
| | | No. 140 | 0.106 | 6.32 | 6.0% | 2.6% | |
| Wt. of +#200 Sample, gm | 100.35 | No. 200 | 0.075 | 0.72 | 0.7% | 1.9% | |

### *USCS SOIL CLASSIFICATION*

*Corrected For 100% Passing a 3" Sieve*

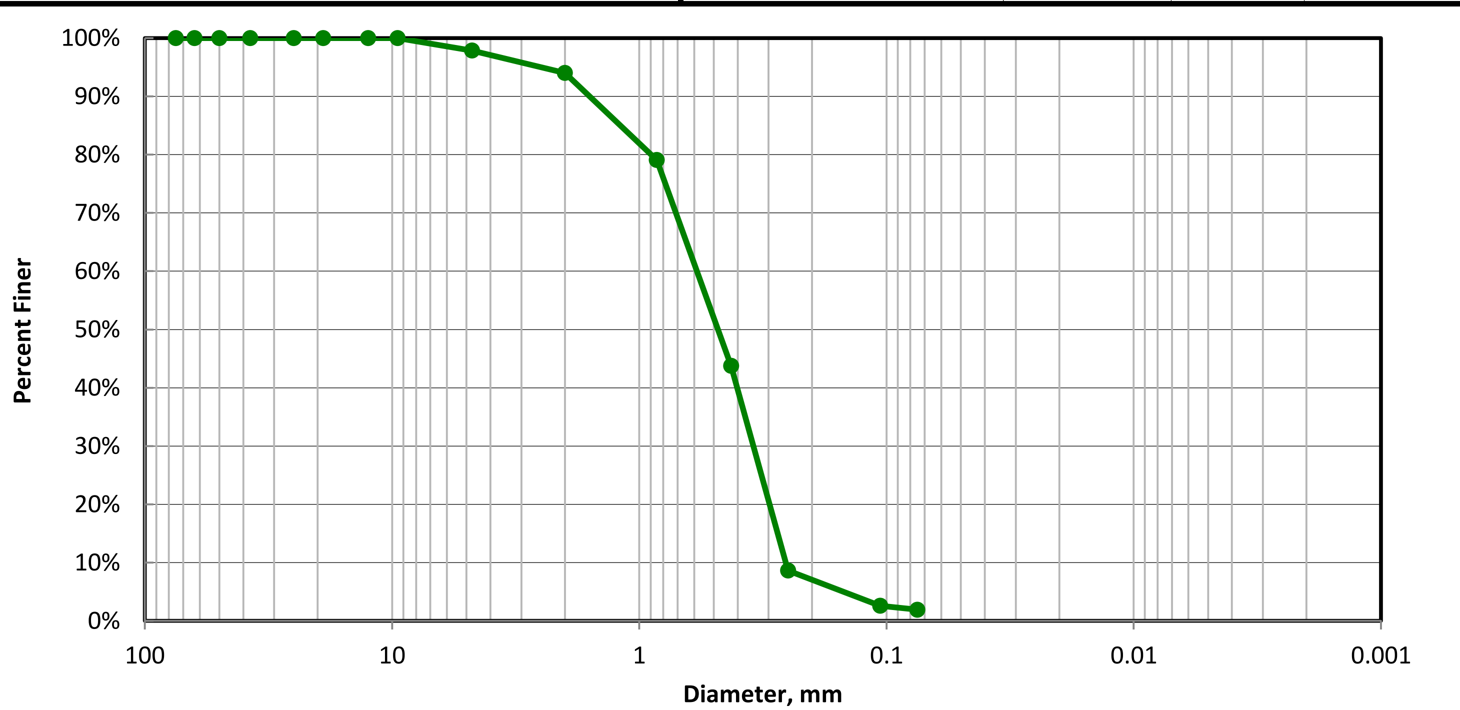
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **2.1** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=2.1* | | D60, mm | 0.58 |
| **% Sand (-#4 & +#200)** | **95.9** | D30, mm | 0.35 |
| *Coarse=3.8; Medium=50.3; Fine=41.8* | | D10, mm | 0.26 |
| **% Fines (-#200)** | **1.9** | Cc | 0.80 |
| **% Plus #200 (-3")** | **98.1** | Cu | 2.29 |

**USCS Description**

**POORLY GRADED SAND**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| sp | np - Non-Plastic (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |

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## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-5 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0002-GS-AI |
| | | Lab Sample | 37829035 |

Sample Color: **BROWN**
USCS Group Name: **POORLY GRADED SAND**
USCS Group Symbol: **sp** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | |
|---|---|
| Total Sample Wet Wt, gm (-3") | 127 |
| Sample Split on Sieve | No. 4 |
| Coarse Washed Dry Sample, gm | 1 |
| Wet Wt Passing Split, gm | 125 |
| Dry Wt. Passing Split, gm | 107 |
| Total Sample Dry Wt, gm | 108 |
| **Split Sample - Passing No. 4** | |
| Tare No. | K14 |
| Tare + WS., gm | 182.6 |
| Tare + DS., gm | 165.55 |
| Tare, gm | 65.01 |
| **Water Content of Split Sample** | **17.0%** |
| Wt. of DS., gm | 100.54 |
| Wt. of +#200 Sample, gm | 99.60 |

| Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|
| 3" | 75 | 0 | 0.0% | 100.0% | |
| 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| 2" | 50 | 0 | 0.0% | 100.0% | |
| 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| 1" | 25 | 0 | 0.0% | 100.0% | |
| 3/4" | 19 | 0 | 0.0% | 100.0% | |
| 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| No. 4 | 4.75 | 1.15 | 1.1% | 98.9% | |
| No. 10 | 2 | 7.99 | 7.9% | 91.1% | |
| No. 20 | 0.85 | 26.19 | 25.8% | 65.3% | |
| No. 40 | 0.425 | 35.1 | 34.5% | 30.8% | |
| No. 60 | 0.25 | 23.78 | 23.4% | 7.4% | |
| No. 140 | 0.106 | 6.32 | 6.2% | 1.1% | |
| No. 200 | 0.075 | 0.22 | 0.2% | 0.9% | |

### *USCS SOIL CLASSIFICATION*

*Corrected For 100% Passing a 3" Sieve*

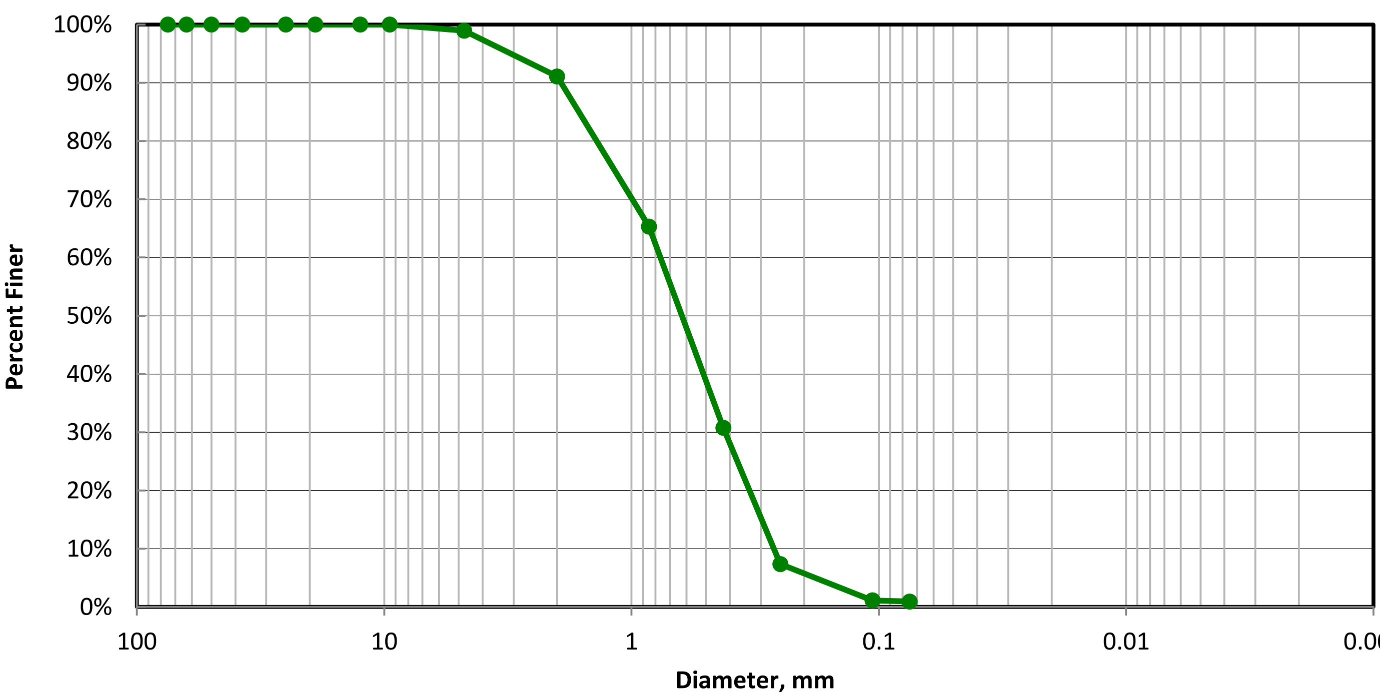
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **1.1** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=1.1* | | D60, mm | 0.76 |
| **% Sand (-#4 & +#200)** | **98.0** | D30, mm | 0.42 |
| *Coarse=7.9; Medium=60.3; Fine=29.8* | | D10, mm | 0.27 |
| **% Fines (-#200)** | **0.9** | Cc | 0.86 |
| **% Plus #200 (-3")** | **99.1** | Cu | 2.88 |

**USCS Description**

**POORLY GRADED SAND**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| sp | np - Non-Plastic (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |

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## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-5 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0002-GS-BI |
| | | Lab Sample | 37829036 |

Sample Color: **GRAY**
USCS Group Name: **SILTY SAND**
USCS Group Symbol: **sm** USDA: **NA** AASHTO: **NA**

### MECHANICAL SIEVE

| Total Sample | |
|---|---|
| Total Sample Wet Wt, gm (-3") | 153 |
| Sample Split on Sieve | No. 4 |
| Coarse Washed Dry Sample, gm | 3 |
| Wet Wt Passing Split, gm | 150 |
| Dry Wt. Passing Split, gm | 107 |
| Total Sample Dry Wt, gm | 110 |

| Split Sample - Passing No. 4 | |
|---|---|
| Tare No. | K6 |
| Tare + WS., gm | 207.88 |
| Tare + DS., gm | 167.09 |
| Tare, gm | 65.23 |
| **Water Content of Split Sample** | **40.0%** |
| Wt. of DS., gm | 101.86 |
| Wt. of +#200 Sample, gm | 72.87 |

| Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|
| 3" | 75 | 0 | 0.0% | 100.0% | |
| 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| 2" | 50 | 0 | 0.0% | 100.0% | |
| 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| 1" | 25 | 0 | 0.0% | 100.0% | |
| 3/4" | 19 | 0 | 0.0% | 100.0% | |
| 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| No. 4 | 4.75 | 2.64 | 2.4% | 97.6% | |
| No. 10 | 2 | 6.39 | 6.1% | 91.5% | |
| No. 20 | 0.85 | 12.15 | 11.6% | 79.8% | |
| No. 40 | 0.425 | 16.37 | 15.7% | 64.1% | |
| No. 60 | 0.25 | 15.37 | 14.7% | 49.4% | |
| No. 140 | 0.106 | 13.97 | 13.4% | 36.0% | |
| No. 200 | 0.075 | 8.62 | 8.3% | 27.8% | |

### USCS SOIL CLASSIFICATION

*Corrected For 100% Passing a 3" Sieve*

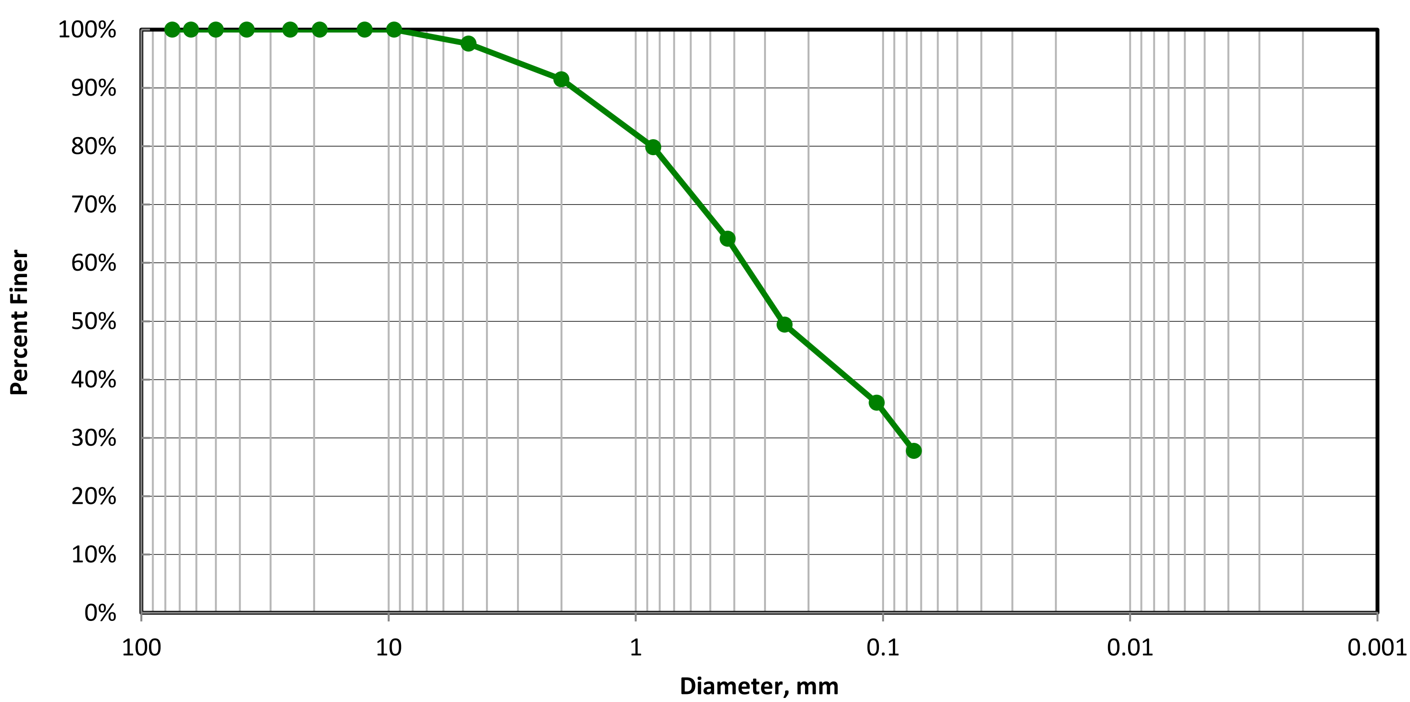
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **2.4** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=2.4* | | D60, mm | NA |
| **% Sand (-#4 & +#200)** | **69.8** | D30, mm | NA |
| *Coarse=6.1; Medium=27.3; Fine=36.4* | | D10, mm | NA |
| **% Fines (-#200)** | **27.8** | Cc | NA |
| **% Plus #200 (-3")** | **72.2** | Cu | NA |

**USCS Description**

**SILTY SAND**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| **sm** | **ml - Silt (assumed)** |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

# PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-5 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0205-GS-BI |
| | | Lab Sample | 37829037 |

Sample Color: **GRAY**
USCS Group Name: **SILTY SAND**
USCS Group Symbol: **sm** USDA: **NA** AASHTO: **NA**

## MECHANICAL SIEVE

| Total Sample | |
|---|---|
| Total Sample Wet Wt, gm (-3") | 188 |
| Sample Split on Sieve | No. 4 |
| Coarse Washed Dry Sample, gm | 0 |
| Wet Wt Passing Split, gm | 188 |
| Dry Wt. Passing Split, gm | 120 |
| Total Sample Dry Wt, gm | 121 |

| Split Sample - Passing No. 4 | |
|---|---|
| Tare No. | K300 |
| Tare + WS., gm | 250.71 |
| Tare + DS., gm | 183.89 |
| Tare, gm | 65.08 |
| **Water Content of Split Sample** | **56.2%** |
| Wt. of DS., gm | 118.81 |
| Wt. of +#200 Sample, gm | 60.20 |

| Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|
| 3" | 75 | 0 | 0.0% | 100.0% | |
| 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| 2" | 50 | 0 | 0.0% | 100.0% | |
| 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| 1" | 25 | 0 | 0.0% | 100.0% | |
| 3/4" | 19 | 0 | 0.0% | 100.0% | |
| 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| No. 4 | 4.75 | 0.17 | 0.1% | 99.9% | |
| No. 10 | 2 | 1.4 | 1.2% | 98.7% | |
| No. 20 | 0.85 | 3.15 | 2.6% | 96.0% | |
| No. 40 | 0.425 | 8.51 | 7.2% | 88.9% | |
| No. 60 | 0.25 | 10.88 | 9.1% | 79.7% | |
| No. 140 | 0.106 | 22.08 | 18.6% | 61.2% | |
| No. 200 | 0.075 | 14.18 | 11.9% | 49.3% | |

## USCS SOIL CLASSIFICATION

*Corrected For 100% Passing a 3" Sieve*

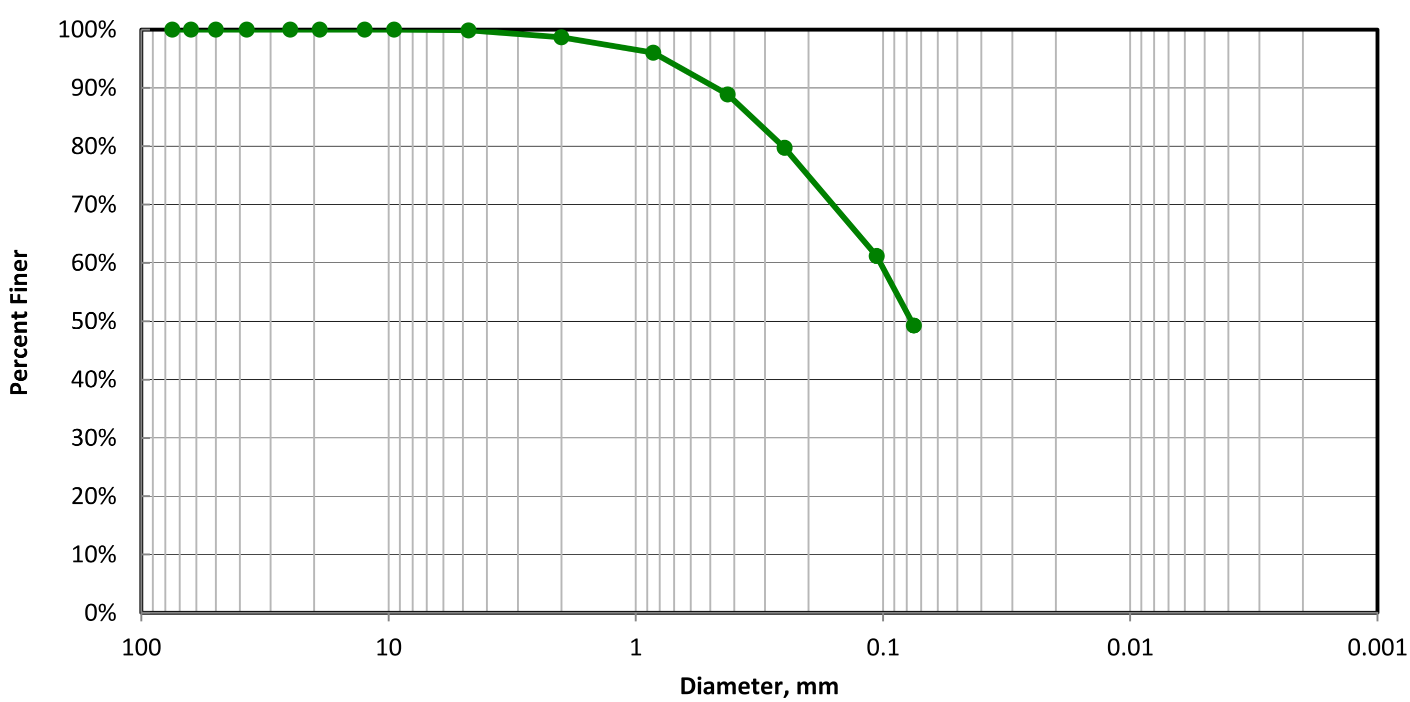
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **0.1** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=0.1* | | D60, mm | NA |
| **% Sand (-#4 & +#200)** | **50.6** | D30, mm | NA |
| *Coarse=1.2; Medium=9.8; Fine=39.6* | | D10, mm | NA |
| **% Fines (-#200)** | **49.3** | Cc | NA |
| **% Plus #200 (-3")** | **50.7** | Cu | NA |

**USCS Description**

**SILTY SAND**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| sm | ml - Silt (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-5 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0507-GS-BI |
| | | Lab Sample | 37829038 |

Sample Color: **GRAY**
USCS Group Name: **SANDY SILT**
USCS Group Symbol: **ml** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | |
|---|---|
| Total Sample Wet Wt, gm (-3") | 106 |
| Sample Split on Sieve | No. 4 |
| Coarse Washed Dry Sample, gm | 0 |
| Wet Wt Passing Split, gm | 106 |
| Dry Wt. Passing Split, gm | 68 |
| Total Sample Dry Wt, gm | 68 |

| Split Sample - Passing No. 4 | |
|---|---|
| Tare No. | K37 |
| Tare + WS., gm | 170.75 |
| Tare + DS., gm | 133.26 |
| Tare, gm | 65.96 |
| **Water Content of Split Sample** | **55.7%** |
| Wt. of DS., gm | 67.30 |
| Wt. of +#200 Sample, gm | 21.31 |

| Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|
| 3" | 75 | 0 | 0.0% | 100.0% | |
| 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| 2" | 50 | 0 | 0.0% | 100.0% | |
| 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| 1" | 25 | 0 | 0.0% | 100.0% | |
| 3/4" | 19 | 0 | 0.0% | 100.0% | |
| 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| No. 4 | 4.75 | 0.24 | 0.4% | 99.6% | |
| No. 10 | 2 | 0.2 | 0.3% | 99.4% | |
| No. 20 | 0.85 | 0.98 | 1.5% | 97.9% | |
| No. 40 | 0.425 | 2.9 | 4.3% | 93.6% | |
| No. 60 | 0.25 | 3.17 | 4.7% | 88.9% | |
| No. 140 | 0.106 | 7.37 | 10.9% | 78.0% | |
| No. 200 | 0.075 | 6.69 | 9.9% | 68.1% | |

### *USCS SOIL CLASSIFICATION*

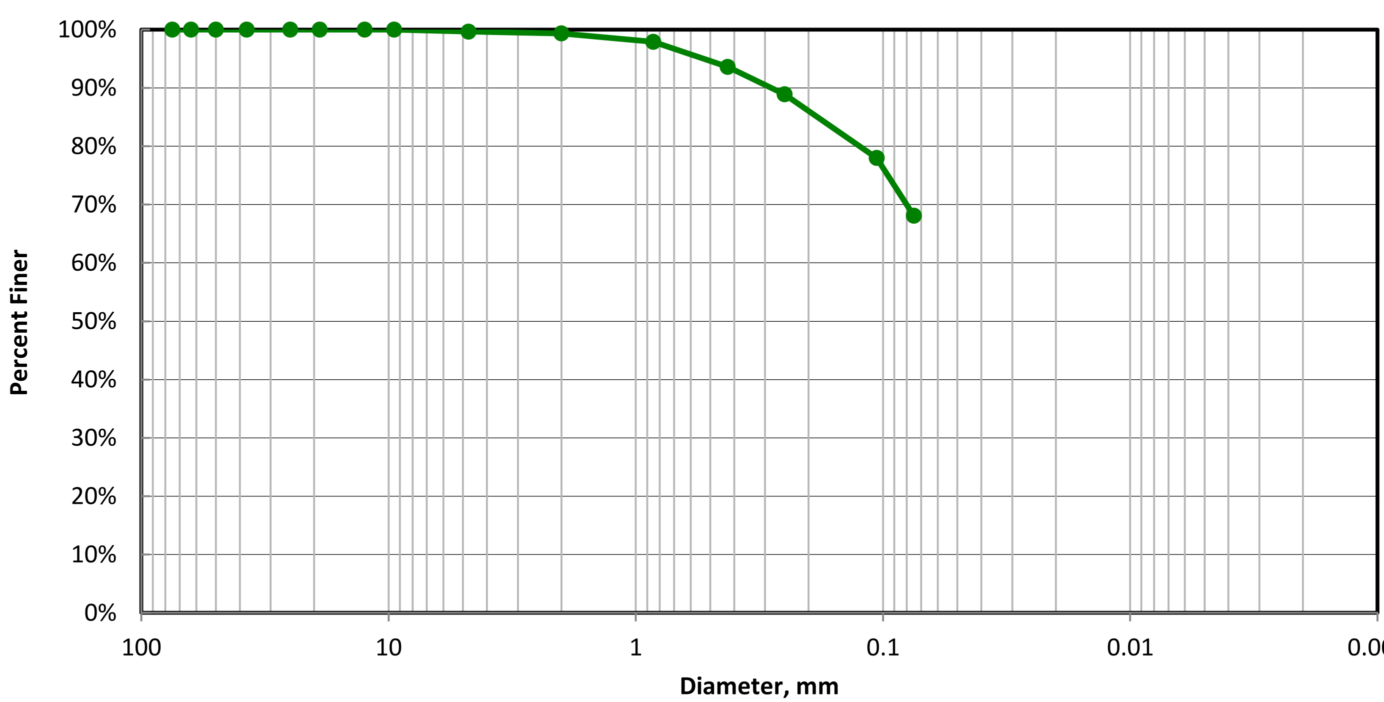
*Corrected For 100% Passing a 3" Sieve*

| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **0.4** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=0.4* | | D60, mm | NA |
| **% Sand (-#4 & +#200)** | **31.6** | D30, mm | NA |
| *Coarse=0.3; Medium=5.7; Fine=25.5* | | D10, mm | NA |
| **% Fines (-#200)** | **68.1** | Cc | NA |
| **% Plus #200 (-3")** | **31.9** | Cu | NA |

**USCS Description**
**SANDY SILT**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| **ml** | **ml - Silt (assumed)** |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

# PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-5DUP |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0002-GS |
| | | Lab Sample | 37829039 |

Sample Color: **BROWN**
USCS Group Name: **POORLY GRADED SAND**
USCS Group Symbol: **sp** USDA: **NA** AASHTO: **NA**

## MECHANICAL SIEVE

| Total Sample | |
|---|---|
| Total Sample Wet Wt, gm (-3") | 78 |
| Sample Split on Sieve | No. 4 |
| Coarse Washed Dry Sample, gm | 1 |
| Wet Wt Passing Split, gm | 76 |
| Dry Wt. Passing Split, gm | 65 |
| Total Sample Dry Wt, gm | 66 |

| Split Sample - Passing No. 4 | |
|---|---|
| Tare No. | K35 |
| Tare + WS., gm | 140.59 |
| Tare + DS., gm | 129.58 |
| Tare, gm | 67.93 |
| **Water Content of Split Sample** | **17.9%** |
| Wt. of DS., gm | 61.65 |
| Wt. of +#200 Sample, gm | 60.21 |

| Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|
| 3" | 75 | 0 | 0.0% | 100.0% | |
| 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| 2" | 50 | 0 | 0.0% | 100.0% | |
| 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| 1" | 25 | 0 | 0.0% | 100.0% | |
| 3/4" | 19 | 0 | 0.0% | 100.0% | |
| 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| No. 4 | 4.75 | 1.47 | 2.2% | 97.8% | |
| No. 10 | 2 | 2.67 | 4.2% | 93.5% | |
| No. 20 | 0.85 | 8.46 | 13.4% | 80.1% | |
| No. 40 | 0.425 | 20.09 | 31.9% | 48.3% | |
| No. 60 | 0.25 | 22.54 | 35.8% | 12.5% | |
| No. 140 | 0.106 | 6.22 | 9.9% | 2.6% | |
| No. 200 | 0.075 | 0.23 | 0.4% | 2.3% | |

## USCS SOIL CLASSIFICATION

*Corrected For 100% Passing a 3" Sieve*

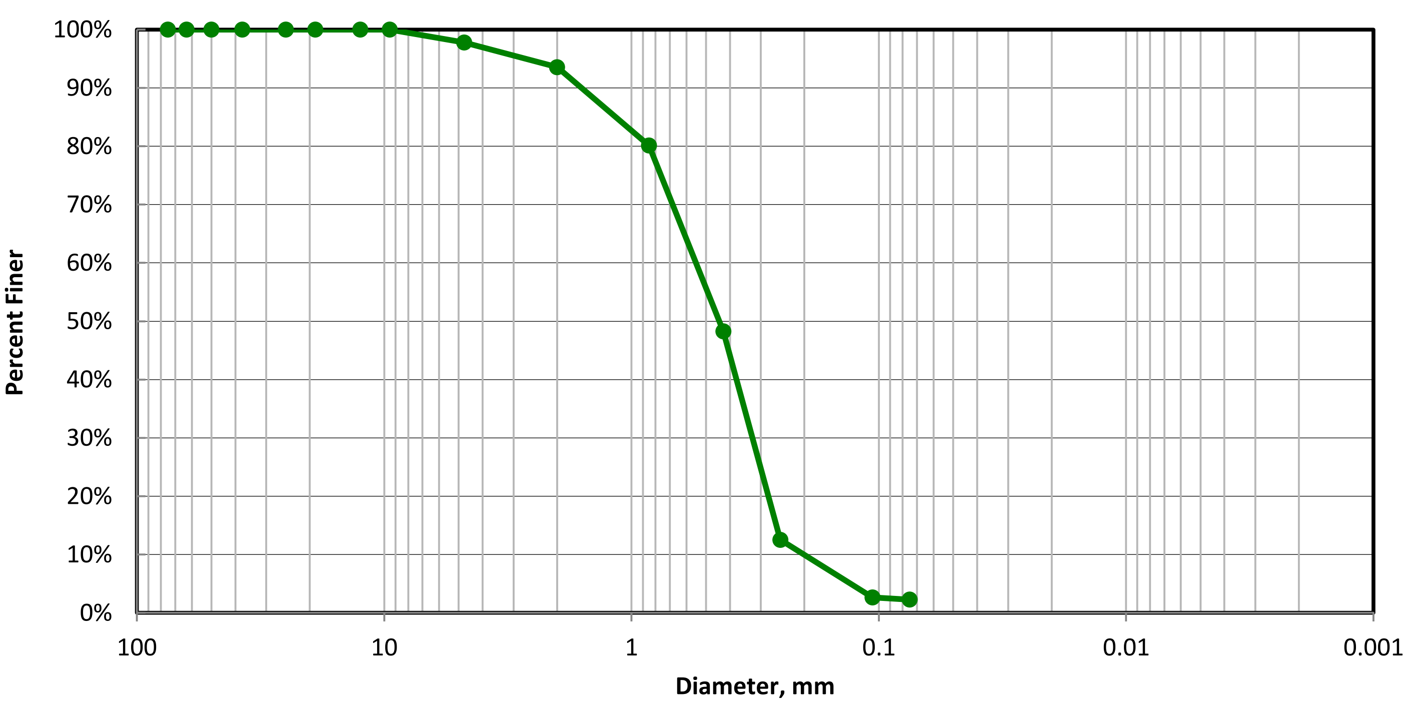
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **2.2** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=2.2* | | D60, mm | 0.55 |
| **% Sand (-#4 & +#200)** | **95.5** | D30, mm | 0.32 |
| *Coarse=4.2; Medium=45.3; Fine=46* | | D10, mm | 0.20 |
| **% Fines (-#200)** | **2.3** | Cc | 0.95 |
| **% Plus #200 (-3")** | **97.7** | Cu | 2.73 |

**USCS Description**

**POORLY GRADED SAND**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| sp | np - Non-Plastic (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




| | | | | |
|---|---|---|---|---|
| Input Validation | tmp | Reviewed By: tmp | Date Tested | 9/6/2016 |

## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-5DUP |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0205-GS |
| | | Lab Sample | 37829040 |

Sample Color: **BROWN**
USCS Group Name: **POORLY GRADED SAND**
USCS Group Symbol: **sp** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | | Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | % Finer | Project Specifications |
|---|---|---|---|---|---|---|---|
| Total Sample Wet Wt, gm (-3") | 197 | 3" | 75 | 0 | 0.0% | 100.0% | |
| Sample Split on Sieve | No. 4 | 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| Coarse Washed Dry Sample, gm | 4 | 2" | 50 | 0 | 0.0% | 100.0% | |
| Wet Wt Passing Split, gm | 193 | 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| Dry Wt. Passing Split, gm | 161 | 1" | 25 | 0 | 0.0% | 100.0% | |
| Total Sample Dry Wt, gm | 166 | 3/4" | 19 | 0 | 0.0% | 100.0% | |
| **Split Sample - Passing No. 4** | | 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| Tare No. | K21 | 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| Tare + WS., gm | 245.9 | No. 4 | 4.75 | 4.47 | 2.7% | 97.3% | |
| Tare + DS., gm | 216.02 | No. 10 | 2 | 9.45 | 6.1% | 91.2% | |
| Tare, gm | 64.73 | No. 20 | 0.85 | 22.36 | 14.4% | 76.8% | |
| **Water Content of Split Sample** | **19.8%** | No. 40 | 0.425 | 52.43 | 33.7% | 43.1% | |
| Wt. of DS., gm | 151.29 | No. 60 | 0.25 | 52.06 | 33.5% | 9.6% | |
| | | No. 140 | 0.106 | 11.15 | 7.2% | 2.5% | |
| Wt. of +#200 Sample, gm | 148.35 | No. 200 | 0.075 | 0.9 | 0.6% | 1.9% | |

### *USCS SOIL CLASSIFICATION*

*Corrected For 100% Passing a 3" Sieve*

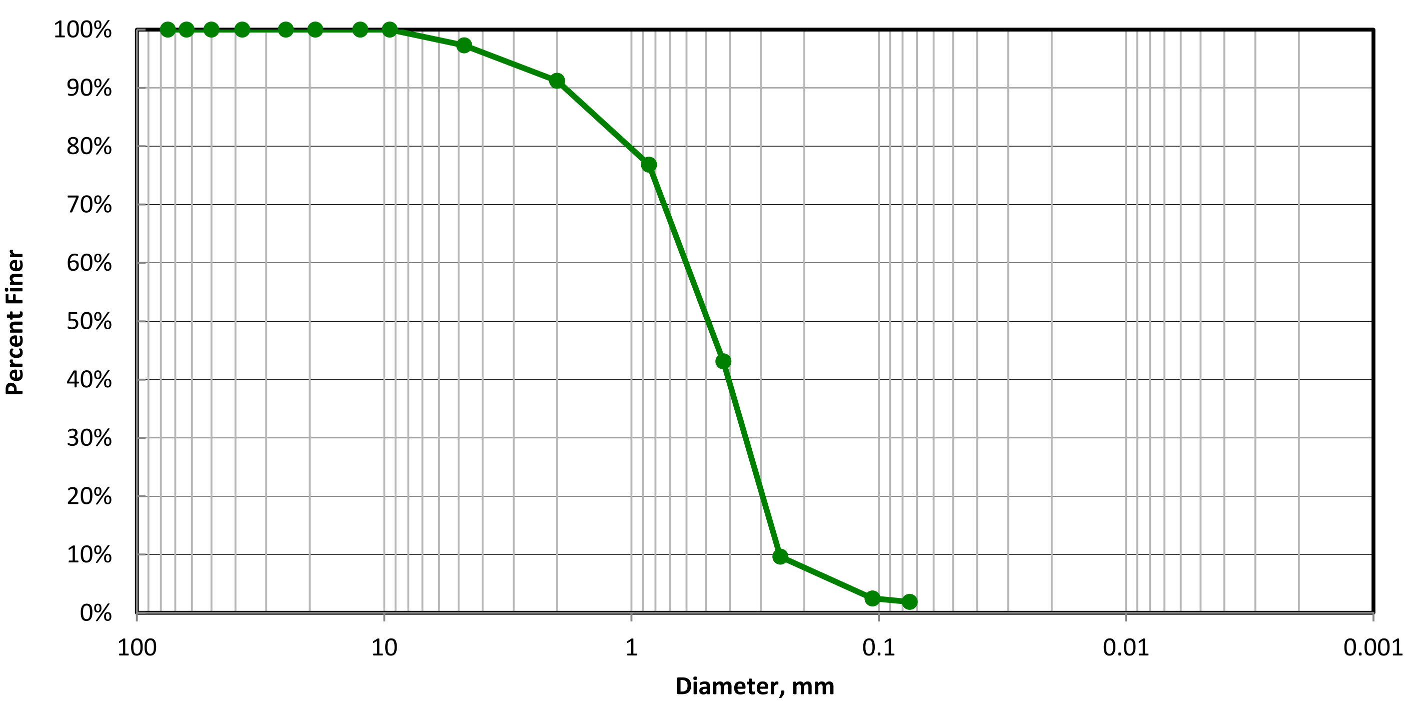
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **2.7** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=2.7* | | D60, mm | 0.60 |
| **% Sand (-#4 & +#200)** | **95.4** | D30, mm | 0.35 |
| *Coarse=6.1; Medium=48.1; Fine=41.2* | | D10, mm | 0.25 |
| **% Fines (-#200)** | **1.9** | Cc | 0.79 |
| **% Plus #200 (-3")** | **98.1** | Cu | 2.39 |

**USCS Description**

**POORLY GRADED SAND**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| sp | np - Non-Plastic (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-5DUP |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0507-GS |
| | | Lab Sample | 37829041 |

Sample Color: **BROWN**
USCS Group Name: **POORLY GRADED SAND**
USCS Group Symbol: **sp** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | |
|---|---|
| Total Sample Wet Wt, gm (-3") | 154 |
| Sample Split on Sieve | No. 4 |
| Coarse Washed Dry Sample, gm | 4 |
| Wet Wt Passing Split, gm | 150 |
| Dry Wt. Passing Split, gm | 127 |
| Total Sample Dry Wt, gm | 131 |

| Split Sample - Passing No. 4 | |
|---|---|
| Tare No. | K8 |
| Tare + WS., gm | 205.65 |
| Tare + DS., gm | 184.46 |
| Tare, gm | 65.6 |
| **Water Content of Split Sample** | **17.8%** |
| Wt. of DS., gm | 118.86 |
| Wt. of +#200 Sample, gm | 117.36 |

| Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|
| 3" | 75 | 0 | 0.0% | 100.0% | |
| 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| 2" | 50 | 0 | 0.0% | 100.0% | |
| 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| 1" | 25 | 0 | 0.0% | 100.0% | |
| 3/4" | 19 | 0 | 0.0% | 100.0% | |
| 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| No. 4 | 4.75 | 3.68 | 2.8% | 97.2% | |
| No. 10 | 2 | 6.24 | 5.1% | 92.1% | |
| No. 20 | 0.85 | 17.99 | 14.7% | 77.4% | |
| No. 40 | 0.425 | 42.59 | 34.8% | 42.6% | |
| No. 60 | 0.25 | 41.5 | 33.9% | 8.6% | |
| No. 140 | 0.106 | 6.61 | 5.4% | 3.2% | |
| No. 200 | 0.075 | 2.43 | 2.0% | 1.2% | |

### *USCS SOIL CLASSIFICATION*

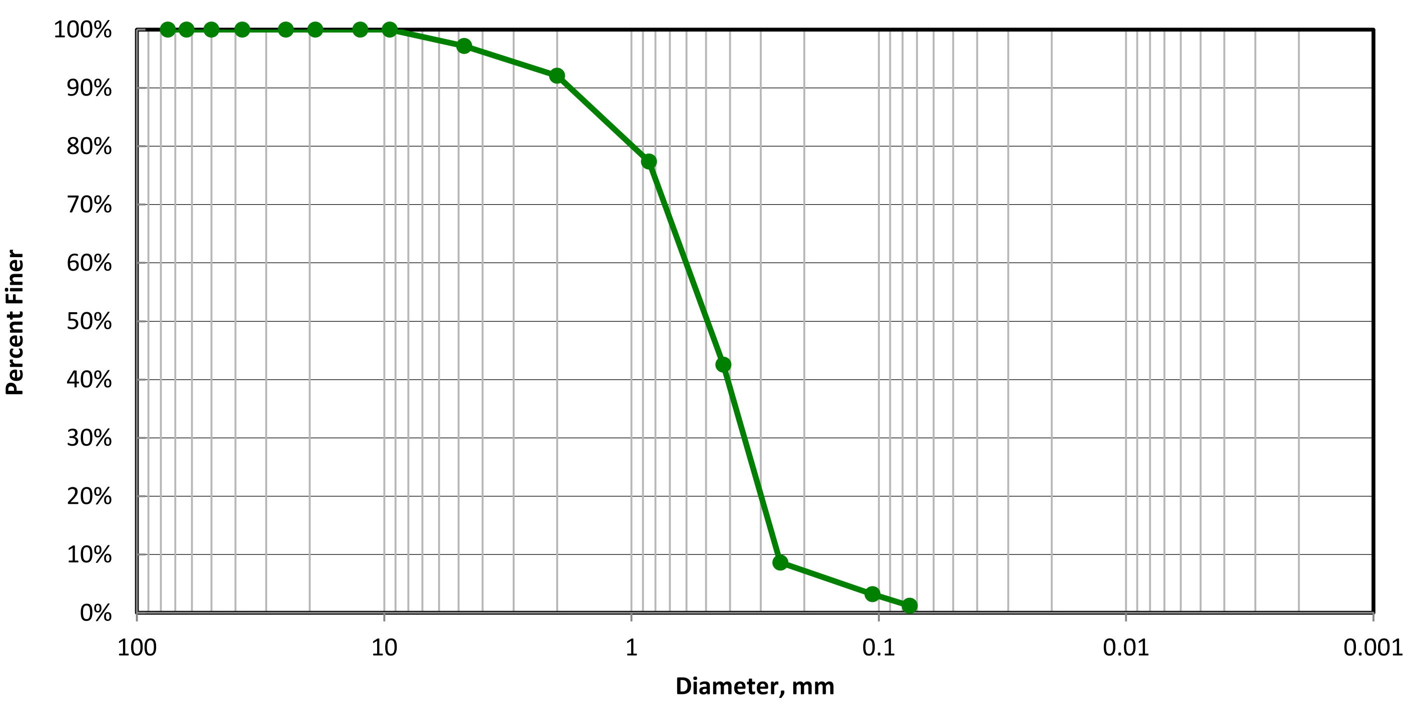
*Corrected For 100% Passing a 3" Sieve*

| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **2.8** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=2.8* | | D60, mm | 0.60 |
| **% Sand (-#4 & +#200)** | **96.0** | D30, mm | 0.35 |
| *Coarse=5.1; Medium=49.5; Fine=41.3* | | D10, mm | 0.26 |
| **% Fines (-#200)** | **1.2** | Cc | 0.79 |
| **% Plus #200 (-3")** | **98.8** | Cu | 2.35 |

**USCS Description**
**POORLY GRADED SAND**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| sp | np - Non-Plastic (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-5DUP |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0002-GS-AI |
| | | Lab Sample | 37829042 |

Sample Color: **BROWN**
USCS Group Name: **POORLY GRADED SAND**
USCS Group Symbol: **sp** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | |
|---|---|
| Total Sample Wet Wt, gm (-3") | 169 |
| Sample Split on Sieve | No. 4 |
| Coarse Washed Dry Sample, gm | 1 |
| Wet Wt Passing Split, gm | 167 |
| Dry Wt. Passing Split, gm | 143 |
| Total Sample Dry Wt, gm | 145 |

| Split Sample - Passing No. 4 | |
|---|---|
| Tare No. | K7 |
| Tare + WS., gm | 225.03 |
| Tare + DS., gm | 202.34 |
| Tare, gm | 65.75 |
| **Water Content of Split Sample** | **16.6%** |
| Wt. of DS., gm | 136.59 |
| Wt. of +#200 Sample, gm | 136.13 |

| Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | Split Normalized % Finer | Project Specifications |
|---|---|---|---|---|---|
| 3" | 75 | 0 | 0.0% | 100.0% | |
| 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| 2" | 50 | 0 | 0.0% | 100.0% | |
| 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| 1" | 25 | 0 | 0.0% | 100.0% | |
| 3/4" | 19 | 0 | 0.0% | 100.0% | |
| 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| No. 4 | 4.75 | 1.32 | 0.9% | 99.1% | |
| No. 10 | 2 | 10.97 | 8.0% | 91.1% | |
| No. 20 | 0.85 | 40.37 | 29.3% | 61.8% | |
| No. 40 | 0.425 | 51.2 | 37.1% | 24.7% | |
| No. 60 | 0.25 | 28 | 20.3% | 4.4% | |
| No. 140 | 0.106 | 5.53 | 4.0% | 0.4% | |
| No. 200 | 0.075 | 0.06 | 0.0% | 0.3% | |

### *USCS SOIL CLASSIFICATION*

*Corrected For 100% Passing a 3" Sieve*

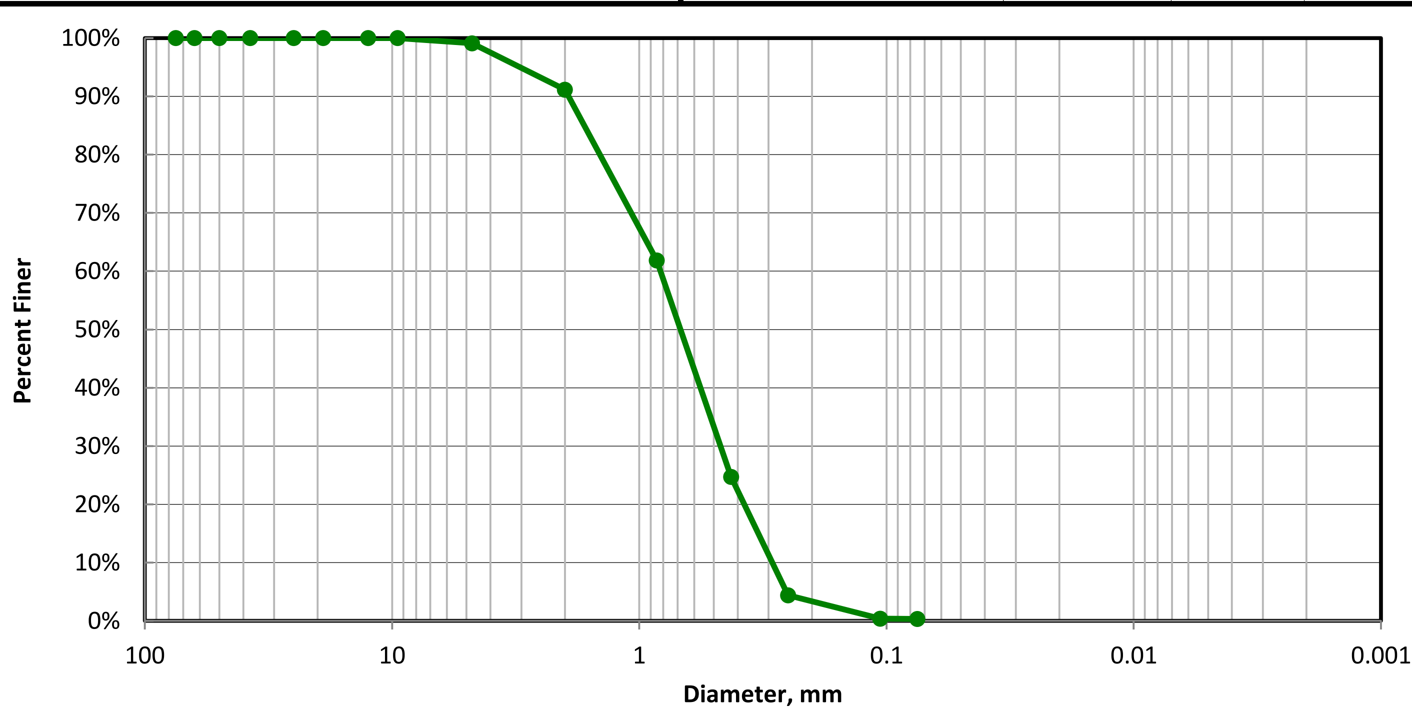
| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **0.9** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=0.9* | | D60, mm | 0.82 |
| **% Sand (-#4 & +#200)** | **98.8** | D30, mm | 0.47 |
| *Coarse=8; Medium=66.4; Fine=24.4* | | D10, mm | 0.29 |
| **% Fines (-#200)** | **0.3** | Cc | 0.93 |
| **% Plus #200 (-3")** | **99.7** | Cu | 2.84 |

**USCS Description**

POORLY GRADED SAND

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| sp | np - Non-Plastic (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-5DUP |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0002-GS-BI |
| | | Lab Sample | 37829043 |

Sample Color: **GRAY**
USCS Group Name: **SILTY SAND**
USCS Group Symbol: **sm** USDA: **NA** AASHTO: **NA**

*MECHANICAL SIEVE*

| Total Sample | | Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | % Finer | Project Specifications |
|---|---|---|---|---|---|---|---|
| Total Sample Wet Wt, gm (-3") | 117 | 3" | 75 | 0 | 0.0% | 100.0% | |
| Sample Split on Sieve | No. 4 | 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| Coarse Washed Dry Sample, gm | 2 | 2" | 50 | 0 | 0.0% | 100.0% | |
| Wet Wt Passing Split, gm | 115 | 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| Dry Wt. Passing Split, gm | 85 | 1" | 25 | 0 | 0.0% | 100.0% | |
| Total Sample Dry Wt, gm | 87 | 3/4" | 19 | 0 | 0.0% | 100.0% | |
| **Split Sample - Passing No. 4** | | 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| Tare No. | K12 | 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| Tare + WS., gm | 175.51 | No. 4 | 4.75 | 1.86 | 2.1% | 97.9% | |
| Tare + DS., gm | 146.43 | No. 10 | 2 | 7.99 | 9.6% | 88.3% | |
| Tare, gm | 64.71 | No. 20 | 0.85 | 10.58 | 12.7% | 75.6% | |
| **Water Content of Split Sample** | **35.6%** | No. 40 | 0.425 | 12.22 | 14.6% | 61.0% | |
| Wt. of DS., gm | 81.72 | No. 60 | 0.25 | 10.88 | 13.0% | 48.0% | |
| | | No. 140 | 0.106 | 11.64 | 13.9% | 34.0% | |
| Wt. of +#200 Sample, gm | 59.51 | No. 200 | 0.075 | 6.2 | 7.4% | 26.6% | |

*USCS SOIL CLASSIFICATION*

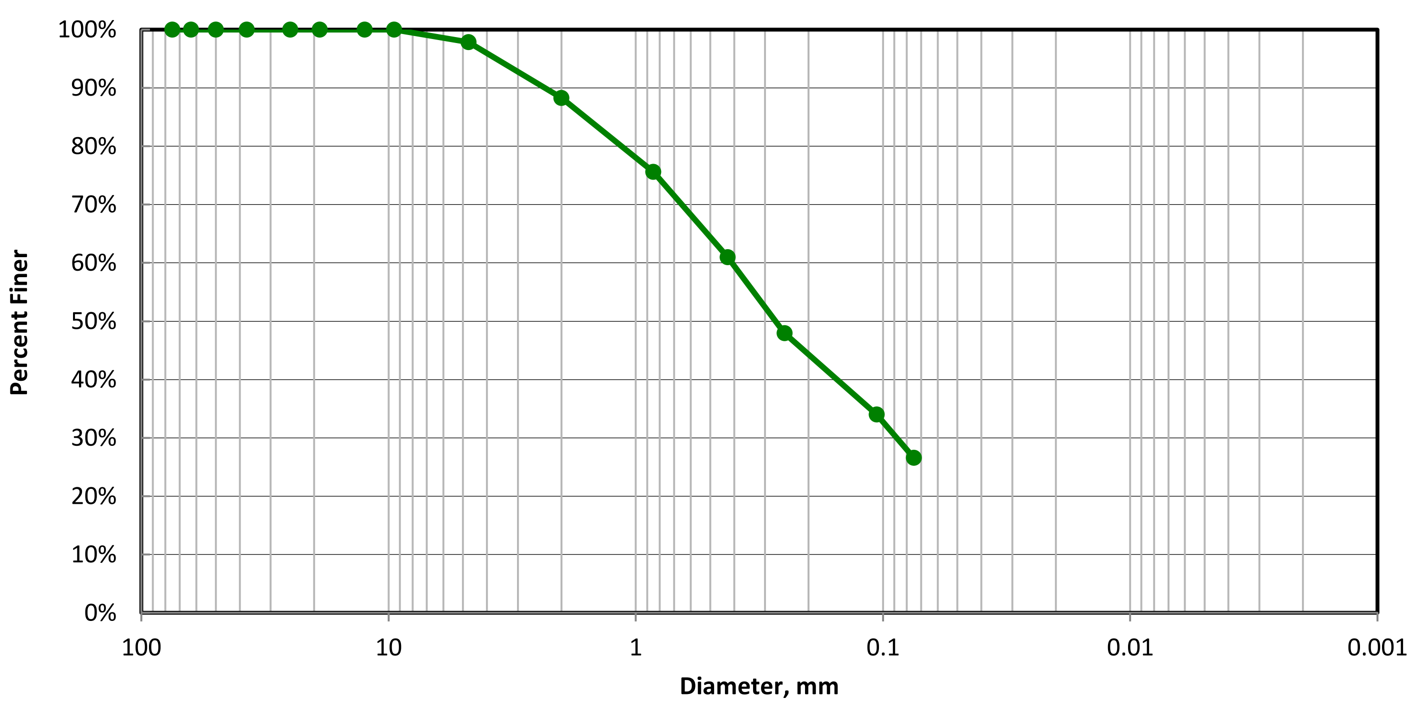
*Corrected For 100% Passing a 3" Sieve*

| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **2.1** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=2.1* | | D60, mm | NA |
| **% Sand (-#4 & +#200)** | **71.3** | D30, mm | NA |
| *Coarse=9.6; Medium=27.3; Fine=34.4* | | D10, mm | NA |
| **% Fines (-#200)** | **26.6** | Cc | NA |
| **% Plus #200 (-3")** | **73.4** | Cu | NA |

**USCS Description**

**SILTY SAND**

| USCS Group Symbol | Atterberg Limits Group Symbol | | |
|---|---|---|---|
| sm | ml - Silt (assumed) | | |
| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

## PARTICLE-SIZE ANALYSIS OF SOILS - ASTM D422

| | | | |
|---|---|---|---|
| Client | Air Water & Soil Laboratories, Inc. | Boring | QT25-1 |
| Client Project | ERDC-EL-EP-C 6082610-44 | Depth | 9-2-16 |
| Project No. | 37829 | Sample | 0002-GS-AI |
| | | Lab Sample | 37829044 |

Sample Color: **BROWN**
USCS Group Name: **POORLY GRADED SAND**
USCS Group Symbol: **sp** USDA: **NA** AASHTO: **NA**

### *MECHANICAL SIEVE*

| Total Sample | | Sieve Size | Nominal Opening, mm | Dry Wt, gm | Split Normalized % Retained | % Finer | Project Specifications |
|---|---|---|---|---|---|---|---|
| Total Sample Wet Wt, gm (-3") | 95 | 3" | 75 | 0 | 0.0% | 100.0% | |
| Sample Split on Sieve | No. 4 | 2-1/2" | 63 | 0 | 0.0% | 100.0% | |
| Coarse Washed Dry Sample, gm | 0 | 2" | 50 | 0 | 0.0% | 100.0% | |
| Wet Wt Passing Split, gm | 94 | 1-1/2" | 37.5 | 0 | 0.0% | 100.0% | |
| Dry Wt. Passing Split, gm | 82 | 1" | 25 | 0 | 0.0% | 100.0% | |
| Total Sample Dry Wt, gm | 82 | 3/4" | 19 | 0 | 0.0% | 100.0% | |
| **Split Sample - Passing No. 4** | | 1/2" | 12.5 | 0 | 0.0% | 100.0% | |
| Tare No. | 454 | 3/8" | 9.5 | 0 | 0.0% | 100.0% | |
| Tare + WS., gm | 174.98 | No. 4 | 4.75 | 0.46 | 0.6% | 99.4% | |
| Tare + DS., gm | 163.05 | No. 10 | 2 | 4.54 | 5.8% | 93.6% | |
| Tare, gm | 85.75 | No. 20 | 0.85 | 18.15 | 23.3% | 70.3% | |
| **Water Content of Split Sample** | **15.4%** | No. 40 | 0.425 | 26.99 | 34.7% | 35.5% | |
| Wt. of DS., gm | 77.30 | No. 60 | 0.25 | 16.25 | 20.9% | 14.6% | |
| | | No. 140 | 0.106 | 8.17 | 10.5% | 4.1% | |
| Wt. of +#200 Sample, gm | 75.87 | No. 200 | 0.075 | 1.77 | 2.3% | 1.8% | |

### *USCS SOIL CLASSIFICATION*

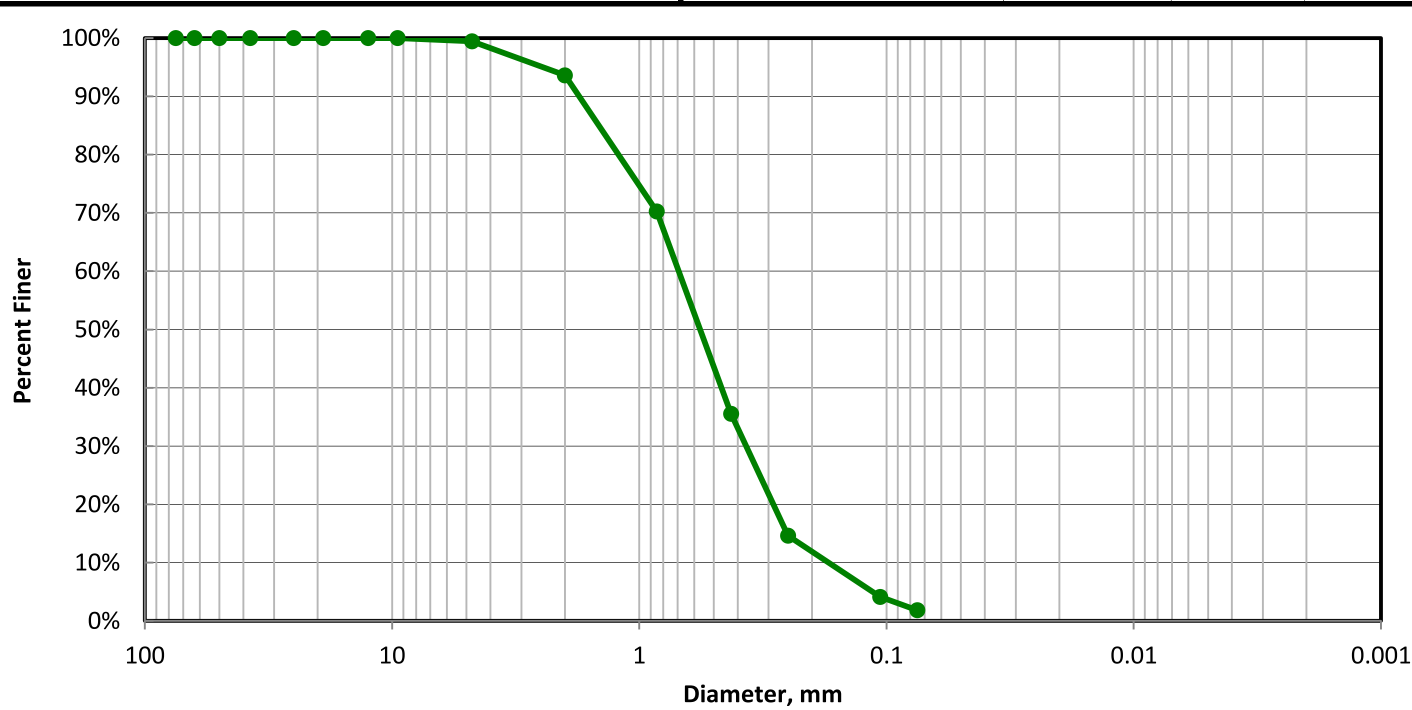
*Corrected For 100% Passing a 3" Sieve*

| | | | |
|---|---|---|---|
| **% Gravel (-3" & +#4)** | **0.6** | Silt=NA Clay=NA | |
| *Coarse=0; Fine=0.6* | | D60, mm | 0.69 |
| **% Sand (-#4 & +#200)** | **97.6** | D30, mm | 0.37 |
| *Coarse=5.8; Medium=58.1; Fine=33.7* | | D10, mm | 0.17 |
| **% Fines (-#200)** | **1.8** | Cc | 1.15 |
| **% Plus #200 (-3")** | **98.2** | Cu | 4.04 |

**USCS Description**
**POORLY GRADED SAND**

| USCS Group Symbol | Atterberg Limits Group Symbol |
|---|---|
| sp | np - Non-Plastic (assumed) |

| Auxiliary Information | Wt Ret, gm | % Retained | % Finer |
|---|---|---|---|
| 12" Sieve - 300 mm | 0 | 0.0 | 100.0 |
| 6" Sieve - 150 mm | 0 | 0.0 | 100.0 |
| 3" Sieve - 75 mm | 0 | 0.0 | 100.0 |




Input Validation tmp Reviewed By: tmp Date Tested 9/6/2016

## Items for Project Manager Review

| LabNumber | Analysis | Analyte | Exception |
|---|---|---|---|

# Appendix E-5

## *Ex Situ* Porewater Chemistry

## Data Compilation, Calculations and Laboratory Reports

**Table 1. Compilation of *ex situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|---|
| Baseline 2 | CAP3 | 2 | 0-2 | Sample | In Cap | B2-CAP03-0002 | In Cap | 2,4′-DDD | 1.086 |
| Baseline 2 | CAP3 | 2 | 0-2 | Sample | In Cap | B2-CAP03-0002 | In Cap | 2,4′-DDE | <0.07 |
| Baseline 2 | CAP3 | 2 | 0-2 | Sample | In Cap | B2-CAP03-0002 | In Cap | 2,4′-DDT | <0.19 |
| Baseline 2 | CAP3 | 2 | 0-2 | Sample | In Cap | B2-CAP03-0002 | In Cap | 4,4′-DDD | 3.443 |
| Baseline 2 | CAP3 | 2 | 0-2 | Sample | In Cap | B2-CAP03-0002 | In Cap | 4,4′-DDE | 0.998 |
| Baseline 2 | CAP3 | 2 | 0-2 | Sample | In Cap | B2-CAP03-0002 | In Cap | 4,4′-DDT | <0.23 |
| Baseline 2 | CAP3 | 2 | 0-2 | Sample | In Cap | B2-CAP03-0002 | In Cap | Total DDX | 5.527 |
| Baseline 2 | CAP3 | 2 | 2-5 | Sample | In Cap | B2-CAP03-0205 | In Cap | 2,4′-DDD | 1.980 |
| Baseline 2 | CAP3 | 2 | 2-5 | Sample | In Cap | B2-CAP03-0205 | In Cap | 2,4′-DDE | <0.07 |
| Baseline 2 | CAP3 | 2 | 2-5 | Sample | In Cap | B2-CAP03-0205 | In Cap | 2,4′-DDT | <0.19 |
| Baseline 2 | CAP3 | 2 | 2-5 | Sample | In Cap | B2-CAP03-0205 | In Cap | 4,4′-DDD | 13.412 |
| Baseline 2 | CAP3 | 2 | 2-5 | Sample | In Cap | B2-CAP03-0205 | In Cap | 4,4′-DDE | 1.200 |
| Baseline 2 | CAP3 | 2 | 2-5 | Sample | In Cap | B2-CAP03-0205 | In Cap | 4,4′-DDT | <0.23 |
| Baseline 2 | CAP3 | 2 | 2-5 | Sample | In Cap | B2-CAP03-0205 | In Cap | Total DDX | 16.592 |
| Baseline 2 | CAP3 | 2 | 5-7 | Sample | In Cap | B2-CAP03-0507 | In Cap | 2,4′-DDD | 0.958 |
| Baseline 2 | CAP3 | 2 | 5-7 | Sample | In Cap | B2-CAP03-0507 | In Cap | 2,4′-DDE | <0.07 |
| Baseline 2 | CAP3 | 2 | 5-7 | Sample | In Cap | B2-CAP03-0507 | In Cap | 2,4′-DDT | <0.19 |
| Baseline 2 | CAP3 | 2 | 5-7 | Sample | In Cap | B2-CAP03-0507 | In Cap | 4,4′-DDD | 8.894 |
| Baseline 2 | CAP3 | 2 | 5-7 | Sample | In Cap | B2-CAP03-0507 | In Cap | 4,4′-DDE | 0.934 |
| Baseline 2 | CAP3 | 2 | 5-7 | Sample | In Cap | B2-CAP03-0507 | In Cap | 4,4′-DDT | <0.23 |
| Baseline 2 | CAP3 | 2 | 5-7 | Sample | In Cap | B2-CAP03-0507 | In Cap | Total DDX | 10.786 |
| Baseline 2 | CAP3 | 2 | 0-10 | Sample | In Cap | B2-CAP3-GRAB | In Cap | 2,4′-DDD | 0.383 |
| Baseline 2 | CAP3 | 2 | 0-10 | Sample | In Cap | B2-CAP3-GRAB | In Cap | 2,4′-DDE | <0.07 |
| Baseline 2 | CAP3 | 2 | 0-10 | Sample | In Cap | B2-CAP3-GRAB | In Cap | 2,4′-DDT | <0.19 |
| Baseline 2 | CAP3 | 2 | 0-10 | Sample | In Cap | B2-CAP3-GRAB | In Cap | 4,4′-DDD | 3.012 |
| Baseline 2 | CAP3 | 2 | 0-10 | Sample | In Cap | B2-CAP3-GRAB | In Cap | 4,4′-DDE | 0.092 |
| Baseline 2 | CAP3 | 2 | 0-10 | Sample | In Cap | B2-CAP3-GRAB | In Cap | 4,4′-DDT | <0.23 |
| Baseline 2 | CAP3 | 2 | 0-10 | Sample | In Cap | B2-CAP3-GRAB | In Cap | Total DDX | 3.487 |
| Baseline 2 | CAP2 | 3 | 0-2 | Sample | In Cap | B2-CAP02-0002 | In Cap | 2,4′-DDD | 0.703 |
| Baseline 2 | CAP2 | 3 | 0-2 | Sample | In Cap | B2-CAP02-0002 | In Cap | 2,4′-DDE | <0.07 |
| Baseline 2 | CAP2 | 3 | 0-2 | Sample | In Cap | B2-CAP02-0002 | In Cap | 2,4′-DDT | <0.19 |
| Baseline 2 | CAP2 | 3 | 0-2 | Sample | In Cap | B2-CAP02-0002 | In Cap | 4,4′-DDD | 6.025 |
| Baseline 2 | CAP2 | 3 | 0-2 | Sample | In Cap | B2-CAP02-0002 | In Cap | 4,4′-DDE | 0.678 |
| Baseline 2 | CAP2 | 3 | 0-2 | Sample | In Cap | B2-CAP02-0002 | In Cap | 4,4′-DDT | <0.23 |
| Baseline 2 | CAP2 | 3 | 0-2 | Sample | In Cap | B2-CAP02-0002 | In Cap | Total DDX | 7.405 |
| Baseline 2 | CAP2 | 3 | 2-5 | Sample | In Cap | B2-CAP02-0205 | In Cap | 2,4′-DDD | 1.277 |
| Baseline 2 | CAP2 | 3 | 2-5 | Sample | In Cap | B2-CAP02-0205 | In Cap | 2,4′-DDE | <0.07 |
| Baseline 2 | CAP2 | 3 | 2-5 | Sample | In Cap | B2-CAP02-0205 | In Cap | 2,4′-DDT | <0.19 |
| Baseline 2 | CAP2 | 3 | 2-5 | Sample | In Cap | B2-CAP02-0205 | In Cap | 4,4′-DDD | 6.312 |
| Baseline 2 | CAP2 | 3 | 2-5 | Sample | In Cap | B2-CAP02-0205 | In Cap | 4,4′-DDE | 0.284 |
| Baseline 2 | CAP2 | 3 | 2-5 | Sample | In Cap | B2-CAP02-0205 | In Cap | 4,4′-DDT | <0.23 |
| Baseline 2 | CAP2 | 3 | 2-5 | Sample | In Cap | B2-CAP02-0205 | In Cap | Total DDX | 7.873 |
| Baseline 2 | CAP2 | 3 | 5-7 | Sample | In Cap | B2-CAP02-0507 | In Cap | 2,4′-DDD | 2.342 |
| Baseline 2 | CAP2 | 3 | 5-7 | Sample | In Cap | B2-CAP02-0507 | In Cap | 2,4′-DDE | <0.08 |
| Baseline 2 | CAP2 | 3 | 5-7 | Sample | In Cap | B2-CAP02-0507 | In Cap | 2,4′-DDT | <0.22 |
| Baseline 2 | CAP2 | 3 | 5-7 | Sample | In Cap | B2-CAP02-0507 | In Cap | 4,4′-DDD | 3.825 |
| Baseline 2 | CAP2 | 3 | 5-7 | Sample | In Cap | B2-CAP02-0507 | In Cap | 4,4′-DDE | 0.570 |
| Baseline 2 | CAP2 | 3 | 5-7 | Sample | In Cap | B2-CAP02-0507 | In Cap | 4,4′-DDT | <0.26 |
| Baseline 2 | CAP2 | 3 | 5-7 | Sample | In Cap | B2-CAP02-0507 | In Cap | Total DDX | 6.737 |
| Baseline 2 | CAP2 | 3 | 0-10 | Sample | In Cap | B2-CAP2-GRAB | In Cap | 2,4′-DDD | 0.909 |

**Table 1. Compilation of *ex situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|---|
| Baseline 2 | CAP2 | 3 | 0-10 | Sample | In Cap | B2-CAP2-GRAB | In Cap | 2,4′-DDE | <0.08 |
| Baseline 2 | CAP2 | 3 | 0-10 | Sample | In Cap | B2-CAP2-GRAB | In Cap | 2,4′-DDT | <0.2 |
| Baseline 2 | CAP2 | 3 | 0-10 | Sample | In Cap | B2-CAP2-GRAB | In Cap | 4,4′-DDD | 1.459 |
| Baseline 2 | CAP2 | 3 | 0-10 | Sample | In Cap | B2-CAP2-GRAB | In Cap | 4,4′-DDE | 1.174 |
| Baseline 2 | CAP2 | 3 | 0-10 | Sample | In Cap | B2-CAP2-GRAB | In Cap | 4,4′-DDT | <0.24 |
| Baseline 2 | CAP2 | 3 | 0-10 | Sample | In Cap | B2-CAP2-GRAB | In Cap | Total DDX | 3.542 |
| Baseline 2 | CAP1 | 5 | 0-2 | Primary | In Cap | B2-CAP01-0002 | In Cap | 2,4′-DDD | <1.15 |
| Baseline 2 | CAP1 | 5 | 0-2 | Primary | In Cap | B2-CAP01-0002 | In Cap | 2,4′-DDE | <0.07 |
| Baseline 2 | CAP1 | 5 | 0-2 | Primary | In Cap | B2-CAP01-0002 | In Cap | 2,4′-DDT | <0.19 |
| Baseline 2 | CAP1 | 5 | 0-2 | Primary | In Cap | B2-CAP01-0002 | In Cap | 4,4′-DDD | 3.371 |
| Baseline 2 | CAP1 | 5 | 0-2 | Primary | In Cap | B2-CAP01-0002 | In Cap | 4,4′-DDE | 1.090 |
| Baseline 2 | CAP1 | 5 | 0-2 | Primary | In Cap | B2-CAP01-0002 | In Cap | 4,4′-DDT | <0.23 |
| Baseline 2 | CAP1 | 5 | 0-2 | Primary | In Cap | B2-CAP01-0002 | In Cap | Total DDX | 4.461 |
| Baseline 2 | CAP1 | 5 | 0-2 | Sample | In Cap | B2-CAP01-0002-Avg | In Cap | 2,4′-DDD | <1.15 |
| Baseline 2 | CAP1 | 5 | 0-2 | Sample | In Cap | B2-CAP01-0002-Avg | In Cap | 2,4′-DDE | <0.07 |
| Baseline 2 | CAP1 | 5 | 0-2 | Sample | In Cap | B2-CAP01-0002-Avg | In Cap | 2,4′-DDT | <0.19 |
| Baseline 2 | CAP1 | 5 | 0-2 | Sample | In Cap | B2-CAP01-0002-Avg | In Cap | 4,4′-DDD | 2.15 |
| Baseline 2 | CAP1 | 5 | 0-2 | Sample | In Cap | B2-CAP01-0002-Avg | In Cap | 4,4′-DDE | 0.86 |
| Baseline 2 | CAP1 | 5 | 0-2 | Sample | In Cap | B2-CAP01-0002-Avg | In Cap | 4,4′-DDT | <0.23 |
| Baseline 2 | CAP1 | 5 | 0-2 | Sample | In Cap | B2-CAP01-0002-Avg | In Cap | Total DDX | 3.01 |
| Baseline 2 | CAP1 | 5 | 2-5 | Primary | In Cap | B2-CAP01-0205 | In Cap | 2,4′-DDD | <1.24 |
| Baseline 2 | CAP1 | 5 | 2-5 | Primary | In Cap | B2-CAP01-0205 | In Cap | 2,4′-DDE | <0.08 |
| Baseline 2 | CAP1 | 5 | 2-5 | Primary | In Cap | B2-CAP01-0205 | In Cap | 2,4′-DDT | <0.21 |
| Baseline 2 | CAP1 | 5 | 2-5 | Primary | In Cap | B2-CAP01-0205 | In Cap | 4,4′-DDD | 1.851 |
| Baseline 2 | CAP1 | 5 | 2-5 | Primary | In Cap | B2-CAP01-0205 | In Cap | 4,4′-DDE | 0.325 |
| Baseline 2 | CAP1 | 5 | 2-5 | Primary | In Cap | B2-CAP01-0205 | In Cap | 4,4′-DDT | <0.25 |
| Baseline 2 | CAP1 | 5 | 2-5 | Primary | In Cap | B2-CAP01-0205 | In Cap | Total DDX | 2.176 |
| Baseline 2 | CAP1 | 5 | 2-5 | Sample | In Cap | B2-CAP01-0205-Avg | In Cap | 2,4′-DDD | 0.44 |
| Baseline 2 | CAP1 | 5 | 2-5 | Sample | In Cap | B2-CAP01-0205-Avg | In Cap | 2,4′-DDE | <0.08 |
| Baseline 2 | CAP1 | 5 | 2-5 | Sample | In Cap | B2-CAP01-0205-Avg | In Cap | 2,4′-DDT | <0.21 |
| Baseline 2 | CAP1 | 5 | 2-5 | Sample | In Cap | B2-CAP01-0205-Avg | In Cap | 4,4′-DDD | 1.36 |
| Baseline 2 | CAP1 | 5 | 2-5 | Sample | In Cap | B2-CAP01-0205-Avg | In Cap | 4,4′-DDE | 0.84 |
| Baseline 2 | CAP1 | 5 | 2-5 | Sample | In Cap | B2-CAP01-0205-Avg | In Cap | 4,4′-DDT | <0.25 |
| Baseline 2 | CAP1 | 5 | 2-5 | Sample | In Cap | B2-CAP01-0205-Avg | In Cap | Total DDX | 2.63 |
| Baseline 2 | CAP1 | 5 | 5-7 | Primary | In Cap | B2-CAP01-0507 | In Cap | 2,4′-DDD | 0.128 |
| Baseline 2 | CAP1 | 5 | 5-7 | Primary | In Cap | B2-CAP01-0507 | In Cap | 2,4′-DDE | <0.07 |
| Baseline 2 | CAP1 | 5 | 5-7 | Primary | In Cap | B2-CAP01-0507 | In Cap | 2,4′-DDT | <0.19 |
| Baseline 2 | CAP1 | 5 | 5-7 | Primary | In Cap | B2-CAP01-0507 | In Cap | 4,4′-DDD | 1.219 |
| Baseline 2 | CAP1 | 5 | 5-7 | Primary | In Cap | B2-CAP01-0507 | In Cap | 4,4′-DDE | 0.971 |
| Baseline 2 | CAP1 | 5 | 5-7 | Primary | In Cap | B2-CAP01-0507 | In Cap | 4,4′-DDT | <0.23 |
| Baseline 2 | CAP1 | 5 | 5-7 | Primary | In Cap | B2-CAP01-0507 | In Cap | Total DDX | 2.318 |
| Baseline 2 | CAP1 | 5 | 5-7 | Sample | In Cap | B2-CAP01-0507-Avg | In Cap | 2,4′-DDD | 0.35 |
| Baseline 2 | CAP1 | 5 | 5-7 | Sample | In Cap | B2-CAP01-0507-Avg | In Cap | 2,4′-DDE | <0.07 |
| Baseline 2 | CAP1 | 5 | 5-7 | Sample | In Cap | B2-CAP01-0507-Avg | In Cap | 2,4′-DDT | <0.19 |
| Baseline 2 | CAP1 | 5 | 5-7 | Sample | In Cap | B2-CAP01-0507-Avg | In Cap | 4,4′-DDD | 1.97 |
| Baseline 2 | CAP1 | 5 | 5-7 | Sample | In Cap | B2-CAP01-0507-Avg | In Cap | 4,4′-DDE | 0.70 |
| Baseline 2 | CAP1 | 5 | 5-7 | Sample | In Cap | B2-CAP01-0507-Avg | In Cap | 4,4′-DDT | <0.23 |
| Baseline 2 | CAP1 | 5 | 5-7 | Sample | In Cap | B2-CAP01-0507-Avg | In Cap | Total DDX | 3.02 |
| Baseline 2 | CAP1 | 5 | 0-10 | Sample | In Cap | B2-CAP1-GRAB | In Cap | 2,4′-DDD | <1.15 |

**Table 1. Compilation of *ex situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|---|
| Baseline 2 | CAP1 | 5 | 0-10 | Sample | In Cap | B2-CAP1-GRAB | In Cap | 2,4´-DDE | <0.07 |
| Baseline 2 | CAP1 | 5 | 0-10 | Sample | In Cap | B2-CAP1-GRAB | In Cap | 2,4´-DDT | <0.19 |
| Baseline 2 | CAP1 | 5 | 0-10 | Sample | In Cap | B2-CAP1-GRAB | In Cap | 4,4´-DDD | 5.092 |
| Baseline 2 | CAP1 | 5 | 0-10 | Sample | In Cap | B2-CAP1-GRAB | In Cap | 4,4´-DDE | 0.101 |
| Baseline 2 | CAP1 | 5 | 0-10 | Sample | In Cap | B2-CAP1-GRAB | In Cap | 4,4´-DDT | 2.120 |
| Baseline 2 | CAP1 | 5 | 0-10 | Sample | In Cap | B2-CAP1-GRAB | In Cap | Total DDX | 7.313 |
| Baseline 2 | CAP1 | 5 | 0-2 | Duplicate | In Cap | B2-CAPX-0002 | In Cap | 2,4´-DDD | <1.15 |
| Baseline 2 | CAP1 | 5 | 0-2 | Duplicate | In Cap | B2-CAPX-0002 | In Cap | 2,4´-DDE | <0.07 |
| Baseline 2 | CAP1 | 5 | 0-2 | Duplicate | In Cap | B2-CAPX-0002 | In Cap | 2,4´-DDT | <0.19 |
| Baseline 2 | CAP1 | 5 | 0-2 | Duplicate | In Cap | B2-CAPX-0002 | In Cap | 4,4´-DDD | 0.932 |
| Baseline 2 | CAP1 | 5 | 0-2 | Duplicate | In Cap | B2-CAPX-0002 | In Cap | 4,4´-DDE | 0.632 |
| Baseline 2 | CAP1 | 5 | 0-2 | Duplicate | In Cap | B2-CAPX-0002 | In Cap | 4,4´-DDT | <0.23 |
| Baseline 2 | CAP1 | 5 | 0-2 | Duplicate | In Cap | B2-CAPX-0002 | In Cap | Total DDX | 1.564 |
| Baseline 2 | CAP1 | 5 | 2-5 | Duplicate | In Cap | B2-CAPX-0205 | In Cap | 2,4´-DDD | 0.255 |
| Baseline 2 | CAP1 | 5 | 2-5 | Duplicate | In Cap | B2-CAPX-0205 | In Cap | 2,4´-DDE | <0.07 |
| Baseline 2 | CAP1 | 5 | 2-5 | Duplicate | In Cap | B2-CAPX-0205 | In Cap | 2,4´-DDT | <0.19 |
| Baseline 2 | CAP1 | 5 | 2-5 | Duplicate | In Cap | B2-CAPX-0205 | In Cap | 4,4´-DDD | 0.861 |
| Baseline 2 | CAP1 | 5 | 2-5 | Duplicate | In Cap | B2-CAPX-0205 | In Cap | 4,4´-DDE | 1.356 |
| Baseline 2 | CAP1 | 5 | 2-5 | Duplicate | In Cap | B2-CAPX-0205 | In Cap | 4,4´-DDT | <0.23 |
| Baseline 2 | CAP1 | 5 | 2-5 | Duplicate | In Cap | B2-CAPX-0205 | In Cap | Total DDX | 2.472 |
| Baseline 2 | CAP1 | 5 | 5-7 | Duplicate | In Cap | B2-CAPX-0507 | In Cap | 2,4´-DDD | <1.15 |
| Baseline 2 | CAP1 | 5 | 5-7 | Duplicate | In Cap | B2-CAPX-0507 | In Cap | 2,4´-DDE | <0.07 |
| Baseline 2 | CAP1 | 5 | 5-7 | Duplicate | In Cap | B2-CAPX-0507 | In Cap | 2,4´-DDT | <0.19 |
| Baseline 2 | CAP1 | 5 | 5-7 | Duplicate | In Cap | B2-CAPX-0507 | In Cap | 4,4´-DDD | 2.725 |
| Baseline 2 | CAP1 | 5 | 5-7 | Duplicate | In Cap | B2-CAPX-0507 | In Cap | 4,4´-DDE | 0.430 |
| Baseline 2 | CAP1 | 5 | 5-7 | Duplicate | In Cap | B2-CAPX-0507 | In Cap | 4,4´-DDT | <0.23 |
| Baseline 2 | CAP1 | 5 | 5-7 | Duplicate | In Cap | B2-CAPX-0507 | In Cap | Total DDX | 3.156 |
| Baseline 2 | OFF2 | 6 | 0-10 | Sample | Off Cap | B2-OFF2-GRAB | Off Cap | 2,4´-DDD | <1.15 |
| Baseline 2 | OFF2 | 6 | 0-10 | Sample | Off Cap | B2-OFF2-GRAB | Off Cap | 2,4´-DDE | <0.07 |
| Baseline 2 | OFF2 | 6 | 0-10 | Sample | Off Cap | B2-OFF2-GRAB | Off Cap | 2,4´-DDT | <0.19 |
| Baseline 2 | OFF2 | 6 | 0-10 | Sample | Off Cap | B2-OFF2-GRAB | Off Cap | 4,4´-DDD | <1.43 |
| Baseline 2 | OFF2 | 6 | 0-10 | Sample | Off Cap | B2-OFF2-GRAB | Off Cap | 4,4´-DDE | <0.08 |
| Baseline 2 | OFF2 | 6 | 0-10 | Sample | Off Cap | B2-OFF2-GRAB | Off Cap | 4,4´-DDT | <0.23 |
| Baseline 2 | OFF2 | 6 | 0-10 | Sample | Off Cap | B2-OFF2-GRAB | Off Cap | Total DDX | <1.43 |
| Baseline 2 | OFF1 | 7 | 0-10 | Sample | Off Cap | B2-OFF1-GRAB | Off Cap | 2,4´-DDD | <1.19 |
| Baseline 2 | OFF1 | 7 | 0-10 | Sample | Off Cap | B2-OFF1-GRAB | Off Cap | 2,4´-DDE | <0.08 |
| Baseline 2 | OFF1 | 7 | 0-10 | Sample | Off Cap | B2-OFF1-GRAB | Off Cap | 2,4´-DDT | <0.2 |
| Baseline 2 | OFF1 | 7 | 0-10 | Sample | Off Cap | B2-OFF1-GRAB | Off Cap | 4,4´-DDD | <1.48 |
| Baseline 2 | OFF1 | 7 | 0-10 | Sample | Off Cap | B2-OFF1-GRAB | Off Cap | 4,4´-DDE | <0.09 |
| Baseline 2 | OFF1 | 7 | 0-10 | Sample | Off Cap | B2-OFF1-GRAB | Off Cap | 4,4´-DDT | <0.24 |
| Baseline 2 | OFF1 | 7 | 0-10 | Sample | Off Cap | B2-OFF1-GRAB | Off Cap | Total DDX | <1.48 |
| 2-Month | 1 | 1 | 0-2 | Sample | In Cap | QT2-1-0002 | In Cap | 2,4´-DDD | <0.412 |
| 2-Month | 1 | 1 | 0-2 | Sample | In Cap | QT2-1-0002 | In Cap | 2,4´-DDE | <0.06 |
| 2-Month | 1 | 1 | 0-2 | Sample | In Cap | QT2-1-0002 | In Cap | 2,4´-DDT | <0.055 |
| 2-Month | 1 | 1 | 0-2 | Sample | In Cap | QT2-1-0002 | In Cap | 4,4´-DDD | 15.403 |
| 2-Month | 1 | 1 | 0-2 | Sample | In Cap | QT2-1-0002 | In Cap | 4,4´-DDE | <0.059 |
| 2-Month | 1 | 1 | 0-2 | Sample | In Cap | QT2-1-0002 | In Cap | 4,4´-DDT | <0.108 |
| 2-Month | 1 | 1 | 0-2 | Sample | In Cap | QT2-1-0002 | In Cap | Total DDX | 15.403 |
| 2-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-1-0002-AI | In Cap | 2,4´-DDD | <0.077 |

**Table 1. Compilation of *ex situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|---|
| 2-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-1-0002-AI | In Cap | 2,4´-DDE | <0.011 |
| 2-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-1-0002-AI | In Cap | 2,4´-DDT | <0.01 |
| 2-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-1-0002-AI | In Cap | 4,4´-DDD | 0.649 |
| 2-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-1-0002-AI | In Cap | 4,4´-DDE | 0.039 |
| 2-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-1-0002-AI | In Cap | 4,4´-DDT | 0.533 |
| 2-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-1-0002-AI | In Cap | Total DDX | 1.221 |
| 2-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0002-BI | In Cap | 2,4´-DDD | <0.393 |
| 2-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0002-BI | In Cap | 2,4´-DDE | <0.057 |
| 2-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0002-BI | In Cap | 2,4´-DDT | <0.052 |
| 2-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0002-BI | In Cap | 4,4´-DDD | 0.588 |
| 2-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0002-BI | In Cap | 4,4´-DDE | <0.056 |
| 2-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0002-BI | In Cap | 4,4´-DDT | <0.103 |
| 2-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0002-BI | In Cap | Total DDX | 0.588 |
| 2-Month | 1 | 1 | 2-5 | Sample | In Cap | QT2-1-0205 | In Cap | 2,4´-DDD | <0.393 |
| 2-Month | 1 | 1 | 2-5 | Sample | In Cap | QT2-1-0205 | In Cap | 2,4´-DDE | 0.086 |
| 2-Month | 1 | 1 | 2-5 | Sample | In Cap | QT2-1-0205 | In Cap | 2,4´-DDT | <0.052 |
| 2-Month | 1 | 1 | 2-5 | Sample | In Cap | QT2-1-0205 | In Cap | 4,4´-DDD | 1.618 |
| 2-Month | 1 | 1 | 2-5 | Sample | In Cap | QT2-1-0205 | In Cap | 4,4´-DDE | 0.235 |
| 2-Month | 1 | 1 | 2-5 | Sample | In Cap | QT2-1-0205 | In Cap | 4,4´-DDT | 0.120 |
| 2-Month | 1 | 1 | 2-5 | Sample | In Cap | QT2-1-0205 | In Cap | Total DDX | 2.059 |
| 2-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0205-BI | In Cap | 2,4´-DDD | <0.395 |
| 2-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0205-BI | In Cap | 2,4´-DDE | <0.058 |
| 2-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0205-BI | In Cap | 2,4´-DDT | <0.052 |
| 2-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0205-BI | In Cap | 4,4´-DDD | 0.812 |
| 2-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0205-BI | In Cap | 4,4´-DDE | <0.057 |
| 2-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0205-BI | In Cap | 4,4´-DDT | <0.103 |
| 2-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0205-BI | In Cap | Total DDX | 0.812 |
| 2-Month | 1 | 1 | 5-7 | Sample | In Cap | QT2-1-0507 | In Cap | 2,4´-DDD | <0.379 |
| 2-Month | 1 | 1 | 5-7 | Sample | In Cap | QT2-1-0507 | In Cap | 2,4´-DDE | <0.055 |
| 2-Month | 1 | 1 | 5-7 | Sample | In Cap | QT2-1-0507 | In Cap | 2,4´-DDT | <0.05 |
| 2-Month | 1 | 1 | 5-7 | Sample | In Cap | QT2-1-0507 | In Cap | 4,4´-DDD | 0.709 |
| 2-Month | 1 | 1 | 5-7 | Sample | In Cap | QT2-1-0507 | In Cap | 4,4´-DDE | <0.054 |
| 2-Month | 1 | 1 | 5-7 | Sample | In Cap | QT2-1-0507 | In Cap | 4,4´-DDT | <0.099 |
| 2-Month | 1 | 1 | 5-7 | Sample | In Cap | QT2-1-0507 | In Cap | Total DDX | 0.709 |
| 2-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0507-BI | In Cap | 2,4´-DDD | <0.378 |
| 2-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0507-BI | In Cap | 2,4´-DDE | <0.055 |
| 2-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0507-BI | In Cap | 2,4´-DDT | <0.05 |
| 2-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0507-BI | In Cap | 4,4´-DDD | 1.201 |
| 2-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0507-BI | In Cap | 4,4´-DDE | <0.054 |
| 2-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0507-BI | In Cap | 4,4´-DDT | <0.099 |
| 2-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-1-0507-BI | In Cap | Total DDX | 1.201 |
| 2-Month | 2 | 2 | 0-2 | Sample | In Cap | QT2-2-0002 | In Cap | 2,4´-DDD | <0.388 |
| 2-Month | 2 | 2 | 0-2 | Sample | In Cap | QT2-2-0002 | In Cap | 2,4´-DDE | <0.057 |
| 2-Month | 2 | 2 | 0-2 | Sample | In Cap | QT2-2-0002 | In Cap | 2,4´-DDT | <0.051 |
| 2-Month | 2 | 2 | 0-2 | Sample | In Cap | QT2-2-0002 | In Cap | 4,4´-DDD | 3.560 |
| 2-Month | 2 | 2 | 0-2 | Sample | In Cap | QT2-2-0002 | In Cap | 4,4´-DDE | <0.056 |
| 2-Month | 2 | 2 | 0-2 | Sample | In Cap | QT2-2-0002 | In Cap | 4,4´-DDT | <0.101 |
| 2-Month | 2 | 2 | 0-2 | Sample | In Cap | QT2-2-0002 | In Cap | Total DDX | 3.560 |
| 2-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-2-0002-AI | In Cap | 2,4´-DDD | 0.629 |

**Table 1. Compilation of *ex situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|---|
| 2-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-2-0002-AI | In Cap | 2,4′-DDE | 0.092 |
| 2-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-2-0002-AI | In Cap | 2,4′-DDT | <0.05 |
| 2-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-2-0002-AI | In Cap | 4,4′-DDD | 5.087 |
| 2-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-2-0002-AI | In Cap | 4,4′-DDE | 0.090 |
| 2-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-2-0002-AI | In Cap | 4,4′-DDT | 0.625 |
| 2-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-2-0002-AI | In Cap | Total DDX | 6.523 |
| 2-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0002-BI | In Cap | 2,4′-DDD | <0.393 |
| 2-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0002-BI | In Cap | 2,4′-DDE | 0.067 |
| 2-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0002-BI | In Cap | 2,4′-DDT | <0.052 |
| 2-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0002-BI | In Cap | 4,4′-DDD | 0.956 |
| 2-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0002-BI | In Cap | 4,4′-DDE | 0.122 |
| 2-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0002-BI | In Cap | 4,4′-DDT | <0.103 |
| 2-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0002-BI | In Cap | Total DDX | 1.145 |
| 2-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0205-BI | In Cap | 2,4′-DDD | <0.382 |
| 2-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0205-BI | In Cap | 2,4′-DDE | 0.074 |
| 2-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0205-BI | In Cap | 2,4′-DDT | <0.051 |
| 2-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0205-BI | In Cap | 4,4′-DDD | 0.786 |
| 2-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0205-BI | In Cap | 4,4′-DDE | <0.055 |
| 2-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0205-BI | In Cap | 4,4′-DDT | <0.1 |
| 2-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0205-BI | In Cap | Total DDX | 0.861 |
| 2-Month | 2 | 2 | 5-7 | Sample | In Cap | QT2-2-0507 | In Cap | 4,4′-DDE | <0.357 |
| 2-Month | 2 | 2 | 5-7 | Sample | In Cap | QT2-2-0507 | In Cap | 4,4′-DDT | <0.65 |
| 2-Month | 2 | 2 | 5-7 | Sample | In Cap | QT2-2-0507 | In Cap | 2,4′-DDD | <2.487 |
| 2-Month | 2 | 2 | 5-7 | Sample | In Cap | QT2-2-0507 | In Cap | 2,4′-DDE | <0.364 |
| 2-Month | 2 | 2 | 5-7 | Sample | In Cap | QT2-2-0507 | In Cap | 2,4′-DDT | <0.33 |
| 2-Month | 2 | 2 | 5-7 | Sample | In Cap | QT2-2-0507 | In Cap | 4,4′-DDD | <2.793 |
| 2-Month | 2 | 2 | 5-7 | Sample | In Cap | QT2-2-0507 | In Cap | Total DDX | <2.793 |
| 2-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0507-BI | In Cap | 2,4′-DDD | <0.388 |
| 2-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0507-BI | In Cap | 2,4′-DDE | 0.123 |
| 2-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0507-BI | In Cap | 2,4′-DDT | <0.051 |
| 2-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0507-BI | In Cap | 4,4′-DDD | 2.107 |
| 2-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0507-BI | In Cap | 4,4′-DDE | 0.167 |
| 2-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0507-BI | In Cap | 4,4′-DDT | 0.152 |
| 2-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-2-0507-BI | In Cap | Total DDX | 2.549 |
| 2-Month | 3 | 3 | 0-2 | Sample | In Cap | QT2-3-0002 | In Cap | 2,4′-DDD | 0.549 |
| 2-Month | 3 | 3 | 0-2 | Sample | In Cap | QT2-3-0002 | In Cap | 2,4′-DDE | 0.161 |
| 2-Month | 3 | 3 | 0-2 | Sample | In Cap | QT2-3-0002 | In Cap | 2,4′-DDT | <0.049 |
| 2-Month | 3 | 3 | 0-2 | Sample | In Cap | QT2-3-0002 | In Cap | 4,4′-DDD | 2.877 |
| 2-Month | 3 | 3 | 0-2 | Sample | In Cap | QT2-3-0002 | In Cap | 4,4′-DDE | 0.639 |
| 2-Month | 3 | 3 | 0-2 | Sample | In Cap | QT2-3-0002 | In Cap | 4,4′-DDT | 0.367 |
| 2-Month | 3 | 3 | 0-2 | Sample | In Cap | QT2-3-0002 | In Cap | Total DDX | 4.591 |
| 2-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-3-0002-AI | In Cap | 2,4′-DDD | <0.347 |
| 2-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-3-0002-AI | In Cap | 2,4′-DDE | <0.051 |
| 2-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-3-0002-AI | In Cap | 2,4′-DDT | <0.046 |
| 2-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-3-0002-AI | In Cap | 4,4′-DDD | 0.936 |
| 2-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-3-0002-AI | In Cap | 4,4′-DDE | 0.070 |
| 2-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-3-0002-AI | In Cap | 4,4′-DDT | 0.163 |
| 2-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-3-0002-AI | In Cap | Total DDX | 1.169 |
| 2-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0002-BI | In Cap | 2,4′-DDD | 1.260 |

**Table 1. Compilation of *ex situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|---|
| 2-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0002-BI | In Cap | 2,4′-DDE | 0.291 |
| 2-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0002-BI | In Cap | 2,4′-DDT | <0.053 |
| 2-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0002-BI | In Cap | 4,4′-DDD | 7.893 |
| 2-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0002-BI | In Cap | 4,4′-DDE | 0.751 |
| 2-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0002-BI | In Cap | 4,4′-DDT | 0.953 |
| 2-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0002-BI | In Cap | Total DDX | 11.148 |
| 2-Month | 3 | 3 | 2-5 | Sample | In Cap | QT2-3-0205 | In Cap | 2,4′-DDD | 1.011 |
| 2-Month | 3 | 3 | 2-5 | Sample | In Cap | QT2-3-0205 | In Cap | 2,4′-DDE | 0.139 |
| 2-Month | 3 | 3 | 2-5 | Sample | In Cap | QT2-3-0205 | In Cap | 2,4′-DDT | <0.05 |
| 2-Month | 3 | 3 | 2-5 | Sample | In Cap | QT2-3-0205 | In Cap | 4,4′-DDD | 3.050 |
| 2-Month | 3 | 3 | 2-5 | Sample | In Cap | QT2-3-0205 | In Cap | 4,4′-DDE | 0.589 |
| 2-Month | 3 | 3 | 2-5 | Sample | In Cap | QT2-3-0205 | In Cap | 4,4′-DDT | 0.347 |
| 2-Month | 3 | 3 | 2-5 | Sample | In Cap | QT2-3-0205 | In Cap | Total DDX | 5.135 |
| 2-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0205-BI | In Cap | 2,4′-DDD | <0.378 |
| 2-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0205-BI | In Cap | 2,4′-DDE | <0.055 |
| 2-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0205-BI | In Cap | 2,4′-DDT | <0.05 |
| 2-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0205-BI | In Cap | 4,4′-DDD | <0.424 |
| 2-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0205-BI | In Cap | 4,4′-DDE | <0.054 |
| 2-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0205-BI | In Cap | 4,4′-DDT | <0.099 |
| 2-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0205-BI | In Cap | Total DDX | <0.424 |
| 2-Month | 3 | 3 | 5-7 | Sample | In Cap | QT2-3-0507 | In Cap | 2,4′-DDD | <0.375 |
| 2-Month | 3 | 3 | 5-7 | Sample | In Cap | QT2-3-0507 | In Cap | 2,4′-DDE | <0.055 |
| 2-Month | 3 | 3 | 5-7 | Sample | In Cap | QT2-3-0507 | In Cap | 2,4′-DDT | <0.05 |
| 2-Month | 3 | 3 | 5-7 | Sample | In Cap | QT2-3-0507 | In Cap | 4,4′-DDD | 0.561 |
| 2-Month | 3 | 3 | 5-7 | Sample | In Cap | QT2-3-0507 | In Cap | 4,4′-DDE | 0.081 |
| 2-Month | 3 | 3 | 5-7 | Sample | In Cap | QT2-3-0507 | In Cap | 4,4′-DDT | <0.098 |
| 2-Month | 3 | 3 | 5-7 | Sample | In Cap | QT2-3-0507 | In Cap | Total DDX | 0.641 |
| 2-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0507-BI | In Cap | 2,4′-DDD | <0.373 |
| 2-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0507-BI | In Cap | 2,4′-DDE | <0.055 |
| 2-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0507-BI | In Cap | 2,4′-DDT | <0.049 |
| 2-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0507-BI | In Cap | 4,4′-DDD | 2.165 |
| 2-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0507-BI | In Cap | 4,4′-DDE | <0.054 |
| 2-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0507-BI | In Cap | 4,4′-DDT | <0.098 |
| 2-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-3-0507-BI | In Cap | Total DDX | 2.165 |
| 2-Month | 4 | 4 | 0-2 | Sample | In Cap | QT2-4-0002 | In Cap | 2,4′-DDD | <0.379 |
| 2-Month | 4 | 4 | 0-2 | Sample | In Cap | QT2-4-0002 | In Cap | 2,4′-DDE | <0.055 |
| 2-Month | 4 | 4 | 0-2 | Sample | In Cap | QT2-4-0002 | In Cap | 2,4′-DDT | <0.05 |
| 2-Month | 4 | 4 | 0-2 | Sample | In Cap | QT2-4-0002 | In Cap | 4,4′-DDD | <0.426 |
| 2-Month | 4 | 4 | 0-2 | Sample | In Cap | QT2-4-0002 | In Cap | 4,4′-DDE | 0.127 |
| 2-Month | 4 | 4 | 0-2 | Sample | In Cap | QT2-4-0002 | In Cap | 4,4′-DDT | <0.099 |
| 2-Month | 4 | 4 | 0-2 | Sample | In Cap | QT2-4-0002 | In Cap | Total DDX | 0.127 |
| 2-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-4-0002-AI | In Cap | 4,4′-DDE | <3.986 |
| 2-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-4-0002-AI | In Cap | 4,4′-DDT | <7.265 |
| 2-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-4-0002-AI | In Cap | 2,4′-DDD | <27.794 |
| 2-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-4-0002-AI | In Cap | 2,4′-DDE | <4.063 |
| 2-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-4-0002-AI | In Cap | 2,4′-DDT | <3.685 |

**Table 1. Compilation of *ex situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|---|
| 2-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-4-0002-AI | In Cap | 4,4′-DDD | <31.209 |
| 2-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-4-0002-AI | In Cap | Total DDX | <31.209 |
| 2-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0002-BI | In Cap | 2,4′-DDD | <0.41 |
| 2-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0002-BI | In Cap | 2,4′-DDE | <0.06 |
| 2-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0002-BI | In Cap | 2,4′-DDT | <0.054 |
| 2-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0002-BI | In Cap | 4,4′-DDD | <0.46 |
| 2-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0002-BI | In Cap | 4,4′-DDE | <0.059 |
| 2-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0002-BI | In Cap | 4,4′-DDT | <0.107 |
| 2-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0002-BI | In Cap | Total DDX | <0.46 |
| 2-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0205-BI | In Cap | 2,4′-DDD | <0.477 |
| 2-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0205-BI | In Cap | 2,4′-DDE | <0.07 |
| 2-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0205-BI | In Cap | 2,4′-DDT | <0.063 |
| 2-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0205-BI | In Cap | 4,4′-DDD | 0.804 |
| 2-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0205-BI | In Cap | 4,4′-DDE | <0.068 |
| 2-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0205-BI | In Cap | 4,4′-DDT | <0.125 |
| 2-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0205-BI | In Cap | Total DDX | 0.804 |
| 2-Month | 4 | 4 | 5-7 | Sample | In Cap | QT2-4-0507 | In Cap | 2,4′-DDD | <0.388 |
| 2-Month | 4 | 4 | 5-7 | Sample | In Cap | QT2-4-0507 | In Cap | 2,4′-DDE | 0.076 |
| 2-Month | 4 | 4 | 5-7 | Sample | In Cap | QT2-4-0507 | In Cap | 2,4′-DDT | <0.051 |
| 2-Month | 4 | 4 | 5-7 | Sample | In Cap | QT2-4-0507 | In Cap | 4,4′-DDD | 0.944 |
| 2-Month | 4 | 4 | 5-7 | Sample | In Cap | QT2-4-0507 | In Cap | 4,4′-DDE | 0.232 |
| 2-Month | 4 | 4 | 5-7 | Sample | In Cap | QT2-4-0507 | In Cap | 4,4′-DDT | <0.101 |
| 2-Month | 4 | 4 | 5-7 | Sample | In Cap | QT2-4-0507 | In Cap | Total DDX | 1.252 |
| 2-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0507-BI | In Cap | 2,4′-DDD | <0.406 |
| 2-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0507-BI | In Cap | 2,4′-DDE | 0.099 |
| 2-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0507-BI | In Cap | 2,4′-DDT | <0.054 |
| 2-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0507-BI | In Cap | 4,4′-DDD | 1.521 |
| 2-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0507-BI | In Cap | 4,4′-DDE | 0.340 |
| 2-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0507-BI | In Cap | 4,4′-DDT | <0.106 |
| 2-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-4-0507-BI | In Cap | Total DDX | 1.960 |
| 2-Month | 5 | 5 | 0-2 | Primary | In Cap | QT2-5-0002 | In Cap | 2,4′-DDD | <0.373 |
| 2-Month | 5 | 5 | 0-2 | Primary | In Cap | QT2-5-0002 | In Cap | 2,4′-DDE | <0.055 |
| 2-Month | 5 | 5 | 0-2 | Primary | In Cap | QT2-5-0002 | In Cap | 2,4′-DDT | <0.049 |
| 2-Month | 5 | 5 | 0-2 | Primary | In Cap | QT2-5-0002 | In Cap | 4,4′-DDD | <0.419 |
| 2-Month | 5 | 5 | 0-2 | Primary | In Cap | QT2-5-0002 | In Cap | 4,4′-DDE | <0.054 |
| 2-Month | 5 | 5 | 0-2 | Primary | In Cap | QT2-5-0002 | In Cap | 4,4′-DDT | <0.098 |
| 2-Month | 5 | 5 | 0-2 | Primary | In Cap | QT2-5-0002 | In Cap | Total DDX | <0.419 |
| 2-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT2-5-0002-AI | In Cap | 2,4′-DDD | <0.387 |
| 2-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT2-5-0002-AI | In Cap | 2,4′-DDE | 0.236 |
| 2-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT2-5-0002-AI | In Cap | 2,4′-DDT | <0.051 |
| 2-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT2-5-0002-AI | In Cap | 4,4′-DDD | 2.171 |
| 2-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT2-5-0002-AI | In Cap | 4,4′-DDE | 0.730 |
| 2-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT2-5-0002-AI | In Cap | 4,4′-DDT | 0.219 |
| 2-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT2-5-0002-AI | In Cap | Total DDX | 3.355 |

**Table 1. Compilation of *ex situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|---|
| 2-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-5-0002-AI-Avg | In Cap | 2,4′-DDD | <2.732 |
| 2-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-5-0002-AI-Avg | In Cap | 2,4′-DDE | 0.35 |
| 2-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-5-0002-AI-Avg | In Cap | 2,4′-DDT | <0.362 |
| 2-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-5-0002-AI-Avg | In Cap | 4,4′-DDD | 3.27 |
| 2-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-5-0002-AI-Avg | In Cap | 4,4′-DDE | 0.77 |
| 2-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-5-0002-AI-Avg | In Cap | 4,4′-DDT | 0.57 |
| 2-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT2-5-0002-AI-Avg | In Cap | Total DDX | 4.97 |
| 2-Month | 5 | 5 | 0-2 | Sample | In Cap | QT2-5-0002-Avg | In Cap | 2,4′-DDD | <0.373 |
| 2-Month | 5 | 5 | 0-2 | Sample | In Cap | QT2-5-0002-Avg | In Cap | 2,4′-DDE | <0.055 |
| 2-Month | 5 | 5 | 0-2 | Sample | In Cap | QT2-5-0002-Avg | In Cap | 2,4′-DDT | <0.049 |
| 2-Month | 5 | 5 | 0-2 | Sample | In Cap | QT2-5-0002-Avg | In Cap | 4,4′-DDD | 0.38 |
| 2-Month | 5 | 5 | 0-2 | Sample | In Cap | QT2-5-0002-Avg | In Cap | 4,4′-DDE | 0.08 |
| 2-Month | 5 | 5 | 0-2 | Sample | In Cap | QT2-5-0002-Avg | In Cap | 4,4′-DDT | <0.098 |
| 2-Month | 5 | 5 | 0-2 | Sample | In Cap | QT2-5-0002-Avg | In Cap | Total DDX | 0.46 |
| 2-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0002-BI | In Cap | 2,4′-DDD | <0.376 |
| 2-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0002-BI | In Cap | 2,4′-DDE | 0.064 |
| 2-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0002-BI | In Cap | 2,4′-DDT | <0.05 |
| 2-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0002-BI | In Cap | 4,4′-DDD | 1.830 |
| 2-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0002-BI | In Cap | 4,4′-DDE | 0.072 |
| 2-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0002-BI | In Cap | 4,4′-DDT | <0.098 |
| 2-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0002-BI | In Cap | Total DDX | 1.966 |
| 2-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0002-BI-Avg | In Cap | 2,4′-DDD | <3.015 |
| 2-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0002-BI-Avg | In Cap | 2,4′-DDE | 0.14 |
| 2-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0002-BI-Avg | In Cap | 2,4′-DDT | <0.4 |
| 2-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0002-BI-Avg | In Cap | 4,4′-DDD | 1.76 |
| 2-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0002-BI-Avg | In Cap | 4,4′-DDE | 0.14 |
| 2-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0002-BI-Avg | In Cap | 4,4′-DDT | <0.788 |
| 2-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0002-BI-Avg | In Cap | Total DDX | 2.05 |
| 2-Month | 5 | 5 | 2-5 | Primary | In Cap | QT2-5-0205 | In Cap | 2,4′-DDD | <0.384 |
| 2-Month | 5 | 5 | 2-5 | Primary | In Cap | QT2-5-0205 | In Cap | 2,4′-DDE | <0.056 |
| 2-Month | 5 | 5 | 2-5 | Primary | In Cap | QT2-5-0205 | In Cap | 2,4′-DDT | <0.051 |
| 2-Month | 5 | 5 | 2-5 | Primary | In Cap | QT2-5-0205 | In Cap | 4,4′-DDD | <0.431 |
| 2-Month | 5 | 5 | 2-5 | Primary | In Cap | QT2-5-0205 | In Cap | 4,4′-DDE | 0.119 |
| 2-Month | 5 | 5 | 2-5 | Primary | In Cap | QT2-5-0205 | In Cap | 4,4′-DDT | <0.1 |
| 2-Month | 5 | 5 | 2-5 | Primary | In Cap | QT2-5-0205 | In Cap | Total DDX | 0.119 |
| 2-Month | 5 | 5 | 2-5 | Sample | In Cap | QT2-5-0205-Avg | In Cap | 2,4′-DDD | <0.384 |
| 2-Month | 5 | 5 | 2-5 | Sample | In Cap | QT2-5-0205-Avg | In Cap | 2,4′-DDE | 0.05 |
| 2-Month | 5 | 5 | 2-5 | Sample | In Cap | QT2-5-0205-Avg | In Cap | 2,4′-DDT | <0.051 |
| 2-Month | 5 | 5 | 2-5 | Sample | In Cap | QT2-5-0205-Avg | In Cap | 4,4′-DDD | 0.53 |
| 2-Month | 5 | 5 | 2-5 | Sample | In Cap | QT2-5-0205-Avg | In Cap | 4,4′-DDE | 0.17 |
| 2-Month | 5 | 5 | 2-5 | Sample | In Cap | QT2-5-0205-Avg | In Cap | 4,4′-DDT | <0.1 |
| 2-Month | 5 | 5 | 2-5 | Sample | In Cap | QT2-5-0205-Avg | In Cap | Total DDX | 0.75 |
| 2-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0205-BI | In Cap | 2,4′-DDD | <0.398 |
| 2-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0205-BI | In Cap | 2,4′-DDE | 0.136 |
| 2-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0205-BI | In Cap | 2,4′-DDT | <0.053 |

**Table 1. Compilation of *ex situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|---|
| 2-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0205-BI | In Cap | 4,4′-DDD | 5.361 |
| 2-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0205-BI | In Cap | 4,4′-DDE | 0.190 |
| 2-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0205-BI | In Cap | 4,4′-DDT | <0.104 |
| 2-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0205-BI | In Cap | Total DDX | 5.687 |
| 2-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0205-BI-Avg | In Cap | 2,4′-DDD | <2.631 |
| 2-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0205-BI-Avg | In Cap | 2,4′-DDE | 0.16 |
| 2-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0205-BI-Avg | In Cap | 2,4′-DDT | <0.349 |
| 2-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0205-BI-Avg | In Cap | 4,4′-DDD | 10.47 |
| 2-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0205-BI-Avg | In Cap | 4,4′-DDE | 0.19 |
| 2-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0205-BI-Avg | In Cap | 4,4′-DDT | <0.688 |
| 2-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0205-BI-Avg | In Cap | Total DDX | 10.82 |
| 2-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0507-BI | In Cap | 2,4′-DDD | <0.391 |
| 2-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0507-BI | In Cap | 2,4′-DDE | 0.076 |
| 2-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0507-BI | In Cap | 2,4′-DDT | <0.052 |
| 2-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0507-BI | In Cap | 4,4′-DDD | 1.758 |
| 2-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0507-BI | In Cap | 4,4′-DDE | 0.112 |
| 2-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0507-BI | In Cap | 4,4′-DDT | <0.102 |
| 2-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT2-5-0507-BI | In Cap | Total DDX | 1.946 |
| 2-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0507-BI-Avg | In Cap | 2,4′-DDD | <2.96 |
| 2-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0507-BI-Avg | In Cap | 2,4′-DDE | 0.15 |
| 2-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0507-BI-Avg | In Cap | 2,4′-DDT | <0.392 |
| 2-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0507-BI-Avg | In Cap | 4,4′-DDD | 1.71 |
| 2-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0507-BI-Avg | In Cap | 4,4′-DDE | 0.29 |
| 2-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0507-BI-Avg | In Cap | 4,4′-DDT | <0.774 |
| 2-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT2-5-0507-BI-Avg | In Cap | Total DDX | 2.15 |
| 2-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT2-5DUP-0002 | In Cap | 2,4′-DDD | <0.367 |
| 2-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT2-5DUP-0002 | In Cap | 2,4′-DDE | <0.054 |
| 2-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT2-5DUP-0002 | In Cap | 2,4′-DDT | <0.049 |
| 2-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT2-5DUP-0002 | In Cap | 4,4′-DDD | 0.550 |
| 2-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT2-5DUP-0002 | In Cap | 4,4′-DDE | 0.132 |
| 2-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT2-5DUP-0002 | In Cap | 4,4′-DDT | <0.096 |
| 2-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT2-5DUP-0002 | In Cap | Total DDX | 0.682 |
| 2-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT2-5DUP-0002-AI | In Cap | 2,4′-DDD | <2.732 |
| 2-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT2-5DUP-0002-AI | In Cap | 2,4′-DDE | 0.469 |
| 2-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT2-5DUP-0002-AI | In Cap | 2,4′-DDT | <0.362 |
| 2-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT2-5DUP-0002-AI | In Cap | 4,4′-DDD | 4.371 |
| 2-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT2-5DUP-0002-AI | In Cap | 4,4′-DDE | 0.813 |
| 2-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT2-5DUP-0002-AI | In Cap | 4,4′-DDT | 0.928 |
| 2-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT2-5DUP-0002-AI | In Cap | Total DDX | 6.582 |
| 2-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0002-BI | In Cap | 2,4′-DDD | <3.015 |
| 2-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0002-BI | In Cap | 2,4′-DDE | <0.441 |
| 2-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0002-BI | In Cap | 2,4′-DDT | <0.4 |
| 2-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0002-BI | In Cap | 4,4′-DDD | <3.386 |
| 2-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0002-BI | In Cap | 4,4′-DDE | <0.432 |
| 2-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0002-BI | In Cap | 4,4′-DDT | <0.788 |
| 2-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0002-BI | In Cap | Total DDX | <3.386 |
| 2-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT2-5DUP-0205 | In Cap | 2,4′-DDD | <0.35 |
| 2-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT2-5DUP-0205 | In Cap | 2,4′-DDE | 0.068 |

**Table 1. Compilation of *ex situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|---|
| 2-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT2-5DUP-0205 | In Cap | 2,4′-DDT | <0.046 |
| 2-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT2-5DUP-0205 | In Cap | 4,4′-DDD | 0.851 |
| 2-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT2-5DUP-0205 | In Cap | 4,4′-DDE | 0.217 |
| 2-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT2-5DUP-0205 | In Cap | 4,4′-DDT | <0.091 |
| 2-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT2-5DUP-0205 | In Cap | Total DDX | 1.137 |
| 2-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0205-BI | In Cap | 2,4′-DDD | <2.631 |
| 2-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0205-BI | In Cap | 2,4′-DDE | <0.385 |
| 2-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0205-BI | In Cap | 2,4′-DDT | <0.349 |
| 2-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0205-BI | In Cap | 4,4′-DDD | 15.582 |
| 2-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0205-BI | In Cap | 4,4′-DDE | <0.377 |
| 2-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0205-BI | In Cap | 4,4′-DDT | <0.688 |
| 2-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0205-BI | In Cap | Total DDX | 15.582 |
| 2-Month | 5 | 5 | 5-7 | Sample | In Cap | QT2-5DUP-0507 | In Cap | 2,4′-DDD | <2.829 |
| 2-Month | 5 | 5 | 5-7 | Sample | In Cap | QT2-5DUP-0507 | In Cap | 2,4′-DDE | <0.414 |
| 2-Month | 5 | 5 | 5-7 | Sample | In Cap | QT2-5DUP-0507 | In Cap | 2,4′-DDT | <0.375 |
| 2-Month | 5 | 5 | 5-7 | Sample | In Cap | QT2-5DUP-0507 | In Cap | 4,4′-DDD | <3.176 |
| 2-Month | 5 | 5 | 5-7 | Sample | In Cap | QT2-5DUP-0507 | In Cap | 4,4′-DDE | <0.406 |
| 2-Month | 5 | 5 | 5-7 | Sample | In Cap | QT2-5DUP-0507 | In Cap | 4,4′-DDT | <0.739 |
| 2-Month | 5 | 5 | 5-7 | Sample | In Cap | QT2-5DUP-0507 | In Cap | Total DDX | <3.176 |
| 2-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0507-BI | In Cap | 2,4′-DDD | <2.96 |
| 2-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0507-BI | In Cap | 2,4′-DDE | <0.433 |
| 2-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0507-BI | In Cap | 2,4′-DDT | <0.392 |
| 2-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0507-BI | In Cap | 4,4′-DDD | <3.323 |
| 2-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0507-BI | In Cap | 4,4′-DDE | 0.467 |
| 2-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0507-BI | In Cap | 4,4′-DDT | <0.774 |
| 2-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT2-5DUP-0507-BI | In Cap | Total DDX | 0.467 |
| 2-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT2-6-GRAB | Off Cap | 2,4′-DDD | <0.327 |
| 2-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT2-6-GRAB | Off Cap | 2,4′-DDE | <0.048 |
| 2-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT2-6-GRAB | Off Cap | 2,4′-DDT | <0.043 |
| 2-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT2-6-GRAB | Off Cap | 4,4′-DDD | 0.735 |
| 2-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT2-6-GRAB | Off Cap | 4,4′-DDE | 0.05635 |
| 2-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT2-6-GRAB | Off Cap | 4,4′-DDT | <0.086 |
| 2-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT2-6-GRAB | Off Cap | Total DDX | 0.792 |
| 2-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT2-7-GRAB | Off Cap | 2,4′-DDD | <0.382 |
| 2-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT2-7-GRAB | Off Cap | 2,4′-DDE | <0.056 |
| 2-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT2-7-GRAB | Off Cap | 2,4′-DDT | <0.051 |
| 2-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT2-7-GRAB | Off Cap | 4,4′-DDD | <0.429 |
| 2-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT2-7-GRAB | Off Cap | 4,4′-DDE | <0.055 |
| 2-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT2-7-GRAB | Off Cap | 4,4′-DDT | <0.1 |
| 2-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT2-7-GRAB | Off Cap | Total DDX | <0.429 |
| 14-Month | 1 | 1 | 0-2 | Sample | In Cap | QT12-1-0002 | In Cap | 2,4′-DDD | <0.333 |
| 14-Month | 1 | 1 | 0-2 | Sample | In Cap | QT12-1-0002 | In Cap | 2,4′-DDE | <0.049 |
| 14-Month | 1 | 1 | 0-2 | Sample | In Cap | QT12-1-0002 | In Cap | 2,4′-DDT | <0.044 |
| 14-Month | 1 | 1 | 0-2 | Sample | In Cap | QT12-1-0002 | In Cap | 4,4′-DDD | 0.972 |
| 14-Month | 1 | 1 | 0-2 | Sample | In Cap | QT12-1-0002 | In Cap | 4,4′-DDE | 0.229 |

**Table 1. Compilation of *ex situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|---|
| 14-Month | 1 | 1 | 0-2 | Sample | In Cap | QT12-1-0002 | In Cap | 4,4′-DDT | <0.087 |
| 14-Month | 1 | 1 | 0-2 | Sample | In Cap | QT12-1-0002 | In Cap | Total DDX | 1.201 |
| 14-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-1-0002-AI | In Cap | 2,4′-DDD | <0.341 |
| 14-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-1-0002-AI | In Cap | 2,4′-DDE | <0.05 |
| 14-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-1-0002-AI | In Cap | 2,4′-DDT | <0.045 |
| 14-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-1-0002-AI | In Cap | 4,4′-DDD | 7.899 |
| 14-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-1-0002-AI | In Cap | 4,4′-DDE | 0.176 |
| 14-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-1-0002-AI | In Cap | 4,4′-DDT | <0.089 |
| 14-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-1-0002-AI | In Cap | Total DDX | 8.075 |
| 14-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0002-BI | In Cap | 2,4′-DDD | 0.688 |
| 14-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0002-BI | In Cap | 2,4′-DDE | 0.201 |
| 14-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0002-BI | In Cap | 2,4′-DDT | <0.051 |
| 14-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0002-BI | In Cap | 4,4′-DDD | 13.137 |
| 14-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0002-BI | In Cap | 4,4′-DDE | 0.362 |
| 14-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0002-BI | In Cap | 4,4′-DDT | 5.456 |
| 14-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0002-BI | In Cap | Total DDX | 19.844 |
| 14-Month | 1 | 1 | 2-5 | Sample | In Cap | QT12-1-0205 | In Cap | 2,4′-DDD | 0.520 |
| 14-Month | 1 | 1 | 2-5 | Sample | In Cap | QT12-1-0205 | In Cap | 2,4′-DDE | <0.047 |
| 14-Month | 1 | 1 | 2-5 | Sample | In Cap | QT12-1-0205 | In Cap | 2,4′-DDT | <0.043 |
| 14-Month | 1 | 1 | 2-5 | Sample | In Cap | QT12-1-0205 | In Cap | 4,4′-DDD | 4.742 |
| 14-Month | 1 | 1 | 2-5 | Sample | In Cap | QT12-1-0205 | In Cap | 4,4′-DDE | 0.512 |
| 14-Month | 1 | 1 | 2-5 | Sample | In Cap | QT12-1-0205 | In Cap | 4,4′-DDT | 0.458 |
| 14-Month | 1 | 1 | 2-5 | Sample | In Cap | QT12-1-0205 | In Cap | Total DDX | 6.232 |
| 14-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0205-BI | In Cap | 2,4′-DDD | 1.125 |
| 14-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0205-BI | In Cap | 2,4′-DDE | 0.230 |
| 14-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0205-BI | In Cap | 2,4′-DDT | <0.05 |
| 14-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0205-BI | In Cap | 4,4′-DDD | 2.275 |
| 14-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0205-BI | In Cap | 4,4′-DDE | 0.452 |
| 14-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0205-BI | In Cap | 4,4′-DDT | 0.922 |
| 14-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0205-BI | In Cap | Total DDX | 5.004 |
| 14-Month | 1 | 1 | 5-7 | Sample | In Cap | QT12-1-0507 | In Cap | 2,4′-DDD | <0.346 |
| 14-Month | 1 | 1 | 5-7 | Sample | In Cap | QT12-1-0507 | In Cap | 2,4′-DDE | <0.051 |
| 14-Month | 1 | 1 | 5-7 | Sample | In Cap | QT12-1-0507 | In Cap | 2,4′-DDT | <0.046 |
| 14-Month | 1 | 1 | 5-7 | Sample | In Cap | QT12-1-0507 | In Cap | 4,4′-DDD | 1.787 |
| 14-Month | 1 | 1 | 5-7 | Sample | In Cap | QT12-1-0507 | In Cap | 4,4′-DDE | 0.427 |
| 14-Month | 1 | 1 | 5-7 | Sample | In Cap | QT12-1-0507 | In Cap | 4,4′-DDT | <0.09 |
| 14-Month | 1 | 1 | 5-7 | Sample | In Cap | QT12-1-0507 | In Cap | Total DDX | 2.213 |
| 14-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0507-BI | In Cap | 2,4′-DDD | <0.441 |
| 14-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0507-BI | In Cap | 2,4′-DDE | <0.065 |
| 14-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0507-BI | In Cap | 2,4′-DDT | <0.059 |
| 14-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0507-BI | In Cap | 4,4′-DDD | 12.790 |
| 14-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0507-BI | In Cap | 4,4′-DDE | 0.266 |
| 14-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0507-BI | In Cap | 4,4′-DDT | 0.877 |
| 14-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-1-0507-BI | In Cap | Total DDX | 13.932 |
| 14-Month | 2 | 2 | 0-2 | Sample | In Cap | QT12-2-0002 | In Cap | 2,4′-DDD | 0.505 |
| 14-Month | 2 | 2 | 0-2 | Sample | In Cap | QT12-2-0002 | In Cap | 2,4′-DDE | <0.046 |
| 14-Month | 2 | 2 | 0-2 | Sample | In Cap | QT12-2-0002 | In Cap | 2,4′-DDT | <0.042 |
| 14-Month | 2 | 2 | 0-2 | Sample | In Cap | QT12-2-0002 | In Cap | 4,4′-DDD | 5.462 |
| 14-Month | 2 | 2 | 0-2 | Sample | In Cap | QT12-2-0002 | In Cap | 4,4′-DDE | 0.245 |

**Table 1. Compilation of *ex situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|---|
| 14-Month | 2 | 2 | 0-2 | Sample | In Cap | QT12-2-0002 | In Cap | 4,4′-DDT | <0.083 |
| 14-Month | 2 | 2 | 0-2 | Sample | In Cap | QT12-2-0002 | In Cap | Total DDX | 6.211 |
| 14-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-2-0002-AI | In Cap | 2,4′-DDD | <0.357 |
| 14-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-2-0002-AI | In Cap | 2,4′-DDE | 0.094 |
| 14-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-2-0002-AI | In Cap | 2,4′-DDT | <0.047 |
| 14-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-2-0002-AI | In Cap | 4,4′-DDD | 2.403 |
| 14-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-2-0002-AI | In Cap | 4,4′-DDE | 0.174 |
| 14-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-2-0002-AI | In Cap | 4,4′-DDT | <0.093 |
| 14-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-2-0002-AI | In Cap | Total DDX | 2.671 |
| 14-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0002-BI | In Cap | 2,4′-DDD | <0.47 |
| 14-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0002-BI | In Cap | 2,4′-DDE | 0.082 |
| 14-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0002-BI | In Cap | 2,4′-DDT | <0.062 |
| 14-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0002-BI | In Cap | 4,4′-DDD | 4.011 |
| 14-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0002-BI | In Cap | 4,4′-DDE | <0.067 |
| 14-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0002-BI | In Cap | 4,4′-DDT | <0.123 |
| 14-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0002-BI | In Cap | Total DDX | 4.094 |
| 14-Month | 2 | 2 | 2-5 | Sample | In Cap | QT12-2-0205 | In Cap | 2,4′-DDD | 0.776 |
| 14-Month | 2 | 2 | 2-5 | Sample | In Cap | QT12-2-0205 | In Cap | 2,4′-DDE | 0.208 |
| 14-Month | 2 | 2 | 2-5 | Sample | In Cap | QT12-2-0205 | In Cap | 2,4′-DDT | <0.043 |
| 14-Month | 2 | 2 | 2-5 | Sample | In Cap | QT12-2-0205 | In Cap | 4,4′-DDD | 4.432 |
| 14-Month | 2 | 2 | 2-5 | Sample | In Cap | QT12-2-0205 | In Cap | 4,4′-DDE | 0.510 |
| 14-Month | 2 | 2 | 2-5 | Sample | In Cap | QT12-2-0205 | In Cap | 4,4′-DDT | 0.101 |
| 14-Month | 2 | 2 | 2-5 | Sample | In Cap | QT12-2-0205 | In Cap | Total DDX | 6.028 |
| 14-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0205-BI | In Cap | 2,4′-DDD | <0.373 |
| 14-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0205-BI | In Cap | 2,4′-DDE | 0.153 |
| 14-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0205-BI | In Cap | 2,4′-DDT | <0.05 |
| 14-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0205-BI | In Cap | 4,4′-DDD | 2.432 |
| 14-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0205-BI | In Cap | 4,4′-DDE | 0.278 |
| 14-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0205-BI | In Cap | 4,4′-DDT | 0.176 |
| 14-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0205-BI | In Cap | Total DDX | 3.039 |
| 14-Month | 2 | 2 | 5-7 | Sample | In Cap | QT12-2-0507 | In Cap | 2,4′-DDD | 1.109 |
| 14-Month | 2 | 2 | 5-7 | Sample | In Cap | QT12-2-0507 | In Cap | 2,4′-DDE | 0.296 |
| 14-Month | 2 | 2 | 5-7 | Sample | In Cap | QT12-2-0507 | In Cap | 2,4′-DDT | <0.043 |
| 14-Month | 2 | 2 | 5-7 | Sample | In Cap | QT12-2-0507 | In Cap | 4,4′-DDD | 4.761 |
| 14-Month | 2 | 2 | 5-7 | Sample | In Cap | QT12-2-0507 | In Cap | 4,4′-DDE | 0.543 |
| 14-Month | 2 | 2 | 5-7 | Sample | In Cap | QT12-2-0507 | In Cap | 4,4′-DDT | 0.153 |
| 14-Month | 2 | 2 | 5-7 | Sample | In Cap | QT12-2-0507 | In Cap | Total DDX | 6.861 |
| 14-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0507-BI | In Cap | 2,4′-DDD | 0.644 |
| 14-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0507-BI | In Cap | 2,4′-DDE | 0.254 |
| 14-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0507-BI | In Cap | 2,4′-DDT | <0.043 |
| 14-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0507-BI | In Cap | 4,4′-DDD | 3.329 |
| 14-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0507-BI | In Cap | 4,4′-DDE | 0.296 |
| 14-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0507-BI | In Cap | 4,4′-DDT | 0.168 |
| 14-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-2-0507-BI | In Cap | Total DDX | 4.691 |
| 14-Month | 3 | 3 | 0-2 | Sample | In Cap | QT12-3-0002 | In Cap | 2,4′-DDD | 0.813 |
| 14-Month | 3 | 3 | 0-2 | Sample | In Cap | QT12-3-0002 | In Cap | 2,4′-DDE | 0.148 |
| 14-Month | 3 | 3 | 0-2 | Sample | In Cap | QT12-3-0002 | In Cap | 2,4′-DDT | <0.045 |
| 14-Month | 3 | 3 | 0-2 | Sample | In Cap | QT12-3-0002 | In Cap | 4,4′-DDD | 2.965 |
| 14-Month | 3 | 3 | 0-2 | Sample | In Cap | QT12-3-0002 | In Cap | 4,4′-DDE | 0.214 |

**Table 1. Compilation of *ex situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|---|
| 14-Month | 3 | 3 | 0-2 | Sample | In Cap | QT12-3-0002 | In Cap | 4,4′-DDT | 0.159 |
| 14-Month | 3 | 3 | 0-2 | Sample | In Cap | QT12-3-0002 | In Cap | Total DDX | 4.300 |
| 14-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-3-0002-AI | In Cap | 2,4′-DDD | 1.195 |
| 14-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-3-0002-AI | In Cap | 2,4′-DDE | <0.046 |
| 14-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-3-0002-AI | In Cap | 2,4′-DDT | <0.042 |
| 14-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-3-0002-AI | In Cap | 4,4′-DDD | 5.793 |
| 14-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-3-0002-AI | In Cap | 4,4′-DDE | 0.668 |
| 14-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-3-0002-AI | In Cap | 4,4′-DDT | 0.148 |
| 14-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-3-0002-AI | In Cap | Total DDX | 7.804 |
| 14-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0002-BI | In Cap | 2,4′-DDD | 1.547 |
| 14-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0002-BI | In Cap | 2,4′-DDE | 0.264 |
| 14-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0002-BI | In Cap | 2,4′-DDT | <0.043 |
| 14-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0002-BI | In Cap | 4,4′-DDD | 6.078 |
| 14-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0002-BI | In Cap | 4,4′-DDE | 0.296 |
| 14-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0002-BI | In Cap | 4,4′-DDT | 0.472 |
| 14-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0002-BI | In Cap | Total DDX | 8.656 |
| 14-Month | 3 | 3 | 2-5 | Sample | In Cap | QT12-3-0205 | In Cap | 2,4′-DDD | 1.179 |
| 14-Month | 3 | 3 | 2-5 | Sample | In Cap | QT12-3-0205 | In Cap | 2,4′-DDE | 0.144 |
| 14-Month | 3 | 3 | 2-5 | Sample | In Cap | QT12-3-0205 | In Cap | 2,4′-DDT | <0.043 |
| 14-Month | 3 | 3 | 2-5 | Sample | In Cap | QT12-3-0205 | In Cap | 4,4′-DDD | 4.707 |
| 14-Month | 3 | 3 | 2-5 | Sample | In Cap | QT12-3-0205 | In Cap | 4,4′-DDE | 0.160 |
| 14-Month | 3 | 3 | 2-5 | Sample | In Cap | QT12-3-0205 | In Cap | 4,4′-DDT | <0.086 |
| 14-Month | 3 | 3 | 2-5 | Sample | In Cap | QT12-3-0205 | In Cap | Total DDX | 6.189 |
| 14-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0205-BI | In Cap | 2,4′-DDD | 1.390 |
| 14-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0205-BI | In Cap | 2,4′-DDE | 0.244 |
| 14-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0205-BI | In Cap | 2,4′-DDT | <0.046 |
| 14-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0205-BI | In Cap | 4,4′-DDD | 28.166 |
| 14-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0205-BI | In Cap | 4,4′-DDE | 0.737 |
| 14-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0205-BI | In Cap | 4,4′-DDT | 0.745 |
| 14-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0205-BI | In Cap | Total DDX | 31.281 |
| 14-Month | 3 | 3 | 5-7 | Sample | In Cap | QT12-3-0507 | In Cap | 2,4′-DDD | 1.033 |
| 14-Month | 3 | 3 | 5-7 | Sample | In Cap | QT12-3-0507 | In Cap | 2,4′-DDE | 0.141 |
| 14-Month | 3 | 3 | 5-7 | Sample | In Cap | QT12-3-0507 | In Cap | 2,4′-DDT | <0.046 |
| 14-Month | 3 | 3 | 5-7 | Sample | In Cap | QT12-3-0507 | In Cap | 4,4′-DDD | 4.177 |
| 14-Month | 3 | 3 | 5-7 | Sample | In Cap | QT12-3-0507 | In Cap | 4,4′-DDE | 0.148 |
| 14-Month | 3 | 3 | 5-7 | Sample | In Cap | QT12-3-0507 | In Cap | 4,4′-DDT | <0.09 |
| 14-Month | 3 | 3 | 5-7 | Sample | In Cap | QT12-3-0507 | In Cap | Total DDX | 5.499 |
| 14-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0507-BI | In Cap | 2,4′-DDD | 1.015 |
| 14-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0507-BI | In Cap | 2,4′-DDE | <0.046 |
| 14-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0507-BI | In Cap | 2,4′-DDT | <0.042 |
| 14-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0507-BI | In Cap | 4,4′-DDD | 12.889 |
| 14-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0507-BI | In Cap | 4,4′-DDE | 1.155 |
| 14-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0507-BI | In Cap | 4,4′-DDT | 0.298 |
| 14-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-3-0507-BI | In Cap | Total DDX | 15.357 |
| 14-Month | 4 | 4 | 0-2 | Sample | In Cap | QT12-4-0002 | In Cap | 2,4′-DDD | <0.35 |
| 14-Month | 4 | 4 | 0-2 | Sample | In Cap | QT12-4-0002 | In Cap | 2,4′-DDE | <0.051 |
| 14-Month | 4 | 4 | 0-2 | Sample | In Cap | QT12-4-0002 | In Cap | 2,4′-DDT | <0.046 |
| 14-Month | 4 | 4 | 0-2 | Sample | In Cap | QT12-4-0002 | In Cap | 4,4′-DDD | 1.023 |

**Table 1. Compilation of *ex situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|---|
| 14-Month | 4 | 4 | 0-2 | Sample | In Cap | QT12-4-0002 | In Cap | 4,4′-DDE | 0.372 |
| 14-Month | 4 | 4 | 0-2 | Sample | In Cap | QT12-4-0002 | In Cap | 4,4′-DDT | 0.183 |
| 14-Month | 4 | 4 | 0-2 | Sample | In Cap | QT12-4-0002 | In Cap | Total DDX | 1.578 |
| 14-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-4-0002-AI | In Cap | 2,4′-DDD | <0.315 |
| 14-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-4-0002-AI | In Cap | 2,4′-DDE | <0.046 |
| 14-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-4-0002-AI | In Cap | 2,4′-DDT | <0.042 |
| 14-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-4-0002-AI | In Cap | 4,4′-DDD | 1.272 |
| 14-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-4-0002-AI | In Cap | 4,4′-DDE | 0.171 |
| 14-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-4-0002-AI | In Cap | 4,4′-DDT | <0.082 |
| 14-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-4-0002-AI | In Cap | Total DDX | 1.443 |
| 14-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0002-BI | In Cap | 2,4′-DDD | <0.347 |
| 14-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0002-BI | In Cap | 2,4′-DDE | 0.112 |
| 14-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0002-BI | In Cap | 2,4′-DDT | <0.046 |
| 14-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0002-BI | In Cap | 4,4′-DDD | 1.092 |
| 14-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0002-BI | In Cap | 4,4′-DDE | 0.299 |
| 14-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0002-BI | In Cap | 4,4′-DDT | <0.091 |
| 14-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0002-BI | In Cap | Total DDX | 1.503 |
| 14-Month | 4 | 4 | 2-5 | Sample | In Cap | QT12-4-0205 | In Cap | 2,4′-DDD | <0.349 |
| 14-Month | 4 | 4 | 2-5 | Sample | In Cap | QT12-4-0205 | In Cap | 2,4′-DDE | 0.082 |
| 14-Month | 4 | 4 | 2-5 | Sample | In Cap | QT12-4-0205 | In Cap | 2,4′-DDT | <0.046 |
| 14-Month | 4 | 4 | 2-5 | Sample | In Cap | QT12-4-0205 | In Cap | 4,4′-DDD | 1.019 |
| 14-Month | 4 | 4 | 2-5 | Sample | In Cap | QT12-4-0205 | In Cap | 4,4′-DDE | 0.450 |
| 14-Month | 4 | 4 | 2-5 | Sample | In Cap | QT12-4-0205 | In Cap | 4,4′-DDT | <0.091 |
| 14-Month | 4 | 4 | 2-5 | Sample | In Cap | QT12-4-0205 | In Cap | Total DDX | 1.551 |
| 14-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0205-BI | In Cap | 2,4′-DDD | <0.339 |
| 14-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0205-BI | In Cap | 2,4′-DDE | <0.049 |
| 14-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0205-BI | In Cap | 2,4′-DDT | <0.045 |
| 14-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0205-BI | In Cap | 4,4′-DDD | <0.38 |
| 14-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0205-BI | In Cap | 4,4′-DDE | 0.097 |
| 14-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0205-BI | In Cap | 4,4′-DDT | <0.088 |
| 14-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0205-BI | In Cap | Total DDX | 0.097 |
| 14-Month | 4 | 4 | 5-7 | Sample | In Cap | QT12-4-0507 | In Cap | 2,4′-DDD | <0.372 |
| 14-Month | 4 | 4 | 5-7 | Sample | In Cap | QT12-4-0507 | In Cap | 2,4′-DDE | <0.054 |
| 14-Month | 4 | 4 | 5-7 | Sample | In Cap | QT12-4-0507 | In Cap | 2,4′-DDT | <0.049 |
| 14-Month | 4 | 4 | 5-7 | Sample | In Cap | QT12-4-0507 | In Cap | 4,4′-DDD | 1.252 |
| 14-Month | 4 | 4 | 5-7 | Sample | In Cap | QT12-4-0507 | In Cap | 4,4′-DDE | 0.394 |
| 14-Month | 4 | 4 | 5-7 | Sample | In Cap | QT12-4-0507 | In Cap | 4,4′-DDT | 0.350 |
| 14-Month | 4 | 4 | 5-7 | Sample | In Cap | QT12-4-0507 | In Cap | Total DDX | 1.996 |
| 14-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0507-BI | In Cap | 2,4′-DDD | <0.36 |
| 14-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0507-BI | In Cap | 2,4′-DDE | 0.126 |
| 14-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0507-BI | In Cap | 2,4′-DDT | <0.048 |
| 14-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0507-BI | In Cap | 4,4′-DDD | 1.859 |
| 14-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0507-BI | In Cap | 4,4′-DDE | 0.196 |
| 14-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0507-BI | In Cap | 4,4′-DDT | <0.094 |
| 14-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-4-0507-BI | In Cap | Total DDX | 2.182 |
| 14-Month | 5 | 5 | 0-2 | Primary | In Cap | QT12-5-0002 | In Cap | 2,4′-DDD | <0.341 |
| 14-Month | 5 | 5 | 0-2 | Primary | In Cap | QT12-5-0002 | In Cap | 2,4′-DDE | 0.090 |
| 14-Month | 5 | 5 | 0-2 | Primary | In Cap | QT12-5-0002 | In Cap | 2,4′-DDT | <0.045 |
| 14-Month | 5 | 5 | 0-2 | Primary | In Cap | QT12-5-0002 | In Cap | 4,4′-DDD | 0.997 |

**Table 1. Compilation of *ex situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|---|
| 14-Month | 5 | 5 | 0-2 | Primary | In Cap | QT12-5-0002 | In Cap | 4,4′-DDE | 0.372 |
| 14-Month | 5 | 5 | 0-2 | Primary | In Cap | QT12-5-0002 | In Cap | 4,4′-DDT | 0.125 |
| 14-Month | 5 | 5 | 0-2 | Primary | In Cap | QT12-5-0002 | In Cap | Total DDX | 1.584 |
| 14-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT12-5-0002-AI | In Cap | 2,4′-DDD | <0.315 |
| 14-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT12-5-0002-AI | In Cap | 2,4′-DDE | 0.166 |
| 14-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT12-5-0002-AI | In Cap | 2,4′-DDT | <0.042 |
| 14-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT12-5-0002-AI | In Cap | 4,4′-DDD | 1.908 |
| 14-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT12-5-0002-AI | In Cap | 4,4′-DDE | 0.568 |
| 14-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT12-5-0002-AI | In Cap | 4,4′-DDT | 0.115 |
| 14-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT12-5-0002-AI | In Cap | Total DDX | 2.757 |
| 14-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-5-0002-AI-Avg | In Cap | 2,4′-DDD | <0.34 |
| 14-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-5-0002-AI-Avg | In Cap | 2,4′-DDE | 0.10 |
| 14-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-5-0002-AI-Avg | In Cap | 2,4′-DDT | <0.045 |
| 14-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-5-0002-AI-Avg | In Cap | 4,4′-DDD | 1.91 |
| 14-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-5-0002-AI-Avg | In Cap | 4,4′-DDE | 0.48 |
| 14-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-5-0002-AI-Avg | In Cap | 4,4′-DDT | 0.08 |
| 14-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT12-5-0002-AI-Avg | In Cap | Total DDX | 2.56 |
| 14-Month | 5 | 5 | 0-2 | Sample | In Cap | QT12-5-0002-Avg | In Cap | 2,4′-DDD | <0.341 |
| 14-Month | 5 | 5 | 0-2 | Sample | In Cap | QT12-5-0002-Avg | In Cap | 2,4′-DDE | 0.06 |
| 14-Month | 5 | 5 | 0-2 | Sample | In Cap | QT12-5-0002-Avg | In Cap | 2,4′-DDT | <0.045 |
| 14-Month | 5 | 5 | 0-2 | Sample | In Cap | QT12-5-0002-Avg | In Cap | 4,4′-DDD | 0.86 |
| 14-Month | 5 | 5 | 0-2 | Sample | In Cap | QT12-5-0002-Avg | In Cap | 4,4′-DDE | 0.34 |
| 14-Month | 5 | 5 | 0-2 | Sample | In Cap | QT12-5-0002-Avg | In Cap | 4,4′-DDT | 0.08 |
| 14-Month | 5 | 5 | 0-2 | Sample | In Cap | QT12-5-0002-Avg | In Cap | Total DDX | 1.34 |
| 14-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0002-BI | In Cap | 2,4′-DDD | 0.739 |
| 14-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0002-BI | In Cap | 2,4′-DDE | 0.128 |
| 14-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0002-BI | In Cap | 2,4′-DDT | <0.045 |
| 14-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0002-BI | In Cap | 4,4′-DDD | 3.091 |
| 14-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0002-BI | In Cap | 4,4′-DDE | 0.693 |
| 14-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0002-BI | In Cap | 4,4′-DDT | <0.088 |
| 14-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0002-BI | In Cap | Total DDX | 4.651 |
| 14-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0002-BI-Avg | In Cap | 2,4′-DDD | 0.62 |
| 14-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0002-BI-Avg | In Cap | 2,4′-DDE | 0.10 |
| 14-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0002-BI-Avg | In Cap | 2,4′-DDT | <0.045 |
| 14-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0002-BI-Avg | In Cap | 4,4′-DDD | 2.52 |
| 14-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0002-BI-Avg | In Cap | 4,4′-DDE | 0.50 |
| 14-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0002-BI-Avg | In Cap | 4,4′-DDT | <0.088 |
| 14-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0002-BI-Avg | In Cap | Total DDX | 3.73 |
| 14-Month | 5 | 5 | 2-5 | Primary | In Cap | QT12-5-0205 | In Cap | 2,4′-DDD | <0.363 |
| 14-Month | 5 | 5 | 2-5 | Primary | In Cap | QT12-5-0205 | In Cap | 2,4′-DDE | 0.127 |
| 14-Month | 5 | 5 | 2-5 | Primary | In Cap | QT12-5-0205 | In Cap | 2,4′-DDT | <0.048 |
| 14-Month | 5 | 5 | 2-5 | Primary | In Cap | QT12-5-0205 | In Cap | 4,4′-DDD | 1.468 |
| 14-Month | 5 | 5 | 2-5 | Primary | In Cap | QT12-5-0205 | In Cap | 4,4′-DDE | 0.479 |
| 14-Month | 5 | 5 | 2-5 | Primary | In Cap | QT12-5-0205 | In Cap | 4,4′-DDT | <0.095 |
| 14-Month | 5 | 5 | 2-5 | Primary | In Cap | QT12-5-0205 | In Cap | Total DDX | 2.075 |
| 14-Month | 5 | 5 | 2-5 | Sample | In Cap | QT12-5-0205-Avg | In Cap | 2,4′-DDD | <0.363 |
| 14-Month | 5 | 5 | 2-5 | Sample | In Cap | QT12-5-0205-Avg | In Cap | 2,4′-DDE | 0.08 |
| 14-Month | 5 | 5 | 2-5 | Sample | In Cap | QT12-5-0205-Avg | In Cap | 2,4′-DDT | <0.048 |

**Table 1. Compilation of *ex situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|---|
| 14-Month | 5 | 5 | 2-5 | Sample | In Cap | QT12-5-0205-Avg | In Cap | 4,4′-DDD | 1.46 |
| 14-Month | 5 | 5 | 2-5 | Sample | In Cap | QT12-5-0205-Avg | In Cap | 4,4′-DDE | 0.50 |
| 14-Month | 5 | 5 | 2-5 | Sample | In Cap | QT12-5-0205-Avg | In Cap | 4,4′-DDT | 0.07 |
| 14-Month | 5 | 5 | 2-5 | Sample | In Cap | QT12-5-0205-Avg | In Cap | Total DDX | 2.11 |
| 14-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0205-BI | In Cap | 2,4′-DDD | 0.442 |
| 14-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0205-BI | In Cap | 2,4′-DDE | 0.074 |
| 14-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0205-BI | In Cap | 2,4′-DDT | <0.042 |
| 14-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0205-BI | In Cap | 4,4′-DDD | 1.986 |
| 14-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0205-BI | In Cap | 4,4′-DDE | 0.226 |
| 14-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0205-BI | In Cap | 4,4′-DDT | <0.083 |
| 14-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0205-BI | In Cap | Total DDX | 2.729 |
| 14-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0205-BI-Avg | In Cap | 2,4′-DDD | 0.46 |
| 14-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0205-BI-Avg | In Cap | 2,4′-DDE | 0.10 |
| 14-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0205-BI-Avg | In Cap | 2,4′-DDT | <0.045 |
| 14-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0205-BI-Avg | In Cap | 4,4′-DDD | 2.17 |
| 14-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0205-BI-Avg | In Cap | 4,4′-DDE | 0.22 |
| 14-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0205-BI-Avg | In Cap | 4,4′-DDT | <0.088 |
| 14-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0205-BI-Avg | In Cap | Total DDX | 2.95 |
| 14-Month | 5 | 5 | 5-7 | Primary | In Cap | QT12-5-0507 | In Cap | 2,4′-DDD | <0.318 |
| 14-Month | 5 | 5 | 5-7 | Primary | In Cap | QT12-5-0507 | In Cap | 2,4′-DDE | 0.084 |
| 14-Month | 5 | 5 | 5-7 | Primary | In Cap | QT12-5-0507 | In Cap | 2,4′-DDT | <0.042 |
| 14-Month | 5 | 5 | 5-7 | Primary | In Cap | QT12-5-0507 | In Cap | 4,4′-DDD | 1.144 |
| 14-Month | 5 | 5 | 5-7 | Primary | In Cap | QT12-5-0507 | In Cap | 4,4′-DDE | 0.192 |
| 14-Month | 5 | 5 | 5-7 | Primary | In Cap | QT12-5-0507 | In Cap | 4,4′-DDT | <0.083 |
| 14-Month | 5 | 5 | 5-7 | Primary | In Cap | QT12-5-0507 | In Cap | Total DDX | 1.419 |
| 14-Month | 5 | 5 | 5-7 | Sample | In Cap | QT12-5-0507-Avg | In Cap | 2,4′-DDD | <0.325 |
| 14-Month | 5 | 5 | 5-7 | Sample | In Cap | QT12-5-0507-Avg | In Cap | 2,4′-DDE | 0.15 |
| 14-Month | 5 | 5 | 5-7 | Sample | In Cap | QT12-5-0507-Avg | In Cap | 2,4′-DDT | <0.043 |
| 14-Month | 5 | 5 | 5-7 | Sample | In Cap | QT12-5-0507-Avg | In Cap | 4,4′-DDD | 1.99 |
| 14-Month | 5 | 5 | 5-7 | Sample | In Cap | QT12-5-0507-Avg | In Cap | 4,4′-DDE | 0.21 |
| 14-Month | 5 | 5 | 5-7 | Sample | In Cap | QT12-5-0507-Avg | In Cap | 4,4′-DDT | <0.085 |
| 14-Month | 5 | 5 | 5-7 | Sample | In Cap | QT12-5-0507-Avg | In Cap | Total DDX | 2.36 |
| 14-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0507-BI | In Cap | 2,4′-DDD | 0.511 |
| 14-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0507-BI | In Cap | 2,4′-DDE | 0.192 |
| 14-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0507-BI | In Cap | 2,4′-DDT | <0.048 |
| 14-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0507-BI | In Cap | 4,4′-DDD | 7.129 |
| 14-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0507-BI | In Cap | 4,4′-DDE | 0.419 |
| 14-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0507-BI | In Cap | 4,4′-DDT | <0.095 |
| 14-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT12-5-0507-BI | In Cap | Total DDX | 8.250 |
| 14-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0507-BI-Avg | In Cap | 2,4′-DDD | 0.34 |
| 14-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0507-BI-Avg | In Cap | 2,4′-DDE | 0.15 |
| 14-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0507-BI-Avg | In Cap | 2,4′-DDT | <0.048 |
| 14-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0507-BI-Avg | In Cap | 4,4′-DDD | 4.35 |
| 14-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0507-BI-Avg | In Cap | 4,4′-DDE | 0.42 |
| 14-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0507-BI-Avg | In Cap | 4,4′-DDT | <0.095 |
| 14-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT12-5-0507-BI-Avg | In Cap | Total DDX | 5.25 |
| 14-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT12-5DUP-0002 | In Cap | 2,4′-DDD | <0.319 |

**Table 1. Compilation of *ex situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|---|
| 14-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT12-5DUP-0002 | In Cap | 2,4′-DDE | <0.047 |
| 14-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT12-5DUP-0002 | In Cap | 2,4′-DDT | <0.042 |
| 14-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT12-5DUP-0002 | In Cap | 4,4′-DDD | 0.717 |
| 14-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT12-5DUP-0002 | In Cap | 4,4′-DDE | 0.311 |
| 14-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT12-5DUP-0002 | In Cap | 4,4′-DDT | <0.083 |
| 14-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT12-5DUP-0002 | In Cap | Total DDX | 1.029 |
| 14-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT12-5DUP-0002-AI | In Cap | 2,4′-DDD | <0.34 |
| 14-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT12-5DUP-0002-AI | In Cap | 2,4′-DDE | <0.05 |
| 14-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT12-5DUP-0002-AI | In Cap | 2,4′-DDT | <0.045 |
| 14-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT12-5DUP-0002-AI | In Cap | 4,4′-DDD | 1.909 |
| 14-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT12-5DUP-0002-AI | In Cap | 4,4′-DDE | 0.390 |
| 14-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT12-5DUP-0002-AI | In Cap | 4,4′-DDT | <0.089 |
| 14-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT12-5DUP-0002-AI | In Cap | Total DDX | 2.299 |
| 14-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0002-BI | In Cap | 2,4′-DDD | 0.496 |
| 14-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0002-BI | In Cap | 2,4′-DDE | 0.072 |
| 14-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0002-BI | In Cap | 2,4′-DDT | <0.041 |
| 14-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0002-BI | In Cap | 4,4′-DDD | 1.948 |
| 14-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0002-BI | In Cap | 4,4′-DDE | 0.302 |
| 14-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0002-BI | In Cap | 4,4′-DDT | <0.081 |
| 14-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0002-BI | In Cap | Total DDX | 2.818 |
| 14-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT12-5DUP-0205 | In Cap | 2,4′-DDD | <0.325 |
| 14-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT12-5DUP-0205 | In Cap | 2,4′-DDE | <0.047 |
| 14-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT12-5DUP-0205 | In Cap | 2,4′-DDT | <0.043 |
| 14-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT12-5DUP-0205 | In Cap | 4,4′-DDD | 1.459 |
| 14-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT12-5DUP-0205 | In Cap | 4,4′-DDE | 0.522 |
| 14-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT12-5DUP-0205 | In Cap | 4,4′-DDT | 0.102 |
| 14-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT12-5DUP-0205 | In Cap | Total DDX | 2.083 |
| 14-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0205-BI | In Cap | 2,4′-DDD | 0.474 |
| 14-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0205-BI | In Cap | 2,4′-DDE | 0.129 |
| 14-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0205-BI | In Cap | 2,4′-DDT | <0.045 |
| 14-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0205-BI | In Cap | 4,4′-DDD | 2.357 |
| 14-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0205-BI | In Cap | 4,4′-DDE | 0.214 |
| 14-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0205-BI | In Cap | 4,4′-DDT | <0.088 |
| 14-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0205-BI | In Cap | Total DDX | 3.174 |
| 14-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT12-5DUP-0507 | In Cap | 2,4′-DDD | <0.325 |
| 14-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT12-5DUP-0507 | In Cap | 2,4′-DDE | 0.218 |
| 14-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT12-5DUP-0507 | In Cap | 2,4′-DDT | <0.043 |
| 14-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT12-5DUP-0507 | In Cap | 4,4′-DDD | 2.845 |
| 14-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT12-5DUP-0507 | In Cap | 4,4′-DDE | 0.233 |
| 14-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT12-5DUP-0507 | In Cap | 4,4′-DDT | <0.085 |
| 14-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT12-5DUP-0507 | In Cap | Total DDX | 3.296 |
| 14-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0507-BI | In Cap | 2,4′-DDD | <0.32 |
| 14-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0507-BI | In Cap | 2,4′-DDE | 0.103 |
| 14-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0507-BI | In Cap | 2,4′-DDT | <0.042 |
| 14-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0507-BI | In Cap | 4,4′-DDD | 1.579 |
| 14-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0507-BI | In Cap | 4,4′-DDE | 0.413 |
| 14-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0507-BI | In Cap | 4,4′-DDT | <0.084 |
| 14-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT12-5DUP-0507-BI | In Cap | Total DDX | 2.094 |

**Table 1. Compilation of *ex situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|---|
| 14-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT12-6-GRAB | Off Cap | 2,4′-DDD | <0.36 |
| 14-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT12-6-GRAB | Off Cap | 2,4′-DDE | <0.053 |
| 14-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT12-6-GRAB | Off Cap | 2,4′-DDT | <0.048 |
| 14-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT12-6-GRAB | Off Cap | 4,4′-DDD | <0.404 |
| 14-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT12-6-GRAB | Off Cap | 4,4′-DDE | 0.072 |
| 14-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT12-6-GRAB | Off Cap | 4,4′-DDT | <0.094 |
| 14-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT12-6-GRAB | Off Cap | Total DDX | 0.072 |
| 14-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT12-7-GRAB | Off Cap | 2,4′-DDD | <0.344 |
| 14-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT12-7-GRAB | Off Cap | 2,4′-DDE | 0.081 |
| 14-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT12-7-GRAB | Off Cap | 2,4′-DDT | <0.046 |
| 14-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT12-7-GRAB | Off Cap | 4,4′-DDD | <0.387 |
| 14-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT12-7-GRAB | Off Cap | 4,4′-DDE | 0.079 |
| 14-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT12-7-GRAB | Off Cap | 4,4′-DDT | <0.09 |
| 14-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT12-7-GRAB | Off Cap | Total DDX | 0.160 |
| 25-Month | 1 | 1 | 0-2 | Sample | In Cap | QT25-1-0002 | In Cap | 2,4′-DDD | 0.549 |
| 25-Month | 1 | 1 | 0-2 | Sample | In Cap | QT25-1-0002 | In Cap | 2,4′-DDE | 0.140 |
| 25-Month | 1 | 1 | 0-2 | Sample | In Cap | QT25-1-0002 | In Cap | 2,4′-DDT | <0.045 |
| 25-Month | 1 | 1 | 0-2 | Sample | In Cap | QT25-1-0002 | In Cap | 4,4′-DDD | 2.233 |
| 25-Month | 1 | 1 | 0-2 | Sample | In Cap | QT25-1-0002 | In Cap | 4,4′-DDE | 0.325 |
| 25-Month | 1 | 1 | 0-2 | Sample | In Cap | QT25-1-0002 | In Cap | 4,4′-DDT | <0.09 |
| 25-Month | 1 | 1 | 0-2 | Sample | In Cap | QT25-1-0002 | In Cap | Total DDX | 3.247 |
| 25-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-1-0002-AI | In Cap | 2,4′-DDD | 0.661 |
| 25-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-1-0002-AI | In Cap | 2,4′-DDE | 0.158 |
| 25-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-1-0002-AI | In Cap | 2,4′-DDT | <0.04 |
| 25-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-1-0002-AI | In Cap | 4,4′-DDD | 2.833 |
| 25-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-1-0002-AI | In Cap | 4,4′-DDE | 0.474 |
| 25-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-1-0002-AI | In Cap | 4,4′-DDT | 0.110 |
| 25-Month | 1 | 1 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-1-0002-AI | In Cap | Total DDX | 4.236 |
| 25-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0002-BI | In Cap | 2,4′-DDD | 0.499 |
| 25-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0002-BI | In Cap | 2,4′-DDE | 0.119 |
| 25-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0002-BI | In Cap | 2,4′-DDT | <0.041 |
| 25-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0002-BI | In Cap | 4,4′-DDD | 9.393 |
| 25-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0002-BI | In Cap | 4,4′-DDE | 0.331 |
| 25-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0002-BI | In Cap | 4,4′-DDT | 0.343 |
| 25-Month | 1 | 1 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0002-BI | In Cap | Total DDX | 10.685 |
| 25-Month | 1 | 1 | 2-5 | Sample | In Cap | QT25-1-0205 | In Cap | 2,4′-DDD | 0.494 |
| 25-Month | 1 | 1 | 2-5 | Sample | In Cap | QT25-1-0205 | In Cap | 2,4′-DDE | 0.108 |
| 25-Month | 1 | 1 | 2-5 | Sample | In Cap | QT25-1-0205 | In Cap | 2,4′-DDT | <0.041 |
| 25-Month | 1 | 1 | 2-5 | Sample | In Cap | QT25-1-0205 | In Cap | 4,4′-DDD | 1.801 |
| 25-Month | 1 | 1 | 2-5 | Sample | In Cap | QT25-1-0205 | In Cap | 4,4′-DDE | 0.549 |
| 25-Month | 1 | 1 | 2-5 | Sample | In Cap | QT25-1-0205 | In Cap | 4,4′-DDT | 0.306 |
| 25-Month | 1 | 1 | 2-5 | Sample | In Cap | QT25-1-0205 | In Cap | Total DDX | 3.258 |
| 25-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0205-BI | In Cap | 2,4′-DDD | 1.740 |
| 25-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0205-BI | In Cap | 2,4′-DDE | 0.207 |
| 25-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0205-BI | In Cap | 2,4′-DDT | 0.103 |
| 25-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0205-BI | In Cap | 4,4′-DDD | 117.221 |

**Table 1. Compilation of *ex situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|---|
| 25-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0205-BI | In Cap | 4,4´-DDE | 0.397 |
| 25-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0205-BI | In Cap | 4,4´-DDT | 1.314 |
| 25-Month | 1 | 1 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0205-BI | In Cap | Total DDX | 120.982 |
| 25-Month | 1 | 1 | 5-7 | Sample | In Cap | QT25-1-0507 | In Cap | 2,4´-DDD | 0.444 |
| 25-Month | 1 | 1 | 5-7 | Sample | In Cap | QT25-1-0507 | In Cap | 2,4´-DDE | 0.121 |
| 25-Month | 1 | 1 | 5-7 | Sample | In Cap | QT25-1-0507 | In Cap | 2,4´-DDT | <0.042 |
| 25-Month | 1 | 1 | 5-7 | Sample | In Cap | QT25-1-0507 | In Cap | 4,4´-DDD | 3.062 |
| 25-Month | 1 | 1 | 5-7 | Sample | In Cap | QT25-1-0507 | In Cap | 4,4´-DDE | 0.373 |
| 25-Month | 1 | 1 | 5-7 | Sample | In Cap | QT25-1-0507 | In Cap | 4,4´-DDT | 0.116 |
| 25-Month | 1 | 1 | 5-7 | Sample | In Cap | QT25-1-0507 | In Cap | Total DDX | 4.115 |
| 25-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0507-BI | In Cap | 2,4´-DDD | 0.309 |
| 25-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0507-BI | In Cap | 2,4´-DDE | 0.117 |
| 25-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0507-BI | In Cap | 2,4´-DDT | <0.041 |
| 25-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0507-BI | In Cap | 4,4´-DDD | 1.178 |
| 25-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0507-BI | In Cap | 4,4´-DDE | 0.195 |
| 25-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0507-BI | In Cap | 4,4´-DDT | 0.226 |
| 25-Month | 1 | 1 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-1-0507-BI | In Cap | Total DDX | 2.024 |
| 25-Month | 2 | 2 | 0-2 | Sample | In Cap | QT25-2-0002 | In Cap | 2,4´-DDD | <0.339 |
| 25-Month | 2 | 2 | 0-2 | Sample | In Cap | QT25-2-0002 | In Cap | 2,4´-DDE | <0.049 |
| 25-Month | 2 | 2 | 0-2 | Sample | In Cap | QT25-2-0002 | In Cap | 2,4´-DDT | <0.045 |
| 25-Month | 2 | 2 | 0-2 | Sample | In Cap | QT25-2-0002 | In Cap | 4,4´-DDD | 1.217 |
| 25-Month | 2 | 2 | 0-2 | Sample | In Cap | QT25-2-0002 | In Cap | 4,4´-DDE | 0.184 |
| 25-Month | 2 | 2 | 0-2 | Sample | In Cap | QT25-2-0002 | In Cap | 4,4´-DDT | 0.088 |
| 25-Month | 2 | 2 | 0-2 | Sample | In Cap | QT25-2-0002 | In Cap | Total DDX | 1.490 |
| 25-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-2-0002-AI | In Cap | 2,4´-DDD | 0.490 |
| 25-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-2-0002-AI | In Cap | 2,4´-DDE | 0.188 |
| 25-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-2-0002-AI | In Cap | 2,4´-DDT | <0.041 |
| 25-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-2-0002-AI | In Cap | 4,4´-DDD | 59.885 |
| 25-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-2-0002-AI | In Cap | 4,4´-DDE | 0.184 |
| 25-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-2-0002-AI | In Cap | 4,4´-DDT | 0.544 |
| 25-Month | 2 | 2 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-2-0002-AI | In Cap | Total DDX | 61.292 |
| 25-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0002-BI | In Cap | 2,4´-DDD | <0.303 |
| 25-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0002-BI | In Cap | 2,4´-DDE | 0.310 |
| 25-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0002-BI | In Cap | 2,4´-DDT | <0.04 |
| 25-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0002-BI | In Cap | 4,4´-DDD | 9.516 |
| 25-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0002-BI | In Cap | 4,4´-DDE | 0.286 |
| 25-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0002-BI | In Cap | 4,4´-DDT | 3.307 |
| 25-Month | 2 | 2 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0002-BI | In Cap | Total DDX | 13.419 |
| 25-Month | 2 | 2 | 2-5 | Sample | In Cap | QT25-2-0205 | In Cap | 2,4´-DDD | <0.315 |
| 25-Month | 2 | 2 | 2-5 | Sample | In Cap | QT25-2-0205 | In Cap | 2,4´-DDE | <0.046 |
| 25-Month | 2 | 2 | 2-5 | Sample | In Cap | QT25-2-0205 | In Cap | 2,4´-DDT | <0.042 |
| 25-Month | 2 | 2 | 2-5 | Sample | In Cap | QT25-2-0205 | In Cap | 4,4´-DDD | 1.272 |
| 25-Month | 2 | 2 | 2-5 | Sample | In Cap | QT25-2-0205 | In Cap | 4,4´-DDE | 0.298 |
| 25-Month | 2 | 2 | 2-5 | Sample | In Cap | QT25-2-0205 | In Cap | 4,4´-DDT | 0.099 |
| 25-Month | 2 | 2 | 2-5 | Sample | In Cap | QT25-2-0205 | In Cap | Total DDX | 1.668 |
| 25-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0205-BI | In Cap | 2,4´-DDD | <0.309 |
| 25-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0205-BI | In Cap | 2,4´-DDE | 0.271 |

**Table 1. Compilation of *ex situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|---|
| 25-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0205-BI | In Cap | 2,4′-DDT | <0.041 |
| 25-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0205-BI | In Cap | 4,4′-DDD | 11.779 |
| 25-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0205-BI | In Cap | 4,4′-DDE | 0.655 |
| 25-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0205-BI | In Cap | 4,4′-DDT | 2.081 |
| 25-Month | 2 | 2 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0205-BI | In Cap | Total DDX | 14.784 |
| 25-Month | 2 | 2 | 5-7 | Sample | In Cap | QT25-2-0507 | In Cap | 2,4′-DDD | <0.34 |
| 25-Month | 2 | 2 | 5-7 | Sample | In Cap | QT25-2-0507 | In Cap | 2,4′-DDE | 0.408 |
| 25-Month | 2 | 2 | 5-7 | Sample | In Cap | QT25-2-0507 | In Cap | 2,4′-DDT | <0.045 |
| 25-Month | 2 | 2 | 5-7 | Sample | In Cap | QT25-2-0507 | In Cap | 4,4′-DDD | <0.382 |
| 25-Month | 2 | 2 | 5-7 | Sample | In Cap | QT25-2-0507 | In Cap | 4,4′-DDE | 0.332 |
| 25-Month | 2 | 2 | 5-7 | Sample | In Cap | QT25-2-0507 | In Cap | 4,4′-DDT | 4.888 |
| 25-Month | 2 | 2 | 5-7 | Sample | In Cap | QT25-2-0507 | In Cap | Total DDX | 5.627 |
| 25-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0507-BI | In Cap | 2,4′-DDD | <0.326 |
| 25-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0507-BI | In Cap | 2,4′-DDE | 0.200 |
| 25-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0507-BI | In Cap | 2,4′-DDT | <0.043 |
| 25-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0507-BI | In Cap | 4,4′-DDD | 4.761 |
| 25-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0507-BI | In Cap | 4,4′-DDE | 0.514 |
| 25-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0507-BI | In Cap | 4,4′-DDT | 0.511 |
| 25-Month | 2 | 2 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-2-0507-BI | In Cap | Total DDX | 5.987 |
| 25-Month | 3 | 3 | 0-2 | Sample | In Cap | QT25-3-0002 | In Cap | 2,4′-DDD | 0.624 |
| 25-Month | 3 | 3 | 0-2 | Sample | In Cap | QT25-3-0002 | In Cap | 2,4′-DDE | 0.137 |
| 25-Month | 3 | 3 | 0-2 | Sample | In Cap | QT25-3-0002 | In Cap | 2,4′-DDT | <0.041 |
| 25-Month | 3 | 3 | 0-2 | Sample | In Cap | QT25-3-0002 | In Cap | 4,4′-DDD | 2.033 |
| 25-Month | 3 | 3 | 0-2 | Sample | In Cap | QT25-3-0002 | In Cap | 4,4′-DDE | 0.662 |
| 25-Month | 3 | 3 | 0-2 | Sample | In Cap | QT25-3-0002 | In Cap | 4,4′-DDT | 0.082 |
| 25-Month | 3 | 3 | 0-2 | Sample | In Cap | QT25-3-0002 | In Cap | Total DDX | 3.538 |
| 25-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-3-0002-AI | In Cap | 2,4′-DDD | 2.677 |
| 25-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-3-0002-AI | In Cap | 2,4′-DDE | 0.230 |
| 25-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-3-0002-AI | In Cap | 2,4′-DDT | <0.052 |
| 25-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-3-0002-AI | In Cap | 4,4′-DDD | 4.155 |
| 25-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-3-0002-AI | In Cap | 4,4′-DDE | 0.948 |
| 25-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-3-0002-AI | In Cap | 4,4′-DDT | 0.535 |
| 25-Month | 3 | 3 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-3-0002-AI | In Cap | Total DDX | 8.545 |
| 25-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0002-BI | In Cap | 2,4′-DDD | <0.312 |
| 25-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0002-BI | In Cap | 2,4′-DDE | 0.265 |
| 25-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0002-BI | In Cap | 2,4′-DDT | <0.041 |
| 25-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0002-BI | In Cap | 4,4′-DDD | 105.847 |
| 25-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0002-BI | In Cap | 4,4′-DDE | 0.358 |
| 25-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0002-BI | In Cap | 4,4′-DDT | 1.322 |
| 25-Month | 3 | 3 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0002-BI | In Cap | Total DDX | 107.792 |
| 25-Month | 3 | 3 | 2-5 | Sample | In Cap | QT25-3-0205 | In Cap | 2,4′-DDD | <0.336 |
| 25-Month | 3 | 3 | 2-5 | Sample | In Cap | QT25-3-0205 | In Cap | 2,4′-DDE | 0.304 |
| 25-Month | 3 | 3 | 2-5 | Sample | In Cap | QT25-3-0205 | In Cap | 2,4′-DDT | <0.045 |
| 25-Month | 3 | 3 | 2-5 | Sample | In Cap | QT25-3-0205 | In Cap | 4,4′-DDD | 1.885 |

**Table 1. Compilation of *ex situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|---|
| 25-Month | 3 | 3 | 2-5 | Sample | In Cap | QT25-3-0205 | In Cap | 4,4′-DDE | 0.655 |
| 25-Month | 3 | 3 | 2-5 | Sample | In Cap | QT25-3-0205 | In Cap | 4,4′-DDT | 1.615 |
| 25-Month | 3 | 3 | 2-5 | Sample | In Cap | QT25-3-0205 | In Cap | Total DDX | 4.459 |
| 25-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0205-BI | In Cap | 2,4′-DDD | <0.305 |
| 25-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0205-BI | In Cap | 2,4′-DDE | 0.392 |
| 25-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0205-BI | In Cap | 2,4′-DDT | <0.04 |
| 25-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0205-BI | In Cap | 4,4′-DDD | 3.425 |
| 25-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0205-BI | In Cap | 4,4′-DDE | 0.280 |
| 25-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0205-BI | In Cap | 4,4′-DDT | 1.738 |
| 25-Month | 3 | 3 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0205-BI | In Cap | Total DDX | 5.835 |
| 25-Month | 3 | 3 | 5-7 | Sample | In Cap | QT25-3-0507 | In Cap | 2,4′-DDD | 1.057 |
| 25-Month | 3 | 3 | 5-7 | Sample | In Cap | QT25-3-0507 | In Cap | 2,4′-DDE | 0.182 |
| 25-Month | 3 | 3 | 5-7 | Sample | In Cap | QT25-3-0507 | In Cap | 2,4′-DDT | 0.041 |
| 25-Month | 3 | 3 | 5-7 | Sample | In Cap | QT25-3-0507 | In Cap | 4,4′-DDD | 2.933 |
| 25-Month | 3 | 3 | 5-7 | Sample | In Cap | QT25-3-0507 | In Cap | 4,4′-DDE | 0.633 |
| 25-Month | 3 | 3 | 5-7 | Sample | In Cap | QT25-3-0507 | In Cap | 4,4′-DDT | <0.081 |
| 25-Month | 3 | 3 | 5-7 | Sample | In Cap | QT25-3-0507 | In Cap | Total DDX | 4.846 |
| 25-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0507-BI | In Cap | 2,4′-DDD | <0.33 |
| 25-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0507-BI | In Cap | 2,4′-DDE | 0.396 |
| 25-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0507-BI | In Cap | 2,4′-DDT | <0.044 |
| 25-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0507-BI | In Cap | 4,4′-DDD | 2.521 |
| 25-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0507-BI | In Cap | 4,4′-DDE | 0.360 |
| 25-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0507-BI | In Cap | 4,4′-DDT | 0.932 |
| 25-Month | 3 | 3 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-3-0507-BI | In Cap | Total DDX | 4.209 |
| 25-Month | 4 | 4 | 0-2 | Sample | In Cap | QT25-4-0002 | In Cap | 2,4′-DDD | 0.313 |
| 25-Month | 4 | 4 | 0-2 | Sample | In Cap | QT25-4-0002 | In Cap | 2,4′-DDE | 0.064 |
| 25-Month | 4 | 4 | 0-2 | Sample | In Cap | QT25-4-0002 | In Cap | 2,4′-DDT | <0.042 |
| 25-Month | 4 | 4 | 0-2 | Sample | In Cap | QT25-4-0002 | In Cap | 4,4′-DDD | 0.844 |
| 25-Month | 4 | 4 | 0-2 | Sample | In Cap | QT25-4-0002 | In Cap | 4,4′-DDE | 0.171 |
| 25-Month | 4 | 4 | 0-2 | Sample | In Cap | QT25-4-0002 | In Cap | 4,4′-DDT | <0.082 |
| 25-Month | 4 | 4 | 0-2 | Sample | In Cap | QT25-4-0002 | In Cap | Total DDX | 1.393 |
| 25-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-4-0002-AI | In Cap | 2,4′-DDD | <0.3 |
| 25-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-4-0002-AI | In Cap | 2,4′-DDE | <0.044 |
| 25-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-4-0002-AI | In Cap | 2,4′-DDT | <0.04 |
| 25-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-4-0002-AI | In Cap | 4,4′-DDD | 1.079 |
| 25-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-4-0002-AI | In Cap | 4,4′-DDE | 0.233 |
| 25-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-4-0002-AI | In Cap | 4,4′-DDT | <0.079 |
| 25-Month | 4 | 4 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-4-0002-AI | In Cap | Total DDX | 1.312 |
| 25-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0002-BI | In Cap | 2,4′-DDD | 0.306 |
| 25-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0002-BI | In Cap | 2,4′-DDE | 0.054 |
| 25-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0002-BI | In Cap | 2,4′-DDT | <0.041 |
| 25-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0002-BI | In Cap | 4,4′-DDD | 1.650 |
| 25-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0002-BI | In Cap | 4,4′-DDE | 0.193 |
| 25-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0002-BI | In Cap | 4,4′-DDT | <0.08 |

**Table 1. Compilation of *ex situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|---|
| 25-Month | 4 | 4 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0002-BI | In Cap | Total DDX | 2.203 |
| 25-Month | 4 | 4 | 2-5 | Sample | In Cap | QT25-4-0205 | In Cap | 2,4′-DDD | 0.313 |
| 25-Month | 4 | 4 | 2-5 | Sample | In Cap | QT25-4-0205 | In Cap | 2,4′-DDE | 0.092 |
| 25-Month | 4 | 4 | 2-5 | Sample | In Cap | QT25-4-0205 | In Cap | 2,4′-DDT | <0.042 |
| 25-Month | 4 | 4 | 2-5 | Sample | In Cap | QT25-4-0205 | In Cap | 4,4′-DDD | 0.844 |
| 25-Month | 4 | 4 | 2-5 | Sample | In Cap | QT25-4-0205 | In Cap | 4,4′-DDE | 0.324 |
| 25-Month | 4 | 4 | 2-5 | Sample | In Cap | QT25-4-0205 | In Cap | 4,4′-DDT | 0.197 |
| 25-Month | 4 | 4 | 2-5 | Sample | In Cap | QT25-4-0205 | In Cap | Total DDX | 1.770 |
| 25-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0205-BI | In Cap | 2,4′-DDD | <0.35 |
| 25-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0205-BI | In Cap | 2,4′-DDE | 0.082 |
| 25-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0205-BI | In Cap | 2,4′-DDT | <0.046 |
| 25-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0205-BI | In Cap | 4,4′-DDD | 0.708 |
| 25-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0205-BI | In Cap | 4,4′-DDE | 0.201 |
| 25-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0205-BI | In Cap | 4,4′-DDT | 0.128 |
| 25-Month | 4 | 4 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0205-BI | In Cap | Total DDX | 1.120 |
| 25-Month | 4 | 4 | 5-7 | Sample | In Cap | QT25-4-0507 | In Cap | 2,4′-DDD | <0.358 |
| 25-Month | 4 | 4 | 5-7 | Sample | In Cap | QT25-4-0507 | In Cap | 2,4′-DDE | <0.052 |
| 25-Month | 4 | 4 | 5-7 | Sample | In Cap | QT25-4-0507 | In Cap | 2,4′-DDT | <0.048 |
| 25-Month | 4 | 4 | 5-7 | Sample | In Cap | QT25-4-0507 | In Cap | 4,4′-DDD | 2.173 |
| 25-Month | 4 | 4 | 5-7 | Sample | In Cap | QT25-4-0507 | In Cap | 4,4′-DDE | 0.617 |
| 25-Month | 4 | 4 | 5-7 | Sample | In Cap | QT25-4-0507 | In Cap | 4,4′-DDT | 0.244 |
| 25-Month | 4 | 4 | 5-7 | Sample | In Cap | QT25-4-0507 | In Cap | Total DDX | 3.033 |
| 25-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0507-BI | In Cap | 2,4′-DDD | <0.305 |
| 25-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0507-BI | In Cap | 2,4′-DDE | 0.116 |
| 25-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0507-BI | In Cap | 2,4′-DDT | <0.04 |
| 25-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0507-BI | In Cap | 4,4′-DDD | 1.370 |
| 25-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0507-BI | In Cap | 4,4′-DDE | 0.892 |
| 25-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0507-BI | In Cap | 4,4′-DDT | 0.080 |
| 25-Month | 4 | 4 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-4-0507-BI | In Cap | Total DDX | 2.458 |
| 25-Month | 5 | 5 | 0-2 | Primary | In Cap | QT25-5-0002 | In Cap | 2,4′-DDD | <0.299 |
| 25-Month | 5 | 5 | 0-2 | Primary | In Cap | QT25-5-0002 | In Cap | 2,4′-DDE | <0.044 |
| 25-Month | 5 | 5 | 0-2 | Primary | In Cap | QT25-5-0002 | In Cap | 2,4′-DDT | <0.04 |
| 25-Month | 5 | 5 | 0-2 | Primary | In Cap | QT25-5-0002 | In Cap | 4,4′-DDD | 0.672 |
| 25-Month | 5 | 5 | 0-2 | Primary | In Cap | QT25-5-0002 | In Cap | 4,4′-DDE | 0.352 |
| 25-Month | 5 | 5 | 0-2 | Primary | In Cap | QT25-5-0002 | In Cap | 4,4′-DDT | 0.501 |
| 25-Month | 5 | 5 | 0-2 | Primary | In Cap | QT25-5-0002 | In Cap | Total DDX | 1.525 |
| 25-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT25-5-0002-AI | In Cap | 2,4′-DDD | <0.313 |
| 25-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT25-5-0002-AI | In Cap | 2,4′-DDE | <0.046 |
| 25-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT25-5-0002-AI | In Cap | 2,4′-DDT | <0.042 |
| 25-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT25-5-0002-AI | In Cap | 4,4′-DDD | 0.704 |
| 25-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT25-5-0002-AI | In Cap | 4,4′-DDE | 0.368 |
| 25-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT25-5-0002-AI | In Cap | 4,4′-DDT | 0.115 |
| 25-Month | 5 | 5 | 0-2 AI | Primary | Above Cap-Native Sediment Interface | QT25-5-0002-AI | In Cap | Total DDX | 1.187 |
| 25-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-5-0002-AI-Avg | In Cap | 2,4′-DDD | <0.313 |

**Table 1. Compilation of *ex situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|---|
| 25-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-5-0002-AI-Avg | In Cap | 2,4′-DDE | <0.046 |
| 25-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-5-0002-AI-Avg | In Cap | 2,4′-DDT | <0.042 |
| 25-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-5-0002-AI-Avg | In Cap | 4,4′-DDD | 0.44 |
| 25-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-5-0002-AI-Avg | In Cap | 4,4′-DDE | 0.26 |
| 25-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-5-0002-AI-Avg | In Cap | 4,4′-DDT | 0.08 |
| 25-Month | 5 | 5 | 0-2 AI | Sample | Above Cap-Native Sediment Interface | QT25-5-0002-AI-Avg | In Cap | Total DDX | 0.77 |
| 25-Month | 5 | 5 | 0-2 | Sample | In Cap | QT25-5-0002-Avg | In Cap | 2,4′-DDD | <0.319 |
| 25-Month | 5 | 5 | 0-2 | Sample | In Cap | QT25-5-0002-Avg | In Cap | 2,4′-DDE | <0.047 |
| 25-Month | 5 | 5 | 0-2 | Sample | In Cap | QT25-5-0002-Avg | In Cap | 2,4′-DDT | <0.042 |
| 25-Month | 5 | 5 | 0-2 | Sample | In Cap | QT25-5-0002-Avg | In Cap | 4,4′-DDD | 0.43 |
| 25-Month | 5 | 5 | 0-2 | Sample | In Cap | QT25-5-0002-Avg | In Cap | 4,4′-DDE | 0.26 |
| 25-Month | 5 | 5 | 0-2 | Sample | In Cap | QT25-5-0002-Avg | In Cap | 4,4′-DDT | 0.27 |
| 25-Month | 5 | 5 | 0-2 | Sample | In Cap | QT25-5-0002-Avg | In Cap | Total DDX | 0.96 |
| 25-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0002-BI | In Cap | 2,4′-DDD | <0.321 |
| 25-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0002-BI | In Cap | 2,4′-DDE | 0.122 |
| 25-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0002-BI | In Cap | 2,4′-DDT | <0.043 |
| 25-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0002-BI | In Cap | 4,4′-DDD | 1.802 |
| 25-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0002-BI | In Cap | 4,4′-DDE | 0.359 |
| 25-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0002-BI | In Cap | 4,4′-DDT | 0.134 |
| 25-Month | 5 | 5 | 0-2 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0002-BI | In Cap | Total DDX | 2.417 |
| 25-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0002-BI-Avg | In Cap | 2,4′-DDD | 0.23 |
| 25-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0002-BI-Avg | In Cap | 2,4′-DDE | 0.13 |
| 25-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0002-BI-Avg | In Cap | 2,4′-DDT | <0.043 |
| 25-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0002-BI-Avg | In Cap | 4,4′-DDD | 0.99 |
| 25-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0002-BI-Avg | In Cap | 4,4′-DDE | 0.36 |
| 25-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0002-BI-Avg | In Cap | 4,4′-DDT | 0.15 |
| 25-Month | 5 | 5 | 0-2 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0002-BI-Avg | In Cap | Total DDX | 1.86 |
| 25-Month | 5 | 5 | 2-5 | Primary | In Cap | QT25-5-0205 | In Cap | 2,4′-DDD | <0.299 |
| 25-Month | 5 | 5 | 2-5 | Primary | In Cap | QT25-5-0205 | In Cap | 2,4′-DDE | <0.044 |
| 25-Month | 5 | 5 | 2-5 | Primary | In Cap | QT25-5-0205 | In Cap | 2,4′-DDT | <0.04 |
| 25-Month | 5 | 5 | 2-5 | Primary | In Cap | QT25-5-0205 | In Cap | 4,4′-DDD | 0.807 |
| 25-Month | 5 | 5 | 2-5 | Primary | In Cap | QT25-5-0205 | In Cap | 4,4′-DDE | 0.369 |
| 25-Month | 5 | 5 | 2-5 | Primary | In Cap | QT25-5-0205 | In Cap | 4,4′-DDT | 0.094 |
| 25-Month | 5 | 5 | 2-5 | Primary | In Cap | QT25-5-0205 | In Cap | Total DDX | 1.269 |
| 25-Month | 5 | 5 | 2-5 | Sample | In Cap | QT25-5-0205-Avg | In Cap | 2,4′-DDD | <0.299 |
| 25-Month | 5 | 5 | 2-5 | Sample | In Cap | QT25-5-0205-Avg | In Cap | 2,4′-DDE | <0.044 |
| 25-Month | 5 | 5 | 2-5 | Sample | In Cap | QT25-5-0205-Avg | In Cap | 2,4′-DDT | <0.04 |
| 25-Month | 5 | 5 | 2-5 | Sample | In Cap | QT25-5-0205-Avg | In Cap | 4,4′-DDD | 0.77 |
| 25-Month | 5 | 5 | 2-5 | Sample | In Cap | QT25-5-0205-Avg | In Cap | 4,4′-DDE | 0.36 |
| 25-Month | 5 | 5 | 2-5 | Sample | In Cap | QT25-5-0205-Avg | In Cap | 4,4′-DDT | 0.10 |
| 25-Month | 5 | 5 | 2-5 | Sample | In Cap | QT25-5-0205-Avg | In Cap | Total DDX | 1.23 |
| 25-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0205-BI | In Cap | 2,4′-DDD | <0.31 |
| 25-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0205-BI | In Cap | 2,4′-DDE | 0.181 |
| 25-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0205-BI | In Cap | 2,4′-DDT | <0.041 |

**Table 1. Compilation of *ex situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|---|
| 25-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0205-BI | In Cap | 4,4´-DDD | 3.547 |
| 25-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0205-BI | In Cap | 4,4´-DDE | 0.391 |
| 25-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0205-BI | In Cap | 4,4´-DDT | 0.162 |
| 25-Month | 5 | 5 | 2-5 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0205-BI | In Cap | Total DDX | 4.281 |
| 25-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0205-BI-Avg | In Cap | 2,4´-DDD | <0.341 |
| 25-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0205-BI-Avg | In Cap | 2,4´-DDE | 0.16 |
| 25-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0205-BI-Avg | In Cap | 2,4´-DDT | <0.045 |
| 25-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0205-BI-Avg | In Cap | 4,4´-DDD | 3.46 |
| 25-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0205-BI-Avg | In Cap | 4,4´-DDE | 0.30 |
| 25-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0205-BI-Avg | In Cap | 4,4´-DDT | 0.16 |
| 25-Month | 5 | 5 | 2-5 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0205-BI-Avg | In Cap | Total DDX | 4.09 |
| 25-Month | 5 | 5 | 5-7 | Primary | In Cap | QT25-5-0507 | In Cap | 2,4´-DDD | <0.321 |
| 25-Month | 5 | 5 | 5-7 | Primary | In Cap | QT25-5-0507 | In Cap | 2,4´-DDE | <0.047 |
| 25-Month | 5 | 5 | 5-7 | Primary | In Cap | QT25-5-0507 | In Cap | 2,4´-DDT | 1.463 |
| 25-Month | 5 | 5 | 5-7 | Primary | In Cap | QT25-5-0507 | In Cap | 4,4´-DDD | 0.937 |
| 25-Month | 5 | 5 | 5-7 | Primary | In Cap | QT25-5-0507 | In Cap | 4,4´-DDE | 0.267 |
| 25-Month | 5 | 5 | 5-7 | Primary | In Cap | QT25-5-0507 | In Cap | 4,4´-DDT | 2.734 |
| 25-Month | 5 | 5 | 5-7 | Primary | In Cap | QT25-5-0507 | In Cap | Total DDX | 5.402 |
| 25-Month | 5 | 5 | 5-7 | Sample | In Cap | QT25-5-0507-Avg | In Cap | 2,4´-DDD | <0.321 |
| 25-Month | 5 | 5 | 5-7 | Sample | In Cap | QT25-5-0507-Avg | In Cap | 2,4´-DDE | <0.047 |
| 25-Month | 5 | 5 | 5-7 | Sample | In Cap | QT25-5-0507-Avg | In Cap | 2,4´-DDT | 0.74 |
| 25-Month | 5 | 5 | 5-7 | Sample | In Cap | QT25-5-0507-Avg | In Cap | 4,4´-DDD | 1.03 |
| 25-Month | 5 | 5 | 5-7 | Sample | In Cap | QT25-5-0507-Avg | In Cap | 4,4´-DDE | 0.30 |
| 25-Month | 5 | 5 | 5-7 | Sample | In Cap | QT25-5-0507-Avg | In Cap | 4,4´-DDT | 1.57 |
| 25-Month | 5 | 5 | 5-7 | Sample | In Cap | QT25-5-0507-Avg | In Cap | Total DDX | 3.65 |
| 25-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0507-BI | In Cap | 2,4´-DDD | <0.321 |
| 25-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0507-BI | In Cap | 2,4´-DDE | 0.188 |
| 25-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0507-BI | In Cap | 2,4´-DDT | <0.043 |
| 25-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0507-BI | In Cap | 4,4´-DDD | 4.684 |
| 25-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0507-BI | In Cap | 4,4´-DDE | 0.193 |
| 25-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0507-BI | In Cap | 4,4´-DDT | 0.134 |
| 25-Month | 5 | 5 | 5-7 BI | Primary | Below Cap-Native Sediment Interface | QT25-5-0507-BI | In Cap | Total DDX | 5.200 |
| 25-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0507-BI-Avg | In Cap | 2,4´-DDD | <0.321 |
| 25-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0507-BI-Avg | In Cap | 2,4´-DDE | 0.19 |
| 25-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0507-BI-Avg | In Cap | 2,4´-DDT | <0.043 |
| 25-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0507-BI-Avg | In Cap | 4,4´-DDD | 4.88 |
| 25-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0507-BI-Avg | In Cap | 4,4´-DDE | 0.20 |
| 25-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0507-BI-Avg | In Cap | 4,4´-DDT | 0.17 |
| 25-Month | 5 | 5 | 5-7 BI | Sample | Below Cap-Native Sediment Interface | QT25-5-0507-BI-Avg | In Cap | Total DDX | 5.43 |
| 25-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT25-5DUP-0002 | In Cap | 2,4´-DDD | <0.319 |
| 25-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT25-5DUP-0002 | In Cap | 2,4´-DDE | <0.047 |
| 25-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT25-5DUP-0002 | In Cap | 2,4´-DDT | <0.042 |
| 25-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT25-5DUP-0002 | In Cap | 4,4´-DDD | <0.359 |
| 25-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT25-5DUP-0002 | In Cap | 4,4´-DDE | 0.174 |

**Table 1. Compilation of *ex situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|---|
| 25-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT25-5DUP-0002 | In Cap | 4,4′-DDT | <0.083 |
| 25-Month | 5 | 5 | 0-2 | Duplicate | In Cap | QT25-5DUP-0002 | In Cap | Total DDX | 0.174 |
| 25-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT25-5DUP-0002-AI | In Cap | 2,4′-DDD | <0.302 |
| 25-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT25-5DUP-0002-AI | In Cap | 2,4′-DDE | <0.044 |
| 25-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT25-5DUP-0002-AI | In Cap | 2,4′-DDT | <0.04 |
| 25-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT25-5DUP-0002-AI | In Cap | 4,4′-DDD | <0.339 |
| 25-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT25-5DUP-0002-AI | In Cap | 4,4′-DDE | 0.147 |
| 25-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT25-5DUP-0002-AI | In Cap | 4,4′-DDT | <0.079 |
| 25-Month | 5 | 5 | 0-2 AI | Duplicate | Above Cap-Native Sediment Interface | QT25-5DUP-0002-AI | In Cap | Total DDX | 0.147 |
| 25-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0002-BI | In Cap | 2,4′-DDD | 0.304 |
| 25-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0002-BI | In Cap | 2,4′-DDE | 0.133 |
| 25-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0002-BI | In Cap | 2,4′-DDT | <0.04 |
| 25-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0002-BI | In Cap | 4,4′-DDD | <0.341 |
| 25-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0002-BI | In Cap | 4,4′-DDE | 0.366 |
| 25-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0002-BI | In Cap | 4,4′-DDT | 0.175 |
| 25-Month | 5 | 5 | 0-2 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0002-BI | In Cap | Total DDX | 0.978 |
| 25-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT25-5DUP-0205 | In Cap | 2,4′-DDD | <0.299 |
| 25-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT25-5DUP-0205 | In Cap | 2,4′-DDE | <0.044 |
| 25-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT25-5DUP-0205 | In Cap | 2,4′-DDT | <0.04 |
| 25-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT25-5DUP-0205 | In Cap | 4,4′-DDD | 0.739 |
| 25-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT25-5DUP-0205 | In Cap | 4,4′-DDE | 0.343 |
| 25-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT25-5DUP-0205 | In Cap | 4,4′-DDT | 0.110 |
| 25-Month | 5 | 5 | 2-5 | Duplicate | In Cap | QT25-5DUP-0205 | In Cap | Total DDX | 1.192 |
| 25-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0205-BI | In Cap | 2,4′-DDD | <0.341 |
| 25-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0205-BI | In Cap | 2,4′-DDE | 0.140 |
| 25-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0205-BI | In Cap | 2,4′-DDT | <0.045 |
| 25-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0205-BI | In Cap | 4,4′-DDD | 3.374 |
| 25-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0205-BI | In Cap | 4,4′-DDE | 0.215 |
| 25-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0205-BI | In Cap | 4,4′-DDT | 0.161 |
| 25-Month | 5 | 5 | 2-5 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0205-BI | In Cap | Total DDX | 3.890 |
| 25-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT25-5DUP-0507 | In Cap | 2,4′-DDD | <0.313 |
| 25-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT25-5DUP-0507 | In Cap | 2,4′-DDE | <0.046 |
| 25-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT25-5DUP-0507 | In Cap | 2,4′-DDT | <0.042 |
| 25-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT25-5DUP-0507 | In Cap | 4,4′-DDD | 1.126 |
| 25-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT25-5DUP-0507 | In Cap | 4,4′-DDE | 0.342 |
| 25-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT25-5DUP-0507 | In Cap | 4,4′-DDT | 0.410 |
| 25-Month | 5 | 5 | 5-7 | Duplicate | In Cap | QT25-5DUP-0507 | In Cap | Total DDX | 1.877 |
| 25-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0507-BI | In Cap | 2,4′-DDD | <0.297 |
| 25-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0507-BI | In Cap | 2,4′-DDE | 0.182 |
| 25-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0507-BI | In Cap | 2,4′-DDT | <0.039 |
| 25-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0507-BI | In Cap | 4,4′-DDD | 5.070 |
| 25-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0507-BI | In Cap | 4,4′-DDE | 0.213 |
| 25-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0507-BI | In Cap | 4,4′-DDT | 0.202 |
| 25-Month | 5 | 5 | 5-7 BI | Duplicate | Below Cap-Native Sediment Interface | QT25-5DUP-0507-BI | In Cap | Total DDX | 5.667 |

**Table 1. Compilation of *ex situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | Sample Interval[3] | Sample Type | Sample Interface | Sample ID[4] | Within Cap Footprint? | Analyte[5] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|---|
| 25-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT25-6-GRAB | Off Cap | 2,4′-DDD | <0.302 |
| 25-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT25-6-GRAB | Off Cap | 2,4′-DDE | <0.044 |
| 25-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT25-6-GRAB | Off Cap | 2,4′-DDT | <0.04 |
| 25-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT25-6-GRAB | Off Cap | 4,4′-DDD | <0.339 |
| 25-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT25-6-GRAB | Off Cap | 4,4′-DDE | 0.069 |
| 25-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT25-6-GRAB | Off Cap | 4,4′-DDT | 0.079 |
| 25-Month | 6 | 6 | 0-10 | Sample | Off Cap | QT25-6-GRAB | Off Cap | Total DDX | 0.148 |
| 25-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT25-7-GRAB | Off Cap | 2,4′-DDD | <0.327 |
| 25-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT25-7-GRAB | Off Cap | 2,4′-DDE | <0.048 |
| 25-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT25-7-GRAB | Off Cap | 2,4′-DDT | <0.043 |
| 25-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT25-7-GRAB | Off Cap | 4,4′-DDD | <0.368 |
| 25-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT25-7-GRAB | Off Cap | 4,4′-DDE | <0.047 |
| 25-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT25-7-GRAB | Off Cap | 4,4′-DDT | <0.086 |
| 25-Month | 7 | 7 | 0-10 | Sample | Off Cap | QT25-7-GRAB | Off Cap | Total DDX | <0.368 |

**Notes:**
1. Sample collections dates: Baseline 2 (May, 2009), 2-Month (September, 2014), 14-Month (September, 2015) and 25-Month (August, 2016)
2. Comparison Station IDs align Baseline 2 IDs with subsequent events for analysis purposes.
3. Sample Interval measured relative to sediment water interface or cap-native sediment interface, Above Interface (AI) and Below Interface (BI), as stated in Sample Interface Column.
4. Sample ID's with -Avg suffix represented an average of primary and duplicate samples.
5. Total DDX represents the sum of detected congeners. If all congeners are ND, total DDX is represented as < max DL.

AI: above cap-native sediment interface
BI: below cap-native sediment interface
cm: centimeter(s)
DL: detection limit
ND: not detected
ng/L: nanogram(s) per liter

**Table 2: Field, Laboratory Data and Calculations for SPME Ex-Situ Study during Baseline 2 Event**
SSC Pacific
Quantico, Virginia

| Extract Vial ID | Sample ID | Exposure Time (d) | Fiber Length (cm) | Analyte | Reported Mass on SPME (ng) | Analytical Qualifier | Fiber:Water Partition Coefficient[2] (Kfs, L/L PDMS) | Volume of PDMS on fiber (µL)[2] | [PDMS DDx] (ng/L) | [Freely Dissolved Pore Water DDx] (ng/L)[3] |
|---|---|---|---|---|---|---|---|---|---|---|
| F14 | B2-CAP01-0002 | 14 | 30.0 | 2,4′-DDE | 0.08 | U | 516,595 | 2.073 | < 38,591 | < 0.07 |
| F14 | B2-CAP01-0002 | 14 | 30.0 | 4,4′-DDE | 1.19 | | 526,667 | 2.073 | 574,047 | 1.09 |
| F14 | B2-CAP01-0002 | 14 | 30.0 | 2,4′-DDD | 0.18 | U | 75,521 | 2.073 | < 86,831 | < 1.15 |
| F14 | B2-CAP01-0002 | 14 | 30.0 | 4,4′-DDD | 0.47 | | 67,258 | 2.073 | 226,725 | 3.37 |
| F14 | B2-CAP01-0002 | 14 | 30.0 | 2,4′-DDT | 0.23 | U | 569,687 | 2.073 | < 110,950 | < 0.19 |
| F14 | B2-CAP01-0002 | 14 | 30.0 | 4,4′-DDT | 0.14 | U | 288,937 | 2.073 | < 67,535 | < 0.23 |
| F15 | B2-CAP01-0205 | 14 | 27.9 | 2,4′-DDE | 0.08 | U | 516,595 | 1.928 | < 41,496 | < 0.08 |
| F15 | B2-CAP01-0205 | 14 | 27.9 | 4,4′-DDE | 0.33 | | 526,667 | 1.928 | 171,172 | 0.33 |
| F15 | B2-CAP01-0205 | 14 | 27.9 | 2,4′-DDD | 0.18 | U | 75,521 | 1.928 | < 93,366 | < 1.24 |
| F15 | B2-CAP01-0205 | 14 | 27.9 | 4,4′-DDD | 0.24 | | 67,258 | 1.928 | 124,488 | 1.85 |
| F15 | B2-CAP01-0205 | 14 | 27.9 | 2,4′-DDT | 0.23 | U | 569,687 | 1.928 | < 119,301 | < 0.21 |
| F15 | B2-CAP01-0205 | 14 | 27.9 | 4,4′-DDT | 0.14 | U | 288,937 | 1.928 | < 72,618 | < 0.25 |
| F16 | B2-CAP01-0507 | 14 | 30.0 | 2,4′-DDE | 0.08 | U | 516,595 | 2.073 | < 38,591 | < 0.07 |
| F16 | B2-CAP01-0507 | 14 | 30.0 | 4,4′-DDE | 1.06 | | 526,667 | 2.073 | 511,336 | 0.97 |
| F16 | B2-CAP01-0507 | 14 | 30.0 | 2,4′-DDD | 0.02 | J | 75,521 | 2.073 | 9,648 | 0.13 |
| F16 | B2-CAP01-0507 | 14 | 30.0 | 4,4′-DDD | 0.17 | J | 67,258 | 2.073 | 82,007 | 1.22 |
| F16 | B2-CAP01-0507 | 14 | 30.0 | 2,4′-DDT | 0.23 | U | 569,687 | 2.073 | < 110,950 | < 0.19 |
| F16 | B2-CAP01-0507 | 14 | 30.0 | 4,4′-DDT | 0.14 | U | 288,937 | 2.073 | < 67,535 | < 0.23 |
| F17 | B2-CAP02-0002 | 14 | 30.0 | 2,4′-DDE | 0.08 | U | 516,595 | 2.073 | < 38,591 | < 0.07 |
| F17 | B2-CAP02-0002 | 14 | 30.0 | 4,4′-DDE | 0.74 | | 526,667 | 2.073 | 356,971 | 0.68 |
| F17 | B2-CAP02-0002 | 14 | 30.0 | 2,4′-DDD | 0.11 | J | 75,521 | 2.073 | 53,063 | 0.70 |
| F17 | B2-CAP02-0002 | 14 | 30.0 | 4,4′-DDD | 0.84 | | 67,258 | 2.073 | 405,210 | 6.02 |
| F17 | B2-CAP02-0002 | 14 | 30.0 | 2,4′-DDT | 0.23 | U | 569,687 | 2.073 | < 110,950 | < 0.19 |
| F17 | B2-CAP02-0002 | 14 | 30.0 | 4,4′-DDT | 0.14 | U | 288,937 | 2.073 | < 67,535 | < 0.23 |
| F18 | B2-CAP02-0205 | 14 | 30.0 | 2,4′-DDE | 0.08 | U | 516,595 | 2.073 | < 38,591 | < 0.07 |
| F18 | B2-CAP02-0205 | 14 | 30.0 | 4,4′-DDE | 0.31 | | 526,667 | 2.073 | 149,542 | 0.28 |
| F18 | B2-CAP02-0205 | 14 | 30.0 | 2,4′-DDD | 0.20 | J | 75,521 | 2.073 | 96,479 | 1.28 |
| F18 | B2-CAP02-0205 | 14 | 30.0 | 4,4′-DDD | 0.88 | | 67,258 | 2.073 | 424,506 | 6.31 |
| F18 | B2-CAP02-0205 | 14 | 30.0 | 2,4′-DDT | 0.23 | U | 569,687 | 2.073 | < 110,950 | < 0.19 |
| F18 | B2-CAP02-0205 | 14 | 30.0 | 4,4′-DDT | 0.14 | U | 288,937 | 2.073 | < 67,535 | < 0.23 |
| F19 | B2-CAP02-0507 | 14 | 27 | 2,4′-DDE | 0.08 | U | 516,595 | 1.866 | < 42,879 | < 0.08 |

**Table 2: Field, Laboratory Data and Calculations for SPME Ex-Situ Study during Baseline 2 Event**
SSC Pacific
Quantico, Virginia

| Extract Vial ID | Sample ID | Exposure Time (d) | Fiber Length (cm) | Analyte | Reported Mass on SPME (ng) | Analytical Qualifier | Fiber:Water Partition Coefficient[2] (Kfs, L/L PDMS) | Volume of PDMS on fiber (µL)[2] | [PDMS DDx] (ng/L) | [Freely Dissolved Pore Water DDx] (ng/L)[3] |
|---|---|---|---|---|---|---|---|---|---|---|
| F19 | B2-CAP02-0507 | 14 | 27 | 4,4′-DDE | 0.56 | | 526,667 | 1.866 | 300,155 | 0.57 |
| F19 | B2-CAP02-0507 | 14 | 27 | 2,4′-DDD | 0.33 | | 75,521 | 1.866 | 176,877 | 2.34 |
| F19 | B2-CAP02-0507 | 14 | 27 | 4,4′-DDD | 0.48 | | 67,258 | 1.866 | 257,276 | 3.83 |
| F19 | B2-CAP02-0507 | 14 | 27 | 2,4′-DDT | 0.23 | U | 569,687 | 1.866 | < 123,278 | < 0.22 |
| F19 | B2-CAP02-0507 | 14 | 27 | 4,4′-DDT | 0.14 | U | 288,937 | 1.866 | < 75,039 | < 0.26 |
| F20 | B2-CAP03-0002 | 14 | 30.0 | 2,4′-DDE | 0.08 | U | 516,595 | 2.073 | < 38,591 | < 0.07 |
| F20 | B2-CAP03-0002 | 14 | 30.0 | 4,4′-DDE | 1.09 | | 526,667 | 2.073 | 525,808 | 1.00 |
| F20 | B2-CAP03-0002 | 14 | 30.0 | 2,4′-DDD | 0.17 | J | 75,521 | 2.073 | 82,007 | 1.09 |
| F20 | B2-CAP03-0002 | 14 | 30.0 | 4,4′-DDD | 0.48 | | 67,258 | 2.073 | 231,548 | 3.44 |
| F20 | B2-CAP03-0002 | 14 | 30.0 | 2,4′-DDT | 0.23 | U | 569,687 | 2.073 | < 110,950 | < 0.19 |
| F20 | B2-CAP03-0002 | 14 | 30.0 | 4,4′-DDT | 0.14 | U | 288,937 | 2.073 | < 67,535 | < 0.23 |
| F21 | B2-CAP03-0205 | 14 | 30.0 | 2,4′-DDE | 0.08 | U | 516,595 | 2.073 | < 38,591 | < 0.07 |
| F21 | B2-CAP03-0205 | 14 | 30.0 | 4,4′-DDE | 1.31 | | 526,667 | 2.073 | 631,934 | 1.20 |
| F21 | B2-CAP03-0205 | 14 | 30.0 | 2,4′-DDD | 0.31 | | 75,521 | 2.073 | 149,542 | 1.98 |
| F21 | B2-CAP03-0205 | 14 | 30.0 | 4,4′-DDD | 1.87 | | 67,258 | 2.073 | 902,074 | 13.41 |
| F21 | B2-CAP03-0205 | 14 | 30.0 | 2,4′-DDT | 0.23 | U | 569,687 | 2.073 | < 110,950 | < 0.19 |
| F21 | B2-CAP03-0205 | 14 | 30.0 | 4,4′-DDT | 0.14 | U | 288,937 | 2.073 | < 67,535 | < 0.23 |
| F22 | B2-CAP03-0507 | 14 | 30.0 | 2,4′-DDE | 0.08 | U | 516,595 | 2.073 | < 38,591 | < 0.07 |
| F22 | B2-CAP03-0507 | 14 | 30.0 | 4,4′-DDE | 1.02 | | 526,667 | 2.073 | 492,041 | 0.93 |
| F22 | B2-CAP03-0507 | 14 | 30.0 | 2,4′-DDD | 0.15 | J | 75,521 | 2.073 | 72,359 | 0.96 |
| F22 | B2-CAP03-0507 | 14 | 30.0 | 4,4′-DDD | 1.24 | | 67,258 | 2.073 | 598,167 | 8.89 |
| F22 | B2-CAP03-0507 | 14 | 30.0 | 2,4′-DDT | 0.23 | U | 569,687 | 2.073 | < 110,950 | < 0.19 |
| F22 | B2-CAP03-0507 | 14 | 30.0 | 4,4′-DDT | 0.14 | U | 288,937 | 2.073 | < 67,535 | < 0.23 |
| F23 | B2-CAPX-0002 | 14 | 30.0 | 2,4′-DDE | 0.08 | U | 516,595 | 2.073 | < 38,591 | < 0.07 |
| F23 | B2-CAPX-0002 | 14 | 30.0 | 4,4′-DDE | 0.69 | | 526,667 | 2.073 | 332,851 | 0.63 |
| F23 | B2-CAPX-0002 | 14 | 30.0 | 2,4′-DDD | 0.18 | U | 75,521 | 2.073 | < 86,831 | < 1.15 |
| F23 | B2-CAPX-0002 | 14 | 30.0 | 4,4′-DDD | 0.13 | J | 67,258 | 2.073 | 62,711 | 0.93 |
| F23 | B2-CAPX-0002 | 14 | 30.0 | 2,4′-DDT | 0.23 | U | 569,687 | 2.073 | < 110,950 | < 0.19 |
| F23 | B2-CAPX-0002 | 14 | 30.0 | 4,4′-DDT | 0.14 | U | 288,937 | 2.073 | < 67,535 | < 0.23 |
| F24 | B2-CAPX-0205 | 14 | 30.0 | 2,4′-DDE | 0.08 | U | 516,595 | 2.073 | < 38,591 | < 0.07 |
| F24 | B2-CAPX-0205 | 14 | 30.0 | 4,4′-DDE | 1.48 | | 526,667 | 2.073 | 713,941 | 1.36 |

**Table 2: Field, Laboratory Data and Calculations for SPME Ex-Situ Study during Baseline 2 Event**
SSC Pacific
Quantico, Virginia

| Extract Vial ID | Sample ID | Exposure Time (d) | Fiber Length (cm) | Analyte | Reported Mass on SPME (ng) | Analytical Qualifier | Fiber:Water Partition Coefficient[2] (Kfs, L/L PDMS) | Volume of PDMS on fiber (µL)[2] | [PDMS DDx] (ng/L) | [Freely Dissolved Pore Water DDx] (ng/L)[3] |
|---|---|---|---|---|---|---|---|---|---|---|
| F24 | B2-CAPX-0205 | 14 | 30.0 | 2,4′-DDD | 0.04 | J | 75,521 | 2.073 | 19,296 | 0.26 |
| F24 | B2-CAPX-0205 | 14 | 30.0 | 4,4′-DDD | 0.12 | J | 67,258 | 2.073 | 57,887 | 0.86 |
| F24 | B2-CAPX-0205 | 14 | 30.0 | 2,4′-DDT | 0.23 | U | 569,687 | 2.073 | < 110,950 | < 0.19 |
| F24 | B2-CAPX-0205 | 14 | 30.0 | 4,4′-DDT | 0.14 | U | 288,937 | 2.073 | < 67,535 | < 0.23 |
| F25 | B2-CAPX-0507 | 14 | 30.0 | 2,4′-DDE | 0.08 | U | 516,595 | 2.073 | < 38,591 | < 0.07 |
| F25 | B2-CAPX-0507 | 14 | 30.0 | 4,4′-DDE | 0.47 | | 526,667 | 2.073 | 226,725 | 0.43 |
| F25 | B2-CAPX-0507 | 14 | 30.0 | 2,4′-DDD | 0.18 | U | 75,521 | 2.073 | < 86,831 | < 1.15 |
| F25 | B2-CAPX-0507 | 14 | 30.0 | 4,4′-DDD | 0.38 | | 67,258 | 2.073 | 183,309 | 2.73 |
| F25 | B2-CAPX-0507 | 14 | 30.0 | 2,4′-DDT | 0.23 | U | 569,687 | 2.073 | < 110,950 | < 0.19 |
| F25 | B2-CAPX-0507 | 14 | 30.0 | 4,4′-DDT | 0.14 | U | 288,937 | 2.073 | < 67,535 | < 0.23 |
| F26 | B2-CAP1-GRAB | 14 | 30.0 | 2,4′-DDE | 0.08 | U | 516,595 | 2.073 | < 38,591 | < 0.07 |
| F26 | B2-CAP1-GRAB | 14 | 30.0 | 4,4′-DDE | 0.11 | J | 526,667 | 2.073 | 53,063 | 0.10 |
| F26 | B2-CAP1-GRAB | 14 | 30.0 | 2,4′-DDD | 0.18 | U | 75,521 | 2.073 | < 86,831 | < 1.15 |
| F26 | B2-CAP1-GRAB | 14 | 30.0 | 4,4′-DDD | 0.71 | | 67,258 | 2.073 | 342,499 | 5.09 |
| F26 | B2-CAP1-GRAB | 14 | 30.0 | 2,4′-DDT | 0.23 | U | 569,687 | 2.073 | < 110,950 | < 0.19 |
| F26 | B2-CAP1-GRAB | 14 | 30.0 | 4,4′-DDT | 1.27 | | 288,937 | 2.073 | 612,639 | 2.12 |
| F27 | B2-CAP2-GRAB | 14 | 29.5 | 2,4′-DDE | 0.08 | U | 516,595 | 2.038 | < 39,246 | < 0.08 |
| F27 | B2-CAP2-GRAB | 14 | 29.5 | 4,4′-DDE | 1.26 | | 526,667 | 2.038 | 618,117 | 1.17 |
| F27 | B2-CAP2-GRAB | 14 | 29.5 | 2,4′-DDD | 0.14 | J | 75,521 | 2.038 | 68,680 | 0.91 |
| F27 | B2-CAP2-GRAB | 14 | 29.5 | 4,4′-DDD | 0.20 | J | 67,258 | 2.038 | 98,114 | 1.46 |
| F27 | B2-CAP2-GRAB | 14 | 29.5 | 2,4′-DDT | 0.23 | U | 569,687 | 2.038 | < 112,831 | < 0.20 |
| F27 | B2-CAP2-GRAB | 14 | 29.5 | 4,4′-DDT | 0.14 | U | 288,937 | 2.038 | < 68,680 | < 0.24 |
| F28 | B2-CAP3-GRAB | 14 | 30.0 | 2,4′-DDE | 0.08 | U | 516,595 | 2.073 | < 38,591 | < 0.07 |
| F28 | B2-CAP3-GRAB | 14 | 30.0 | 4,4′-DDE | 0.10 | J | 526,667 | 2.073 | 48,239 | 0.09 |
| F28 | B2-CAP3-GRAB | 14 | 30.0 | 2,4′-DDD | 0.06 | J | 75,521 | 2.073 | 28,944 | 0.38 |
| F28 | B2-CAP3-GRAB | 14 | 30.0 | 4,4′-DDD | 0.42 | | 67,258 | 2.073 | 202,605 | 3.01 |
| F28 | B2-CAP3-GRAB | 14 | 30.0 | 2,4′-DDT | 0.23 | U | 569,687 | 2.073 | < 110,950 | < 0.19 |
| F28 | B2-CAP3-GRAB | 14 | 30.0 | 4,4′-DDT | 0.14 | U | 288,937 | 2.073 | < 67,535 | < 0.23 |
| F29 | B2-OFF1-GRAB | 14 | 29 | 2,4′-DDE | 0.08 | U | 516,595 | 2.004 | < 39,922 | < 0.08 |
| F29 | B2-OFF1-GRAB | 14 | 29 | 4,4′-DDE | 0.09 | U | 526,667 | 2.004 | < 44,912 | < 0.09 |
| F29 | B2-OFF1-GRAB | 14 | 29 | 2,4′-DDD | 0.18 | U | 75,521 | 2.004 | < 89,825 | < 1.19 |

**Table 2: Field, Laboratory Data and Calculations for SPME Ex-Situ Study during Baseline 2 Event**
SSC Pacific
Quantico, Virginia

| Extract Vial ID | Sample ID | Exposure Time (d) | Fiber Length (cm) | Analyte | Reported Mass on SPME (ng) | Analytical Qualifier | Fiber:Water Partition Coefficient[2] (Kfs, L/L PDMS) | Volume of PDMS on fiber (µL)[2] | [PDMS DDx] (ng/L) | [Freely Dissolved Pore Water DDx] (ng/L)[3] |
|---|---|---|---|---|---|---|---|---|---|---|
| F29 | B2-OFF1-GRAB | 14 | 29 | 4,4´-DDD | 0.20 | U | 67,258 | 2.004 | < 99,805 | < 1.48 |
| F29 | B2-OFF1-GRAB | 14 | 29 | 2,4´-DDT | 0.23 | U | 569,687 | 2.004 | < 114,776 | < 0.20 |
| F29 | B2-OFF1-GRAB | 14 | 29 | 4,4´-DDT | 0.14 | U | 288,937 | 2.004 | < 69,864 | < 0.24 |
| F30 | B2-OFF2-GRAB | 14 | 30.0 | 2,4´-DDE | 0.08 | U | 516,595 | 2.073 | < 38,591 | < 0.07 |
| F30 | B2-OFF2-GRAB | 14 | 30.0 | 4,4´-DDE | 0.09 | U | 526,667 | 2.073 | < 43,415 | < 0.08 |
| F30 | B2-OFF2-GRAB | 14 | 30.0 | 2,4´-DDD | 0.18 | U | 75,521 | 2.073 | < 86,831 | < 1.15 |
| F30 | B2-OFF2-GRAB | 14 | 30.0 | 4,4´-DDD | 0.20 | U | 67,258 | 2.073 | < 96,479 | < 1.43 |
| F30 | B2-OFF2-GRAB | 14 | 30.0 | 2,4´-DDT | 0.23 | U | 569,687 | 2.073 | < 110,950 | < 0.19 |
| F30 | B2-OFF2-GRAB | 14 | 30.0 | 4,4´-DDT | 0.14 | U | 288,937 | 2.073 | < 67,535 | < 0.23 |

**Footnotes:**
1. Fiber:Water Partition Coefficient calculated as Log Kfs = LogKow - 0.91 (Mayer et al. 2000). Log Kow referenced from ATDSR (2002) Toxicological Profile for DDT, DDE and DDD.
2. 0.069 µL polydimethylsiloxane (PDMS) per cm of this type of SPME fiber.
3. Concentration of exposure solution = Concentration in fiber ÷ Kfs. If not detected, reported as < detection limit.

**Abbreviations:**
cm: centimenter(s)
d: day(s)
J: Analyte detected but below the Reporting Limit; therefore, result is an estimated concentration.
Kfs: Fiber:Water Partition Coefficient
L: liter(s)
PDMS: polydimethylsiloxane
ng: nanogram(s)
SPME: solid phase microextraction
U: Analyte not detected

**Table 3: Field, Laboratory Data and Calculations for SPME Ex-Situ Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Extract Vial ID | Sample ID | Exposure Time (d) | Analyte | Reported Mass on SPME (ng) | Detection Limit (ng) | Fiber Weight (g) | Fiber Length (cm)[1] | Fiber:Water Partition Coefficient[2] (Kfs, L/L PDMS) | Volume of PDMS on fiber[3] (µL) | [PDMS DDx] (ng/L) | [Freely Dissolved Pore Water DDx] (ng/L)[4] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F31 | QT2-1-0002 | 14 | 4,4'-DDE [2C] | ND | 0.06 | 0.023 | 27.94 | 526,667 | 1.930 | < 31,080 | < 0.06 |
| F31 | QT2-1-0002 | 14 | 4,4´-DDT | ND | 0.06 | 0.023 | 27.94 | 288,937 | 1.930 | < 31,080 | < 0.11 |
| F31 | QT2-1-0002 | 14 | 2,4´-DDD | ND | 0.06 | 0.023 | 27.94 | 75,521 | 1.930 | < 31,080 | < 0.41 |
| F31 | QT2-1-0002 | 14 | 2,4´-DDE | ND | 0.06 | 0.023 | 27.94 | 516,595 | 1.930 | < 31,080 | < 0.06 |
| F31 | QT2-1-0002 | 14 | 2,4´-DDT | ND | 0.06 | 0.023 | 27.94 | 569,687 | 1.930 | < 31,080 | < 0.05 |
| F31 | QT2-1-0002 | 14 | 4,4´-DDD | 2 | 0.06 | 0.023 | 27.94 | 67,258 | 1.930 | 1,036,006 | 15.40 |
| F32 | QT2-1-0205 | 14 | 4,4'-DDE [2C] | 0.25 | 0.06 | 0.024 | 29.26 | 526,667 | 2.022 | 123,663 | 0.23 |
| F32 | QT2-1-0205 | 14 | 4,4´-DDT | 0.07 | 0.06 | 0.024 | 29.26 | 288,937 | 2.022 | 34,626 | 0.12 |
| F32 | QT2-1-0205 | 14 | 2,4´-DDD | ND | 0.06 | 0.024 | 29.26 | 75,521 | 2.022 | < 29,679 | < 0.39 |
| F32 | QT2-1-0205 | 14 | 2,4´-DDE | 0.09 | 0.06 | 0.024 | 29.26 | 516,595 | 2.022 | 44,519 | 0.09 |
| F32 | QT2-1-0205 | 14 | 2,4´-DDT | ND | 0.06 | 0.024 | 29.26 | 569,687 | 2.022 | < 29,679 | < 0.05 |
| F32 | QT2-1-0205 | 14 | 4,4´-DDD | 0.22 | 0.06 | 0.024 | 29.26 | 67,258 | 2.022 | 108,823 | 1.62 |
| F33 | QT2-1-0507 | 14 | 4,4'-DDE [2C] | ND | 0.06 | 0.025 | 30.34 | 526,667 | 2.096 | < 28,623 | < 0.05 |
| F33 | QT2-1-0507 | 14 | 4,4´-DDT | ND | 0.06 | 0.025 | 30.34 | 288,937 | 2.096 | < 28,623 | < 0.10 |
| F33 | QT2-1-0507 | 14 | 2,4´-DDD | ND | 0.06 | 0.025 | 30.34 | 75,521 | 2.096 | < 28,623 | < 0.38 |
| F33 | QT2-1-0507 | 14 | 2,4´-DDE | ND | 0.06 | 0.025 | 30.34 | 516,595 | 2.096 | < 28,623 | < 0.06 |
| F33 | QT2-1-0507 | 14 | 2,4´-DDT | ND | 0.06 | 0.025 | 30.34 | 569,687 | 2.096 | < 28,623 | < 0.05 |
| F33 | QT2-1-0507 | 14 | 4,4´-DDD | 0.1 | 0.06 | 0.025 | 30.34 | 67,258 | 2.096 | 47,705 | 0.71 |
| F34 | QT2-1-0002-AI | 14 | 4,4'-DDE [2C] | 0.21 | 0.06 | 0.125 | 149.28 | 526,667 | 10.315 | 20,358 | 0.04 |
| F34 | QT2-1-0002-AI | 14 | 4,4´-DDT | 1.59 | 0.06 | 0.125 | 149.28 | 288,937 | 10.315 | 154,140 | 0.53 |
| F34 | QT2-1-0002-AI | 14 | 2,4´-DDD | ND | 0.06 | 0.125 | 149.28 | 75,521 | 10.315 | < 5,817 | < 0.08 |
| F34 | QT2-1-0002-AI | 14 | 2,4´-DDE | ND | 0.06 | 0.125 | 149.28 | 516,595 | 10.315 | < 5,817 | < 0.01 |
| F34 | QT2-1-0002-AI | 14 | 2,4´-DDT | ND | 0.06 | 0.125 | 149.28 | 569,687 | 10.315 | < 5,817 | < 0.01 |
| F34 | QT2-1-0002-AI | 14 | 4,4´-DDD | 0.45 | 0.06 | 0.125 | 149.28 | 67,258 | 10.315 | 43,625 | 0.65 |
| F35 | QT2-1-0002-BI | 14 | 4,4'-DDE [2C] | ND | 0.06 | 0.024 | 29.26 | 526,667 | 2.022 | < 29,679 | < 0.06 |
| F35 | QT2-1-0002-BI | 14 | 4,4´-DDT | ND | 0.06 | 0.024 | 29.26 | 288,937 | 2.022 | < 29,679 | < 0.10 |
| F35 | QT2-1-0002-BI | 14 | 2,4´-DDD | ND | 0.06 | 0.024 | 29.26 | 75,521 | 2.022 | < 29,679 | < 0.39 |
| F35 | QT2-1-0002-BI | 14 | 2,4´-DDE | ND | 0.06 | 0.024 | 29.26 | 516,595 | 2.022 | < 29,679 | < 0.06 |
| F35 | QT2-1-0002-BI | 14 | 2,4´-DDT | ND | 0.06 | 0.024 | 29.26 | 569,687 | 2.022 | < 29,679 | < 0.05 |
| F35 | QT2-1-0002-BI | 14 | 4,4´-DDD | 0.08 | 0.06 | 0.024 | 29.26 | 67,258 | 2.022 | 39,572 | 0.59 |
| F36 | QT2-1-0205-BI | 14 | 4,4'-DDE [2C] | ND | 0.06 | 0.024 | 29.14 | 526,667 | 2.013 | < 29,801 | < 0.06 |
| F36 | QT2-1-0205-BI | 14 | 4,4´-DDT | ND | 0.06 | 0.024 | 29.14 | 288,937 | 2.013 | < 29,801 | < 0.10 |
| F36 | QT2-1-0205-BI | 14 | 2,4´-DDD | ND | 0.06 | 0.024 | 29.14 | 75,521 | 2.013 | < 29,801 | < 0.39 |
| F36 | QT2-1-0205-BI | 14 | 2,4´-DDE | ND | 0.06 | 0.024 | 29.14 | 516,595 | 2.013 | < 29,801 | < 0.06 |
| F36 | QT2-1-0205-BI | 14 | 2,4´-DDT | ND | 0.06 | 0.024 | 29.14 | 569,687 | 2.013 | < 29,801 | < 0.05 |
| F36 | QT2-1-0205-BI | 14 | 4,4´-DDD | 0.11 | 0.06 | 0.024 | 29.14 | 67,258 | 2.013 | 54,635 | 0.81 |
| F37 | QT2-1-0507-BI | 14 | 4,4'-DDE [2C] | ND | 0.06 | 0.025 | 30.46 | 526,667 | 2.104 | < 28,511 | < 0.05 |
| F37 | QT2-1-0507-BI | 14 | 4,4´-DDT | ND | 0.06 | 0.025 | 30.46 | 288,937 | 2.104 | < 28,511 | < 0.10 |

**Table 3: Field, Laboratory Data and Calculations for SPME Ex-Situ Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Extract Vial ID | Sample ID | Exposure Time (d) | Analyte | Reported Mass on SPME (ng) | Detection Limit (ng) | Fiber Weight (g) | Fiber Length (cm)[1] | Fiber:Water Partition Coefficient[2] (Kfs, L/L PDMS) | Volume of PDMS on fiber[3] (µL) | [PDMS DDx] (ng/L) | [Freely Dissolved Pore Water DDx] (ng/L)[4] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F37 | QT2-1-0507-BI | 14 | 2,4´-DDD | ND | 0.06 | 0.025 | 30.46 | 75,521 | 2.104 | < 28,511 | < 0.38 |
| F37 | QT2-1-0507-BI | 14 | 2,4´-DDE | ND | 0.06 | 0.025 | 30.46 | 516,595 | 2.104 | < 28,511 | < 0.06 |
| F37 | QT2-1-0507-BI | 14 | 2,4´-DDT | ND | 0.06 | 0.025 | 30.46 | 569,687 | 2.104 | < 28,511 | < 0.05 |
| F37 | QT2-1-0507-BI | 14 | 4,4´-DDD | 0.17 | 0.06 | 0.025 | 30.46 | 67,258 | 2.104 | 80,780 | 1.20 |
| F38 | QT2-2-0002 | 14 | 4,4'-DDE [2C] | ND | 0.06 | 0.025 | 29.62 | 526,667 | 2.046 | < 29,319 | < 0.06 |
| F38 | QT2-2-0002 | 14 | 4,4´-DDT | ND | 0.06 | 0.025 | 29.62 | 288,937 | 2.046 | < 29,319 | < 0.10 |
| F38 | QT2-2-0002 | 14 | 2,4´-DDD | ND | 0.06 | 0.025 | 29.62 | 75,521 | 2.046 | < 29,319 | < 0.39 |
| F38 | QT2-2-0002 | 14 | 2,4´-DDE | ND | 0.06 | 0.025 | 29.62 | 516,595 | 2.046 | < 29,319 | < 0.06 |
| F38 | QT2-2-0002 | 14 | 2,4´-DDT | ND | 0.06 | 0.025 | 29.62 | 569,687 | 2.046 | < 29,319 | < 0.05 |
| F38 | QT2-2-0002 | 14 | 4,4´-DDD | 0.49 | 0.06 | 0.025 | 29.62 | 67,258 | 2.046 | 239,435 | 3.56 |
| F40 | QT2-2-0507 | 14 | 4,4´-DDE | ND | 0.4 | 0.026 | 30.82 | 526,667 | 2.129 | < 187,852 | < 0.36 |
| F40 | QT2-2-0507 | 14 | 4,4'-DDT [2C] | ND | 0.4 | 0.026 | 30.82 | 288,937 | 2.129 | < 187,852 | < 0.65 |
| F40 | QT2-2-0507 | 14 | 2,4´-DDD | ND | 0.4 | 0.026 | 30.82 | 75,521 | 2.129 | < 187,852 | < 2.49 |
| F40 | QT2-2-0507 | 14 | 2,4´-DDE | ND | 0.4 | 0.026 | 30.82 | 516,595 | 2.129 | < 187,852 | < 0.36 |
| F40 | QT2-2-0507 | 14 | 2,4´-DDT | ND | 0.4 | 0.026 | 30.82 | 569,687 | 2.129 | < 187,852 | < 0.33 |
| F40 | QT2-2-0507 | 14 | 4,4´-DDD | ND | 0.4 | 0.026 | 30.82 | 67,258 | 2.129 | < 187,852 | < 2.79 |
| F41 | QT2-2-0002-AI | 14 | 4,4'-DDE [2C] | 0.1 | 0.06 | 0.025 | 30.46 | 526,667 | 2.104 | 47,518 | 0.09 |
| F41 | QT2-2-0002-AI | 14 | 4,4´-DDT | 0.38 | 0.06 | 0.025 | 30.46 | 288,937 | 2.104 | 180,567 | 0.62 |
| F41 | QT2-2-0002-AI | 14 | 2,4´-DDD | 0.1 | 0.06 | 0.025 | 30.46 | 75,521 | 2.104 | 47,518 | 0.63 |
| F41 | QT2-2-0002-AI | 14 | 2,4´-DDE | 0.1 | 0.06 | 0.025 | 30.46 | 516,595 | 2.104 | 47,518 | 0.09 |
| F41 | QT2-2-0002-AI | 14 | 2,4´-DDT | ND | 0.06 | 0.025 | 30.46 | 569,687 | 2.104 | < 28,511 | < 0.05 |
| F41 | QT2-2-0002-AI | 14 | 4,4´-DDD | 0.72 | 0.06 | 0.025 | 30.46 | 67,258 | 2.104 | 342,127 | 5.09 |
| F42 | QT2-2-0002-BI | 14 | 4,4'-DDE [2C] | 0.13 | 0.06 | 0.024 | 29.26 | 526,667 | 2.022 | 64,305 | 0.12 |
| F42 | QT2-2-0002-BI | 14 | 4,4´-DDT | ND | 0.06 | 0.024 | 29.26 | 288,937 | 2.022 | < 29,679 | < 0.10 |
| F42 | QT2-2-0002-BI | 14 | 2,4´-DDD | ND | 0.06 | 0.024 | 29.26 | 75,521 | 2.022 | < 29,679 | < 0.39 |
| F42 | QT2-2-0002-BI | 14 | 2,4´-DDE | 0.07 | 0.06 | 0.024 | 29.26 | 516,595 | 2.022 | 34,626 | 0.07 |
| F42 | QT2-2-0002-BI | 14 | 2,4´-DDT | ND | 0.06 | 0.024 | 29.26 | 569,687 | 2.022 | < 29,679 | < 0.05 |
| F42 | QT2-2-0002-BI | 14 | 4,4´-DDD | 0.13 | 0.06 | 0.024 | 29.26 | 67,258 | 2.022 | 64,305 | 0.96 |
| F43 | QT2-2-0205-BI | 14 | 4,4'-DDE [2C] | ND | 0.06 | 0.025 | 30.10 | 526,667 | 2.080 | < 28,851 | < 0.05 |
| F43 | QT2-2-0205-BI | 14 | 4,4´-DDT | ND | 0.06 | 0.025 | 30.10 | 288,937 | 2.080 | < 28,851 | < 0.10 |
| F43 | QT2-2-0205-BI | 14 | 2,4´-DDD | ND | 0.06 | 0.025 | 30.10 | 75,521 | 2.080 | < 28,851 | < 0.38 |
| F43 | QT2-2-0205-BI | 14 | 2,4´-DDE | 0.08 | 0.06 | 0.025 | 30.10 | 516,595 | 2.080 | 38,468 | 0.07 |
| F43 | QT2-2-0205-BI | 14 | 2,4´-DDT | ND | 0.06 | 0.025 | 30.10 | 569,687 | 2.080 | < 28,851 | < 0.05 |
| F43 | QT2-2-0205-BI | 14 | 4,4´-DDD | 0.11 | 0.06 | 0.025 | 30.10 | 67,258 | 2.080 | 52,894 | 0.79 |
| F44 | QT2-2-0507-BI | 14 | 4,4'-DDE [2C] | 0.18 | 0.06 | 0.025 | 29.62 | 526,667 | 2.046 | 87,956 | 0.17 |
| F44 | QT2-2-0507-BI | 14 | 4,4´-DDT | 0.09 | 0.06 | 0.025 | 29.62 | 288,937 | 2.046 | 43,978 | 0.15 |
| F44 | QT2-2-0507-BI | 14 | 2,4´-DDD | ND | 0.06 | 0.025 | 29.62 | 75,521 | 2.046 | < 29,319 | < 0.39 |
| F44 | QT2-2-0507-BI | 14 | 2,4´-DDE | 0.13 | 0.06 | 0.025 | 29.62 | 516,595 | 2.046 | 63,523 | 0.12 |

**Table 3: Field, Laboratory Data and Calculations for SPME Ex-Situ Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Extract Vial ID | Sample ID | Exposure Time (d) | Analyte | Reported Mass on SPME (ng) | Detection Limit (ng) | Fiber Weight (g) | Fiber Length (cm)[1] | Fiber:Water Partition Coefficient[2] (Kfs, L/L PDMS) | Volume of PDMS on fiber[3] (µL) | [PDMS DDx] (ng/L) | [Freely Dissolved Pore Water DDx] (ng/L)[4] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F44 | QT2-2-0507-BI | 14 | 2,4′-DDT | ND | 0.06 | 0.025 | 29.62 | 569,687 | 2.046 | < 29,319 | < 0.05 |
| F44 | QT2-2-0507-BI | 14 | 4,4′-DDD | 0.29 | 0.06 | 0.025 | 29.62 | 67,258 | 2.046 | 141,706 | 2.11 |
| F45 | QT2-3-0002 | 14 | 4,4'-DDE [2C] | 0.73 | 0.06 | 0.026 | 31.41 | 526,667 | 2.171 | 336,287 | 0.64 |
| F45 | QT2-3-0002 | 14 | 4,4′-DDT | 0.23 | 0.06 | 0.026 | 31.41 | 288,937 | 2.171 | 105,953 | 0.37 |
| F45 | QT2-3-0002 | 14 | 2,4′-DDD | 0.09 | 0.06 | 0.026 | 31.41 | 75,521 | 2.171 | 41,460 | 0.55 |
| F45 | QT2-3-0002 | 14 | 2,4′-DDE | 0.18 | 0.06 | 0.026 | 31.41 | 516,595 | 2.171 | 82,920 | 0.16 |
| F45 | QT2-3-0002 | 14 | 2,4′-DDT | ND | 0.06 | 0.026 | 31.41 | 569,687 | 2.171 | < 27,640 | < 0.05 |
| F45 | QT2-3-0002 | 14 | 4,4′-DDD | 0.42 | 0.06 | 0.026 | 31.41 | 67,258 | 2.171 | 193,480 | 2.88 |
| F46 | QT2-3-0205 | 14 | 4,4'-DDE [2C] | 0.65 | 0.06 | 0.025 | 30.34 | 526,667 | 2.096 | 310,085 | 0.59 |
| F46 | QT2-3-0205 | 14 | 4,4′-DDT | 0.21 | 0.06 | 0.025 | 30.34 | 288,937 | 2.096 | 100,181 | 0.35 |
| F46 | QT2-3-0205 | 14 | 2,4′-DDD | 0.16 | 0.06 | 0.025 | 30.34 | 75,521 | 2.096 | 76,329 | 1.01 |
| F46 | QT2-3-0205 | 14 | 2,4′-DDE | 0.15 | 0.06 | 0.025 | 30.34 | 516,595 | 2.096 | 71,558 | 0.14 |
| F46 | QT2-3-0205 | 14 | 2,4′-DDT | ND | 0.06 | 0.025 | 30.34 | 569,687 | 2.096 | < 28,623 | < 0.05 |
| F46 | QT2-3-0205 | 14 | 4,4′-DDD | 0.43 | 0.06 | 0.025 | 30.34 | 67,258 | 2.096 | 205,133 | 3.05 |
| F47 | QT2-3-0507 | 14 | 4,4'-DDE [2C] | 0.09 | 0.06 | 0.026 | 30.70 | 526,667 | 2.121 | 42,432 | 0.08 |
| F47 | QT2-3-0507 | 14 | 4,4′-DDT | ND | 0.06 | 0.026 | 30.70 | 288,937 | 2.121 | < 28,288 | < 0.10 |
| F47 | QT2-3-0507 | 14 | 2,4′-DDD | ND | 0.06 | 0.026 | 30.70 | 75,521 | 2.121 | < 28,288 | < 0.37 |
| F47 | QT2-3-0507 | 14 | 2,4′-DDE | ND | 0.06 | 0.026 | 30.70 | 516,595 | 2.121 | < 28,288 | < 0.05 |
| F47 | QT2-3-0507 | 14 | 2,4′-DDT | ND | 0.06 | 0.026 | 30.70 | 569,687 | 2.121 | < 28,288 | < 0.05 |
| F47 | QT2-3-0507 | 14 | 4,4′-DDD | 0.08 | 0.06 | 0.026 | 30.70 | 67,258 | 2.121 | 37,717 | 0.56 |
| F127 | QT2-3-0002-AI | 14 | 4,4′-DDE | 0.07 | 0.05 | 0.023 | 27.58 | 526,667 | 1.906 | 36,733 | 0.07 |
| F127 | QT2-3-0002-AI | 14 | 4,4′-DDT | 0.09 | 0.05 | 0.023 | 27.58 | 288,937 | 1.906 | 47,228 | 0.16 |
| F127 | QT2-3-0002-AI | 14 | 2,4′-DDD | ND | 0.05 | 0.023 | 27.58 | 75,521 | 1.906 | < 26,238 | < 0.35 |
| F127 | QT2-3-0002-AI | 14 | 2,4′-DDE | ND | 0.05 | 0.023 | 27.58 | 516,595 | 1.906 | < 26,238 | < 0.05 |
| F127 | QT2-3-0002-AI | 14 | 2,4′-DDT | ND | 0.05 | 0.023 | 27.58 | 569,687 | 1.906 | < 26,238 | < 0.05 |
| F127 | QT2-3-0002-AI | 14 | 4,4′-DDD | 0.12 | 0.05 | 0.023 | 27.58 | 67,258 | 1.906 | 62,971 | 0.94 |
| F49 | QT2-3-0002-BI | 14 | 4,4'-DDE [2C] | 0.79 | 0.06 | 0.024 | 28.90 | 526,667 | 1.997 | 395,638 | 0.75 |
| F49 | QT2-3-0002-BI | 14 | 4,4′-DDT | 0.55 | 0.06 | 0.024 | 28.90 | 288,937 | 1.997 | 275,444 | 0.95 |
| F49 | QT2-3-0002-BI | 14 | 2,4′-DDD | 0.19 | 0.06 | 0.024 | 28.90 | 75,521 | 1.997 | 95,153 | 1.26 |
| F49 | QT2-3-0002-BI | 14 | 2,4′-DDE | 0.3 | 0.06 | 0.024 | 28.90 | 516,595 | 1.997 | 150,242 | 0.29 |
| F49 | QT2-3-0002-BI | 14 | 2,4′-DDT | ND | 0.06 | 0.024 | 28.90 | 569,687 | 1.997 | < 30,048 | < 0.05 |
| F49 | QT2-3-0002-BI | 14 | 4,4′-DDD | 1.06 | 0.06 | 0.024 | 28.90 | 67,258 | 1.997 | 530,856 | 7.89 |
| F50 | QT2-3-0205-BI | 14 | 4,4'-DDE [2C] | ND | 0.06 | 0.025 | 30.46 | 526,667 | 2.104 | < 28,511 | < 0.05 |
| F50 | QT2-3-0205-BI | 14 | 4,4′-DDT | ND | 0.06 | 0.025 | 30.46 | 288,937 | 2.104 | < 28,511 | < 0.10 |
| F50 | QT2-3-0205-BI | 14 | 2,4′-DDD | ND | 0.06 | 0.025 | 30.46 | 75,521 | 2.104 | < 28,511 | < 0.38 |
| F50 | QT2-3-0205-BI | 14 | 2,4′-DDE | ND | 0.06 | 0.025 | 30.46 | 516,595 | 2.104 | < 28,511 | < 0.06 |
| F50 | QT2-3-0205-BI | 14 | 2,4′-DDT | ND | 0.06 | 0.025 | 30.46 | 569,687 | 2.104 | < 28,511 | < 0.05 |
| F50 | QT2-3-0205-BI | 14 | 4,4′-DDD | ND | 0.06 | 0.025 | 30.46 | 67,258 | 2.104 | < 28,511 | < 0.42 |

**Table 3: Field, Laboratory Data and Calculations for SPME Ex-Situ Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Extract Vial ID | Sample ID | Exposure Time (d) | Analyte | Reported Mass on SPME (ng) | Detection Limit (ng) | Fiber Weight (g) | Fiber Length (cm)[1] | Fiber:Water Partition Coefficient[2] (Kfs, L/L PDMS) | Volume of PDMS on fiber[3] (µL) | [PDMS DDx] (ng/L) | [Freely Dissolved Pore Water DDx] (ng/L)[4] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F51 | QT2-3-0507-BI | 14 | 4,4'-DDE [2C] | ND | 0.06 | 0.026 | 30.82 | 526,667 | 2.129 | < 28,178 | < 0.05 |
| F51 | QT2-3-0507-BI | 14 | 4,4′-DDT | ND | 0.06 | 0.026 | 30.82 | 288,937 | 2.129 | < 28,178 | < 0.10 |
| F51 | QT2-3-0507-BI | 14 | 2,4′-DDD | ND | 0.06 | 0.026 | 30.82 | 75,521 | 2.129 | < 28,178 | < 0.37 |
| F51 | QT2-3-0507-BI | 14 | 2,4′-DDE | ND | 0.06 | 0.026 | 30.82 | 516,595 | 2.129 | < 28,178 | < 0.05 |
| F51 | QT2-3-0507-BI | 14 | 2,4′-DDT | ND | 0.06 | 0.026 | 30.82 | 569,687 | 2.129 | < 28,178 | < 0.05 |
| F51 | QT2-3-0507-BI | 14 | 4,4′-DDD | 0.31 | 0.06 | 0.026 | 30.82 | 67,258 | 2.129 | 145,585 | 2.16 |
| F52 | QT2-4-0002 | 14 | 4,4'-DDE [2C] | 0.14 | 0.06 | 0.025 | 30.34 | 526,667 | 2.096 | 66,788 | 0.13 |
| F52 | QT2-4-0002 | 14 | 4,4′-DDT | ND | 0.06 | 0.025 | 30.34 | 288,937 | 2.096 | < 28,623 | < 0.10 |
| F52 | QT2-4-0002 | 14 | 2,4′-DDD | ND | 0.06 | 0.025 | 30.34 | 75,521 | 2.096 | < 28,623 | < 0.38 |
| F52 | QT2-4-0002 | 14 | 2,4′-DDE | ND | 0.06 | 0.025 | 30.34 | 516,595 | 2.096 | < 28,623 | < 0.06 |
| F52 | QT2-4-0002 | 14 | 2,4′-DDT | ND | 0.06 | 0.025 | 30.34 | 569,687 | 2.096 | < 28,623 | < 0.05 |
| F52 | QT2-4-0002 | 14 | 4,4′-DDD | ND | 0.06 | 0.025 | 30.34 | 67,258 | 2.096 | < 28,623 | < 0.43 |
| F53 | QT2-4-0507 | 14 | 4,4'-DDE [2C] | 0.25 | 0.06 | 0.025 | 29.62 | 526,667 | 2.046 | 122,161 | 0.23 |
| F53 | QT2-4-0507 | 14 | 4,4′-DDT | ND | 0.06 | 0.025 | 29.62 | 288,937 | 2.046 | < 29,319 | < 0.10 |
| F53 | QT2-4-0507 | 14 | 2,4′-DDD | ND | 0.06 | 0.025 | 29.62 | 75,521 | 2.046 | < 29,319 | < 0.39 |
| F53 | QT2-4-0507 | 14 | 2,4′-DDE | 0.08 | 0.06 | 0.025 | 29.62 | 516,595 | 2.046 | 39,091 | 0.08 |
| F53 | QT2-4-0507 | 14 | 2,4′-DDT | ND | 0.06 | 0.025 | 29.62 | 569,687 | 2.046 | < 29,319 | < 0.05 |
| F53 | QT2-4-0507 | 14 | 4,4′-DDD | 0.13 | 0.06 | 0.025 | 29.62 | 67,258 | 2.046 | 63,523 | 0.94 |
| F54 | QT2-4-0002-AI | 14 | 4,4′-DDE | ND | 0.4 | 0.002 | 2.76 | 526,667 | 0.191 | < 2,099,037 | < 3.99 |
| F54 | QT2-4-0002-AI | 14 | 4,4'-DDT [2C] | ND | 0.4 | 0.002 | 2.76 | 288,937 | 0.191 | < 2,099,037 | < 7.26 |
| F54 | QT2-4-0002-AI | 14 | 2,4′-DDD | ND | 0.4 | 0.002 | 2.76 | 75,521 | 0.191 | < 2,099,037 | < 27.79 |
| F54 | QT2-4-0002-AI | 14 | 2,4′-DDE | ND | 0.4 | 0.002 | 2.76 | 516,595 | 0.191 | < 2,099,037 | < 4.06 |
| F54 | QT2-4-0002-AI | 14 | 2,4′-DDT | ND | 0.4 | 0.002 | 2.76 | 569,687 | 0.191 | < 2,099,037 | < 3.68 |
| F54 | QT2-4-0002-AI | 14 | 4,4′-DDD | ND | 0.4 | 0.002 | 2.76 | 67,258 | 0.191 | < 2,099,037 | < 31.21 |
| F55 | QT2-4-0002-BI | 14 | 4,4'-DDE [2C] | ND | 0.06 | 0.023 | 28.06 | 526,667 | 1.939 | < 30,947 | < 0.06 |
| F55 | QT2-4-0002-BI | 14 | 4,4′-DDT | ND | 0.06 | 0.023 | 28.06 | 288,937 | 1.939 | < 30,947 | < 0.11 |
| F55 | QT2-4-0002-BI | 14 | 2,4′-DDD | ND | 0.06 | 0.023 | 28.06 | 75,521 | 1.939 | < 30,947 | < 0.41 |
| F55 | QT2-4-0002-BI | 14 | 2,4′-DDE | ND | 0.06 | 0.023 | 28.06 | 516,595 | 1.939 | < 30,947 | < 0.06 |
| F55 | QT2-4-0002-BI | 14 | 2,4′-DDT | ND | 0.06 | 0.023 | 28.06 | 569,687 | 1.939 | < 30,947 | < 0.05 |
| F55 | QT2-4-0002-BI | 14 | 4,4′-DDD | ND | 0.06 | 0.023 | 28.06 | 67,258 | 1.939 | < 30,947 | < 0.46 |
| F56 | QT2-4-0205-BI | 14 | 4,4'-DDE [2C] | ND | 0.06 | 0.020 | 24.10 | 526,667 | 1.665 | < 36,028 | < 0.07 |
| F56 | QT2-4-0205-BI | 14 | 4,4′-DDT | ND | 0.06 | 0.020 | 24.10 | 288,937 | 1.665 | < 36,028 | < 0.12 |
| F56 | QT2-4-0205-BI | 14 | 2,4′-DDD | ND | 0.06 | 0.020 | 24.10 | 75,521 | 1.665 | < 36,028 | < 0.48 |
| F56 | QT2-4-0205-BI | 14 | 2,4′-DDE | ND | 0.06 | 0.020 | 24.10 | 516,595 | 1.665 | < 36,028 | < 0.07 |
| F56 | QT2-4-0205-BI | 14 | 2,4′-DDT | ND | 0.06 | 0.020 | 24.10 | 569,687 | 1.665 | < 36,028 | < 0.06 |
| F56 | QT2-4-0205-BI | 14 | 4,4′-DDD | 0.09 | 0.06 | 0.020 | 24.10 | 67,258 | 1.665 | 54,042 | 0.80 |
| F57 | QT2-4-0507-BI | 14 | 4,4'-DDE [2C] | 0.35 | 0.06 | 0.024 | 28.30 | 526,667 | 1.955 | 178,996 | 0.34 |
| F57 | QT2-4-0507-BI | 14 | 4,4′-DDT | ND | 0.06 | 0.024 | 28.30 | 288,937 | 1.955 | < 30,685 | < 0.11 |

**Table 3: Field, Laboratory Data and Calculations for SPME Ex-Situ Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Extract Vial ID | Sample ID | Exposure Time (d) | Analyte | Reported Mass on SPME (ng) | Detection Limit (ng) | Fiber Weight (g) | Fiber Length (cm)[1] | Fiber:Water Partition Coefficient[2] (Kfs, L/L PDMS) | Volume of PDMS on fiber[3] (µL) | | [PDMS DDx] (ng/L) | | [Freely Dissolved Pore Water DDx] (ng/L)[4] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F57 | QT2-4-0507-BI | 14 | 2,4′-DDD | ND | 0.06 | 0.024 | 28.30 | 75,521 | 1.955 | < | 30,685 | < | 0.41 |
| F57 | QT2-4-0507-BI | 14 | 2,4′-DDE | 0.1 | 0.06 | 0.024 | 28.30 | 516,595 | 1.955 | | 51,142 | | 0.10 |
| F57 | QT2-4-0507-BI | 14 | 2,4′-DDT | ND | 0.06 | 0.024 | 28.30 | 569,687 | 1.955 | < | 30,685 | < | 0.05 |
| F57 | QT2-4-0507-BI | 14 | 4,4′-DDD | 0.2 | 0.06 | 0.024 | 28.30 | 67,258 | 1.955 | | 102,284 | | 1.52 |
| F59 | QT2-5-0205 | 14 | 4,4'-DDE [2C] | 0.13 | 0.06 | 0.025 | 29.98 | 526,667 | 2.071 | | 62,761 | | 0.12 |
| F59 | QT2-5-0205 | 14 | 4,4′-DDT | ND | 0.06 | 0.025 | 29.98 | 288,937 | 2.071 | < | 28,967 | < | 0.10 |
| F59 | QT2-5-0205 | 14 | 2,4′-DDD | ND | 0.06 | 0.025 | 29.98 | 75,521 | 2.071 | < | 28,967 | < | 0.38 |
| F59 | QT2-5-0205 | 14 | 2,4′-DDE | ND | 0.06 | 0.025 | 29.98 | 516,595 | 2.071 | < | 28,967 | < | 0.06 |
| F59 | QT2-5-0205 | 14 | 2,4′-DDT | ND | 0.06 | 0.025 | 29.98 | 569,687 | 2.071 | < | 28,967 | < | 0.05 |
| F59 | QT2-5-0205 | 14 | 4,4′-DDD | ND | 0.06 | 0.025 | 29.98 | 67,258 | 2.071 | < | 28,967 | < | 0.43 |
| F60 | QT2-5-0002-AI | 14 | 4,4'-DDE [2C] | 0.79 | 0.06 | 0.025 | 29.74 | 526,667 | 2.055 | | 384,471 | | 0.73 |
| F60 | QT2-5-0002-AI | 14 | 4,4′-DDT | 0.13 | 0.06 | 0.025 | 29.74 | 288,937 | 2.055 | | 63,267 | | 0.22 |
| F60 | QT2-5-0002-AI | 14 | 2,4′-DDD | ND | 0.06 | 0.025 | 29.74 | 75,521 | 2.055 | < | 29,200 | < | 0.39 |
| F60 | QT2-5-0002-AI | 14 | 2,4′-DDE | 0.25 | 0.06 | 0.025 | 29.74 | 516,595 | 2.055 | | 121,668 | | 0.24 |
| F60 | QT2-5-0002-AI | 14 | 2,4′-DDT | ND | 0.06 | 0.025 | 29.74 | 569,687 | 2.055 | < | 29,200 | < | 0.05 |
| F60 | QT2-5-0002-AI | 14 | 4,4′-DDD | 0.3 | 0.06 | 0.025 | 29.74 | 67,258 | 2.055 | | 146,002 | | 2.17 |
| F61 | QT2-5-0002-BI | 14 | 4,4'-DDE [2C] | 0.08 | 0.06 | 0.026 | 30.58 | 526,667 | 2.113 | | 37,865 | | 0.07 |
| F61 | QT2-5-0002-BI | 14 | 4,4′-DDT | ND | 0.06 | 0.026 | 30.58 | 288,937 | 2.113 | < | 28,399 | < | 0.10 |
| F61 | QT2-5-0002-BI | 14 | 2,4′-DDD | ND | 0.06 | 0.026 | 30.58 | 75,521 | 2.113 | < | 28,399 | < | 0.38 |
| F61 | QT2-5-0002-BI | 14 | 2,4′-DDE | 0.07 | 0.06 | 0.026 | 30.58 | 516,595 | 2.113 | | 33,132 | | 0.06 |
| F61 | QT2-5-0002-BI | 14 | 2,4′-DDT | ND | 0.06 | 0.026 | 30.58 | 569,687 | 2.113 | < | 28,399 | < | 0.05 |
| F61 | QT2-5-0002-BI | 14 | 4,4′-DDD | 0.26 | 0.06 | 0.026 | 30.58 | 67,258 | 2.113 | | 123,061 | | 1.83 |
| F62 | QT2-5-0205-BI | 14 | 4,4'-DDE [2C] | 0.2 | 0.06 | 0.024 | 28.90 | 526,667 | 1.997 | | 100,162 | | 0.19 |
| F62 | QT2-5-0205-BI | 14 | 4,4′-DDT | ND | 0.06 | 0.024 | 28.90 | 288,937 | 1.997 | < | 30,048 | < | 0.10 |
| F62 | QT2-5-0205-BI | 14 | 2,4′-DDD | ND | 0.06 | 0.024 | 28.90 | 75,521 | 1.997 | < | 30,048 | < | 0.40 |
| F62 | QT2-5-0205-BI | 14 | 2,4′-DDE | 0.14 | 0.06 | 0.024 | 28.90 | 516,595 | 1.997 | | 70,113 | | 0.14 |
| F62 | QT2-5-0205-BI | 14 | 2,4′-DDT | ND | 0.06 | 0.024 | 28.90 | 569,687 | 1.997 | < | 30,048 | < | 0.05 |
| F62 | QT2-5-0205-BI | 14 | 4,4′-DDD | 0.72 | 0.06 | 0.024 | 28.90 | 67,258 | 1.997 | | 360,582 | | 5.36 |
| F63 | QT2-5-0507-BI | 14 | 4,4'-DDE [2C] | 0.12 | 0.06 | 0.024 | 29.38 | 526,667 | 2.030 | | 59,116 | | 0.11 |
| F63 | QT2-5-0507-BI | 14 | 4,4′-DDT | ND | 0.06 | 0.024 | 29.38 | 288,937 | 2.030 | < | 29,558 | < | 0.10 |
| F63 | QT2-5-0507-BI | 14 | 2,4′-DDD | ND | 0.06 | 0.024 | 29.38 | 75,521 | 2.030 | < | 29,558 | < | 0.39 |
| F63 | QT2-5-0507-BI | 14 | 2,4′-DDE | 0.08 | 0.06 | 0.024 | 29.38 | 516,595 | 2.030 | | 39,410 | | 0.08 |
| F63 | QT2-5-0507-BI | 14 | 2,4′-DDT | ND | 0.06 | 0.024 | 29.38 | 569,687 | 2.030 | < | 29,558 | < | 0.05 |
| F63 | QT2-5-0507-BI | 14 | 4,4′-DDD | 0.24 | 0.06 | 0.024 | 29.38 | 67,258 | 2.030 | | 118,231 | | 1.76 |
| F64 | QT2-5DUP-0002 | 14 | 4,4'-DDE [2C] | 0.15 | 0.06 | 0.026 | 31.29 | 526,667 | 2.162 | | 69,365 | | 0.13 |
| F64 | QT2-5DUP-0002 | 14 | 4,4′-DDT | ND | 0.06 | 0.026 | 31.29 | 288,937 | 2.162 | < | 27,746 | < | 0.10 |
| F64 | QT2-5DUP-0002 | 14 | 2,4′-DDD | ND | 0.06 | 0.026 | 31.29 | 75,521 | 2.162 | < | 27,746 | < | 0.37 |
| F64 | QT2-5DUP-0002 | 14 | 2,4′-DDE | ND | 0.06 | 0.026 | 31.29 | 516,595 | 2.162 | < | 27,746 | < | 0.05 |

**Table 3: Field, Laboratory Data and Calculations for SPME Ex-Situ Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Extract Vial ID | Sample ID | Exposure Time (d) | Analyte | Reported Mass on SPME (ng) | Detection Limit (ng) | Fiber Weight (g) | Fiber Length (cm)[1] | Fiber:Water Partition Coefficient[2] (Kfs, L/L PDMS) | Volume of PDMS on fiber[3] (µL) | [PDMS DDx] (ng/L) | [Freely Dissolved Pore Water DDx] (ng/L)[4] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F64 | QT2-5DUP-0002 | 14 | 2,4′-DDT | ND | 0.06 | 0.026 | 31.29 | 569,687 | 2.162 | < 27,746 | < 0.05 |
| F64 | QT2-5DUP-0002 | 14 | 4,4′-DDD | 0.08 | 0.06 | 0.026 | 31.29 | 67,258 | 2.162 | 36,995 | 0.55 |
| F65 | QT2-5DUP-0205 | 14 | 4,4'-DDE [2C] | 0.26 | 0.06 | 0.027 | 32.85 | 526,667 | 2.270 | 114,528 | 0.22 |
| F65 | QT2-5DUP-0205 | 14 | 4,4′-DDT | ND | 0.06 | 0.027 | 32.85 | 288,937 | 2.270 | < 26,429 | < 0.09 |
| F65 | QT2-5DUP-0205 | 14 | 2,4′-DDD | ND | 0.06 | 0.027 | 32.85 | 75,521 | 2.270 | < 26,429 | < 0.35 |
| F65 | QT2-5DUP-0205 | 14 | 2,4′-DDE | 0.08 | 0.06 | 0.027 | 32.85 | 516,595 | 2.270 | 35,239 | 0.07 |
| F65 | QT2-5DUP-0205 | 14 | 2,4′-DDT | ND | 0.06 | 0.027 | 32.85 | 569,687 | 2.270 | < 26,429 | < 0.05 |
| F65 | QT2-5DUP-0205 | 14 | 4,4′-DDD | 0.13 | 0.06 | 0.027 | 32.85 | 67,258 | 2.270 | 57,264 | 0.85 |
| F128 | QT2-6-GRAB | 14 | 4,4′-DDE | 0.06 | 0.05 | 0.024 | 29.26 | 526,667 | 2.022 | 29,679 | 0.06 |
| F128 | QT2-6-GRAB | 14 | 4,4′-DDT | ND | 0.05 | 0.024 | 29.26 | 288,937 | 2.022 | < 24,733 | < 0.09 |
| F128 | QT2-6-GRAB | 14 | 2,4′-DDD | ND | 0.05 | 0.024 | 29.26 | 75,521 | 2.022 | < 24,733 | < 0.33 |
| F128 | QT2-6-GRAB | 14 | 2,4′-DDE | ND | 0.05 | 0.024 | 29.26 | 516,595 | 2.022 | < 24,733 | < 0.05 |
| F128 | QT2-6-GRAB | 14 | 2,4′-DDT | ND | 0.05 | 0.024 | 29.26 | 569,687 | 2.022 | < 24,733 | < 0.04 |
| F128 | QT2-6-GRAB | 14 | 4,4′-DDD | 0.1 | 0.05 | 0.024 | 29.26 | 67,258 | 2.022 | 49,465 | 0.74 |
| F72 | QT2-7-GRAB | 14 | 4,4'-DDE [2C] | ND | 0.06 | 0.025 | 30.10 | 526,667 | 2.080 | < 28,851 | < 0.05 |
| F72 | QT2-7-GRAB | 14 | 4,4′-DDT | ND | 0.06 | 0.025 | 30.10 | 288,937 | 2.080 | < 28,851 | < 0.10 |
| F72 | QT2-7-GRAB | 14 | 2,4′-DDD | ND | 0.06 | 0.025 | 30.10 | 75,521 | 2.080 | < 28,851 | < 0.38 |
| F72 | QT2-7-GRAB | 14 | 2,4′-DDE | ND | 0.06 | 0.025 | 30.10 | 516,595 | 2.080 | < 28,851 | < 0.06 |
| F72 | QT2-7-GRAB | 14 | 2,4′-DDT | ND | 0.06 | 0.025 | 30.10 | 569,687 | 2.080 | < 28,851 | < 0.05 |
| F72 | QT2-7-GRAB | 14 | 4,4′-DDD | ND | 0.06 | 0.025 | 30.10 | 67,258 | 2.080 | < 28,851 | < 0.43 |
| F73 | QT2-5DUP-0507 | 14 | 4,4′-DDE | ND | 0.4 | 0.023 | 27.10 | 526,667 | 1.872 | < 213,619 | < 0.41 |
| F73 | QT2-5DUP-0507 | 14 | 4,4'-DDT [2C] | ND | 0.4 | 0.023 | 27.10 | 288,937 | 1.872 | < 213,619 | < 0.74 |
| F73 | QT2-5DUP-0507 | 14 | 2,4′-DDD | ND | 0.4 | 0.023 | 27.10 | 75,521 | 1.872 | < 213,619 | < 2.83 |
| F73 | QT2-5DUP-0507 | 14 | 2,4′-DDE | ND | 0.4 | 0.023 | 27.10 | 516,595 | 1.872 | < 213,619 | < 0.41 |
| F73 | QT2-5DUP-0507 | 14 | 2,4′-DDT | ND | 0.4 | 0.023 | 27.10 | 569,687 | 1.872 | < 213,619 | < 0.37 |
| F73 | QT2-5DUP-0507 | 14 | 4,4′-DDD | ND | 0.4 | 0.023 | 27.10 | 67,258 | 1.872 | < 213,619 | < 3.18 |
| F74 | QT2-5DUP-0002-AI | 14 | 4,4′-DDE | 0.83 | 0.4 | 0.023 | 28.06 | 526,667 | 1.939 | 428,105 | 0.81 |
| F74 | QT2-5DUP-0002-AI | 14 | 4,4'-DDT [2C] | 0.52 | 0.4 | 0.023 | 28.06 | 288,937 | 1.939 | 268,210 | 0.93 |
| F74 | QT2-5DUP-0002-AI | 14 | 2,4′-DDD | ND | 0.4 | 0.023 | 28.06 | 75,521 | 1.939 | < 206,316 | < 2.73 |
| F74 | QT2-5DUP-0002-AI | 14 | 2,4′-DDE | 0.47 | 0.4 | 0.023 | 28.06 | 516,595 | 1.939 | 242,421 | 0.47 |
| F74 | QT2-5DUP-0002-AI | 14 | 2,4′-DDT | ND | 0.4 | 0.023 | 28.06 | 569,687 | 1.939 | < 206,316 | < 0.36 |
| F74 | QT2-5DUP-0002-AI | 14 | 4,4′-DDD | 0.57 | 0.4 | 0.023 | 28.06 | 67,258 | 1.939 | 294,000 | 4.37 |
| F75 | QT2-5DUP-0002-BI | 14 | 4,4′-DDE | ND | 0.4 | 0.021 | 25.42 | 526,667 | 1.756 | < 227,726 | < 0.43 |
| F75 | QT2-5DUP-0002-BI | 14 | 4,4'-DDT [2C] | ND | 0.4 | 0.021 | 25.42 | 288,937 | 1.756 | < 227,726 | < 0.79 |
| F75 | QT2-5DUP-0002-BI | 14 | 2,4′-DDD | ND | 0.4 | 0.021 | 25.42 | 75,521 | 1.756 | < 227,726 | < 3.02 |
| F75 | QT2-5DUP-0002-BI | 14 | 2,4′-DDE | ND | 0.4 | 0.021 | 25.42 | 516,595 | 1.756 | < 227,726 | < 0.44 |

**Table 3: Field, Laboratory Data and Calculations for SPME Ex-Situ Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Extract Vial ID | Sample ID | Exposure Time (d) | Analyte | Reported Mass on SPME (ng) | Detection Limit (ng) | Fiber Weight (g) | Fiber Length (cm)[1] | Fiber:Water Partition Coefficient[2] (Kfs, L/L PDMS) | Volume of PDMS on fiber[3] (µL) | [PDMS DDx] (ng/L) | [Freely Dissolved Pore Water DDx] (ng/L)[4] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F75 | QT2-5DUP-0002-BI | 14 | 2,4´-DDT | ND | 0.4 | 0.021 | 25.42 | 569,687 | 1.756 | < 227,726 | < 0.40 |
| F75 | QT2-5DUP-0002-BI | 14 | 4,4´-DDD | ND | 0.4 | 0.021 | 25.42 | 67,258 | 1.756 | < 227,726 | < 3.39 |
| F76 | QT2-5DUP-0205-BI | 14 | 4,4´-DDE | ND | 0.4 | 0.024 | 29.14 | 526,667 | 2.013 | < 198,674 | < 0.38 |
| F76 | QT2-5DUP-0205-BI | 14 | 4,4'-DDT [2C] | ND | 0.4 | 0.024 | 29.14 | 288,937 | 2.013 | < 198,674 | < 0.69 |
| F76 | QT2-5DUP-0205-BI | 14 | 2,4´-DDD | ND | 0.4 | 0.024 | 29.14 | 75,521 | 2.013 | < 198,674 | < 2.63 |
| F76 | QT2-5DUP-0205-BI | 14 | 2,4´-DDE | ND | 0.4 | 0.024 | 29.14 | 516,595 | 2.013 | < 198,674 | < 0.38 |
| F76 | QT2-5DUP-0205-BI | 14 | 2,4´-DDT | ND | 0.4 | 0.024 | 29.14 | 569,687 | 2.013 | < 198,674 | < 0.35 |
| F76 | QT2-5DUP-0205-BI | 14 | 4,4´-DDD | 2.11 | 0.4 | 0.024 | 29.14 | 67,258 | 2.013 | 1,048,007 | 15.58 |
| F77 | QT2-5DUP-0507-BI | 14 | 4,4´-DDE | 0.44 | 0.4 | 0.022 | 25.90 | 526,667 | 1.790 | 245,859 | 0.47 |
| F77 | QT2-5DUP-0507-BI | 14 | 4,4'-DDT [2C] | ND | 0.4 | 0.022 | 25.90 | 288,937 | 1.790 | < 223,509 | < 0.77 |
| F77 | QT2-5DUP-0507-BI | 14 | 2,4´-DDD | ND | 0.4 | 0.022 | 25.90 | 75,521 | 1.790 | < 223,509 | < 2.96 |
| F77 | QT2-5DUP-0507-BI | 14 | 2,4´-DDE | ND | 0.4 | 0.022 | 25.90 | 516,595 | 1.790 | < 223,509 | < 0.43 |
| F77 | QT2-5DUP-0507-BI | 14 | 2,4´-DDT | ND | 0.4 | 0.022 | 25.90 | 569,687 | 1.790 | < 223,509 | < 0.39 |
| F77 | QT2-5DUP-0507-BI | 14 | 4,4´-DDD | ND | 0.4 | 0.022 | 25.90 | 67,258 | 1.790 | < 223,509 | < 3.32 |
| F58 | QT2-5-0002 | 14 | 4,4'-DDE [2C] | ND | 0.06 | 0.026 | 30.82 | 526,667 | 2.129 | < 28,178 | < 0.05 |
| F58 | QT2-5-0002 | 14 | 4,4´-DDT | ND | 0.06 | 0.026 | 30.82 | 288,937 | 2.129 | < 28,178 | < 0.10 |
| F58 | QT2-5-0002 | 14 | 2,4´-DDD | ND | 0.06 | 0.026 | 30.82 | 75,521 | 2.129 | < 28,178 | < 0.37 |
| F58 | QT2-5-0002 | 14 | 2,4´-DDE | ND | 0.06 | 0.026 | 30.82 | 516,595 | 2.129 | < 28,178 | < 0.05 |
| F58 | QT2-5-0002 | 14 | 2,4´-DDT | ND | 0.06 | 0.026 | 30.82 | 569,687 | 2.129 | < 28,178 | < 0.05 |
| F58 | QT2-5-0002 | 14 | 4,4´-DDD | ND | 0.06 | 0.026 | 30.82 | 67,258 | 2.129 | < 28,178 | < 0.42 |

**Footnotes:**

1.) Fiber mass per length value: 0.000834 g/cm

2.) Fiber:Water Partition Coefficient calculated as Log Kfs = LogKow - 0.91 (Mayer et al. 2000). Log Kow referenced from ATDSR (2002) Toxicological Profile for DDT, DDE and DDD.

3.) 0.0691 µL polydimethylsiloxane (PDMS) per cm of this type of SPME fiber.

4.) Concentration of exposure solution = Concentration in fiber ÷ Kfs. If not detected, reported as < detection limit.

**Abbreviations:**

cm: centimeter(s)
d: day(s)
g: gram(s)
Kfs: Fiber:Water Partition Coefficient
L: Liter(s)
µ: micro
ND: Not detected
ng: nanogram(s)
PDMS: Polydimethylsiloxane
SPME: solid phase microextraction

**Table 4: Field, Laboratory Data and Calculations for SPME Ex-Situ Study during 14-Month Event**
SSC Pacific
Quantico, Virginia

| Extract Vial ID | Sample ID | Exposure Time (d) | Analyte | Reported Mass on SPME (ng) | Detection Limit (ng) | Fiber Weight (g) | Fiber Length[1] (cm) | Fiber:Water Partition Coefficient[2] (Kfs, L/L PDMS) | Volume of PDMS on fiber[3] (µL) | [PDMS DDx] (ng/L) | [Freely Dissolved Pore Water DDx][4] (ng/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F78 | QT12-1-0002 | 14 | 4,4′-DDE | 0.24 | 0.05 | 0.024 | 28.78 | 526,667 | 1.988 | 120695 | 0.23 |
| F78 | QT12-1-0002 | 14 | 4,4′-DDT | ND | 0.05 | 0.024 | 28.78 | 288,937 | 1.988 | < 25145 | < 0.09 |
| F78 | QT12-1-0002 | 14 | 2,4′-DDD | ND | 0.05 | 0.024 | 28.78 | 75,521 | 1.988 | < 25145 | < 0.33 |
| F78 | QT12-1-0002 | 14 | 2,4′-DDE | ND | 0.05 | 0.024 | 28.78 | 516,595 | 1.988 | < 25145 | < 0.05 |
| F78 | QT12-1-0002 | 14 | 2,4′-DDT | ND | 0.05 | 0.024 | 28.78 | 569,687 | 1.988 | < 25145 | < 0.04 |
| F78 | QT12-1-0002 | 14 | 4,4′-DDD | 0.13 | 0.05 | 0.024 | 28.78 | 67,258 | 1.988 | 65376 | 0.97 |
| F79 | QT12-1-0205 | 14 | 4,4′-DDE | 0.55 | 0.05 | 0.025 | 29.50 | 526,667 | 2.038 | 269846 | 0.51 |
| F79 | QT12-1-0205 | 14 | 4,4′-DDT | 0.27 | 0.05 | 0.025 | 29.50 | 288,937 | 2.038 | 132470 | 0.46 |
| F79 | QT12-1-0205 | 14 | 2,4′-DDD | 0.08 | 0.05 | 0.025 | 29.50 | 75,521 | 2.038 | 39250 | 0.52 |
| F79 | QT12-1-0205 | 14 | 2,4′-DDE | ND | 0.05 | 0.025 | 29.50 | 516,595 | 2.038 | < 24531 | < 0.05 |
| F79 | QT12-1-0205 | 14 | 2,4′-DDT | ND | 0.05 | 0.025 | 29.50 | 569,687 | 2.038 | < 24531 | < 0.04 |
| F79 | QT12-1-0205 | 14 | 4,4′-DDD | 0.65 | 0.05 | 0.025 | 29.50 | 67,258 | 2.038 | 318909 | 4.74 |
| F80 | QT12-1-0507 | 14 | 4,4′-DDE | 0.43 | 0.05 | 0.023 | 27.70 | 526,667 | 1.914 | 224670 | 0.43 |
| F80 | QT12-1-0507 | 14 | 4,4′-DDT | ND | 0.05 | 0.023 | 27.70 | 288,937 | 1.914 | < 26124 | < 0.09 |
| F80 | QT12-1-0507 | 14 | 2,4′-DDD | ND | 0.05 | 0.023 | 27.70 | 75,521 | 1.914 | < 26124 | < 0.35 |
| F80 | QT12-1-0507 | 14 | 2,4′-DDE | ND | 0.05 | 0.023 | 27.70 | 516,595 | 1.914 | < 26124 | < 0.05 |
| F80 | QT12-1-0507 | 14 | 2,4′-DDT | ND | 0.05 | 0.023 | 27.70 | 569,687 | 1.914 | < 26124 | < 0.05 |
| F80 | QT12-1-0507 | 14 | 4,4′-DDD | 0.23 | 0.05 | 0.023 | 27.70 | 67,258 | 1.914 | 120172 | 1.79 |
| F81 | QT12-1-0002-AI | 14 | 4,4′-DDE | 0.18 | 0.05 | 0.023 | 28.06 | 526,667 | 1.939 | 92842 | 0.18 |
| F81 | QT12-1-0002-AI | 14 | 4,4′-DDT | ND | 0.05 | 0.023 | 28.06 | 288,937 | 1.939 | < 25789 | < 0.09 |
| F81 | QT12-1-0002-AI | 14 | 2,4′-DDD | ND | 0.05 | 0.023 | 28.06 | 75,521 | 1.939 | < 25789 | < 0.34 |
| F81 | QT12-1-0002-AI | 14 | 2,4′-DDE | ND | 0.05 | 0.023 | 28.06 | 516,595 | 1.939 | < 25789 | < 0.05 |
| F81 | QT12-1-0002-AI | 14 | 2,4′-DDT | ND | 0.05 | 0.023 | 28.06 | 569,687 | 1.939 | < 25789 | < 0.05 |
| F81 | QT12-1-0002-AI | 14 | 4,4′-DDD | 1.03 | 0.05 | 0.023 | 28.06 | 67,258 | 1.939 | 531263 | 7.90 |
| F82 | QT12-1-0002-BI | 14 | 4,4′-DDE | 0.33 | 0.05 | 0.021 | 25.06 | 526,667 | 1.732 | 190570 | 0.36 |
| F82 | QT12-1-0002-BI | 14 | 4,4′-DDT | 2.73 | 0.05 | 0.021 | 25.06 | 288,937 | 1.732 | 1576538 | 5.46 |
| F82 | QT12-1-0002-BI | 14 | 2,4′-DDD | 0.09 | 0.05 | 0.021 | 25.06 | 75,521 | 1.732 | 51974 | 0.69 |
| F82 | QT12-1-0002-BI | 14 | 2,4′-DDE | 0.18 | 0.05 | 0.021 | 25.06 | 516,595 | 1.732 | 103948 | 0.20 |
| F82 | QT12-1-0002-BI | 14 | 2,4′-DDT | ND | 0.05 | 0.021 | 25.06 | 569,687 | 1.732 | < 28874 | < 0.05 |
| F82 | QT12-1-0002-BI | 14 | 4,4′-DDD | 1.53 | 0.05 | 0.021 | 25.06 | 67,258 | 1.732 | 883554 | 13.14 |
| F83 | QT12-1-0205-BI | 14 | 4,4′-DDE | 0.42 | 0.05 | 0.021 | 25.54 | 526,667 | 1.765 | 237989 | 0.45 |
| F83 | QT12-1-0205-BI | 14 | 4,4′-DDT | 0.47 | 0.05 | 0.021 | 25.54 | 288,937 | 1.765 | 266322 | 0.92 |
| F83 | QT12-1-0205-BI | 14 | 2,4′-DDD | 0.15 | 0.05 | 0.021 | 25.54 | 75,521 | 1.765 | 84996 | 1.13 |
| F83 | QT12-1-0205-BI | 14 | 2,4′-DDE | 0.21 | 0.05 | 0.021 | 25.54 | 516,595 | 1.765 | 118995 | 0.23 |
| F83 | QT12-1-0205-BI | 14 | 2,4′-DDT | ND | 0.05 | 0.021 | 25.54 | 569,687 | 1.765 | < 28332 | < 0.05 |

**Table 4: Field, Laboratory Data and Calculations for SPME Ex-Situ Study during 14-Month Event**
SSC Pacific
Quantico, Virginia

| Extract Vial ID | Sample ID | Exposure Time (d) | Analyte | Reported Mass on SPME (ng) | Detection Limit (ng) | Fiber Weight (g) | Fiber Length[1] (cm) | Fiber:Water Partition Coefficient[2] (Kfs, L/L PDMS) | Volume of PDMS on fiber[3] (µL) | [PDMS DDx] (ng/L) | [Freely Dissolved Pore Water DDx][4] (ng/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F83 | QT12-1-0205-BI | 14 | 4,4′-DDD | 0.27 | 0.05 | 0.021 | 25.54 | 67,258 | 1.765 | 152993 | 2.27 |
| F84 | QT12-1-0507-BI | 14 | 4,4′-DDE | 0.21 | 0.05 | 0.018 | 21.70 | 526,667 | 1.500 | 140032 | 0.27 |
| F84 | QT12-1-0507-BI | 14 | 4,4′-DDT | 0.38 | 0.05 | 0.018 | 21.70 | 288,937 | 1.500 | 253392 | 0.88 |
| F84 | QT12-1-0507-BI | 14 | 2,4′-DDD | ND | 0.05 | 0.018 | 21.70 | 75,521 | 1.500 | < 33341 | < 0.44 |
| F84 | QT12-1-0507-BI | 14 | 2,4′-DDE | ND | 0.05 | 0.018 | 21.70 | 516,595 | 1.500 | < 33341 | < 0.06 |
| F84 | QT12-1-0507-BI | 14 | 2,4′-DDT | ND | 0.05 | 0.018 | 21.70 | 569,687 | 1.500 | < 33341 | < 0.06 |
| F84 | QT12-1-0507-BI | 14 | 4,4′-DDD | 1.29 | 0.05 | 0.018 | 21.70 | 67,258 | 1.500 | 860199 | 12.79 |
| F85 | QT12-2-0002 | 14 | 4,4′-DDE | 0.27 | 0.05 | 0.025 | 30.34 | 526,667 | 2.096 | 128805 | 0.24 |
| F85 | QT12-2-0002 | 14 | 4,4′-DDT | ND | 0.05 | 0.025 | 30.34 | 288,937 | 2.096 | < 23853 | < 0.08 |
| F85 | QT12-2-0002 | 14 | 2,4′-DDD | 0.08 | 0.05 | 0.025 | 30.34 | 75,521 | 2.096 | 38164 | 0.51 |
| F85 | QT12-2-0002 | 14 | 2,4′-DDE | ND | 0.05 | 0.025 | 30.34 | 516,595 | 2.096 | < 23853 | < 0.05 |
| F85 | QT12-2-0002 | 14 | 2,4′-DDT | ND | 0.05 | 0.025 | 30.34 | 569,687 | 2.096 | < 23853 | < 0.04 |
| F85 | QT12-2-0002 | 14 | 4,4′-DDD | 0.77 | 0.05 | 0.025 | 30.34 | 67,258 | 2.096 | 367332 | 5.46 |
| F86 | QT12-2-0205 | 14 | 4,4′-DDE | 0.55 | 0.05 | 0.025 | 29.62 | 526,667 | 2.046 | 268753 | 0.51 |
| F86 | QT12-2-0205 | 14 | 4,4′-DDT | 0.06 | 0.05 | 0.025 | 29.62 | 288,937 | 2.046 | 29319 | 0.10 |
| F86 | QT12-2-0205 | 14 | 2,4′-DDD | 0.12 | 0.05 | 0.025 | 29.62 | 75,521 | 2.046 | 58637 | 0.78 |
| F86 | QT12-2-0205 | 14 | 2,4′-DDE | 0.22 | 0.05 | 0.025 | 29.62 | 516,595 | 2.046 | 107501 | 0.21 |
| F86 | QT12-2-0205 | 14 | 2,4′-DDT | ND | 0.05 | 0.025 | 29.62 | 569,687 | 2.046 | < 24432 | < 0.04 |
| F86 | QT12-2-0205 | 14 | 4,4′-DDD | 0.61 | 0.05 | 0.025 | 29.62 | 67,258 | 2.046 | 298072 | 4.43 |
| F87 | QT12-2-0507 | 14 | 4,4′-DDE | 0.58 | 0.05 | 0.025 | 29.38 | 526,667 | 2.030 | 285726 | 0.54 |
| F87 | QT12-2-0507 | 14 | 4,4′-DDT | 0.09 | 0.05 | 0.025 | 29.38 | 288,937 | 2.030 | 44337 | 0.15 |
| F87 | QT12-2-0507 | 14 | 2,4′-DDD | 0.17 | 0.05 | 0.025 | 29.38 | 75,521 | 2.030 | 83747 | 1.11 |
| F87 | QT12-2-0507 | 14 | 2,4′-DDE | 0.31 | 0.05 | 0.025 | 29.38 | 516,595 | 2.030 | 152716 | 0.30 |
| F87 | QT12-2-0507 | 14 | 2,4′-DDT | ND | 0.05 | 0.025 | 29.38 | 569,687 | 2.030 | < 24632 | < 0.04 |
| F87 | QT12-2-0507 | 14 | 4,4′-DDD | 0.65 | 0.05 | 0.025 | 29.38 | 67,258 | 2.030 | 320210 | 4.76 |
| F88 | QT12-2-0002-AI | 14 | 4,4′-DDE | 0.17 | 0.05 | 0.022 | 26.86 | 526,667 | 1.856 | 91599 | 0.17 |
| F88 | QT12-2-0002-AI | 14 | 4,4′-DDT | ND | 0.05 | 0.022 | 26.86 | 288,937 | 1.856 | < 26941 | < 0.09 |
| F88 | QT12-2-0002-AI | 14 | 2,4′-DDD | ND | 0.05 | 0.022 | 26.86 | 75,521 | 1.856 | < 26941 | < 0.36 |
| F88 | QT12-2-0002-AI | 14 | 2,4′-DDE | 0.09 | 0.05 | 0.022 | 26.86 | 516,595 | 1.856 | 48493 | 0.09 |
| F88 | QT12-2-0002-AI | 14 | 2,4′-DDT | ND | 0.05 | 0.022 | 26.86 | 569,687 | 1.856 | < 26941 | < 0.05 |
| F88 | QT12-2-0002-AI | 14 | 4,4′-DDD | 0.3 | 0.05 | 0.022 | 26.86 | 67,258 | 1.856 | 161645 | 2.40 |
| F89 | QT12-2-0002-BI | 14 | 4,4′-DDE | ND | 0.05 | 0.017 | 20.38 | 526,667 | 1.409 | < 35498 | < 0.07 |
| F89 | QT12-2-0002-BI | 14 | 4,4′-DDT | ND | 0.05 | 0.017 | 20.38 | 288,937 | 1.409 | < 35498 | < 0.12 |
| F89 | QT12-2-0002-BI | 14 | 2,4′-DDD | ND | 0.05 | 0.017 | 20.38 | 75,521 | 1.409 | < 35498 | < 0.47 |
| F89 | QT12-2-0002-BI | 14 | 2,4′-DDE | 0.06 | 0.05 | 0.017 | 20.38 | 516,595 | 1.409 | 42598 | 0.08 |

**Table 4: Field, Laboratory Data and Calculations for SPME Ex-Situ Study during 14-Month Event**
SSC Pacific
Quantico, Virginia

| Extract Vial ID | Sample ID | Exposure Time (d) | Analyte | Reported Mass on SPME (ng) | Detection Limit (ng) | Fiber Weight (g) | Fiber Length[1] (cm) | Fiber:Water Partition Coefficient[2] (Kfs, L/L PDMS) | Volume of PDMS on fiber[3] (µL) | [PDMS DDx] (ng/L) | [Freely Dissolved Pore Water DDx][4] (ng/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F89 | QT12-2-0002-BI | 14 | 2,4′-DDT | ND | 0.05 | 0.017 | 20.38 | 569,687 | 1.409 | < 35498 | < 0.06 |
| F89 | QT12-2-0002-BI | 14 | 4,4′-DDD | 0.38 | 0.05 | 0.017 | 20.38 | 67,258 | 1.409 | 269788 | 4.01 |
| F90 | QT12-2-0205-BI | 14 | 4,4′-DDE | 0.26 | 0.05 | 0.021 | 25.66 | 526,667 | 1.773 | 146638 | 0.28 |
| F90 | QT12-2-0205-BI | 14 | 4,4′-DDT | 0.09 | 0.05 | 0.021 | 25.66 | 288,937 | 1.773 | 50759 | 0.18 |
| F90 | QT12-2-0205-BI | 14 | 2,4′-DDD | ND | 0.05 | 0.021 | 25.66 | 75,521 | 1.773 | < 28200 | < 0.37 |
| F90 | QT12-2-0205-BI | 14 | 2,4′-DDE | 0.14 | 0.05 | 0.021 | 25.66 | 516,595 | 1.773 | 78959 | 0.15 |
| F90 | QT12-2-0205-BI | 14 | 2,4′-DDT | ND | 0.05 | 0.021 | 25.66 | 569,687 | 1.773 | < 28200 | < 0.05 |
| F90 | QT12-2-0205-BI | 14 | 4,4′-DDD | 0.29 | 0.05 | 0.021 | 25.66 | 67,258 | 1.773 | 163558 | 2.43 |
| F91 | QT12-2-0507-BI | 14 | 4,4′-DDE | 0.32 | 0.05 | 0.025 | 29.74 | 526,667 | 2.055 | 155735 | 0.30 |
| F91 | QT12-2-0507-BI | 14 | 4,4′-DDT | 0.1 | 0.05 | 0.025 | 29.74 | 288,937 | 2.055 | 48667 | 0.17 |
| F91 | QT12-2-0507-BI | 14 | 2,4′-DDD | 0.1 | 0.05 | 0.025 | 29.74 | 75,521 | 2.055 | 48667 | 0.64 |
| F91 | QT12-2-0507-BI | 14 | 2,4′-DDE | 0.27 | 0.05 | 0.025 | 29.74 | 516,595 | 2.055 | 131401 | 0.25 |
| F91 | QT12-2-0507-BI | 14 | 2,4′-DDT | ND | 0.05 | 0.025 | 29.74 | 569,687 | 2.055 | < 24334 | < 0.04 |
| F91 | QT12-2-0507-BI | 14 | 4,4′-DDD | 0.46 | 0.05 | 0.025 | 29.74 | 67,258 | 2.055 | 223869 | 3.33 |
| F92 | QT12-3-0002 | 14 | 4,4′-DDE | 0.22 | 0.05 | 0.024 | 28.30 | 526,667 | 1.955 | 112512 | 0.21 |
| F92 | QT12-3-0002 | 14 | 4,4′-DDT | 0.09 | 0.05 | 0.024 | 28.30 | 288,937 | 1.955 | 46028 | 0.16 |
| F92 | QT12-3-0002 | 14 | 2,4′-DDD | 0.12 | 0.05 | 0.024 | 28.30 | 75,521 | 1.955 | 61370 | 0.81 |
| F92 | QT12-3-0002 | 14 | 2,4′-DDE | 0.15 | 0.05 | 0.024 | 28.30 | 516,595 | 1.955 | 76713 | 0.15 |
| F92 | QT12-3-0002 | 14 | 2,4′-DDT | ND | 0.05 | 0.024 | 28.30 | 569,687 | 1.955 | < 25571 | < 0.04 |
| F92 | QT12-3-0002 | 14 | 4,4′-DDD | 0.39 | 0.05 | 0.024 | 28.30 | 67,258 | 1.955 | 199453 | 2.97 |
| F93 | QT12-3-0205 | 14 | 4,4′-DDE | 0.17 | 0.05 | 0.024 | 29.26 | 526,667 | 2.022 | 84091 | 0.16 |
| F93 | QT12-3-0205 | 14 | 4,4′-DDT | ND | 0.05 | 0.024 | 29.26 | 288,937 | 2.022 | < 24733 | < 0.09 |
| F93 | QT12-3-0205 | 14 | 2,4′-DDD | 0.18 | 0.05 | 0.024 | 29.26 | 75,521 | 2.022 | 89037 | 1.18 |
| F93 | QT12-3-0205 | 14 | 2,4′-DDE | 0.15 | 0.05 | 0.024 | 29.26 | 516,595 | 2.022 | 74198 | 0.14 |
| F93 | QT12-3-0205 | 14 | 2,4′-DDT | ND | 0.05 | 0.024 | 29.26 | 569,687 | 2.022 | < 24733 | < 0.04 |
| F93 | QT12-3-0205 | 14 | 4,4′-DDD | 0.64 | 0.05 | 0.024 | 29.26 | 67,258 | 2.022 | 316576 | 4.71 |
| F94 | QT12-3-0507 | 14 | 4,4′-DDE | 0.15 | 0.05 | 0.023 | 27.82 | 526,667 | 1.922 | 78035 | 0.15 |
| F94 | QT12-3-0507 | 14 | 4,4′-DDT | ND | 0.05 | 0.023 | 27.82 | 288,937 | 1.922 | < 26012 | < 0.09 |
| F94 | QT12-3-0507 | 14 | 2,4′-DDD | 0.15 | 0.05 | 0.023 | 27.82 | 75,521 | 1.922 | 78035 | 1.03 |
| F94 | QT12-3-0507 | 14 | 2,4′-DDE | 0.14 | 0.05 | 0.023 | 27.82 | 516,595 | 1.922 | 72833 | 0.14 |
| F94 | QT12-3-0507 | 14 | 2,4′-DDT | ND | 0.05 | 0.023 | 27.82 | 569,687 | 1.922 | < 26012 | < 0.05 |
| F94 | QT12-3-0507 | 14 | 4,4′-DDD | 0.54 | 0.05 | 0.023 | 27.82 | 67,258 | 1.922 | 280927 | 4.18 |
| F95 | QT12-3-0002-AI | 14 | 4,4′-DDE | 0.74 | 0.05 | 0.025 | 30.46 | 526,667 | 2.104 | 351630 | 0.67 |
| F95 | QT12-3-0002-AI | 14 | 4,4′-DDT | 0.09 | 0.05 | 0.025 | 30.46 | 288,937 | 2.104 | 42766 | 0.15 |
| F95 | QT12-3-0002-AI | 14 | 2,4′-DDD | 0.19 | 0.05 | 0.025 | 30.46 | 75,521 | 2.104 | 90283 | 1.20 |

**Table 4: Field, Laboratory Data and Calculations for SPME Ex-Situ Study during 14-Month Event**
SSC Pacific
Quantico, Virginia

| Extract Vial ID | Sample ID | Exposure Time (d) | Analyte | Reported Mass on SPME (ng) | Detection Limit (ng) | Fiber Weight (g) | Fiber Length[1] (cm) | Fiber:Water Partition Coefficient[2] (Kfs, L/L PDMS) | Volume of PDMS on fiber[3] (µL) | [PDMS DDx] (ng/L) | [Freely Dissolved Pore Water DDx][4] (ng/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F95 | QT12-3-0002-AI | 14 | 2,4′-DDE | ND | 0.05 | 0.025 | 30.46 | 516,595 | 2.104 | < 23759 | < 0.05 |
| F95 | QT12-3-0002-AI | 14 | 2,4′-DDT | ND | 0.05 | 0.025 | 30.46 | 569,687 | 2.104 | < 23759 | < 0.04 |
| F95 | QT12-3-0002-AI | 14 | 4,4′-DDD | 0.82 | 0.05 | 0.025 | 30.46 | 67,258 | 2.104 | 389644 | 5.79 |
| F96 | QT12-3-0002-BI | 14 | 4,4′-DDE | 0.32 | 0.05 | 0.025 | 29.74 | 526,667 | 2.055 | 155735 | 0.30 |
| F96 | QT12-3-0002-BI | 14 | 4,4′-DDT | 0.28 | 0.05 | 0.025 | 29.74 | 288,937 | 2.055 | 136268 | 0.47 |
| F96 | QT12-3-0002-BI | 14 | 2,4′-DDD | 0.24 | 0.05 | 0.025 | 29.74 | 75,521 | 2.055 | 116801 | 1.55 |
| F96 | QT12-3-0002-BI | 14 | 2,4′-DDE | 0.28 | 0.05 | 0.025 | 29.74 | 516,595 | 2.055 | 136268 | 0.26 |
| F96 | QT12-3-0002-BI | 14 | 2,4′-DDT | ND | 0.05 | 0.025 | 29.74 | 569,687 | 2.055 | < 24334 | < 0.04 |
| F96 | QT12-3-0002-BI | 14 | 4,4′-DDD | 0.84 | 0.05 | 0.025 | 29.74 | 67,258 | 2.055 | 408804 | 6.08 |
| F97 | QT12-3-0205-BI | 14 | 4,4′-DDE | 0.74 | 0.05 | 0.023 | 27.58 | 526,667 | 1.906 | 388322 | 0.74 |
| F97 | QT12-3-0205-BI | 14 | 4,4′-DDT | 0.41 | 0.05 | 0.023 | 27.58 | 288,937 | 1.906 | 215151 | 0.74 |
| F97 | QT12-3-0205-BI | 14 | 2,4′-DDD | 0.2 | 0.05 | 0.023 | 27.58 | 75,521 | 1.906 | 104952 | 1.39 |
| F97 | QT12-3-0205-BI | 14 | 2,4′-DDE | 0.24 | 0.05 | 0.023 | 27.58 | 516,595 | 1.906 | 125942 | 0.24 |
| F97 | QT12-3-0205-BI | 14 | 2,4′-DDT | ND | 0.05 | 0.023 | 27.58 | 569,687 | 1.906 | < 26238 | < 0.05 |
| F97 | QT12-3-0205-BI | 14 | 4,4′-DDD | 3.61 | 0.05 | 0.023 | 27.58 | 67,258 | 1.906 | 1894381 | 28.17 |
| F98 | QT12-3-0507-BI | 14 | 4,4′-DDE | 1.27 | 0.05 | 0.025 | 30.22 | 526,667 | 2.088 | 608263 | 1.15 |
| F98 | QT12-3-0507-BI | 14 | 4,4′-DDT | 0.18 | 0.05 | 0.025 | 30.22 | 288,937 | 2.088 | 86210 | 0.30 |
| F98 | QT12-3-0507-BI | 14 | 2,4′-DDD | 0.16 | 0.05 | 0.025 | 30.22 | 75,521 | 2.088 | 76632 | 1.01 |
| F98 | QT12-3-0507-BI | 14 | 2,4′-DDE | ND | 0.05 | 0.025 | 30.22 | 516,595 | 2.088 | < 23947 | < 0.05 |
| F98 | QT12-3-0507-BI | 14 | 2,4′-DDT | ND | 0.05 | 0.025 | 30.22 | 569,687 | 2.088 | < 23947 | < 0.04 |
| F98 | QT12-3-0507-BI | 14 | 4,4′-DDD | 1.81 | 0.05 | 0.025 | 30.22 | 67,258 | 2.088 | 866894 | 12.89 |
| F99 | QT12-4-0002 | 14 | 4,4′-DDE | 0.37 | 0.05 | 0.023 | 27.34 | 526,667 | 1.889 | 195864 | 0.37 |
| F99 | QT12-4-0002 | 14 | 4,4′-DDT | 0.1 | 0.05 | 0.023 | 27.34 | 288,937 | 1.889 | 52936 | 0.18 |
| F99 | QT12-4-0002 | 14 | 2,4′-DDD | ND | 0.05 | 0.023 | 27.34 | 75,521 | 1.889 | < 26468 | < 0.35 |
| F99 | QT12-4-0002 | 14 | 2,4′-DDE | ND | 0.05 | 0.023 | 27.34 | 516,595 | 1.889 | < 26468 | < 0.05 |
| F99 | QT12-4-0002 | 14 | 2,4′-DDT | ND | 0.05 | 0.023 | 27.34 | 569,687 | 1.889 | < 26468 | < 0.05 |
| F99 | QT12-4-0002 | 14 | 4,4′-DDD | 0.13 | 0.05 | 0.023 | 27.34 | 67,258 | 1.889 | 68817 | 1.02 |
| F100 | QT12-4-0205 | 14 | 4,4′-DDE | 0.45 | 0.05 | 0.023 | 27.46 | 526,667 | 1.897 | 237173 | 0.45 |
| F100 | QT12-4-0205 | 14 | 4,4′-DDT | ND | 0.05 | 0.023 | 27.46 | 288,937 | 1.897 | < 26353 | < 0.09 |
| F100 | QT12-4-0205 | 14 | 2,4′-DDD | ND | 0.05 | 0.023 | 27.46 | 75,521 | 1.897 | < 26353 | < 0.35 |
| F100 | QT12-4-0205 | 14 | 2,4′-DDE | 0.08 | 0.05 | 0.023 | 27.46 | 516,595 | 1.897 | 42164 | 0.08 |
| F100 | QT12-4-0205 | 14 | 2,4′-DDT | ND | 0.05 | 0.023 | 27.46 | 569,687 | 1.897 | < 26353 | < 0.05 |
| F100 | QT12-4-0205 | 14 | 4,4′-DDD | 0.13 | 0.05 | 0.023 | 27.46 | 67,258 | 1.897 | 68517 | 1.02 |
| F101 | QT12-4-0507 | 14 | 4,4′-DDE | 0.37 | 0.05 | 0.022 | 25.78 | 526,667 | 1.781 | 207707 | 0.39 |
| F101 | QT12-4-0507 | 14 | 4,4′-DDT | 0.18 | 0.05 | 0.022 | 25.78 | 288,937 | 1.781 | 101047 | 0.35 |

**Table 4: Field, Laboratory Data and Calculations for SPME Ex-Situ Study during 14-Month Event**
SSC Pacific
Quantico, Virginia

| Extract Vial ID | Sample ID | Exposure Time (d) | Analyte | Reported Mass on SPME (ng) | Detection Limit (ng) | Fiber Weight (g) | Fiber Length[1] (cm) | Fiber:Water Partition Coefficient[2] (Kfs, L/L PDMS) | Volume of PDMS on fiber[3] (µL) | [PDMS DDx] (ng/L) | [Freely Dissolved Pore Water DDx][4] (ng/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F101 | QT12-4-0507 | 14 | 2,4′-DDD | ND | 0.05 | 0.022 | 25.78 | 75,521 | 1.781 | < 28069 | < 0.37 |
| F101 | QT12-4-0507 | 14 | 2,4′-DDE | ND | 0.05 | 0.022 | 25.78 | 516,595 | 1.781 | < 28069 | < 0.05 |
| F101 | QT12-4-0507 | 14 | 2,4′-DDT | ND | 0.05 | 0.022 | 25.78 | 569,687 | 1.781 | < 28069 | < 0.05 |
| F101 | QT12-4-0507 | 14 | 4,4′-DDD | 0.15 | 0.05 | 0.022 | 25.78 | 67,258 | 1.781 | 84206 | 1.25 |
| F102 | QT12-4-0002-AI | 14 | 4,4′-DDE | 0.19 | 0.05 | 0.025 | 30.46 | 526,667 | 2.104 | 90283 | 0.17 |
| F102 | QT12-4-0002-AI | 14 | 4,4′-DDT | ND | 0.05 | 0.025 | 30.46 | 288,937 | 2.104 | < 23759 | < 0.08 |
| F102 | QT12-4-0002-AI | 14 | 2,4′-DDD | ND | 0.05 | 0.025 | 30.46 | 75,521 | 2.104 | < 23759 | < 0.31 |
| F102 | QT12-4-0002-AI | 14 | 2,4′-DDE | ND | 0.05 | 0.025 | 30.46 | 516,595 | 2.104 | < 23759 | < 0.05 |
| F102 | QT12-4-0002-AI | 14 | 2,4′-DDT | ND | 0.05 | 0.025 | 30.46 | 569,687 | 2.104 | < 23759 | < 0.04 |
| F102 | QT12-4-0002-AI | 14 | 4,4′-DDD | 0.18 | 0.05 | 0.025 | 30.46 | 67,258 | 2.104 | 85532 | 1.27 |
| F103 | QT12-4-0002-BI | 14 | 4,4′-DDE | 0.3 | 0.05 | 0.023 | 27.58 | 526,667 | 1.906 | 157428 | 0.30 |
| F103 | QT12-4-0002-BI | 14 | 4,4′-DDT | ND | 0.05 | 0.023 | 27.58 | 288,937 | 1.906 | < 26238 | < 0.09 |
| F103 | QT12-4-0002-BI | 14 | 2,4′-DDD | ND | 0.05 | 0.023 | 27.58 | 75,521 | 1.906 | < 26238 | < 0.35 |
| F103 | QT12-4-0002-BI | 14 | 2,4′-DDE | 0.11 | 0.05 | 0.023 | 27.58 | 516,595 | 1.906 | 57724 | 0.11 |
| F103 | QT12-4-0002-BI | 14 | 2,4′-DDT | ND | 0.05 | 0.023 | 27.58 | 569,687 | 1.906 | < 26238 | < 0.05 |
| F103 | QT12-4-0002-BI | 14 | 4,4′-DDD | 0.14 | 0.05 | 0.023 | 27.58 | 67,258 | 1.906 | 73466 | 1.09 |
| F104 | QT12-4-0205-BI | 14 | 4,4′-DDE | 0.1 | 0.05 | 0.024 | 28.30 | 526,667 | 1.955 | 51142 | 0.10 |
| F104 | QT12-4-0205-BI | 14 | 4,4′-DDT | ND | 0.05 | 0.024 | 28.30 | 288,937 | 1.955 | < 25571 | < 0.09 |
| F104 | QT12-4-0205-BI | 14 | 2,4′-DDD | ND | 0.05 | 0.024 | 28.30 | 75,521 | 1.955 | < 25571 | < 0.34 |
| F104 | QT12-4-0205-BI | 14 | 2,4′-DDE | ND | 0.05 | 0.024 | 28.30 | 516,595 | 1.955 | < 25571 | < 0.05 |
| F104 | QT12-4-0205-BI | 14 | 2,4′-DDT | ND | 0.05 | 0.024 | 28.30 | 569,687 | 1.955 | < 25571 | < 0.04 |
| F104 | QT12-4-0205-BI | 14 | 4,4′-DDD | ND | 0.05 | 0.024 | 28.30 | 67,258 | 1.955 | < 25571 | < 0.38 |
| F105 | QT12-4-0507-BI | 14 | 4,4′-DDE | 0.19 | 0.05 | 0.022 | 26.62 | 526,667 | 1.839 | 103297 | 0.20 |
| F105 | QT12-4-0507-BI | 14 | 4,4′-DDT | ND | 0.05 | 0.022 | 26.62 | 288,937 | 1.839 | < 27183 | < 0.09 |
| F105 | QT12-4-0507-BI | 14 | 2,4′-DDD | ND | 0.05 | 0.022 | 26.62 | 75,521 | 1.839 | < 27183 | < 0.36 |
| F105 | QT12-4-0507-BI | 14 | 2,4′-DDE | 0.12 | 0.05 | 0.022 | 26.62 | 516,595 | 1.839 | 65240 | 0.13 |
| F105 | QT12-4-0507-BI | 14 | 2,4′-DDT | ND | 0.05 | 0.022 | 26.62 | 569,687 | 1.839 | < 27183 | < 0.05 |
| F105 | QT12-4-0507-BI | 14 | 4,4′-DDD | 0.23 | 0.05 | 0.022 | 26.62 | 67,258 | 1.839 | 125044 | 1.86 |
| F106 | QT12-5-0002 | 14 | 4,4′-DDE | 0.38 | 0.05 | 0.023 | 28.06 | 526,667 | 1.939 | 196000 | 0.37 |
| F106 | QT12-5-0002 | 14 | 4,4′-DDT | 0.07 | 0.05 | 0.023 | 28.06 | 288,937 | 1.939 | 36105 | 0.12 |
| F106 | QT12-5-0002 | 14 | 2,4′-DDD | ND | 0.05 | 0.023 | 28.06 | 75,521 | 1.939 | < 25789 | < 0.34 |
| F106 | QT12-5-0002 | 14 | 2,4′-DDE | 0.09 | 0.05 | 0.023 | 28.06 | 516,595 | 1.939 | 46421 | 0.09 |
| F106 | QT12-5-0002 | 14 | 2,4′-DDT | ND | 0.05 | 0.023 | 28.06 | 569,687 | 1.939 | < 25789 | < 0.05 |
| F106 | QT12-5-0002 | 14 | 4,4′-DDD | 0.13 | 0.05 | 0.023 | 28.06 | 67,258 | 1.939 | 67053 | 1.00 |
| F107 | QT12-5-0205 | 14 | 4,4′-DDE | 0.46 | 0.05 | 0.022 | 26.38 | 526,667 | 1.823 | 252362 | 0.48 |

**Table 4: Field, Laboratory Data and Calculations for SPME Ex-Situ Study during 14-Month Event**
SSC Pacific
Quantico, Virginia

| Extract Vial ID | Sample ID | Exposure Time (d) | Analyte | Reported Mass on SPME (ng) | Detection Limit (ng) | Fiber Weight (g) | Fiber Length[1] (cm) | Fiber:Water Partition Coefficient[2] (Kfs, L/L PDMS) | Volume of PDMS on fiber[3] (µL) | [PDMS DDx] (ng/L) | [Freely Dissolved Pore Water DDx][4] (ng/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F107 | QT12-5-0205 | 14 | 4,4′-DDT | ND | 0.05 | 0.022 | 26.38 | 288,937 | 1.823 | < 27431 | < 0.09 |
| F107 | QT12-5-0205 | 14 | 2,4′-DDD | ND | 0.05 | 0.022 | 26.38 | 75,521 | 1.823 | < 27431 | < 0.36 |
| F107 | QT12-5-0205 | 14 | 2,4′-DDE | 0.12 | 0.05 | 0.022 | 26.38 | 516,595 | 1.823 | 65833 | 0.13 |
| F107 | QT12-5-0205 | 14 | 2,4′-DDT | ND | 0.05 | 0.022 | 26.38 | 569,687 | 1.823 | < 27431 | < 0.05 |
| F107 | QT12-5-0205 | 14 | 4,4′-DDD | 0.18 | 0.05 | 0.022 | 26.38 | 67,258 | 1.823 | 98750 | 1.47 |
| F108 | QT12-5-0507 | 14 | 4,4′-DDE | 0.21 | 0.05 | 0.025 | 30.10 | 526,667 | 2.080 | 100980 | 0.19 |
| F108 | QT12-5-0507 | 14 | 4,4′-DDT | ND | 0.05 | 0.025 | 30.10 | 288,937 | 2.080 | < 24043 | < 0.08 |
| F108 | QT12-5-0507 | 14 | 2,4′-DDD | ND | 0.05 | 0.025 | 30.10 | 75,521 | 2.080 | < 24043 | < 0.32 |
| F108 | QT12-5-0507 | 14 | 2,4′-DDE | 0.09 | 0.05 | 0.025 | 30.10 | 516,595 | 2.080 | 43277 | 0.08 |
| F108 | QT12-5-0507 | 14 | 2,4′-DDT | ND | 0.05 | 0.025 | 30.10 | 569,687 | 2.080 | < 24043 | < 0.04 |
| F108 | QT12-5-0507 | 14 | 4,4′-DDD | 0.16 | 0.05 | 0.025 | 30.10 | 67,258 | 2.080 | 76937 | 1.14 |
| F109 | QT12-5-0002-AI | 14 | 4,4′-DDE | 0.63 | 0.05 | 0.025 | 30.46 | 526,667 | 2.104 | 299361 | 0.57 |
| F109 | QT12-5-0002-AI | 14 | 4,4′-DDT | 0.07 | 0.05 | 0.025 | 30.46 | 288,937 | 2.104 | 33262 | 0.12 |
| F109 | QT12-5-0002-AI | 14 | 2,4′-DDD | ND | 0.05 | 0.025 | 30.46 | 75,521 | 2.104 | < 23759 | < 0.31 |
| F109 | QT12-5-0002-AI | 14 | 2,4′-DDE | 0.18 | 0.05 | 0.025 | 30.46 | 516,595 | 2.104 | 85532 | 0.17 |
| F109 | QT12-5-0002-AI | 14 | 2,4′-DDT | ND | 0.05 | 0.025 | 30.46 | 569,687 | 2.104 | < 23759 | < 0.04 |
| F109 | QT12-5-0002-AI | 14 | 4,4′-DDD | 0.27 | 0.05 | 0.025 | 30.46 | 67,258 | 2.104 | 128297 | 1.91 |
| F110 | QT12-5-0002-BI | 14 | 4,4′-DDE | 0.72 | 0.05 | 0.024 | 28.54 | 526,667 | 1.972 | 365127 | 0.69 |
| F110 | QT12-5-0002-BI | 14 | 4,4′-DDT | ND | 0.05 | 0.024 | 28.54 | 288,937 | 1.972 | < 25356 | < 0.09 |
| F110 | QT12-5-0002-BI | 14 | 2,4′-DDD | 0.11 | 0.05 | 0.024 | 28.54 | 75,521 | 1.972 | 55783 | 0.74 |
| F110 | QT12-5-0002-BI | 14 | 2,4′-DDE | 0.13 | 0.05 | 0.024 | 28.54 | 516,595 | 1.972 | 65926 | 0.13 |
| F110 | QT12-5-0002-BI | 14 | 2,4′-DDT | ND | 0.05 | 0.024 | 28.54 | 569,687 | 1.972 | < 25356 | < 0.04 |
| F110 | QT12-5-0002-BI | 14 | 4,4′-DDD | 0.41 | 0.05 | 0.024 | 28.54 | 67,258 | 1.972 | 207919 | 3.09 |
| F111 | QT12-5-0205-BI | 14 | 4,4′-DDE | 0.25 | 0.05 | 0.025 | 30.34 | 526,667 | 2.096 | 119263 | 0.23 |
| F111 | QT12-5-0205-BI | 14 | 4,4′-DDT | ND | 0.05 | 0.025 | 30.34 | 288,937 | 2.096 | < 23853 | < 0.08 |
| F111 | QT12-5-0205-BI | 14 | 2,4′-DDD | 0.07 | 0.05 | 0.025 | 30.34 | 75,521 | 2.096 | 33394 | 0.44 |
| F111 | QT12-5-0205-BI | 14 | 2,4′-DDE | 0.08 | 0.05 | 0.025 | 30.34 | 516,595 | 2.096 | 38164 | 0.07 |
| F111 | QT12-5-0205-BI | 14 | 2,4′-DDT | ND | 0.05 | 0.025 | 30.34 | 569,687 | 2.096 | < 23853 | < 0.04 |
| F111 | QT12-5-0205-BI | 14 | 4,4′-DDD | 0.28 | 0.05 | 0.025 | 30.34 | 67,258 | 2.096 | 133575 | 1.99 |
| F112 | QT12-5-0507-BI | 14 | 4,4′-DDE | 0.4 | 0.05 | 0.022 | 26.26 | 526,667 | 1.814 | 220447 | 0.42 |
| F112 | QT12-5-0507-BI | 14 | 4,4′-DDT | ND | 0.05 | 0.022 | 26.26 | 288,937 | 1.814 | < 27556 | < 0.10 |
| F112 | QT12-5-0507-BI | 14 | 2,4′-DDD | 0.07 | 0.05 | 0.022 | 26.26 | 75,521 | 1.814 | 38578 | 0.51 |
| F112 | QT12-5-0507-BI | 14 | 2,4′-DDE | 0.18 | 0.05 | 0.022 | 26.26 | 516,595 | 1.814 | 99201 | 0.19 |
| F112 | QT12-5-0507-BI | 14 | 2,4′-DDT | ND | 0.05 | 0.022 | 26.26 | 569,687 | 1.814 | < 27556 | < 0.05 |
| F112 | QT12-5-0507-BI | 14 | 4,4′-DDD | 0.87 | 0.05 | 0.022 | 26.26 | 67,258 | 1.814 | 479472 | 7.13 |

**Table 4: Field, Laboratory Data and Calculations for SPME Ex-Situ Study during 14-Month Event**
SSC Pacific
Quantico, Virginia

| Extract Vial ID | Sample ID | Exposure Time (d) | Analyte | Reported Mass on SPME (ng) | Detection Limit (ng) | Fiber Weight (g) | Fiber Length[1] (cm) | Fiber:Water Partition Coefficient[2] (Kfs, L/L PDMS) | Volume of PDMS on fiber[3] (µL) | [PDMS DDx] (ng/L) | [Freely Dissolved Pore Water DDx][4] (ng/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F113 | QT12-5DUP-0002 | 14 | 4,4′-DDE | 0.34 | 0.05 | NA [5] | 30.00 | 526,667 | 2.073 | 164014 | 0.31 |
| F113 | QT12-5DUP-0002 | 14 | 4,4′-DDT | ND | 0.05 | | 30.00 | 288,937 | 2.073 | < 24120 | < 0.08 |
| F113 | QT12-5DUP-0002 | 14 | 2,4′-DDD | ND | 0.05 | | 30.00 | 75,521 | 2.073 | < 24120 | < 0.32 |
| F113 | QT12-5DUP-0002 | 14 | 2,4′-DDE | ND | 0.05 | | 30.00 | 516,595 | 2.073 | < 24120 | < 0.05 |
| F113 | QT12-5DUP-0002 | 14 | 2,4′-DDT | ND | 0.05 | | 30.00 | 569,687 | 2.073 | < 24120 | < 0.04 |
| F113 | QT12-5DUP-0002 | 14 | 4,4′-DDD | 0.1 | 0.05 | | 30.00 | 67,258 | 2.073 | 48239 | 0.72 |
| F114 | QT12-5DUP-0205 | 14 | 4,4′-DDE | 0.56 | 0.05 | 0.025 | 29.50 | 526,667 | 2.038 | 274752 | 0.52 |
| F114 | QT12-5DUP-0205 | 14 | 4,4′-DDT | 0.06 | 0.05 | 0.025 | 29.50 | 288,937 | 2.038 | 29438 | 0.10 |
| F114 | QT12-5DUP-0205 | 14 | 2,4′-DDD | ND | 0.05 | 0.025 | 29.50 | 75,521 | 2.038 | < 24531 | < 0.32 |
| F114 | QT12-5DUP-0205 | 14 | 2,4′-DDE | ND | 0.05 | 0.025 | 29.50 | 516,595 | 2.038 | < 24531 | < 0.05 |
| F114 | QT12-5DUP-0205 | 14 | 2,4′-DDT | ND | 0.05 | 0.025 | 29.50 | 569,687 | 2.038 | < 24531 | < 0.04 |
| F114 | QT12-5DUP-0205 | 14 | 4,4′-DDD | 0.2 | 0.05 | 0.025 | 29.50 | 67,258 | 2.038 | 98126 | 1.46 |
| F115 | QT12-5DUP-0507 | 14 | 4,4′-DDE | 0.25 | 0.05 | 0.025 | 29.50 | 526,667 | 2.038 | 122657 | 0.23 |
| F115 | QT12-5DUP-0507 | 14 | 4,4′-DDT | ND | 0.05 | 0.025 | 29.50 | 288,937 | 2.038 | < 24531 | < 0.08 |
| F115 | QT12-5DUP-0507 | 14 | 2,4′-DDD | ND | 0.05 | 0.025 | 29.50 | 75,521 | 2.038 | < 24531 | < 0.32 |
| F115 | QT12-5DUP-0507 | 14 | 2,4′-DDE | 0.23 | 0.05 | 0.025 | 29.50 | 516,595 | 2.038 | 112845 | 0.22 |
| F115 | QT12-5DUP-0507 | 14 | 2,4′-DDT | ND | 0.05 | 0.025 | 29.50 | 569,687 | 2.038 | < 24531 | < 0.04 |
| F115 | QT12-5DUP-0507 | 14 | 4,4′-DDD | 0.39 | 0.05 | 0.025 | 29.50 | 67,258 | 2.038 | 191345 | 2.84 |
| F116 | QT12-5DUP-0002-AI | 14 | 4,4′-DDE | 0.4 | 0.05 | 0.023 | 28.18 | 526,667 | 1.947 | 205438 | 0.39 |
| F116 | QT12-5DUP-0002-AI | 14 | 4,4′-DDT | ND | 0.05 | 0.023 | 28.18 | 288,937 | 1.947 | < 25680 | < 0.09 |
| F116 | QT12-5DUP-0002-AI | 14 | 2,4′-DDD | ND | 0.05 | 0.023 | 28.18 | 75,521 | 1.947 | < 25680 | < 0.34 |
| F116 | QT12-5DUP-0002-AI | 14 | 2,4′-DDE | ND | 0.05 | 0.023 | 28.18 | 516,595 | 1.947 | < 25680 | < 0.05 |
| F116 | QT12-5DUP-0002-AI | 14 | 2,4′-DDT | ND | 0.05 | 0.023 | 28.18 | 569,687 | 1.947 | < 25680 | < 0.05 |
| F116 | QT12-5DUP-0002-AI | 14 | 4,4′-DDD | 0.25 | 0.05 | 0.023 | 28.18 | 67,258 | 1.947 | 128399 | 1.91 |
| F117 | QT12-5DUP-0002-BI | 14 | 4,4′-DDE | 0.34 | 0.05 | 0.026 | 30.94 | 526,667 | 2.138 | 159055 | 0.30 |
| F117 | QT12-5DUP-0002-BI | 14 | 4,4′-DDT | ND | 0.05 | 0.026 | 30.94 | 288,937 | 2.138 | < 23390 | < 0.08 |
| F117 | QT12-5DUP-0002-BI | 14 | 2,4′-DDD | 0.08 | 0.05 | 0.026 | 30.94 | 75,521 | 2.138 | 37425 | 0.50 |
| F117 | QT12-5DUP-0002-BI | 14 | 2,4′-DDE | 0.08 | 0.05 | 0.026 | 30.94 | 516,595 | 2.138 | 37425 | 0.07 |
| F117 | QT12-5DUP-0002-BI | 14 | 2,4′-DDT | ND | 0.05 | 0.026 | 30.94 | 569,687 | 2.138 | < 23390 | < 0.04 |
| F117 | QT12-5DUP-0002-BI | 14 | 4,4′-DDD | 0.28 | 0.05 | 0.026 | 30.94 | 67,258 | 2.138 | 130986 | 1.95 |
| F118 | QT12-5DUP-0205-BI | 14 | 4,4′-DDE | 0.22 | 0.05 | 0.024 | 28.30 | 526,667 | 1.955 | 112512 | 0.21 |
| F118 | QT12-5DUP-0205-BI | 14 | 4,4′-DDT | ND | 0.05 | 0.024 | 28.30 | 288,937 | 1.955 | < 25571 | < 0.09 |
| F118 | QT12-5DUP-0205-BI | 14 | 2,4′-DDD | 0.07 | 0.05 | 0.024 | 28.30 | 75,521 | 1.955 | 35799 | 0.47 |
| F118 | QT12-5DUP-0205-BI | 14 | 2,4′-DDE | 0.13 | 0.05 | 0.024 | 28.30 | 516,595 | 1.955 | 66484 | 0.13 |
| F118 | QT12-5DUP-0205-BI | 14 | 2,4′-DDT | ND | 0.05 | 0.024 | 28.30 | 569,687 | 1.955 | < 25571 | < 0.04 |

**Table 4: Field, Laboratory Data and Calculations for SPME Ex-Situ Study during 14-Month Event**
SSC Pacific
Quantico, Virginia

| Extract Vial ID | Sample ID | Exposure Time (d) | Analyte | Reported Mass on SPME (ng) | Detection Limit (ng) | Fiber Weight (g) | Fiber Length[1] (cm) | Fiber:Water Partition Coefficient[2] (Kfs, L/L PDMS) | Volume of PDMS on fiber[3] (µL) | [PDMS DDx] (ng/L) | [Freely Dissolved Pore Water DDx][4] (ng/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F118 | QT12-5DUP-0205-BI | 14 | 4,4′-DDD | 0.31 | 0.05 | 0.024 | 28.30 | 67,258 | 1.955 | 158540 | 2.36 |
| F119 | QT12-5DUP-0507-BI | 14 | 4,4′-DDE | 0.45 | 0.05 | 0.025 | 29.98 | 526,667 | 2.071 | 217250 | 0.41 |
| F119 | QT12-5DUP-0507-BI | 14 | 4,4′-DDT | ND | 0.05 | 0.025 | 29.98 | 288,937 | 2.071 | < 24139 | < 0.08 |
| F119 | QT12-5DUP-0507-BI | 14 | 2,4′-DDD | ND | 0.05 | 0.025 | 29.98 | 75,521 | 2.071 | < 24139 | < 0.32 |
| F119 | QT12-5DUP-0507-BI | 14 | 2,4′-DDE | 0.11 | 0.05 | 0.025 | 29.98 | 516,595 | 2.071 | 53106 | 0.10 |
| F119 | QT12-5DUP-0507-BI | 14 | 2,4′-DDT | ND | 0.05 | 0.025 | 29.98 | 569,687 | 2.071 | < 24139 | < 0.04 |
| F119 | QT12-5DUP-0507-BI | 14 | 4,4′-DDD | 0.22 | 0.05 | 0.025 | 29.98 | 67,258 | 2.071 | 106211 | 1.58 |
| F120 | QT12-6-GRAB | 14 | 4,4′-DDE | 0.07 | 0.05 | 0.022 | 26.62 | 526,667 | 1.839 | 38057 | 0.07 |
| F120 | QT12-6-GRAB | 14 | 4,4′-DDT | ND | 0.05 | 0.022 | 26.62 | 288,937 | 1.839 | < 27183 | < 0.09 |
| F120 | QT12-6-GRAB | 14 | 2,4′-DDD | ND | 0.05 | 0.022 | 26.62 | 75,521 | 1.839 | < 27183 | < 0.36 |
| F120 | QT12-6-GRAB | 14 | 2,4′-DDE | ND | 0.05 | 0.022 | 26.62 | 516,595 | 1.839 | < 27183 | < 0.05 |
| F120 | QT12-6-GRAB | 14 | 2,4′-DDT | ND | 0.05 | 0.022 | 26.62 | 569,687 | 1.839 | < 27183 | < 0.05 |
| F120 | QT12-6-GRAB | 14 | 4,4′-DDD | ND | 0.05 | 0.022 | 26.62 | 67,258 | 1.839 | < 27183 | < 0.40 |
| F121 | QT12-7-GRAB | 14 | 4,4′-DDE | 0.08 | 0.05 | 0.023 | 27.82 | 526,667 | 1.922 | 41619 | 0.08 |
| F121 | QT12-7-GRAB | 14 | 4,4′-DDT | ND | 0.05 | 0.023 | 27.82 | 288,937 | 1.922 | < 26012 | < 0.09 |
| F121 | QT12-7-GRAB | 14 | 2,4′-DDD | ND | 0.05 | 0.023 | 27.82 | 75,521 | 1.922 | < 26012 | < 0.34 |
| F121 | QT12-7-GRAB | 14 | 2,4′-DDE | 0.08 | 0.05 | 0.023 | 27.82 | 516,595 | 1.922 | 41619 | 0.08 |
| F121 | QT12-7-GRAB | 14 | 2,4′-DDT | ND | 0.05 | 0.023 | 27.82 | 569,687 | 1.922 | < 26012 | < 0.05 |
| F121 | QT12-7-GRAB | 14 | 4,4′-DDD | ND | 0.05 | 0.023 | 27.82 | 67,258 | 1.922 | < 26012 | < 0.39 |

**Footnotes:**

1.) Fiber mass per length value 0.000834 g/cm
2.) Fiber:Water Partition Coefficient calculated as Log Kfs = LogKow - 0.91 (Mayer et al. 2000). Log Kow referenced from ATDSR (2002) Toxicological Profile for DDT, DDE
3.) 0.0691 µL polydimethylsiloxane (PDMS) per cm of this type of SPME fiber.
4.) Concentration of exposure solution = Concentration in fiber ÷ Kfs. If not detected, reported as < detection limit.
5.) Hexane was added to vial prior to weighing with fibers. For calculation of porewater concentrations, full recovery of 30cm SPME fiber is assumed.

**Abbreviations:**

cm: centimeter(s)
d: day(s)
g: gram(s)
Kfs: Fiber:Water Partition Coefficient
L: Liter(s)
µ: micro
NA: Not available
ND: Not detected
ng: nanogram(s)
PDMS: Polydimethylsiloxane
SPME: solid phase microextraction

**Table 5: Field, Laboratory Data and Calculations for SPME Ex-Situ Study during 25-Month Event**
SSC Pacific
Quantico, Virginia

| Extract Vial ID | Sample ID | Exposure Time (d) | Analyte | Reported Mass on SPME (ng) | Detection Limit (ng) | Fiber Weight (g) | Fiber Length (cm)[1] | Fiber:Water Partition Coefficient[2] (Kfs, L/L PDMS) | Volume of PDMS on fiber (µL)[3] | [PDMS DDx] (ng/L) | [Freely Dissolved Pore Water DDx] (ng/L)[4] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F129 | QT25-1-0002 | 14 | 2,4´-DDD | 0.08 | 0.05 | 0.023 | 27.94 | 75,521 | 1.930 | 41,440 | 0.55 |
| F129 | QT25-1-0002 | 14 | 2,4´-DDE | 0.14 | 0.05 | 0.023 | 27.94 | 516,595 | 1.930 | 72,520 | 0.14 |
| F129 | QT25-1-0002 | 14 | 2,4´-DDT | ND | 0.05 | 0.023 | 27.94 | 569,687 | 1.930 | < 25,900 | < 0.05 |
| F129 | QT25-1-0002 | 14 | 4,4´-DDD | 0.29 | 0.05 | 0.023 | 27.94 | 67,258 | 1.930 | 150,221 | 2.23 |
| F129 | QT25-1-0002 | 14 | 4,4´-DDE | 0.33 | 0.05 | 0.023 | 27.94 | 526,667 | 1.930 | 170,941 | 0.32 |
| F129 | QT25-1-0002 | 14 | 4,4´-DDT | ND | 0.05 | 0.023 | 27.94 | 288,937 | 1.930 | < 25,900 | < 0.09 |
| F130 | QT25-1-0205 | 14 | 2,4´-DDD | 0.08 | 0.05 | 0.026 | 31.06 | 75,521 | 2.146 | 37,280 | 0.49 |
| F130 | QT25-1-0205 | 14 | 2,4´-DDE | 0.12 | 0.05 | 0.026 | 31.06 | 516,595 | 2.146 | 55,920 | 0.11 |
| F130 | QT25-1-0205 | 14 | 2,4´-DDT | ND | 0.05 | 0.026 | 31.06 | 569,687 | 2.146 | < 23,300 | < 0.04 |
| F130 | QT25-1-0205 | 14 | 4,4´-DDD | 0.26 | 0.05 | 0.026 | 31.06 | 67,258 | 2.146 | 121,161 | 1.80 |
| F130 | QT25-1-0205 | 14 | 4,4´-DDE | 0.62 | 0.05 | 0.026 | 31.06 | 526,667 | 2.146 | 288,922 | 0.55 |
| F130 | QT25-1-0205 | 14 | 4,4´-DDT | 0.19 | 0.05 | 0.026 | 31.06 | 288,937 | 2.146 | 88,540 | 0.31 |
| F131 | QT25-1-0507 | 14 | 2,4´-DDD | 0.07 | 0.05 | 0.025 | 30.22 | 75,521 | 2.088 | 33,526 | 0.44 |
| F131 | QT25-1-0507 | 14 | 2,4´-DDE | 0.13 | 0.05 | 0.025 | 30.22 | 516,595 | 2.088 | 62,263 | 0.12 |
| F131 | QT25-1-0507 | 14 | 2,4´-DDT | ND | 0.05 | 0.025 | 30.22 | 569,687 | 2.088 | < 23,947 | < 0.04 |
| F131 | QT25-1-0507 | 14 | 4,4´-DDD | 0.43 | 0.05 | 0.025 | 30.22 | 67,258 | 2.088 | 205,947 | 3.06 |
| F131 | QT25-1-0507 | 14 | 4,4´-DDE | 0.41 | 0.05 | 0.025 | 30.22 | 526,667 | 2.088 | 196,368 | 0.37 |
| F131 | QT25-1-0507 | 14 | 4,4´-DDT | 0.07 | 0.05 | 0.025 | 30.22 | 288,937 | 2.088 | 33,526 | 0.12 |
| F132 | QT25-1-0002-AI | 14 | 2,4´-DDD | 0.11 | 0.05 | 0.027 | 31.89 | 75,521 | 2.204 | 49,911 | 0.66 |
| F132 | QT25-1-0002-AI | 14 | 2,4´-DDE | 0.18 | 0.05 | 0.027 | 31.89 | 516,595 | 2.204 | 81,673 | 0.16 |
| F132 | QT25-1-0002-AI | 14 | 2,4´-DDT | ND | 0.05 | 0.027 | 31.89 | 569,687 | 2.204 | < 22,687 | < 0.04 |
| F132 | QT25-1-0002-AI | 14 | 4,4´-DDD | 0.42 | 0.05 | 0.027 | 31.89 | 67,258 | 2.204 | 190,570 | 2.83 |
| F132 | QT25-1-0002-AI | 14 | 4,4´-DDE | 0.55 | 0.05 | 0.027 | 31.89 | 526,667 | 2.204 | 249,557 | 0.47 |
| F132 | QT25-1-0002-AI | 14 | 4,4´-DDT | 0.07 | 0.05 | 0.027 | 31.89 | 288,937 | 2.204 | 31,762 | 0.11 |
| F133 | QT25-1-0002-BI | 14 | 2,4´-DDD | 0.08 | 0.05 | 0.026 | 30.70 | 75,521 | 2.121 | 37,717 | 0.50 |
| F133 | QT25-1-0002-BI | 14 | 2,4´-DDE | 0.13 | 0.05 | 0.026 | 30.70 | 516,595 | 2.121 | 61,290 | 0.12 |
| F133 | QT25-1-0002-BI | 14 | 2,4´-DDT | ND | 0.05 | 0.026 | 30.70 | 569,687 | 2.121 | < 23,573 | < 0.04 |
| F133 | QT25-1-0002-BI | 14 | 4,4´-DDD | 1.34 | 0.05 | 0.026 | 30.70 | 67,258 | 2.121 | 631,761 | 9.39 |
| F133 | QT25-1-0002-BI | 14 | 4,4´-DDE | 0.37 | 0.05 | 0.026 | 30.70 | 526,667 | 2.121 | 174,441 | 0.33 |
| F133 | QT25-1-0002-BI | 14 | 4,4´-DDT | 0.21 | 0.05 | 0.026 | 30.70 | 288,937 | 2.121 | 99,007 | 0.34 |
| F134 | QT25-1-0205-BI | 14 | 2,4´-DDD | 0.27 | 0.05 | 0.025 | 29.74 | 75,521 | 2.055 | 131,401 | 1.74 |
| F134 | QT25-1-0205-BI | 14 | 2,4´-DDE | 0.22 | 0.05 | 0.025 | 29.74 | 516,595 | 2.055 | 107,068 | 0.21 |
| F134 | QT25-1-0205-BI | 14 | 2,4´-DDT | 0.12 | 0.05 | 0.025 | 29.74 | 569,687 | 2.055 | 58,401 | 0.10 |
| F134 | QT25-1-0205-BI | 14 | 4,4´-DDD | 16.2 | 0.05 | 0.025 | 29.74 | 67,258 | 2.055 | 7,884,086 | 117.22 |
| F134 | QT25-1-0205-BI | 14 | 4,4´-DDE | 0.43 | 0.05 | 0.025 | 29.74 | 526,667 | 2.055 | 209,269 | 0.40 |

**Table 5: Field, Laboratory Data and Calculations for SPME Ex-Situ Study during 25-Month Event**
SSC Pacific
Quantico, Virginia

| Extract Vial ID | Sample ID | Exposure Time (d) | Analyte | Reported Mass on SPME (ng) | Detection Limit (ng) | Fiber Weight (g) | Fiber Length (cm)[1] | Fiber:Water Partition Coefficient[2] (Kfs, L/L PDMS) | Volume of PDMS on fiber (µL)[3] | [PDMS DDx] (ng/L) | [Freely Dissolved Pore Water DDx] (ng/L)[4] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F134 | QT25-1-0205-BI | 14 | 4,4′-DDT | 0.78 | 0.05 | 0.025 | 29.74 | 288,937 | 2.055 | 379,604 | 1.31 |
| F135 | QT25-1-0507-BI | 14 | 2,4′-DDD | 0.05 | 0.05 | 0.026 | 31.06 | 75,521 | 2.146 | 23,300 | 0.31 |
| F135 | QT25-1-0507-BI | 14 | 2,4′-DDE | 0.13 | 0.05 | 0.026 | 31.06 | 516,595 | 2.146 | 60,580 | 0.12 |
| F135 | QT25-1-0507-BI | 14 | 2,4′-DDT | ND | 0.05 | 0.026 | 31.06 | 569,687 | 2.146 | < 23,300 | < 0.04 |
| F135 | QT25-1-0507-BI | 14 | 4,4′-DDD | 0.17 | 0.05 | 0.026 | 31.06 | 67,258 | 2.146 | 79,220 | 1.18 |
| F135 | QT25-1-0507-BI | 14 | 4,4′-DDE | 0.22 | 0.05 | 0.026 | 31.06 | 526,667 | 2.146 | 102,521 | 0.19 |
| F135 | QT25-1-0507-BI | 14 | 4,4′-DDT | 0.14 | 0.05 | 0.026 | 31.06 | 288,937 | 2.146 | 65,240 | 0.23 |
| F136 | QT25-2-0002 | 14 | 2,4′-DDD | ND | 0.05 | 0.024 | 28.30 | 75,521 | 1.955 | < 25,571 | < 0.34 |
| F136 | QT25-2-0002 | 14 | 2,4′-DDE | ND | 0.05 | 0.024 | 28.30 | 516,595 | 1.955 | < 25,571 | < 0.05 |
| F136 | QT25-2-0002 | 14 | 2,4′-DDT | ND | 0.05 | 0.024 | 28.30 | 569,687 | 1.955 | < 25,571 | < 0.04 |
| F136 | QT25-2-0002 | 14 | 4,4′-DDD | 0.16 | 0.05 | 0.024 | 28.30 | 67,258 | 1.955 | 81,827 | 1.22 |
| F136 | QT25-2-0002 | 14 | 4,4′-DDE | 0.19 | 0.05 | 0.024 | 28.30 | 526,667 | 1.955 | 97,169 | 0.18 |
| F136 | QT25-2-0002 | 14 | 4,4′-DDT | 0.05 | 0.05 | 0.024 | 28.30 | 288,937 | 1.955 | 25,571 | 0.09 |
| F137 | QT25-2-0205 | 14 | 2,4′-DDD | ND | 0.05 | 0.025 | 30.46 | 75,521 | 2.104 | < 23,759 | < 0.31 |
| F137 | QT25-2-0205 | 14 | 2,4′-DDE | ND | 0.05 | 0.025 | 30.46 | 516,595 | 2.104 | < 23,759 | < 0.05 |
| F137 | QT25-2-0205 | 14 | 2,4′-DDT | ND | 0.05 | 0.025 | 30.46 | 569,687 | 2.104 | < 23,759 | < 0.04 |
| F137 | QT25-2-0205 | 14 | 4,4′-DDD | 0.18 | 0.05 | 0.025 | 30.46 | 67,258 | 2.104 | 85,532 | 1.27 |
| F137 | QT25-2-0205 | 14 | 4,4′-DDE | 0.33 | 0.05 | 0.025 | 30.46 | 526,667 | 2.104 | 156,808 | 0.30 |
| F137 | QT25-2-0205 | 14 | 4,4′-DDT | 0.06 | 0.05 | 0.025 | 30.46 | 288,937 | 2.104 | 28,511 | 0.10 |
| F138 | QT25-2-0507 | 14 | 2,4′-DDD | ND | 0.05 | 0.023 | 28.18 | 75,521 | 1.947 | < 25,680 | < 0.34 |
| F138 | QT25-2-0507 | 14 | 2,4′-DDE | 0.41 | 0.05 | 0.023 | 28.18 | 516,595 | 1.947 | 210,574 | 0.41 |
| F138 | QT25-2-0507 | 14 | 2,4′-DDT | ND | 0.05 | 0.023 | 28.18 | 569,687 | 1.947 | < 25,680 | < 0.05 |
| F138 | QT25-2-0507 | 14 | 4,4′-DDD | ND | 0.05 | 0.023 | 28.18 | 67,258 | 1.947 | < 25,680 | < 0.38 |
| F138 | QT25-2-0507 | 14 | 4,4′-DDE | 0.34 | 0.05 | 0.023 | 28.18 | 526,667 | 1.947 | 174,622 | 0.33 |
| F138 | QT25-2-0507 | 14 | 4,4′-DDT | 2.75 | 0.05 | 0.023 | 28.18 | 288,937 | 1.947 | 1,412,384 | 4.89 |
| F139 | QT25-2-0002-AI | 14 | 2,4′-DDD | 0.08 | 0.05 | 0.026 | 31.29 | 75,521 | 2.162 | 36,995 | 0.49 |
| F139 | QT25-2-0002-AI | 14 | 2,4′-DDE | 0.21 | 0.05 | 0.026 | 31.29 | 516,595 | 2.162 | 97,111 | 0.19 |
| F139 | QT25-2-0002-AI | 14 | 2,4′-DDT | ND | 0.05 | 0.026 | 31.29 | 569,687 | 2.162 | < 23,122 | < 0.04 |
| F139 | QT25-2-0002-AI | 14 | 4,4′-DDD | 8.71 | 0.05 | 0.026 | 31.29 | 67,258 | 2.162 | 4,027,779 | 59.89 |
| F139 | QT25-2-0002-AI | 14 | 4,4′-DDE | 0.21 | 0.05 | 0.026 | 31.29 | 526,667 | 2.162 | 97,111 | 0.18 |
| F139 | QT25-2-0002-AI | 14 | 4,4′-DDT | 0.34 | 0.05 | 0.026 | 31.29 | 288,937 | 2.162 | 157,227 | 0.54 |
| F140 | QT25-2-0002-BI | 14 | 2,4′-DDD | ND | 0.05 | 0.026 | 31.65 | 75,521 | 2.187 | < 22,859 | < 0.30 |
| F140 | QT25-2-0002-BI | 14 | 2,4′-DDE | 0.35 | 0.05 | 0.026 | 31.65 | 516,595 | 2.187 | 160,012 | 0.31 |
| F140 | QT25-2-0002-BI | 14 | 2,4′-DDT | ND | 0.05 | 0.026 | 31.65 | 569,687 | 2.187 | < 22,859 | < 0.04 |
| F140 | QT25-2-0002-BI | 14 | 4,4′-DDD | 1.4 | 0.05 | 0.026 | 31.65 | 67,258 | 2.187 | 640,047 | 9.52 |

**Table 5: Field, Laboratory Data and Calculations for SPME Ex-Situ Study during 25-Month Event**
SSC Pacific
Quantico, Virginia

| Extract Vial ID | Sample ID | Exposure Time (d) | Analyte | Reported Mass on SPME (ng) | Detection Limit (ng) | Fiber Weight (g) | Fiber Length (cm)[1] | Fiber:Water Partition Coefficient[2] (Kfs, L/L PDMS) | Volume of PDMS on fiber (µL)[3] | [PDMS DDx] (ng/L) | [Freely Dissolved Pore Water DDx] (ng/L)[4] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F140 | QT25-2-0002-BI | 14 | 4,4´-DDE | 0.33 | 0.05 | 0.026 | 31.65 | 526,667 | 2.187 | 150,868 | 0.29 |
| F140 | QT25-2-0002-BI | 14 | 4,4´-DDT | 2.09 | 0.05 | 0.026 | 31.65 | 288,937 | 2.187 | 955,499 | 3.31 |
| F141 | QT25-2-0205-BI | 14 | 2,4´-DDD | ND | 0.05 | 0.026 | 31.06 | 75,521 | 2.146 | < 23,300 | < 0.31 |
| F141 | QT25-2-0205-BI | 14 | 2,4´-DDE | 0.3 | 0.05 | 0.026 | 31.06 | 516,595 | 2.146 | 139,801 | 0.27 |
| F141 | QT25-2-0205-BI | 14 | 2,4´-DDT | ND | 0.05 | 0.026 | 31.06 | 569,687 | 2.146 | < 23,300 | < 0.04 |
| F141 | QT25-2-0205-BI | 14 | 4,4´-DDD | 1.7 | 0.05 | 0.026 | 31.06 | 67,258 | 2.146 | 792,204 | 11.78 |
| F141 | QT25-2-0205-BI | 14 | 4,4´-DDE | 0.74 | 0.05 | 0.026 | 31.06 | 526,667 | 2.146 | 344,842 | 0.65 |
| F141 | QT25-2-0205-BI | 14 | 4,4´-DDT | 1.29 | 0.05 | 0.026 | 31.06 | 288,937 | 2.146 | 601,143 | 2.08 |
| F142 | QT25-2-0507-BI | 14 | 2,4´-DDD | ND | 0.05 | 0.025 | 29.38 | 75,521 | 2.030 | < 24,632 | < 0.33 |
| F142 | QT25-2-0507-BI | 14 | 2,4´-DDE | 0.21 | 0.05 | 0.025 | 29.38 | 516,595 | 2.030 | 103,453 | 0.20 |
| F142 | QT25-2-0507-BI | 14 | 2,4´-DDT | ND | 0.05 | 0.025 | 29.38 | 569,687 | 2.030 | < 24,632 | < 0.04 |
| F142 | QT25-2-0507-BI | 14 | 4,4´-DDD | 0.65 | 0.05 | 0.025 | 29.38 | 67,258 | 2.030 | 320,210 | 4.76 |
| F142 | QT25-2-0507-BI | 14 | 4,4´-DDE | 0.55 | 0.05 | 0.025 | 29.38 | 526,667 | 2.030 | 270,947 | 0.51 |
| F142 | QT25-2-0507-BI | 14 | 4,4´-DDT | 0.3 | 0.05 | 0.025 | 29.38 | 288,937 | 2.030 | 147,789 | 0.51 |
| F143 | QT25-3-0002 | 14 | 2,4´-DDD | 0.1 | 0.05 | 0.026 | 30.70 | 75,521 | 2.121 | 47,146 | 0.62 |
| F143 | QT25-3-0002 | 14 | 2,4´-DDE | 0.15 | 0.05 | 0.026 | 30.70 | 516,595 | 2.121 | 70,720 | 0.14 |
| F143 | QT25-3-0002 | 14 | 2,4´-DDT | ND | 0.05 | 0.026 | 30.70 | 569,687 | 2.121 | < 23,573 | < 0.04 |
| F143 | QT25-3-0002 | 14 | 4,4´-DDD | 0.29 | 0.05 | 0.026 | 30.70 | 67,258 | 2.121 | 136,724 | 2.03 |
| F143 | QT25-3-0002 | 14 | 4,4´-DDE | 0.74 | 0.05 | 0.026 | 30.70 | 526,667 | 2.121 | 348,883 | 0.66 |
| F143 | QT25-3-0002 | 14 | 4,4´-DDT | 0.05 | 0.05 | 0.026 | 30.70 | 288,937 | 2.121 | 23,573 | 0.08 |
| F144 | QT25-3-0205 | 14 | 2,4´-DDD | ND | 0.05 | 0.024 | 28.54 | 75,521 | 1.972 | < 25,356 | < 0.34 |
| F144 | QT25-3-0205 | 14 | 2,4´-DDE | 0.31 | 0.05 | 0.024 | 28.54 | 516,595 | 1.972 | 157,207 | 0.30 |
| F144 | QT25-3-0205 | 14 | 2,4´-DDT | ND | 0.05 | 0.024 | 28.54 | 569,687 | 1.972 | < 25,356 | < 0.04 |
| F144 | QT25-3-0205 | 14 | 4,4´-DDD | 0.25 | 0.05 | 0.024 | 28.54 | 67,258 | 1.972 | 126,780 | 1.88 |
| F144 | QT25-3-0205 | 14 | 4,4´-DDE | 0.68 | 0.05 | 0.024 | 28.54 | 526,667 | 1.972 | 344,842 | 0.65 |
| F144 | QT25-3-0205 | 14 | 4,4´-DDT | 0.92 | 0.05 | 0.024 | 28.54 | 288,937 | 1.972 | 466,551 | 1.61 |
| F145 | QT25-3-0507 | 14 | 2,4´-DDD | 0.17 | 0.05 | 0.026 | 30.82 | 75,521 | 2.129 | 79,837 | 1.06 |
| F145 | QT25-3-0507 | 14 | 2,4´-DDE | 0.2 | 0.05 | 0.026 | 30.82 | 516,595 | 2.129 | 93,926 | 0.18 |
| F145 | QT25-3-0507 | 14 | 2,4´-DDT | 0.05 | 0.05 | 0.026 | 30.82 | 569,687 | 2.129 | 23,481 | 0.04 |
| F145 | QT25-3-0507 | 14 | 4,4´-DDD | 0.42 | 0.05 | 0.026 | 30.82 | 67,258 | 2.129 | 197,244 | 2.93 |
| F145 | QT25-3-0507 | 14 | 4,4´-DDE | 0.71 | 0.05 | 0.026 | 30.82 | 526,667 | 2.129 | 333,437 | 0.63 |
| F145 | QT25-3-0507 | 14 | 4,4´-DDT | ND | 0.05 | 0.026 | 30.82 | 288,937 | 2.129 | < 23,481 | < 0.08 |
| F146 | QT25-3-0002-AI | 14 | 2,4´-DDD | 0.34 | 0.05 | 0.020 | 24.34 | 75,521 | 1.682 | 202,149 | 2.68 |
| F146 | QT25-3-0002-AI | 14 | 2,4´-DDE | 0.2 | 0.05 | 0.020 | 24.34 | 516,595 | 1.682 | 118,911 | 0.23 |
| F146 | QT25-3-0002-AI | 14 | 2,4´-DDT | ND | 0.05 | 0.020 | 24.34 | 569,687 | 1.682 | < 29,728 | < 0.05 |

**Table 5: Field, Laboratory Data and Calculations for SPME Ex-Situ Study during 25-Month Event**
SSC Pacific
Quantico, Virginia

| Extract Vial ID | Sample ID | Exposure Time (d) | Analyte | Reported Mass on SPME (ng) | Detection Limit (ng) | Fiber Weight (g) | Fiber Length (cm)[1] | Fiber:Water Partition Coefficient[2] (Kfs, L/L PDMS) | Volume of PDMS on fiber (µL)[3] | [PDMS DDx] (ng/L) | [Freely Dissolved Pore Water DDx] (ng/L)[4] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F146 | QT25-3-0002-AI | 14 | 4,4´-DDD | 0.47 | 0.05 | 0.020 | 24.34 | 67,258 | 1.682 | 279,441 | 4.15 |
| F146 | QT25-3-0002-AI | 14 | 4,4´-DDE | 0.84 | 0.05 | 0.020 | 24.34 | 526,667 | 1.682 | 499,426 | 0.95 |
| F146 | QT25-3-0002-AI | 14 | 4,4´-DDT | 0.26 | 0.05 | 0.020 | 24.34 | 288,937 | 1.682 | 154,584 | 0.54 |
| F147 | QT25-3-0002-BI | 14 | 2,4´-DDD | ND | 0.05 | 0.026 | 30.70 | 75,521 | 2.121 | < 23,573 | < 0.31 |
| F147 | QT25-3-0002-BI | 14 | 2,4´-DDE | 0.29 | 0.05 | 0.026 | 30.70 | 516,595 | 2.121 | 136,724 | 0.26 |
| F147 | QT25-3-0002-BI | 14 | 2,4´-DDT | ND | 0.05 | 0.026 | 30.70 | 569,687 | 2.121 | < 23,573 | < 0.04 |
| F147 | QT25-3-0002-BI | 14 | 4,4´-DDD | 15.1 | 0.05 | 0.026 | 30.70 | 67,258 | 2.121 | 7,119,098 | 105.85 |
| F147 | QT25-3-0002-BI | 14 | 4,4´-DDE | 0.4 | 0.05 | 0.026 | 30.70 | 526,667 | 2.121 | 188,585 | 0.36 |
| F147 | QT25-3-0002-BI | 14 | 4,4´-DDT | 0.81 | 0.05 | 0.026 | 30.70 | 288,937 | 2.121 | 381,885 | 1.32 |
| F148 | QT25-3-0205-BI | 14 | 2,4´-DDD | ND | 0.05 | 0.026 | 31.41 | 75,521 | 2.171 | < 23,033 | < 0.30 |
| F148 | QT25-3-0205-BI | 14 | 2,4´-DDE | 0.44 | 0.05 | 0.026 | 31.41 | 516,595 | 2.171 | 202,693 | 0.39 |
| F148 | QT25-3-0205-BI | 14 | 2,4´-DDT | ND | 0.05 | 0.026 | 31.41 | 569,687 | 2.171 | < 23,033 | < 0.04 |
| F148 | QT25-3-0205-BI | 14 | 4,4´-DDD | 0.5 | 0.05 | 0.026 | 31.41 | 67,258 | 2.171 | 230,333 | 3.42 |
| F148 | QT25-3-0205-BI | 14 | 4,4´-DDE | 0.32 | 0.05 | 0.026 | 31.41 | 526,667 | 2.171 | 147,413 | 0.28 |
| F148 | QT25-3-0205-BI | 14 | 4,4´-DDT | 1.09 | 0.05 | 0.026 | 31.41 | 288,937 | 2.171 | 502,127 | 1.74 |
| F149 | QT25-3-0507-BI | 14 | 2,4´-DDD | ND | 0.05 | 0.024 | 29.02 | 75,521 | 2.005 | < 24,937 | < 0.33 |
| F149 | QT25-3-0507-BI | 14 | 2,4´-DDE | 0.41 | 0.05 | 0.024 | 29.02 | 516,595 | 2.005 | 204,483 | 0.40 |
| F149 | QT25-3-0507-BI | 14 | 2,4´-DDT | ND | 0.05 | 0.024 | 29.02 | 569,687 | 2.005 | < 24,937 | < 0.04 |
| F149 | QT25-3-0507-BI | 14 | 4,4´-DDD | 0.34 | 0.05 | 0.024 | 29.02 | 67,258 | 2.005 | 169,571 | 2.52 |
| F149 | QT25-3-0507-BI | 14 | 4,4´-DDE | 0.38 | 0.05 | 0.024 | 29.02 | 526,667 | 2.005 | 189,521 | 0.36 |
| F149 | QT25-3-0507-BI | 14 | 4,4´-DDT | 0.54 | 0.05 | 0.024 | 29.02 | 288,937 | 2.005 | 269,319 | 0.93 |
| F150 | QT25-4-0002 | 14 | 2,4´-DDD | 0.05 | 0.05 | 0.025 | 30.58 | 75,521 | 2.113 | 23,666 | 0.31 |
| F150 | QT25-4-0002 | 14 | 2,4´-DDE | 0.07 | 0.05 | 0.025 | 30.58 | 516,595 | 2.113 | 33,132 | 0.06 |
| F150 | QT25-4-0002 | 14 | 2,4´-DDT | ND | 0.05 | 0.025 | 30.58 | 569,687 | 2.113 | < 23,666 | < 0.04 |
| F150 | QT25-4-0002 | 14 | 4,4´-DDD | 0.12 | 0.05 | 0.025 | 30.58 | 67,258 | 2.113 | 56,797 | 0.84 |
| F150 | QT25-4-0002 | 14 | 4,4´-DDE | 0.19 | 0.05 | 0.025 | 30.58 | 526,667 | 2.113 | 89,929 | 0.17 |
| F150 | QT25-4-0002 | 14 | 4,4´-DDT | ND | 0.05 | 0.025 | 30.58 | 288,937 | 2.113 | < 23,666 | < 0.08 |
| F151 | QT25-4-0205 | 14 | 2,4´-DDD | 0.05 | 0.05 | 0.026 | 30.58 | 75,521 | 2.113 | 23,666 | 0.31 |
| F151 | QT25-4-0205 | 14 | 2,4´-DDE | 0.1 | 0.05 | 0.026 | 30.58 | 516,595 | 2.113 | 47,331 | 0.09 |
| F151 | QT25-4-0205 | 14 | 2,4´-DDT | ND | 0.05 | 0.026 | 30.58 | 569,687 | 2.113 | < 23,666 | < 0.04 |
| F151 | QT25-4-0205 | 14 | 4,4´-DDD | 0.12 | 0.05 | 0.026 | 30.58 | 67,258 | 2.113 | 56,797 | 0.84 |
| F151 | QT25-4-0205 | 14 | 4,4´-DDE | 0.36 | 0.05 | 0.026 | 30.58 | 526,667 | 2.113 | 170,392 | 0.32 |
| F151 | QT25-4-0205 | 14 | 4,4´-DDT | 0.12 | 0.05 | 0.026 | 30.58 | 288,937 | 2.113 | 56,797 | 0.20 |
| F152 | QT25-4-0507 | 14 | 2,4´-DDD | ND | 0.05 | 0.022 | 26.74 | 75,521 | 1.848 | < 27,062 | < 0.36 |
| F152 | QT25-4-0507 | 14 | 2,4´-DDE | ND | 0.05 | 0.022 | 26.74 | 516,595 | 1.848 | < 27,062 | < 0.05 |

**Table 5: Field, Laboratory Data and Calculations for SPME Ex-Situ Study during 25-Month Event**
SSC Pacific
Quantico, Virginia

| Extract Vial ID | Sample ID | Exposure Time (d) | Analyte | Reported Mass on SPME (ng) | Detection Limit (ng) | Fiber Weight (g) | Fiber Length (cm)[1] | Fiber:Water Partition Coefficient[2] (Kfs, L/L PDMS) | Volume of PDMS on fiber (µL)[3] | [PDMS DDx] (ng/L) | [Freely Dissolved Pore Water DDx] (ng/L)[4] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F152 | QT25-4-0507 | 14 | 2,4′-DDT | ND | 0.05 | 0.022 | 26.74 | 569,687 | 1.848 | < 27,062 | < 0.05 |
| F152 | QT25-4-0507 | 14 | 4,4′-DDD | 0.27 | 0.05 | 0.022 | 26.74 | 67,258 | 1.848 | 146,133 | 2.17 |
| F152 | QT25-4-0507 | 14 | 4,4′-DDE | 0.6 | 0.05 | 0.022 | 26.74 | 526,667 | 1.848 | 324,739 | 0.62 |
| F152 | QT25-4-0507 | 14 | 4,4′-DDT | 0.13 | 0.05 | 0.022 | 26.74 | 288,937 | 1.848 | 70,360 | 0.24 |
| F153 | QT25-4-0002-AI | 14 | 2,4′-DDD | ND | 0.05 | 0.027 | 31.89 | 75,521 | 2.204 | < 22,687 | < 0.30 |
| F153 | QT25-4-0002-AI | 14 | 2,4′-DDE | ND | 0.05 | 0.027 | 31.89 | 516,595 | 2.204 | < 22,687 | < 0.04 |
| F153 | QT25-4-0002-AI | 14 | 2,4′-DDT | ND | 0.05 | 0.027 | 31.89 | 569,687 | 2.204 | < 22,687 | < 0.04 |
| F153 | QT25-4-0002-AI | 14 | 4,4′-DDD | 0.16 | 0.05 | 0.027 | 31.89 | 67,258 | 2.204 | 72,598 | 1.08 |
| F153 | QT25-4-0002-AI | 14 | 4,4′-DDE | 0.27 | 0.05 | 0.027 | 31.89 | 526,667 | 2.204 | 122,510 | 0.23 |
| F153 | QT25-4-0002-AI | 14 | 4,4′-DDT | ND | 0.05 | 0.027 | 31.89 | 288,937 | 2.204 | < 22,687 | < 0.08 |
| F154 | QT25-4-0002-BI | 14 | 2,4′-DDD | 0.05 | 0.05 | 0.026 | 31.29 | 75,521 | 2.162 | 23,122 | 0.31 |
| F154 | QT25-4-0002-BI | 14 | 2,4′-DDE | 0.06 | 0.05 | 0.026 | 31.29 | 516,595 | 2.162 | 27,746 | 0.05 |
| F154 | QT25-4-0002-BI | 14 | 2,4′-DDT | ND | 0.05 | 0.026 | 31.29 | 569,687 | 2.162 | < 23,122 | < 0.04 |
| F154 | QT25-4-0002-BI | 14 | 4,4′-DDD | 0.24 | 0.05 | 0.026 | 31.29 | 67,258 | 2.162 | 110,984 | 1.65 |
| F154 | QT25-4-0002-BI | 14 | 4,4′-DDE | 0.22 | 0.05 | 0.026 | 31.29 | 526,667 | 2.162 | 101,735 | 0.19 |
| F154 | QT25-4-0002-BI | 14 | 4,4′-DDT | ND | 0.05 | 0.026 | 31.29 | 288,937 | 2.162 | < 23,122 | < 0.08 |
| F155 | QT25-4-0205-BI | 14 | 2,4′-DDD | ND | 0.05 | 0.023 | 27.34 | 75,521 | 1.889 | < 26,468 | < 0.35 |
| F155 | QT25-4-0205-BI | 14 | 2,4′-DDE | 0.08 | 0.05 | 0.023 | 27.34 | 516,595 | 1.889 | 42,349 | 0.08 |
| F155 | QT25-4-0205-BI | 14 | 2,4′-DDT | ND | 0.05 | 0.023 | 27.34 | 569,687 | 1.889 | < 26,468 | < 0.05 |
| F155 | QT25-4-0205-BI | 14 | 4,4′-DDD | 0.09 | 0.05 | 0.023 | 27.34 | 67,258 | 1.889 | 47,643 | 0.71 |
| F155 | QT25-4-0205-BI | 14 | 4,4′-DDE | 0.2 | 0.05 | 0.023 | 27.34 | 526,667 | 1.889 | 105,872 | 0.20 |
| F155 | QT25-4-0205-BI | 14 | 4,4′-DDT | 0.07 | 0.05 | 0.023 | 27.34 | 288,937 | 1.889 | 37,055 | 0.13 |
| F156 | QT25-4-0507-BI | 14 | 2,4′-DDD | ND | 0.05 | 0.026 | 31.41 | 75,521 | 2.171 | < 23,033 | < 0.30 |
| F156 | QT25-4-0507-BI | 14 | 2,4′-DDE | 0.13 | 0.05 | 0.026 | 31.41 | 516,595 | 2.171 | 59,887 | 0.12 |
| F156 | QT25-4-0507-BI | 14 | 2,4′-DDT | ND | 0.05 | 0.026 | 31.41 | 569,687 | 2.171 | < 23,033 | < 0.04 |
| F156 | QT25-4-0507-BI | 14 | 4,4′-DDD | 0.2 | 0.05 | 0.026 | 31.41 | 67,258 | 2.171 | 92,133 | 1.37 |
| F156 | QT25-4-0507-BI | 14 | 4,4′-DDE | 1.02 | 0.05 | 0.026 | 31.41 | 526,667 | 2.171 | 469,880 | 0.89 |
| F156 | QT25-4-0507-BI | 14 | 4,4′-DDT | 0.05 | 0.05 | 0.026 | 31.41 | 288,937 | 2.171 | 23,033 | 0.08 |
| F157 | QT25-5-0002 | 14 | 2,4′-DDD | ND | 0.05 | 0.027 | 32.01 | 75,521 | 2.212 | < 22,602 | < 0.30 |
| F157 | QT25-5-0002 | 14 | 2,4′-DDE | ND | 0.05 | 0.027 | 32.01 | 516,595 | 2.212 | < 22,602 | < 0.04 |
| F157 | QT25-5-0002 | 14 | 2,4′-DDT | ND | 0.05 | 0.027 | 32.01 | 569,687 | 2.212 | < 22,602 | < 0.04 |
| F157 | QT25-5-0002 | 14 | 4,4′-DDD | 0.1 | 0.05 | 0.027 | 32.01 | 67,258 | 2.212 | 45,204 | 0.67 |
| F157 | QT25-5-0002 | 14 | 4,4′-DDE | 0.41 | 0.05 | 0.027 | 32.01 | 526,667 | 2.212 | 185,336 | 0.35 |
| F157 | QT25-5-0002 | 14 | 4,4′-DDT | 0.32 | 0.05 | 0.027 | 32.01 | 288,937 | 2.212 | 144,653 | 0.50 |
| F158 | QT25-5-0205 | 14 | 2,4′-DDD | ND | 0.05 | 0.027 | 32.01 | 75,521 | 2.212 | < 22,602 | < 0.30 |

**Table 5: Field, Laboratory Data and Calculations for SPME Ex-Situ Study during 25-Month Event**
SSC Pacific
Quantico, Virginia

| Extract Vial ID | Sample ID | Exposure Time (d) | Analyte | Reported Mass on SPME (ng) | Detection Limit (ng) | Fiber Weight (g) | Fiber Length (cm)[1] | Fiber:Water Partition Coefficient[2] (Kfs, L/L PDMS) | Volume of PDMS on fiber (µL)[3] | [PDMS DDx] (ng/L) | [Freely Dissolved Pore Water DDx] (ng/L)[4] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F158 | QT25-5-0205 | 14 | 2,4′-DDE | ND | 0.05 | 0.027 | 32.01 | 516,595 | 2.212 | < 22,602 | < 0.04 |
| F158 | QT25-5-0205 | 14 | 2,4′-DDT | ND | 0.05 | 0.027 | 32.01 | 569,687 | 2.212 | < 22,602 | < 0.04 |
| F158 | QT25-5-0205 | 14 | 4,4′-DDD | 0.12 | 0.05 | 0.027 | 32.01 | 67,258 | 2.212 | 54,245 | 0.81 |
| F158 | QT25-5-0205 | 14 | 4,4′-DDE | 0.43 | 0.05 | 0.027 | 32.01 | 526,667 | 2.212 | 194,377 | 0.37 |
| F158 | QT25-5-0205 | 14 | 4,4′-DDT | 0.06 | 0.05 | 0.027 | 32.01 | 288,937 | 2.212 | 27,122 | 0.09 |
| F159 | QT25-5-0507 | 14 | 2,4′-DDD | ND | 0.05 | 0.025 | 29.86 | 75,521 | 2.063 | < 24,236 | < 0.32 |
| F159 | QT25-5-0507 | 14 | 2,4′-DDE | ND | 0.05 | 0.025 | 29.86 | 516,595 | 2.063 | < 24,236 | < 0.05 |
| F159 | QT25-5-0507 | 14 | 2,4′-DDT | 1.72 | 0.05 | 0.025 | 29.86 | 569,687 | 2.063 | 833,714 | 1.46 |
| F159 | QT25-5-0507 | 14 | 4,4′-DDD | 0.13 | 0.05 | 0.025 | 29.86 | 67,258 | 2.063 | 63,013 | 0.94 |
| F159 | QT25-5-0507 | 14 | 4,4′-DDE | 0.29 | 0.05 | 0.025 | 29.86 | 526,667 | 2.063 | 140,568 | 0.27 |
| F159 | QT25-5-0507 | 14 | 4,4′-DDT | 1.63 | 0.05 | 0.025 | 29.86 | 288,937 | 2.063 | 790,089 | 2.73 |
| F160 | QT25-5-0002-AI | 14 | 2,4′-DDD | ND | 0.05 | 0.026 | 30.58 | 75,521 | 2.113 | < 23,666 | < 0.31 |
| F160 | QT25-5-0002-AI | 14 | 2,4′-DDE | ND | 0.05 | 0.026 | 30.58 | 516,595 | 2.113 | < 23,666 | < 0.05 |
| F160 | QT25-5-0002-AI | 14 | 2,4′-DDT | ND | 0.05 | 0.026 | 30.58 | 569,687 | 2.113 | < 23,666 | < 0.04 |
| F160 | QT25-5-0002-AI | 14 | 4,4′-DDD | 0.1 | 0.05 | 0.026 | 30.58 | 67,258 | 2.113 | 47,331 | 0.70 |
| F160 | QT25-5-0002-AI | 14 | 4,4′-DDE | 0.41 | 0.05 | 0.026 | 30.58 | 526,667 | 2.113 | 194,058 | 0.37 |
| F160 | QT25-5-0002-AI | 14 | 4,4′-DDT | 0.07 | 0.05 | 0.026 | 30.58 | 288,937 | 2.113 | 33,132 | 0.11 |
| F161 | QT25-5-0002-BI | 14 | 2,4′-DDD | ND | 0.05 | 0.025 | 29.86 | 75,521 | 2.063 | < 24,236 | < 0.32 |
| F161 | QT25-5-0002-BI | 14 | 2,4′-DDE | 0.13 | 0.05 | 0.025 | 29.86 | 516,595 | 2.063 | 63,013 | 0.12 |
| F161 | QT25-5-0002-BI | 14 | 2,4′-DDT | ND | 0.05 | 0.025 | 29.86 | 569,687 | 2.063 | < 24,236 | < 0.04 |
| F161 | QT25-5-0002-BI | 14 | 4,4′-DDD | 0.25 | 0.05 | 0.025 | 29.86 | 67,258 | 2.063 | 121,179 | 1.80 |
| F161 | QT25-5-0002-BI | 14 | 4,4′-DDE | 0.39 | 0.05 | 0.025 | 29.86 | 526,667 | 2.063 | 189,040 | 0.36 |
| F161 | QT25-5-0002-BI | 14 | 4,4′-DDT | 0.08 | 0.05 | 0.025 | 29.86 | 288,937 | 2.063 | 38,777 | 0.13 |
| F162 | QT25-5-0205-BI | 14 | 2,4′-DDD | ND | 0.05 | 0.026 | 30.94 | 75,521 | 2.138 | < 23,390 | < 0.31 |
| F162 | QT25-5-0205-BI | 14 | 2,4′-DDE | 0.2 | 0.05 | 0.026 | 30.94 | 516,595 | 2.138 | 93,562 | 0.18 |
| F162 | QT25-5-0205-BI | 14 | 2,4′-DDT | ND | 0.05 | 0.026 | 30.94 | 569,687 | 2.138 | < 23,390 | < 0.04 |
| F162 | QT25-5-0205-BI | 14 | 4,4′-DDD | 0.51 | 0.05 | 0.026 | 30.94 | 67,258 | 2.138 | 238,582 | 3.55 |
| F162 | QT25-5-0205-BI | 14 | 4,4′-DDE | 0.44 | 0.05 | 0.026 | 30.94 | 526,667 | 2.138 | 205,836 | 0.39 |
| F162 | QT25-5-0205-BI | 14 | 4,4′-DDT | 0.1 | 0.05 | 0.026 | 30.94 | 288,937 | 2.138 | 46,781 | 0.16 |
| F163 | QT25-5-0507-BI | 14 | 2,4′-DDD | ND | 0.05 | 0.025 | 29.86 | 75,521 | 2.063 | < 24,236 | < 0.32 |
| F163 | QT25-5-0507-BI | 14 | 2,4′-DDE | 0.2 | 0.05 | 0.025 | 29.86 | 516,595 | 2.063 | 96,943 | 0.19 |
| F163 | QT25-5-0507-BI | 14 | 2,4′-DDT | ND | 0.05 | 0.025 | 29.86 | 569,687 | 2.063 | < 24,236 | < 0.04 |
| F163 | QT25-5-0507-BI | 14 | 4,4′-DDD | 0.65 | 0.05 | 0.025 | 29.86 | 67,258 | 2.063 | 315,066 | 4.68 |
| F163 | QT25-5-0507-BI | 14 | 4,4′-DDE | 0.21 | 0.05 | 0.025 | 29.86 | 526,667 | 2.063 | 101,791 | 0.19 |
| F163 | QT25-5-0507-BI | 14 | 4,4′-DDT | 0.08 | 0.05 | 0.025 | 29.86 | 288,937 | 2.063 | 38,777 | 0.13 |

**Table 5: Field, Laboratory Data and Calculations for SPME Ex-Situ Study during 25-Month Event**
SSC Pacific
Quantico, Virginia

| Extract Vial ID | Sample ID | Exposure Time (d) | Analyte | Reported Mass on SPME (ng) | Detection Limit (ng) | Fiber Weight (g) | Fiber Length (cm)[1] | Fiber:Water Partition Coefficient[2] (Kfs, L/L PDMS) | Volume of PDMS on fiber (µL)[3] | [PDMS DDx] (ng/L) | [Freely Dissolved Pore Water DDx] (ng/L)[4] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F164 | QT25-5DUP-0002 | 14 | 2,4´-DDD | ND | 0.05 | 0.025 | 30.00 | 75,521 | 2.073 | < 24,120 | < 0.32 |
| F164 | QT25-5DUP-0002 | 14 | 2,4´-DDE | ND | 0.05 | 0.025 | 30.00 | 516,595 | 2.073 | < 24,120 | < 0.05 |
| F164 | QT25-5DUP-0002 | 14 | 2,4´-DDT | ND | 0.05 | 0.025 | 30.00 | 569,687 | 2.073 | < 24,120 | < 0.04 |
| F164 | QT25-5DUP-0002 | 14 | 4,4´-DDD | ND | 0.05 | 0.025 | 30.00 | 67,258 | 2.073 | < 24,120 | < 0.36 |
| F164 | QT25-5DUP-0002 | 14 | 4,4´-DDE | 0.19 | 0.05 | 0.025 | 30.00 | 526,667 | 2.073 | 91,655 | 0.17 |
| F164 | QT25-5DUP-0002 | 14 | 4,4´-DDT | ND | 0.05 | 0.025 | 30.00 | 288,937 | 2.073 | < 24,120 | < 0.08 |
| F165 | QT25-5DUP-0205 | 14 | 2,4´-DDD | ND | 0.05 | 0.027 | 32.01 | 75,521 | 2.212 | < 22,602 | < 0.30 |
| F165 | QT25-5DUP-0205 | 14 | 2,4´-DDE | ND | 0.05 | 0.027 | 32.01 | 516,595 | 2.212 | < 22,602 | < 0.04 |
| F165 | QT25-5DUP-0205 | 14 | 2,4´-DDT | ND | 0.05 | 0.027 | 32.01 | 569,687 | 2.212 | < 22,602 | < 0.04 |
| F165 | QT25-5DUP-0205 | 14 | 4,4´-DDD | 0.11 | 0.05 | 0.027 | 32.01 | 67,258 | 2.212 | 49,724 | 0.74 |
| F165 | QT25-5DUP-0205 | 14 | 4,4´-DDE | 0.4 | 0.05 | 0.027 | 32.01 | 526,667 | 2.212 | 180,816 | 0.34 |
| F165 | QT25-5DUP-0205 | 14 | 4,4´-DDT | 0.07 | 0.05 | 0.027 | 32.01 | 288,937 | 2.212 | 31,643 | 0.11 |
| F166 | QT25-5DUP-0507 | 14 | 2,4´-DDD | ND | 0.05 | 0.026 | 30.58 | 75,521 | 2.113 | < 23,666 | < 0.31 |
| F166 | QT25-5DUP-0507 | 14 | 2,4´-DDE | ND | 0.05 | 0.026 | 30.58 | 516,595 | 2.113 | < 23,666 | < 0.05 |
| F166 | QT25-5DUP-0507 | 14 | 2,4´-DDT | ND | 0.05 | 0.026 | 30.58 | 569,687 | 2.113 | < 23,666 | < 0.04 |
| F166 | QT25-5DUP-0507 | 14 | 4,4´-DDD | 0.16 | 0.05 | 0.026 | 30.58 | 67,258 | 2.113 | 75,730 | 1.13 |
| F166 | QT25-5DUP-0507 | 14 | 4,4´-DDE | 0.38 | 0.05 | 0.026 | 30.58 | 526,667 | 2.113 | 179,859 | 0.34 |
| F166 | QT25-5DUP-0507 | 14 | 4,4´-DDT | 0.25 | 0.05 | 0.026 | 30.58 | 288,937 | 2.113 | 118,328 | 0.41 |
| F167 | QT25-5DUP-0002-AI | 14 | 2,4´-DDD | ND | 0.05 | 0.027 | 31.77 | 75,521 | 2.196 | < 22,773 | < 0.30 |
| F167 | QT25-5DUP-0002-AI | 14 | 2,4´-DDE | ND | 0.05 | 0.027 | 31.77 | 516,595 | 2.196 | < 22,773 | < 0.04 |
| F167 | QT25-5DUP-0002-AI | 14 | 2,4´-DDT | ND | 0.05 | 0.027 | 31.77 | 569,687 | 2.196 | < 22,773 | < 0.04 |
| F167 | QT25-5DUP-0002-AI | 14 | 4,4´-DDD | ND | 0.05 | 0.027 | 31.77 | 67,258 | 2.196 | < 22,773 | < 0.34 |
| F167 | QT25-5DUP-0002-AI | 14 | 4,4´-DDE | 0.17 | 0.05 | 0.027 | 31.77 | 526,667 | 2.196 | 77,427 | 0.15 |
| F167 | QT25-5DUP-0002-AI | 14 | 4,4´-DDT | ND | 0.05 | 0.027 | 31.77 | 288,937 | 2.196 | < 22,773 | < 0.08 |
| F168 | QT25-5DUP-0002-BI | 14 | 2,4´-DDD | 0.05 | 0.05 | 0.026 | 31.53 | 75,521 | 2.179 | 22,946 | 0.30 |
| F168 | QT25-5DUP-0002-BI | 14 | 2,4´-DDE | 0.15 | 0.05 | 0.026 | 31.53 | 516,595 | 2.179 | 68,837 | 0.13 |
| F168 | QT25-5DUP-0002-BI | 14 | 2,4´-DDT | ND | 0.05 | 0.026 | 31.53 | 569,687 | 2.179 | < 22,946 | < 0.04 |
| F168 | QT25-5DUP-0002-BI | 14 | 4,4´-DDD | ND | 0.05 | 0.026 | 31.53 | 67,258 | 2.179 | < 22,946 | < 0.34 |
| F168 | QT25-5DUP-0002-BI | 14 | 4,4´-DDE | 0.42 | 0.05 | 0.026 | 31.53 | 526,667 | 2.179 | 192,744 | 0.37 |
| F168 | QT25-5DUP-0002-BI | 14 | 4,4´-DDT | 0.11 | 0.05 | 0.026 | 31.53 | 288,937 | 2.179 | 50,481 | 0.17 |
| F169 | QT25-5DUP-0205-BI | 14 | 2,4´-DDD | ND | 0.05 | 0.023 | 28.06 | 75,521 | 1.939 | < 25,789 | < 0.34 |
| F169 | QT25-5DUP-0205-BI | 14 | 2,4´-DDE | 0.14 | 0.05 | 0.023 | 28.06 | 516,595 | 1.939 | 72,210 | 0.14 |
| F169 | QT25-5DUP-0205-BI | 14 | 2,4´-DDT | ND | 0.05 | 0.023 | 28.06 | 569,687 | 1.939 | < 25,789 | < 0.05 |
| F169 | QT25-5DUP-0205-BI | 14 | 4,4´-DDD | 0.44 | 0.05 | 0.023 | 28.06 | 67,258 | 1.939 | 226,947 | 3.37 |
| F169 | QT25-5DUP-0205-BI | 14 | 4,4´-DDE | 0.22 | 0.05 | 0.023 | 28.06 | 526,667 | 1.939 | 113,474 | 0.22 |

**Table 5: Field, Laboratory Data and Calculations for SPME Ex-Situ Study during 25-Month Event**
SSC Pacific
Quantico, Virginia

| Extract Vial ID | Sample ID | Exposure Time (d) | Analyte | Reported Mass on SPME (ng) | Detection Limit (ng) | Fiber Weight (g) | Fiber Length (cm)[1] | Fiber:Water Partition Coefficient[2] (Kfs, L/L PDMS) | Volume of PDMS on fiber (µL)[3] | [PDMS DDx] (ng/L) | [Freely Dissolved Pore Water DDx] (ng/L)[4] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F169 | QT25-5DUP-0205-BI | 14 | 4,4′-DDT | 0.09 | 0.05 | 0.023 | 28.06 | 288,937 | 1.939 | 46,421 | 0.16 |
| F170 | QT25-5DUP-0507-BI | 14 | 2,4′-DDD | ND | 0.05 | 0.027 | 32.25 | 75,521 | 2.229 | < 22,434 | < 0.30 |
| F170 | QT25-5DUP-0507-BI | 14 | 2,4′-DDE | 0.21 | 0.05 | 0.027 | 32.25 | 516,595 | 2.229 | 94,223 | 0.18 |
| F170 | QT25-5DUP-0507-BI | 14 | 2,4′-DDT | ND | 0.05 | 0.027 | 32.25 | 569,687 | 2.229 | < 22,434 | < 0.04 |
| F170 | QT25-5DUP-0507-BI | 14 | 4,4′-DDD | 0.76 | 0.05 | 0.027 | 32.25 | 67,258 | 2.229 | 340,996 | 5.07 |
| F170 | QT25-5DUP-0507-BI | 14 | 4,4′-DDE | 0.25 | 0.05 | 0.027 | 32.25 | 526,667 | 2.229 | 112,170 | 0.21 |
| F170 | QT25-5DUP-0507-BI | 14 | 4,4′-DDT | 0.13 | 0.05 | 0.027 | 32.25 | 288,937 | 2.229 | 58,328 | 0.20 |
| F171 | QT25-6-GRAB | 14 | 2,4′-DDD | ND | 0.05 | 0.027 | 31.77 | 75,521 | 2.196 | < 22,773 | < 0.30 |
| F171 | QT25-6-GRAB | 14 | 2,4′-DDE | ND | 0.05 | 0.027 | 31.77 | 516,595 | 2.196 | < 22,773 | < 0.04 |
| F171 | QT25-6-GRAB | 14 | 2,4′-DDT | ND | 0.05 | 0.027 | 31.77 | 569,687 | 2.196 | < 22,773 | < 0.04 |
| F171 | QT25-6-GRAB | 14 | 4,4′-DDD | ND | 0.05 | 0.027 | 31.77 | 67,258 | 2.196 | < 22,773 | < 0.34 |
| F171 | QT25-6-GRAB | 14 | 4,4′-DDE | 0.08 | 0.05 | 0.027 | 31.77 | 526,667 | 2.196 | 36,436 | 0.07 |
| F171 | QT25-6-GRAB | 14 | 4,4′-DDT | 0.05 | 0.05 | 0.027 | 31.77 | 288,937 | 2.196 | 22,773 | 0.08 |
| F172 | QT25-7-GRAB | 14 | 2,4′-DDD | ND | 0.05 | 0.024 | 29.26 | 75,521 | 2.022 | < 24,733 | < 0.33 |
| F172 | QT25-7-GRAB | 14 | 2,4′-DDE | ND | 0.05 | 0.024 | 29.26 | 516,595 | 2.022 | < 24,733 | < 0.05 |
| F172 | QT25-7-GRAB | 14 | 2,4′-DDT | ND | 0.05 | 0.024 | 29.26 | 569,687 | 2.022 | < 24,733 | < 0.04 |
| F172 | QT25-7-GRAB | 14 | 4,4′-DDD | ND | 0.05 | 0.024 | 29.26 | 67,258 | 2.022 | < 24,733 | < 0.37 |
| F172 | QT25-7-GRAB | 14 | 4,4′-DDE | ND | 0.05 | 0.024 | 29.26 | 526,667 | 2.022 | < 24,733 | < 0.05 |
| F172 | QT25-7-GRAB | 14 | 4,4′-DDT | ND | 0.05 | 0.024 | 29.26 | 288,937 | 2.022 | < 24,733 | < 0.09 |

**Footnotes:**

1.) Fiber mass per length value 0.000834 g/cm
2.) Fiber:Water Partition Coefficient calculated as Log Kfs = LogKow - 0.91 (Mayer et al. 2000). Log Kow referenced from ATDSR (2002)
3.) 0.0691 µL polydimethylsiloxane (PDMS) per cm of this type of SPME fiber.
4.) Concentration of exposure solution = Concentration in fiber ÷ Kfs. If not detected, reported as < detection limit.

**Abbreviations:**

| | |
|---|---|
| cm: centimeter(s) | NA: Not available |
| d: day(s) | ND: Not detected |
| g: gram(s) | ng: nanogram(s) |
| Kfs: Fiber:Water Partition Coefficient | PDMS: Polydimethylsiloxane |
| L: Liter(s) | SPME: solid phase microextraction |
| µ: micro | |

Baseline 2 Sample ID Lookup Table

| Extract Vial ID | Sample ID |
|---|---|
| F11 | QE-Sed 1 |
| F12 | QE-Sed 1 |
| F13 | QE-Sed 1 |
| F14 | B2-CAP01-0002 |
| F15 | B2-CAP01-0205 |
| F16 | B2-CAP01-0507 |
| F17 | B2-CAP02-0002 |
| F18 | B2-CAP02-0205 |
| F19 | B2-CAP02-0507 |
| F20 | B2-CAP03-0002 |
| F21 | B2-CAP03-0205 |
| F22 | B2-CAP03-0507 |
| F23 | B2-CAPX-0002 |
| F24 | B2-CAPX-0205 |
| F25 | B2-CAPX-0507 |
| F26 | B2-CAP1-GRAB |
| F27 | B2-CAP2-GRAB |
| F28 | B2-CAP3-GRAB |
| F29 | B2-OFF1-GRAB |
| F30 | B2-OFF2-GRAB |

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**Project Client:** NAVY SPACE + NAVAL WARFARE SYSTS COMMAND
**Project Name:** SPAWAR Quantico Embayment EMNR - SPME Extracts
**Project Number:** CG898574-0001

| **Client ID** | Procedural Blank | Procedural Blank |
|---|---|---|
| **Battelle ID** | BN429PB-P | BN431PB-P |
| **Sample Type** | PB | PB |
| **Collection Date** | 11/11/2009 | 11/11/2009 |
| **Extraction Date** | 11/11/2009 | 11/11/2009 |
| **Analysis Date** | 11/12/2009 | 11/12/2009 |
| **Analytical Instrument** | MS | MS |
| **% Moisture** | NA | NA |
| **% Lipid** | NA | NA |
| **Matrix** | SEDIMENT | SEDIMENT |
| **Sample Size** | NA | NA |
| **Size Unit-Basis** | G_DRY | G_DRY |
| **Units** | NG_DRY | NG_DRY |
| 2,4'-DDE | 0.08 U | 0.08 U |
| 4,4'-DDE | 0.09 U | 0.09 U |
| 2,4'-DDD | 0.18 U | 0.18 U |
| 4,4'-DDD | 0.20 U | 0.20 U |
| 2,4'-DDT | 0.23 U | 0.23 U |
| 4,4'-DDT | 0.14 U | 0.14 U |
| ***Surrogate Recoveries (%)*** | | |
| Cl3(34) | 110 | 111 |
| Cl6(152) | 110 | 111 |

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**Project Client:** NAVY SPACE + NAVAL WARFARE SYSTS COMMAND
**Project Name:** SPAWAR Quantico Embayment EMNR - SPME Extracts
**Project Number:** CG898574-0001

| **Client ID** | Laboratory Control Sample | | | | Laboratory Control Sample | | | |
|---|---|---|---|---|---|---|---|---|
| **Battelle ID** | BN430LCS-P | | | | BN432LCS-P | | | |
| **Sample Type** | LCS | | | | LCS | | | |
| **Collection Date** | 11/11/2009 | | | | 11/11/2009 | | | |
| **Extraction Date** | 11/11/2009 | | | | 11/11/2009 | | | |
| **Analysis Date** | 11/12/2009 | | | | 11/12/2009 | | | |
| **Analytical Instrument** | MS | | | | MS | | | |
| **% Moisture** | NA | | | | NA | | | |
| **% Lipid** | NA | | | | NA | | | |
| **Matrix** | SEDIMENT | | | | SEDIMENT | | | |
| **Sample Size** | NA | | | | NA | | | |
| **Size Unit-Basis** | G_DRY | | | | G_DRY | | | |
| **Units** | NG_DRY | **Target** | **% REC** | **Qual** | NG_DRY | **Target** | **% REC** | **Qual** |
| 2,4'-DDE | 7.48 | 7.54 | 99 | | 7.35 | 7.54 | 97 | |
| 4,4'-DDE | 7.32 | 7.50 | 98 | | 7.41 | 7.50 | 99 | |
| 2,4'-DDD | 7.22 | 7.51 | 96 | | 7.09 | 7.51 | 94 | |
| 4,4'-DDD | 7.50 | 7.51 | 100 | | 7.28 | 7.51 | 97 | |
| 2,4'-DDT | 7.93 | 7.53 | 105 | | 8.05 | 7.53 | 107 | |
| 4,4'-DDT | 8.03 | 7.50 | 107 | | 8.41 | 7.50 | 112 | |
| ***Surrogate Recoveries (%)*** | | | | | | | | |
| Cl3(34) | 107 | | | | 104 | | | |
| Cl6(152) | 107 | | | | 102 | | | |

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**Project Client:** NAVY SPACE + NAVAL WARFARE SYSTS COMMAND
**Project Name:** SPAWAR Quantico Embayment EMNR - SPME Extracts
**Project Number:** CG898574-0001

| Client ID | F11-SPME | | F12-SPME | | F13-SPME | | F14-SPME | |
|---|---|---|---|---|---|---|---|---|
| **Battelle ID** | Q8511-P | | Q8512-P | | Q8513-P | | Q8514-P | |
| **Sample Type** | SA | | SA | | SA | | SA | |
| **Collection Date** | 11/09/2009 | | 11/09/2009 | | 11/09/2009 | | 11/09/2009 | |
| **Extraction Date** | 11/11/2009 | | 11/11/2009 | | 11/11/2009 | | 11/11/2009 | |
| **Analysis Date** | 11/12/2009 | | 11/12/2009 | | 11/12/2009 | | 11/12/2009 | |
| **Analytical Instrument** | MS | | MS | | MS | | MS | |
| **% Moisture** | NA | | NA | | NA | | NA | |
| **% Lipid** | NA | | NA | | NA | | NA | |
| **Matrix** | SPME | | SPME | | SPME | | SPME | |
| **Sample Size** | NA | | NA | | NA | | NA | |
| **Size Unit-Basis** | G_DRY | | G_DRY | | G_DRY | | G_DRY | |
| **Units** | NG_DRY | | NG_DRY | | NG_DRY | | NG_DRY | |
| 2,4'-DDE | 0.08 | U | 0.08 | U | 0.08 | U | 0.08 | U |
| 4,4'-DDE | 0.34 | | 0.35 | | 0.40 | | 1.19 | |
| 2,4'-DDD | 0.29 | | 0.27 | | 0.25 | | 0.18 | U |
| 4,4'-DDD | 0.77 | | 0.74 | | 0.62 | | 0.47 | |
| 2,4'-DDT | 0.23 | U | 0.23 | U | 0.23 | U | 0.23 | U |
| 4,4'-DDT | 0.14 | U | 0.14 | U | 0.14 | U | 0.14 | U |
| ***Surrogate Recoveries (%)*** | | | | | | | | |
| Cl3(34) | 111 | | 108 | | 108 | | 111 | |
| Cl6(152) | 112 | | 102 | | 101 | | 101 | |

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**Project Client:** NAVY SPACE + NAVAL WARFARE SYSTS COMMAND
**Project Name:** SPAWAR Quantico Embayment EMNR - SPME Extracts
**Project Number:** CG898574-0001

| **Client ID** | F15-SPME | | F16-SPME | | F17-SPME | | F18-SPME | |
|---|---|---|---|---|---|---|---|---|
| **Battelle ID** | Q8515-P | | Q8516-P | | Q8517-P | | Q8518-P | |
| **Sample Type** | SA | | SA | | SA | | SA | |
| **Collection Date** | 11/09/2009 | | 11/09/2009 | | 11/09/2009 | | 11/09/2009 | |
| **Extraction Date** | 11/11/2009 | | 11/11/2009 | | 11/11/2009 | | 11/11/2009 | |
| **Analysis Date** | 11/12/2009 | | 11/13/2009 | | 11/13/2009 | | 11/13/2009 | |
| **Analytical Instrument** | MS | | MS | | MS | | MS | |
| **% Moisture** | NA | | NA | | NA | | NA | |
| **% Lipid** | NA | | NA | | NA | | NA | |
| **Matrix** | SPME | | SPME | | SPME | | SPME | |
| **Sample Size** | NA | | NA | | NA | | NA | |
| **Size Unit-Basis** | G_DRY | | G_DRY | | G_DRY | | G_DRY | |
| **Units** | NG_DRY | | NG_DRY | | NG_DRY | | NG_DRY | |
| 2,4'-DDE | 0.08 | U | 0.08 | U | 0.08 | U | 0.08 | U |
| 4,4'-DDE | 0.33 | | 1.06 | | 0.74 | | 0.31 | |
| 2,4'-DDD | 0.18 | U | 0.02 | J | 0.11 | J | 0.20 | J |
| 4,4'-DDD | 0.24 | | 0.17 | J | 0.84 | | 0.88 | |
| 2,4'-DDT | 0.23 | U | 0.23 | U | 0.23 | U | 0.23 | U |
| 4,4'-DDT | 0.14 | U | 0.14 | U | 0.14 | U | 0.14 | U |
| ***Surrogate Recoveries (%)*** | | | | | | | | |
| Cl3(34) | 108 | | 110 | | 110 | | 109 | |
| Cl6(152) | 101 | | 104 | | 103 | | 106 | |

Not Surrogate Corrected

Analyzed By Thorn, Jonathan
11/16/2009

S09-0147MS-Master_315:DRAFT

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**Project Client:** NAVY SPACE + NAVAL WARFARE SYSTS COMMAND
**Project Name:** SPAWAR Quantico Embayment EMNR - SPME Extracts
**Project Number:** CG898574-0001

| Client ID | F19-SPME | | F20-SPME | | F21-SPME | | F22-SPME | |
|---|---|---|---|---|---|---|---|---|
| Battelle ID | Q8519-P | | Q8520-P | | Q8521-P | | Q8522-P | |
| Sample Type | SA | | SA | | SA | | SA | |
| Collection Date | 11/09/2009 | | 11/09/2009 | | 11/09/2009 | | 11/09/2009 | |
| Extraction Date | 11/11/2009 | | 11/11/2009 | | 11/11/2009 | | 11/11/2009 | |
| Analysis Date | 11/13/2009 | | 11/13/2009 | | 11/13/2009 | | 11/13/2009 | |
| Analytical Instrument | MS | | MS | | MS | | MS | |
| % Moisture | NA | | NA | | NA | | NA | |
| % Lipid | NA | | NA | | NA | | NA | |
| Matrix | SPME | | SPME | | SPME | | SPME | |
| Sample Size | NA | | NA | | NA | | NA | |
| Size Unit-Basis | G_DRY | | G_DRY | | G_DRY | | G_DRY | |
| Units | NG_DRY | | NG_DRY | | NG_DRY | | NG_DRY | |
| 2,4'-DDE | 0.08 | U | 0.08 | U | 0.08 | U | 0.08 | U |
| 4,4'-DDE | 0.56 | | 1.09 | | 1.31 | | 1.02 | |
| 2,4'-DDD | 0.33 | | 0.17 | J | 0.31 | | 0.15 | J |
| 4,4'-DDD | 0.48 | | 0.48 | | 1.87 | | 1.24 | |
| 2,4'-DDT | 0.23 | U | 0.23 | U | 0.23 | U | 0.23 | U |
| 4,4'-DDT | 0.14 | U | 0.14 | U | 0.14 | U | 0.14 | U |
| ***Surrogate Recoveries (%)*** | | | | | | | | |
| Cl3(34) | 109 | | 108 | | 113 | | 105 | |
| Cl6(152) | 105 | | 104 | | 110 | | 102 | |

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**Project Client:** NAVY SPACE + NAVAL WARFARE SYSTS COMMAND
**Project Name:** SPAWAR Quantico Embayment EMNR - SPME Extracts
**Project Number:** CG898574-0001

| **Client ID** | F23-SPME | F24-SPME | F25-SPME | F26-SPME |
|---|---|---|---|---|
| **Battelle ID** | Q8523-P | Q8524-P | Q8525-P | Q8526-P |
| **Sample Type** | SA | SA | SA | SA |
| **Collection Date** | 11/09/2009 | 11/09/2009 | 11/09/2009 | 11/09/2009 |
| **Extraction Date** | 11/11/2009 | 11/11/2009 | 11/11/2009 | 11/11/2009 |
| **Analysis Date** | 11/13/2009 | 11/13/2009 | 11/13/2009 | 11/13/2009 |
| **Analytical Instrument** | MS | MS | MS | MS |
| **% Moisture** | NA | NA | NA | NA |
| **% Lipid** | NA | NA | NA | NA |
| **Matrix** | SPME | SPME | SPME | SPME |
| **Sample Size** | NA | NA | NA | NA |
| **Size Unit-Basis** | G_DRY | G_DRY | G_DRY | G_DRY |
| **Units** | NG_DRY | NG_DRY | NG_DRY | NG_DRY |
| 2,4'-DDE | 0.08 U | 0.08 U | 0.08 U | 0.08 U |
| 4,4'-DDE | 0.69 | 1.48 | 0.47 | 0.11 J |
| 2,4'-DDD | 0.18 U | 0.04 J | 0.18 U | 0.18 U |
| 4,4'-DDD | 0.13 J | 0.12 J | 0.38 | 0.71 |
| 2,4'-DDT | 0.23 U | 0.23 U | 0.23 U | 0.23 U |
| 4,4'-DDT | 0.14 U | 0.14 U | 0.14 U | 1.27 |
| ***Surrogate Recoveries (%)*** | | | | |
| Cl3(34) | 109 | 109 | 107 | 110 |
| Cl6(152) | 105 | 111 | 103 | 105 |

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Project Client: NAVY SPACE + NAVAL WARFARE SYSTS COMMAND
Project Name: SPAWAR Quantico Embayment EMNR - SPME Extracts
Project Number: CG898574-0001

| Client ID | F27-SPME | | F28-SPME | | F29-SPME | | F30-SPME | |
|---|---|---|---|---|---|---|---|---|
| Battelle ID | Q8527-P | | Q8528-P | | Q8529-P | | Q8530-P | |
| Sample Type | SA | | SA | | SA | | SA | |
| Collection Date | 11/09/2009 | | 11/09/2009 | | 11/09/2009 | | 11/09/2009 | |
| Extraction Date | 11/11/2009 | | 11/11/2009 | | 11/11/2009 | | 11/11/2009 | |
| Analysis Date | 11/13/2009 | | 11/13/2009 | | 11/13/2009 | | 11/13/2009 | |
| Analytical Instrument | MS | | MS | | MS | | MS | |
| % Moisture | NA | | NA | | NA | | NA | |
| % Lipid | NA | | NA | | NA | | NA | |
| Matrix | SPME | | SPME | | SPME | | SPME | |
| Sample Size | NA | | NA | | NA | | NA | |
| Size Unit-Basis | G_DRY | | G_DRY | | G_DRY | | G_DRY | |
| Units | NG_DRY | | NG_DRY | | NG_DRY | | NG_DRY | |
| 2,4'-DDE | 0.08 | U | 0.08 | U | 0.08 | U | 0.08 | U |
| 4,4'-DDE | 1.26 | | 0.10 | J | 0.09 | U | 0.09 | U |
| 2,4'-DDD | 0.14 | J | 0.06 | J | 0.18 | U | 0.18 | U |
| 4,4'-DDD | 0.20 | J | 0.42 | | 0.20 | U | 0.20 | U |
| 2,4'-DDT | 0.23 | U | 0.23 | U | 0.23 | U | 0.23 | U |
| 4,4'-DDT | 0.14 | U | 0.14 | U | 0.14 | U | 0.14 | U |
| ***Surrogate Recoveries (%)*** | | | | | | | | |
| Cl3(34) | 109 | | 109 | | 109 | | 109 | |
| Cl6(152) | 106 | | 103 | | 101 | | 107 | |

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**Project Client:** NAVY SPACE + NAVAL WARFARE SYSTS COMMAND
**Project Name:** SPAWAR Quantico Embayment EMNR - SPME Extracts
**Project Number:** CG898574-0001

| **Client ID** | F31-SPME (spike) | | F32-SPME (spike) | | F33-SPME (spike) | |
|---|---|---|---|---|---|---|
| **Battelle ID** | Q8531-P | | Q8532-P | | Q8533-P | |
| **Sample Type** | SA | | SA | | SA | |
| **Collection Date** | 11/09/2009 | | 11/09/2009 | | 11/09/2009 | |
| **Extraction Date** | 11/11/2009 | | 11/11/2009 | | 11/11/2009 | |
| **Analysis Date** | 11/13/2009 | | 11/13/2009 | | 11/13/2009 | |
| **Analytical Instrument** | MS | | MS | | MS | |
| **% Moisture** | NA | | NA | | NA | |
| **% Lipid** | NA | | NA | | NA | |
| **Matrix** | SPME | | SPME | | SPME | |
| **Sample Size** | NA | | NA | | NA | |
| **Size Unit-Basis** | G_DRY | | G_DRY | | G_DRY | |
| **Units** | NG_DRY | | NG_DRY | | NG_DRY | |
| 2,4'-DDE | 1.45 | | 1.24 | | 0.08 | U |
| 4,4'-DDE | 1.56 | | 1.26 | | 0.09 | U |
| 2,4'-DDD | 0.16 | J | 0.17 | J | 0.18 | U |
| 4,4'-DDD | 0.02 | J | 0.20 | U | 0.20 | U |
| 2,4'-DDT | 1.54 | | 1.27 | | 0.23 | U |
| 4,4'-DDT | 0.71 | | 0.65 | | 0.14 | U |
| ***Surrogate Recoveries (%)*** | | | | | | |
| Cl3(34) | 112 | | 105 | | 108 | |
| Cl6(152) | 109 | | 100 | | 106 | |

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## ssary of Data Qualifiers

| Flag: | Application: |
|---|---|
| B | Analyte concentration found in the sample at a concentration <5x the level found in the procedural blank. |
| D | Dilution Run. Initial run outside linear range of instrument. |
| E | Estimate, result is greater than the highest concentration level in the calibration. |
| H | Surrogate diluted out. Used when surrogate recovery is affected by excessive dilution of the sample extract. |
| J | Analyte detected below the sample-specific Reporting Limit (RL). |
| m | Confirmation column manually over-ridden by analyst, dual column quantitative analysis only. |
| ME | Significant Matrix Interference - Estimated value. |
| MI | Significant Matrix Interference - value could not be determined or estimated. |
| n | Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO), but meets the contingency criteria. |
| N | Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO) |
| NA | Not applicable |
| p | Dual column value exceeds RPD criteria, dual column quantitative analysis only. |
| T | Holding Time (HT) exceeded. |
| U | Analyte not detected at 3:1 signal:noise ratio. |

**2-Month ex situ Porewater Sample ID Lookup Table**

| Sample Name | Extract Sample Number |
|---|---|
| QT2-1-0002 | F31 |
| QT2-1-0205 | F32 |
| QT2-1-0507 | F33 |
| QT2-1-0002-AI | F34 |
| QT2-1-0002-BI | F35 |
| QT2-1-0205-BI | F36 |
| QT2-1-0507-BI | F37 |
| QT2-2-0002 | F38 |
| QT2-2-0205 | F39 |
| QT2-2-0507 | F40 |
| QT2-2-0002-AI | F41 |
| QT2-2-0002-BI | F42 |
| QT2-2-0205-BI | F43 |
| QT2-2-0507-BI | F44 |
| QT2-3-0002 | F45 |
| QT2-3-0205 | F46 |
| QT2-3-0507 | F47 |
| QT2-3-0002-AI | F48 |
| QT2-3-0002-BI | F49 |
| QT2-3-0205-BI | F50 |
| QT2-3-0507-BI | F51 |
| QT2-4-0002 | F52 |
| QT2-4-0205 | NA |
| QT2-4-0507 | F53 |
| QT2-4-0002-AI | F54 |
| QT2-4-0002-BI | F55 |
| QT2-4-0205-BI | F56 |
| QT2-4-0507-BI | F57 |
| QT2-5-0002 | F58 |
| QT2-5-0205 | F59 |
| QT2-5-0507 | NA |
| QT2-5-0002-AI | F60 |
| QT2-5-0002-BI | F61 |
| QT2-5-0205-BI | F62 |
| QT2-5-0507-BI | F63 |
| QT2-5DUP-0002 | F64 |
| QT2-5DUP-0205 | F65 |
| QT2-5DUP-0507 | F66 |
| QT2-5DUP-0002-AI | F67 |
| QT2-5DUP-0002-BI | F68 |
| QT2-5DUP-0205-BI | F69 |
| QT2-5DUP-0507-BI | F70 |
| QT2-6-GRAB | F71 |
| QT2-7-GRAB | F72 |
| QT2-5DUP-0507 | F73 |
| QT2-5DUP-0002-AI | F74 |
| QT2-5DUP-0002-BI | F75 |
| QT2-5DUP-0205-BI | F76 |
| QT2-5DUP-0507-BI | F77 |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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05 May 2015

Gunther Rosen
Navy -- SPAWAR
Environmental Science and Applied System Branch, 536(
San Diego, CA 92152

RE: Quantico

Enclosed are the results of analyses for samples received by the laboratory on 05-Dec-2014. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Dale Rosado, Ph. D. For Allyson Holman
Biologist

**USACE ERDC-EP-C**
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**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| F31 | 4120501-01 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F32 | 4120501-02 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F33 | 4120501-03 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F34 | 4120501-04 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F35 | 4120501-05 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F36 | 4120501-06 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F37 | 4120501-07 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F41 | 4120501-09 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F42 | 4120501-10 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F43 | 4120501-11 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F44 | 4120501-12 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F45 | 4120501-13 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F46 | 4120501-14 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F47 | 4120501-15 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F49 | 4120501-16 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F50 | 4120501-17 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F51 | 4120501-18 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F52 | 4120501-19 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F53 | 4120501-20 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F55 | 4120501-21 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F56 | 4120501-22 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F57 | 4120501-23 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F59 | 4120501-24 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F60 | 4120501-25 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F61 | 4120501-26 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F62 | 4120501-27 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F63 | 4120501-28 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F64 | 4120501-29 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F65 | 4120501-30 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F70 | 4120501-35 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |
| F72 | 4120501-37 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

**WORK ORDER SUMMARY**

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| F58 | 4120501-38 | Passive Sampler | 04-Dec-2014 | 05-Dec-2014 |

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| Environmental Science and Applied System Branch, 5360 | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

**Case Narrative**

Samples F66-F69 and F71 were missing from the sample set. Sample F58 was present, but not listed on the chain-of-custody. The replacement for sample F38 was ran in work order 5031001.

Low surrogates recoveries were observed with this set. It appears that the SPME does adsorb the recovery surrogates (see the case narrative for 5031001), but not to such an extent that explains the low recoveries for this set. The lower recovereis could be related to the amount of SPME used and the amount of organic compounds that were present in the sample.

| | | |
|---|---|---|
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## Notes and Definitions

| | |
|---|---|
| Z-03 | See case narrative. |
| U | Analyte included in the analysis, but not detected |
| Q | Value is outside of acceptance limits. |
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration. |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

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## F31

### 4120501-01 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **2.00** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **ND** | | *%* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03, U* |
| *Surrogate: Decachlorobiphenyl* | **0.110** | | *3.66 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |

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| | | |
|---|---|---|
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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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# F32

## 4120501-02 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.09** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.22** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| **4,4´-DDT** | **0.07** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| **4,4'-DDE [2C]** | **0.25** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.08** | | *36.1 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.62** | | *53.9 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |

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|---|---|---|
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## F33

### 4120501-03 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.10** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.402** | | *13.4 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |
| *Surrogate: Decachlorobiphenyl* | **0.671** | | *22.4 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## F34

### 4120501-04 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.45** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| **4,4´-DDT** | **1.59** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| **4,4'-DDE [2C]** | **0.21** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.719** | | *24.0 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |
| *Surrogate: Decachlorobiphenyl* | **0.478** | | *15.9 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## F35

### 4120501-05 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.08** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.569** | | *19.0 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |
| *Surrogate: Decachlorobiphenyl* | **0.563** | | *18.8 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |

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## F36

### 4120501-06 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.11** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.609** | | *20.3 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |
| *Surrogate: Decachlorobiphenyl* | **0.673** | | *22.4 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |

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## F37

### 4120501-07 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.17** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.381** | | *12.7 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |
| *Surrogate: Decachlorobiphenyl* | **0.542** | | *18.1 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## F41

### 4120501-09 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.10** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| **2,4´-DDE** | **0.10** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.72** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| **4,4´-DDT** | **0.38** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| **4,4'-DDE [2C]** | **0.10** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.57** | | *52.2 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.61** | | *53.6 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |

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## F42

### 4120501-10 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.07** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.13** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4'-DDE [2C]** | **0.13** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.982** | | *32.7 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.51** | | *50.5 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

# F43

## 4120501-11 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.08** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.11** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.747** | | *24.9 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |
| *Surrogate: Decachlorobiphenyl* | **0.788** | | *26.3 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |

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| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## F44

**4120501-12 (Passive Sampler)**

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.13** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.29** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| **4,4´-DDT** | **0.09** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| **4,4'-DDE [2C]** | **0.18** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.800** | | *26.7 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.37** | | *45.6 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## F45

### 4120501-13 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.09** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| **2,4´-DDE** | **0.18** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.42** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| **4,4´-DDT** | **0.23** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| **4,4'-DDE [2C]** | **0.73** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.13** | | *37.7 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.60** | | *53.2 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

# F46

## 4120501-14 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.16** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| **2,4´-DDE** | **0.15** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.43** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| **4,4´-DDT** | **0.21** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| **4,4'-DDE [2C]** | **0.65** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.30** | | *43.3 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.48** | | *49.4 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## F47

### 4120501-15 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.08** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4'-DDE [2C]** | **0.09** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.207** | | *6.90 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |
| *Surrogate: Decachlorobiphenyl* | **0.322** | | *10.8 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## F49

### 4120501-16 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.19** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| **2,4´-DDE** | **0.30** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **1.06** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| **4,4´-DDT** | **0.55** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| **4,4'-DDE [2C]** | **0.79** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.27** | | *42.3 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.07** | | *69.1 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## F50

### 4120501-17 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.104** | | *3.48 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |
| *Surrogate: Decachlorobiphenyl* | **0.320** | | *10.7 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## F51

### 4120501-18 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **ERDC-EL-EP-C** | | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.31** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.528** | | *17.6 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |
| *Surrogate: Decachlorobiphenyl* | **1.03** | | *34.3 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## F52

### 4120501-19 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4'-DDE [2C]** | **0.14** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.629** | | *21.0 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |
| *Surrogate: Decachlorobiphenyl* | **0.988** | | *33.0 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## F53

### 4120501-20 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.08** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.13** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4'-DDE [2C]** | **0.25** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.972** | | *32.4 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.14** | | *38.0 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## F55

### 4120501-21 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.170** | | *5.67 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |
| *Surrogate: Decachlorobiphenyl* | **0.238** | | *7.95 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## F56

### 4120501-22 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.09** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.833** | | *27.8 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.10** | | *36.8 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## F57

### 4120501-23 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.10** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.20** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4'-DDE [2C]** | **0.35** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.52** | | *50.6 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.59** | | *52.9 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |

# USACE ERDC-EP-C
# 3909 Halls Ferry Road
# Vicksburg, MS 39180-6199

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## F59

### 4120501-24 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4'-DDE [2C]** | **0.13** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.549** | | *18.3 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |
| *Surrogate: Decachlorobiphenyl* | **0.689** | | *23.0 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## F60

### 4120501-25 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.25** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.30** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| **4,4´-DDT** | **0.13** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| **4,4'-DDE [2C]** | **0.79** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.11** | | *36.9 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.54** | | *51.3 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## F61

### 4120501-26 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.07** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.26** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4'-DDE [2C]** | **0.08** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.747** | | *24.9 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.32** | | *44.0 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## F62

### 4120501-27 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.14** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.72** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4'-DDE [2C]** | **0.20** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.61** | | *53.6 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.89** | | *63.0 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |

# USACE ERDC-EP-C
# 3909 Halls Ferry Road
# Vicksburg, MS 39180-6199

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## F63

### 4120501-28 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.08** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.24** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4'-DDE [2C]** | **0.12** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.05** | | *35.0 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.44** | | *48.0 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**


| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## F64

### 4120501-29 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.08** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4'-DDE [2C]** | **0.15** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.358** | | *11.9 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |
| *Surrogate: Decachlorobiphenyl* | **0.710** | | *23.6 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |

USACE ERDC-EP-C
3909 Halls Ferry Road
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| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

# F65

## 4120501-30 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.08** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.13** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| **4,4'-DDE [2C]** | **0.26** | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.02** | | *34.0 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.28** | | *42.6 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## F70

### 4120501-35 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.178** | | *5.95 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |
| *Surrogate: Decachlorobiphenyl* | **0.233** | | *7.78 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |

USACE ERDC-EP-C
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## F72

### 4120501-37 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.12** | | *37.2 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.58** | | *52.6 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## F58

### 4120501-38 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 15-Jan-2015 | 21-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.138** | | *4.60 %* | *25-140* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |
| *Surrogate: Decachlorobiphenyl* | **0.390** | | *13.0 %* | *30-135* | | *15-Jan-2015* | *21-Jan-2015* | *EPA 8081A* | *Q, Z-03* |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC-EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B501104 - *** DEFAULT PREP ***** | | | | | | | | | | | |
| **Blank (B501104-BLK1)** | | | | | Prepared: 15-Jan-2015 Analyzed: 21-Jan-2015 | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.88* | | | *ng* | *3.000* | | *62.6* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.48* | | | *ng* | *3.000* | | *82.6* | *30-135* | | | |
| **Blank (B501104-BLK2)** | | | | | Prepared: 15-Jan-2015 Analyzed: 21-Jan-2015 | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *2.05* | | | *ng* | *3.000* | | *68.3* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.62* | | | *ng* | *3.000* | | *87.3* | *30-135* | | | |
| **LCS (B501104-BS1)** | | | | | Prepared: 15-Jan-2015 Analyzed: 21-Jan-2015 | | | | | | |
| 2,4´-DDD | 3.1 | 0.06 | 0.19 | ng | 3.750 | | 81.6 | 50-125 | | | |
| 2,4´-DDE | 3.1 | 0.06 | 0.19 | ng | 3.750 | | 83.6 | 50-125 | | | |
| 2,4´-DDT | 3.1 | 0.06 | 0.19 | ng | 3.750 | | 82.7 | 50-125 | | | |
| 4,4´-DDD | 2.3 | 0.06 | 0.19 | ng | 3.000 | | 75.4 | 25-150 | | | |
| 4,4´-DDT | 2.3 | 0.06 | 0.19 | ng | 3.000 | | 77.7 | 45-140 | | | |
| 4,4'-DDE [2C] | 2.3 | 0.06 | 0.19 | ng | 3.000 | | 75.6 | 35-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.41* | | | *ng* | *3.000* | | *47.1* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *1.79* | | | *ng* | *3.000* | | *59.5* | *30-135* | | | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC-EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B501104 - *** DEFAULT PREP ***** | | | | | | | | | | | |
| **LCS (B501104-BS2)** | | | | | Prepared: 15-Jan-2015 Analyzed: 21-Jan-2015 | | | | | | |
| 2,4´-DDD | 2.9 | 0.06 | 0.19 | ng | 3.750 | | 78.4 | 50-125 | | | |
| 2,4´-DDE | 2.9 | 0.06 | 0.19 | ng | 3.750 | | 76.1 | 50-125 | | | |
| 2,4´-DDT | 2.9 | 0.06 | 0.19 | ng | 3.750 | | 78.2 | 50-125 | | | |
| 4,4´-DDD | 2.5 | 0.06 | 0.19 | ng | 3.000 | | 82.4 | 25-150 | | | |
| 4,4´-DDT | 2.5 | 0.06 | 0.19 | ng | 3.000 | | 84.8 | 45-140 | | | |
| 4,4'-DDE [2C] | 2.5 | 0.06 | 0.19 | ng | 3.000 | | 81.7 | 35-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.90* | | | *ng* | *3.000* | | *63.5* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.41* | | | *ng* | *3.000* | | *80.5* | *30-135* | | | |
| **LCS Dup (B501104-BSD1)** | | | | | Prepared: 15-Jan-2015 Analyzed: 21-Jan-2015 | | | | | | |
| 2,4´-DDD | 3.2 | 0.06 | 0.19 | ng | 3.750 | | 84.5 | 50-125 | 3.52 | 30 | |
| 2,4´-DDE | 3.2 | 0.06 | 0.19 | ng | 3.750 | | 85.3 | 50-125 | 2.04 | 30 | |
| 2,4´-DDT | 3.2 | 0.06 | 0.19 | ng | 3.750 | | 85.4 | 50-125 | 3.28 | 30 | |
| 4,4´-DDD | 2.5 | 0.06 | 0.19 | ng | 3.000 | | 81.9 | 25-150 | 8.29 | 30 | |
| 4,4´-DDT | 2.5 | 0.06 | 0.19 | ng | 3.000 | | 84.8 | 45-140 | 8.72 | 30 | |
| 4,4'-DDE [2C] | 2.4 | 0.06 | 0.19 | ng | 3.000 | | 80.7 | 35-140 | 6.49 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.73* | | | *ng* | *3.000* | | *57.7* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.42* | | | *ng* | *3.000* | | *80.8* | *30-135* | | | |
| **LCS Dup (B501104-BSD2)** | | | | | Prepared: 15-Jan-2015 Analyzed: 21-Jan-2015 | | | | | | |
| 2,4´-DDD | 3.2 | 0.06 | 0.19 | ng | 3.750 | | 85.4 | 50-125 | 8.55 | 30 | |
| 2,4´-DDE | 3.2 | 0.06 | 0.19 | ng | 3.750 | | 86.1 | 50-125 | 12.3 | 30 | |
| 2,4´-DDT | 3.2 | 0.06 | 0.19 | ng | 3.750 | | 86.3 | 50-125 | 9.77 | 30 | |
| 4,4´-DDD | 2.4 | 0.06 | 0.19 | ng | 3.000 | | 79.6 | 25-150 | 3.47 | 30 | |
| 4,4´-DDT | 2.5 | 0.06 | 0.19 | ng | 3.000 | | 82.7 | 45-140 | 2.56 | 30 | |
| 4,4'-DDE [2C] | 2.4 | 0.06 | 0.19 | ng | 3.000 | | 79.2 | 35-140 | 3.11 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.75* | | | *ng* | *3.000* | | *58.5* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.39* | | | *ng* | *3.000* | | *79.5* | *30-135* | | | |

## Items for Project Manager Review

| LabNumber | Analysis | Analyte | Exception |
|---|---|---|---|

**USACE ERDC-EP-C**
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**Vicksburg, MS 39180-6199**

05 May 2015

Gunther Rosen
Navy -- SPAWAR
Environmental Science and Applied System Branch, 536(
San Diego, CA 92152

RE: Quantico

Enclosed are the results of analyses for samples received by the laboratory on 10-Mar-2015. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Dale Rosado, Ph. D. For Allyson Holman
Biologist

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**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

**WORK ORDER SUMMARY**

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| F38 | 5031001-01 | Passive Sampler | 03-Mar-2015 | 10-Mar-2015 |
| F40 | 5031001-02 | Passive Sampler | 03-Mar-2015 | 10-Mar-2015 |
| F54 | 5031001-03 | Passive Sampler | 03-Mar-2015 | 10-Mar-2015 |
| F73 | 5031001-04 | Passive Sampler | 03-Mar-2015 | 10-Mar-2015 |
| F74 | 5031001-05 | Passive Sampler | 03-Mar-2015 | 10-Mar-2015 |
| F75 | 5031001-06 | Passive Sampler | 03-Mar-2015 | 10-Mar-2015 |
| F76 | 5031001-07 | Passive Sampler | 03-Mar-2015 | 10-Mar-2015 |
| F77 | 5031001-08 | Passive Sampler | 03-Mar-2015 | 10-Mar-2015 |

| | | |
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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## Case Narrative

The spikes for 4,4-DDD, 4,4-DDE, and 4,4-DDT were inadvertently left out of the laboratory control sample (BS). The batch was accepted based on the recovery of the 2,4-DDD, 2,4-DDE, and 2,4-DDT analytes.

Surrogate Adsorption by SPME: 1 mL of Hexane was placed in vials with 16 cm of blank SPME fibers that were cut into 2 cm pieces. A SPME blank (BLK2), blank spike (BS2), and blank spike duplicate (BSD2) was created by adding spike and surrogate solutions to the solutions containing the blank SPME. A blank (BLK1), blank spike (BS1), and blank spike duplicate (BSD1) was also made using 1 mL of hexane with no SPME present. It was noted that 31% of the 2,4,5,6-tetrachloro-m-xylene surrogate was recovered from the SPME blank (BLK2), while 59% was recovered from the non-SPME blank (BLK1). We also saw adsorption of the analytes from the spikes. The recoveries for the SPME blank spike (BS2) were 60-65% for the 2,4-DDX analytes, versus 98-102% for the same analytes in the none SPME blank spike (BS1). This indicated that the fibers are absorbing the surrogates and the spike material during concentration.
It may be possible to obtain better recoveries by removing the solution from the SPME before concentration.

| | | |
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## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| QM-08 | Spike or surrogate was inadvertently left out of this sample. |
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration. |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

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## F38

### 5031001-01 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.49** | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | J |
| 4,4´-DDE | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 4,4'-DDT [2C] | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.45** | | *81.8 %* | *25-140* | | *01-Apr-2015* | *16-Apr-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.48** | | *82.8 %* | *30-135* | | *01-Apr-2015* | *16-Apr-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

# F40

## 5031001-02 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 4,4'-DDT [2C] | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.09** | | *36.4 %* | *25-140* | | *01-Apr-2015* | *16-Apr-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.01** | | *33.6 %* | *30-135* | | *01-Apr-2015* | *16-Apr-2015* | *EPA 8081A* | |

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## F54

### 5031001-03 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 4,4'-DDT [2C] | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.16** | | *72.0 %* | *25-140* | | *01-Apr-2015* | *16-Apr-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.81** | | *93.7 %* | *30-135* | | *01-Apr-2015* | *16-Apr-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## F73

### 5031001-04 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **ERDC-EL-EP-C** | | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 4,4'-DDT [2C] | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.92** | | *97.5 %* | *25-140* | | *01-Apr-2015* | *16-Apr-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.08** | | *102 %* | *30-135* | | *01-Apr-2015* | *16-Apr-2015* | *EPA 8081A* | |

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### F74

**5031001-05 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.47** | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.57** | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | J |
| **4,4´-DDE** | **0.83** | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | J |
| **4,4'-DDT [2C]** | **0.52** | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.11** | | *70.4 %* | *25-140* | | *01-Apr-2015* | *16-Apr-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.15** | | *71.8 %* | *30-135* | | *01-Apr-2015* | *16-Apr-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

# F75

## 5031001-06 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 4,4'-DDT [2C] | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.82** | | *60.8 %* | *25-140* | | *01-Apr-2015* | *16-Apr-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.19** | | *73.0 %* | *30-135* | | *01-Apr-2015* | *16-Apr-2015* | *EPA 8081A* | |

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## F76

**5031001-07 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| **4,4´-DDD** | **2.11** | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | |
| 4,4´-DDE | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 4,4'-DDT [2C] | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.29** | | *76.4 %* | *25-140* | | *01-Apr-2015* | *16-Apr-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.43** | | *80.9 %* | *30-135* | | *01-Apr-2015* | *16-Apr-2015* | *EPA 8081A* | |

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| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## F77

### 5031001-08 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| **4,4´-DDE** | **0.44** | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | J |
| 4,4'-DDT [2C] | ND | 0.40 | 1.25 | ng | | 01-Apr-2015 | 16-Apr-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.23** | | *74.2 %* | *25-140* | | *01-Apr-2015* | *16-Apr-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.53** | | *84.4 %* | *30-135* | | *01-Apr-2015* | *16-Apr-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC-EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B505014 - *** DEFAULT PREP ***** | | | | | | | | | | | |
| **Blank (B505014-BLK1)** | | | | | Prepared: 01-Apr-2015 Analyzed: 16-Apr-2015 | | | | | | |
| 2,4´-DDD | ND | 0.40 | 1.25 | ng | | | | | | | U |
| 2,4´-DDE | ND | 0.40 | 1.25 | ng | | | | | | | U |
| 2,4´-DDT | ND | 0.40 | 1.25 | ng | | | | | | | U |
| 4,4´-DDD | ND | 0.40 | 1.25 | ng | | | | | | | U |
| 4,4´-DDT | ND | 0.40 | 1.25 | ng | | | | | | | U |
| 4,4'-DDE [2C] | ND | 0.40 | 1.25 | ng | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.77* | | | *ng* | *3.000* | | *59.0* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *1.98* | | | *ng* | *3.000* | | *66.0* | *30-135* | | | |
| **Blank (B505014-BLK2)** | | | | | Prepared: 01-Apr-2015 Analyzed: 16-Apr-2015 | | | | | | |
| 2,4´-DDD | ND | 0.40 | 1.25 | ng | | | | | | | U |
| 2,4´-DDE | ND | 0.40 | 1.25 | ng | | | | | | | U |
| 2,4´-DDT | ND | 0.40 | 1.25 | ng | | | | | | | U |
| 4,4´-DDD | ND | 0.40 | 1.25 | ng | | | | | | | U |
| 4,4´-DDT | ND | 0.40 | 1.25 | ng | | | | | | | U |
| 4,4'-DDE [2C] | ND | 0.40 | 1.25 | ng | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *0.938* | | | *ng* | *3.000* | | *31.2* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *1.40* | | | *ng* | *3.000* | | *46.7* | *30-135* | | | |
| **LCS (B505014-BS1)** | | | | | Prepared: 01-Apr-2015 Analyzed: 16-Apr-2015 | | | | | | |
| 2,4´-DDD | 3.7 | 0.40 | 1.25 | ng | 3.750 | | 98.8 | 50-125 | | | |
| 2,4´-DDE | 3.6 | 0.40 | 1.25 | ng | 3.750 | | 95.2 | 50-125 | | | |
| 2,4´-DDT | 3.8 | 0.40 | 1.25 | ng | 3.750 | | 102 | 50-125 | | | |
| 4,4´-DDD | ND | 0.40 | 1.25 | ng | | | | 25-150 | | | QM-08, U |
| 4,4´-DDT | ND | 0.40 | 1.25 | ng | | | | 45-140 | | | QM-08, U |
| 4,4'-DDE [2C] | ND | 0.40 | 1.25 | ng | | | | 35-140 | | | QM-08, U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.87* | | | *ng* | *3.000* | | *62.4* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.45* | | | *ng* | *3.000* | | *81.6* | *30-135* | | | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 05-May-2015 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC-EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B505014 - *** DEFAULT PREP ***** | | | | | | | | | | | |
| **LCS (B505014-BS2)** | | | | | Prepared: 01-Apr-2015 Analyzed: 16-Apr-2015 | | | | | | |
| 2,4´-DDD | 2.3 | 0.40 | 1.25 | ng | 3.750 | | 61.3 | 50-125 | | | |
| 2,4´-DDE | 2.2 | 0.40 | 1.25 | ng | 3.750 | | 59.4 | 50-125 | | | |
| 2,4´-DDT | 2.5 | 0.40 | 1.25 | ng | 3.750 | | 65.8 | 50-125 | | | |
| 4,4´-DDD | ND | 0.40 | 1.25 | ng | | | | 25-150 | | | QM-08, U |
| 4,4´-DDT | ND | 0.40 | 1.25 | ng | | | | 45-140 | | | QM-08, U |
| 4,4'-DDE [2C] | ND | 0.40 | 1.25 | ng | | | | 35-140 | | | QM-08, U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.22* | | | *ng* | *3.000* | | *40.6* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *1.36* | | | *ng* | *3.000* | | *45.4* | *30-135* | | | |
| **LCS Dup (B505014-BSD1)** | | | | | Prepared: 01-Apr-2015 Analyzed: 16-Apr-2015 | | | | | | |
| 2,4´-DDD | 3.1 | 0.40 | 1.25 | ng | 3.750 | | 83.2 | 50-125 | 17.1 | 30 | |
| 2,4´-DDE | 3.1 | 0.40 | 1.25 | ng | 3.750 | | 81.4 | 50-125 | 15.6 | 30 | |
| 2,4´-DDT | 3.3 | 0.40 | 1.25 | ng | 3.750 | | 87.2 | 50-125 | 15.3 | 30 | |
| 4,4´-DDD | ND | 0.40 | 1.25 | ng | | | | 25-150 | | 30 | QM-08, U |
| 4,4´-DDT | ND | 0.40 | 1.25 | ng | | | | 45-140 | | 30 | QM-08, U |
| 4,4'-DDE [2C] | ND | 0.40 | 1.25 | ng | | | | 35-140 | | 30 | QM-08, U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.66* | | | *ng* | *3.000* | | *55.2* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *1.90* | | | *ng* | *3.000* | | *63.5* | *30-135* | | | |
| **LCS Dup (B505014-BSD2)** | | | | | Prepared: 01-Apr-2015 Analyzed: 16-Apr-2015 | | | | | | |
| 2,4´-DDD | 2.6 | 0.40 | 1.25 | ng | 3.750 | | 70.4 | 50-125 | 13.9 | 30 | |
| 2,4´-DDE | 2.5 | 0.40 | 1.25 | ng | 3.750 | | 67.6 | 50-125 | 12.8 | 30 | |
| 2,4´-DDT | 2.8 | 0.40 | 1.25 | ng | 3.750 | | 75.6 | 50-125 | 13.9 | 30 | |
| 4,4´-DDD | ND | 0.40 | 1.25 | ng | | | | 25-150 | | 30 | QM-08, U |
| 4,4´-DDT | ND | 0.40 | 1.25 | ng | | | | 45-140 | | 30 | QM-08, U |
| 4,4'-DDE [2C] | ND | 0.40 | 1.25 | ng | | | | 35-140 | | 30 | QM-08, U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.37* | | | *ng* | *3.000* | | *45.6* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *1.77* | | | *ng* | *3.000* | | *59.1* | *30-135* | | | |

Project Name: MCB Quantico EMNR Project



| Sample ID | # of containers | container type | Date (dd-mm-yy) | Time (local) | LAB | Sample Type | Matrix | Location | Analysis/Comments | Pres. | COC # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| F38 | 1 | 2ml vial | 3-Mar-15 | 09:00 | ERDC | SPME | Hexane | Lab Sample | DDx | none | 1 |
| F40 | 1 | 2ml vial | 3-Mar-15 | 09:00 | ERDC | SPME | Hexane | Lab Sample | DDx | none | 1 |
| F54 | 1 | 2ml vial | 3-Mar-15 | 09:00 | ERDC | SPME | Hexane | Lab Sample | DDx | none | 1 |
| F73 | 1 | 2ml vial | 3-Mar-15 | 09:00 | ERDC | SPME | Hexane | Lab Sample | DDx | none | 1 |
| F74 | 1 | 2ml vial | 3-Mar-15 | 09:00 | ERDC | SPME | Hexane | Lab Sample | DDx | none | 1 |
| F75 | 1 | 2ml vial | 3-Mar-15 | 09:00 | ERDC | SPME | Hexane | Lab Sample | DDx | none | 1 |
| F76 | 1 | 2ml vial | 3-Mar-15 | 09:00 | ERDC | SPME | Hexane | Lab Sample | DDx | none | 1 |
| F77 | 1 | 2ml vial | 3-Mar-15 | 09:00 | ERDC | SPME | Hexane | Lab Sample | DDx | none | 1 |

Total = 8 samples

NOTE: contact Melissa Grover (Environ: 619 400 4936) for questions regarding sample prep/analysis.

DDx: 4,4'-DDD, 4,4'-DDE, 4,4'DDT, 2,4'-DDD, 2,4'-DDE, 2,4'-DDT

| | | | | | |
|---|---|---|---|---|---|
| Relinquished by | Vikki Kirtay | Date/Time | 3/3/2015 | Relinquished by | VJK |
| Received by | Allyson Holman | Date/Time | 3/10/15 | Received by | MWC |
| Fedex Tracking number | | Shipper: | V. Kirtay - SPAWARSYSCEN Pacific | Tele: | 619.553.1395 |
| Please check appropriate ship to box: | | Drop-off: | | Tele: | |
| | X | Ship to: ERDC | | Tele: | 601.634.4896 |

## Items for Project Manager Review

| LabNumber | Analysis | Analyte | Exception |
|---|---|---|---|

**14-Month *ex situ* Porewater Sample ID Lookup Table**

| Sample ID | Extract Sample Number |
|---|---|
| QT12-1-0002 | F78 |
| QT12-1-0205 | F79 |
| QT12-1-0507 | F80 |
| QT12-1-0002-AI | F81 |
| QT12-1-0002-BI | F82 |
| QT12-1-0205-BI | F83 |
| QT12-1-0507-BI | F84 |
| QT12-2-0002 | F85 |
| QT12-2-0205 | F86 |
| QT12-2-0507 | F87 |
| QT12-2-0002-AI | F88 |
| QT12-2-0002-BI | F89 |
| QT12-2-0205-BI | F90 |
| QT12-2-0507-BI | F91 |
| QT12-3-0002 | F92 |
| QT12-3-0205 | F93 |
| QT12-3-0507 | F94 |
| QT12-3-0002-AI | F95 |
| QT12-3-0002-BI | F96 |
| QT12-3-0205-BI | F97 |
| QT12-3-0507-BI | F98 |
| QT12-4-0002 | F99 |
| QT12-4-0205 | F100 |
| QT12-4-0507 | F101 |
| QT12-4-0002-AI | F102 |
| QT12-4-0002-BI | F103 |
| QT12-4-0205-BI | F104 |
| QT12-4-0507-BI | F105 |
| QT12-5-0002 | F106 |
| QT12-5-0205 | F107 |
| QT12-5-0507 | F108 |
| QT12-5-0002-AI | F109 |
| QT12-5-0002-BI | F110 |
| QT12-5-0205-BI | F111 |
| QT12-5-0507-BI | F112 |
| QT12-5DUP-0002 | F113 |
| QT12-5DUP-0205 | F114 |
| QT12-5DUP-0507 | F115 |
| QT12-5DUP-0002-AI | F116 |
| QT12-5DUP-0002-BI | F117 |
| QT12-5DUP-0205-BI | F118 |
| QT12-5DUP-0507-BI | F119 |
| QT12-6-GRAB | F120 |
| QT12-7-GRAB | F121 |
| QT12-1-0002-SPME-BI-DUP | F122 |
| QT12-1-0205-SPME-BI-DUP | F123 |
| QT12-1-0507-SPME-BI-DUP | F124 |
| Hexane/Fiber blank | F125 |
| QT-2-2-0205 | F126 |
| QT2-3-0002-AI | F127 |
| QT2-6-GRAB | F128 |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

26 January 2016

Gunther Rosen

Navy -- SPAWAR

Environmental Science and Applied System Branch, 536(

San Diego, CA 92152

RE: Quantico

Enclosed are the results of analyses for samples received by the laboratory on 07-Oct-2015. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Dale Rosado, Ph. D.

# USACE ERDC-EP-C
# 3909 Halls Ferry Road
# Vicksburg, MS 39180-6199

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| F78 | 5100701-01 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F79 | 5100701-02 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F80 | 5100701-03 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F81 | 5100701-04 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F82 | 5100701-05 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F83 | 5100701-06 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F84 | 5100701-07 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F85 | 5100701-08 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F86 | 5100701-09 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F87 | 5100701-10 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F88 | 5100701-11 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F89 | 5100701-12 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F90 | 5100701-13 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F91 | 5100701-14 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F92 | 5100701-15 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F93 | 5100701-16 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F94 | 5100701-17 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F95 | 5100701-18 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F96 | 5100701-19 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F97 | 5100701-20 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F98 | 5100701-21 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F99 | 5100701-22 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F100 | 5100701-23 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F101 | 5100701-24 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F102 | 5100701-25 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F103 | 5100701-26 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F104 | 5100701-27 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F105 | 5100701-28 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F106 | 5100701-29 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F107 | 5100701-30 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F108 | 5100701-31 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |

**USACE ERDC-EP-C**
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**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| F109 | 5100701-32 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F110 | 5100701-33 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F111 | 5100701-34 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F112 | 5100701-35 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F113 | 5100701-36 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F114 | 5100701-37 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F115 | 5100701-38 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F116 | 5100701-39 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F117 | 5100701-40 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F118 | 5100701-41 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F119 | 5100701-42 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F120 | 5100701-43 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F121 | 5100701-44 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F122 | 5100701-45 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F123 | 5100701-46 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F124 | 5100701-47 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F125 | 5100701-48 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F127 | 5100701-49 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |
| F128 | 5100701-50 | Passive Sampler | 07-Oct-2015 | 07-Oct-2015 |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## Case Narrative

For some samples, the primary and confirmation columns did not always agree within 40%. This primarily occured for 4,4'DDT. For these samples, the higher concentration was likely caused by an interference. Therefore, the lower value was reported per SW 846 guidelines.

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| RPD-04 | RPD between primary and confirmation column values >40%. Per SW846 8000C, the lower result has been reported. |
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration. |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## F78

### 5100701-01 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.13** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.24** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **17.6** | | *67.7 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **20.3** | | *78.1 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

# USACE ERDC-EP-C
# 3909 Halls Ferry Road
# Vicksburg, MS 39180-6199

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## F79

### 5100701-02 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.08** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.65** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.55** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.27** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **16.1** | | *61.9 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **18.1** | | *69.6 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## F80

### 5100701-03 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.23** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.43** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **17.0** | | *65.4 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **19.5** | | *75.0 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## F81

### 5100701-04 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **1.03** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.18** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **19.9** | | *76.5 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **21.5** | | *82.7 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**


| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## F82

### 5100701-05 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.09** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.18** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **1.53** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.33** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDT** | **2.73** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **16.6** | | *63.8 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **19.1** | | *73.5 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## F83

### 5100701-06 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.15** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.21** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.27** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | RPD-04 |
| **4,4´-DDE** | **0.42** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.47** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **18.2** | | *70.0 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **19.5** | | *75.0 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## F84

### 5100701-07 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **1.29** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.21** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.38** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **17.1** | | *65.8 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **18.9** | | *72.7 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360! | | Reported: |
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# F85

## 5100701-08 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.08** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.77** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.27** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **20.4** | | *78.5 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **19.9** | | *76.5 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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# F86

## 5100701-09 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.12** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.22** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.61** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.55** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.06** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | RPD-04, J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **18.3** | | *70.4 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **19.9** | | *76.5 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## F87

### 5100701-10 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.17** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **2,4´-DDE** | **0.31** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.65** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.58** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.09** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | RPD-04, J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **18.3** | | *70.4 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **20.9** | | *80.4 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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|---|---|---|
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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## F88

### 5100701-11 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.09** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.30** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.17** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **17.3** | | *66.5 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **19.3** | | *74.2 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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## F89

### 5100701-12 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.06** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.38** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 4,4´-DDE | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **15.3** | | *58.8 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **18.5** | | *71.2 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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# F90

## 5100701-13 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.14** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.29** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.26** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.09** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | RPD-04, J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **14.1** | | *54.2 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **19.4** | | *74.6 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: Quantico | |
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# F91

## 5100701-14 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.10** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.27** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | RPD-04 |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.46** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.32** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.10** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | RPD-04, J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **16.3** | | *62.7 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **20.1** | | *77.3 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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|---|---|---|
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## F92

### 5100701-15 (Passive Sampler)

#### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.12** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.15** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.39** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.22** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.09** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | RPD-04, J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **18.2** | | *70.0 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **19.1** | | *73.5 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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|---|---|---|
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## F93

### 5100701-16 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.18** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **2,4´-DDE** | **0.15** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.64** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.17** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **17.3** | | *66.5 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **17.1** | | *65.8 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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## F94

### 5100701-17 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.15** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.14** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.54** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.15** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **18.0** | | *69.2 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **19.6** | | *75.4 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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## F95

### 5100701-18 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

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**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.19** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.82** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.74** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.09** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **17.1** | | *65.8 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **18.7** | | *71.9 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## F96

### 5100701-19 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.24** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **2,4´-DDE** | **0.28** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.84** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.32** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.28** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **18.8** | | *72.3 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **19.9** | | *76.5 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## F97

### 5100701-20 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.20** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **2,4´-DDE** | **0.24** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **3.61** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.74** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.41** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **14.5** | | *55.8 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **16.5** | | *63.5 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

# F98

## 5100701-21 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.16** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **1.81** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **1.27** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.18** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **14.8** | | *56.9 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **18.1** | | *69.6 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: Quantico | |
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| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## F99

### 5100701-22 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.13** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.37** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.10** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **16.2** | | *62.3 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **19.1** | | *73.5 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## F100

### 5100701-23 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.08** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.13** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.45** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **17.0** | | *65.4 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **19.4** | | *74.6 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## F101

### 5100701-24 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.15** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.37** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.18** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **17.5** | | *67.3 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **18.8** | | *72.3 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## F102

**5100701-25 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.18** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.19** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **17.3** | | *66.5 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **19.8** | | *76.2 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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# F103

## 5100701-26 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.11** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.14** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.30** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **16.7** | | *64.2 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **17.8** | | *68.5 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## F104

### 5100701-27 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDE** | **0.10** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **8.72** | | *33.5 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **10.1** | | *38.8 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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# F105

## 5100701-28 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.12** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.23** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.19** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **16.1** | | *61.9 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **18.4** | | *70.8 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## F106

### 5100701-29 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.09** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.13** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.38** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.07** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **19.1** | | *73.5 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **22.9** | | *88.1 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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## F107

### 5100701-30 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.12** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.18** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.46** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **16.9** | | *65.0 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **20.5** | | *78.8 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## F108

### 5100701-31 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.09** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.16** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.21** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **12.7** | | *48.8 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **15.4** | | *59.2 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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# F109

## 5100701-32 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.18** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.27** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.63** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.07** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **17.4** | | *66.9 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **20.4** | | *78.5 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## F110

### 5100701-33 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.11** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.13** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.41** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.72** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **17.3** | | *66.5 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **20.8** | | *80.0 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## F111

### 5100701-34 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.07** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.08** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.28** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.25** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **17.0** | | *65.4 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **20.0** | | *76.9 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## F112

### 5100701-35 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.07** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.18** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.87** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.40** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **17.9** | | *68.8 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **19.9** | | *76.5 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## F113

### 5100701-36 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | ERDC-EL-EP-C | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.10** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.34** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **15.4** | | *59.2 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **17.8** | | *68.5 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

# USACE ERDC-EP-C
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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## F114
### 5100701-37 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.20** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.56** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.06** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **14.1** | | *54.2 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **16.4** | | *63.1 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360! | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## F115

### 5100701-38 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.23** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.39** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.25** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **15.7** | | *60.4 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **18.0** | | *69.2 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## F116

### 5100701-39 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.25** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.40** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **15.7** | | *60.4 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **18.6** | | *71.5 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## F117

### 5100701-40 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.08** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.08** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.28** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.34** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **17.8** | | *68.5 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **19.4** | | *74.6 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## F118

### 5100701-41 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.07** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.13** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.31** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.22** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **20.3** | | *78.1 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **21.9** | | *84.2 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | **Reported:**<br>26-Jan-2016 |

# F119

## 5100701-42 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.11** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.22** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.45** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **17.8** | | *68.5 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **19.9** | | *76.5 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## F120

### 5100701-43 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDE** | **0.07** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **18.8** | | *72.3 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **20.4** | | *78.5 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

# F121

## 5100701-44 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.08** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDE** | **0.08** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **16.3** | | *62.7 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **18.7** | | *71.9 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

# F122

## 5100701-45 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.09** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.15** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | RPD-04, J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.35** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.33** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.16** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **15.3** | | *58.8 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **14.6** | | *56.2 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

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| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## F123

### 5100701-46 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.15** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.51** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.60** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.09** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **16.6** | | *63.8 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **17.5** | | *67.3 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## F124

### 5100701-47 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.51** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | RPD-04 |
| **4,4´-DDE** | **0.73** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.83** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **13.9** | | *53.5 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **17.4** | | *66.9 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## F125

### 5100701-48 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **18.5** | | *71.2 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **21.2** | | *81.5 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## F127

### 5100701-49 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.12** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.07** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| **4,4´-DDT** | **0.09** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **24.1** | | *92.7 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **21.2** | | *81.5 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

# F128

## 5100701-50 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.10** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.06** | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 22-Jan-2016 | 22-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **26.8** | | *103 %* | *25-140* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **24.9** | | *95.8 %* | *30-135* | *22-Jan-2016* | *22-Jan-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360 | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 26-Jan-2016 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC-EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B601061 - *** DEFAULT PREP ***** | | | | | | | | | | | |
| **Blank (B601061-BLK3)** | | | | | Prepared & Analyzed: 22-Jan-2016 | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | | | | | | | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | | | | | | | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | | | | | | | U |
| 4,4´-DDD | ND | 0.05 | 0.15 | ng | | | | | | | U |
| 4,4´-DDE | ND | 0.05 | 0.15 | ng | | | | | | | U |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *24.5* | | | *ng* | *26.00* | | *94.2* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *31.5* | | | *ng* | *26.00* | | *121* | *30-135* | | | |
| **LCS (B601061-BS1)** | | | | | Prepared & Analyzed: 22-Jan-2016 | | | | | | |
| 2,4´-DDD | 35.8 | 0.05 | 0.15 | ng | 48.75 | | 73.4 | 50-125 | | | |
| 2,4´-DDE | 33.1 | 0.05 | 0.15 | ng | 48.75 | | 67.9 | 50-125 | | | |
| 2,4´-DDT | 33.2 | 0.05 | 0.15 | ng | 48.75 | | 68.1 | 50-125 | | | |
| 4,4´-DDD | 33.1 | 0.05 | 0.15 | ng | 39.00 | | 84.9 | 25-150 | | | |
| 4,4´-DDE | 34.4 | 0.05 | 0.15 | ng | 39.00 | | 88.2 | 35-140 | | | |
| 4,4´-DDT | 34.1 | 0.05 | 0.15 | ng | 39.00 | | 87.4 | 45-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *24.6* | | | *ng* | *26.00* | | *94.6* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *24.7* | | | *ng* | *26.00* | | *95.0* | *30-135* | | | |

RAMBOLL ENVIRON

# CHAIN-OF-CUSTODY FORM № 11713

UST PROJECT OR IS EDF REQUIRED? Y (N) IF YES, GLOBAL ID #: ______ MSA# ______ WO# —

PROJECT NAME/FACILITY ID: Quantico 12-Month

PROJECT LOCATION: Quantico, VA DATE 10/5/15

PROJECT NUMBER: ______

FIELD PERSON: Melissa Groner

PROJECT MANAGER: Victoria Kirtay, SPAWAR

LABORATORY: ERDC

SAMPLER: M. Groner

SIGNATURE: MGr

YEAR: 2015

| SAMPLE I.D. NUMBER | SAMPLE DATE | SAMPLE TIME | SAMPLE DEPTH (FT) | AIR SAMPLE VOLUME (L) | MATRIX (A) AIR (S) SOIL (G) GAS (W) WATER | NUMBER OF CONTAINERS | FILTERED/UNFILTERED (F/U) | PRESERVATION (SEE KEY) | DDX EPA 8081A | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|
| F78 | 10/1 | 9:00 | NA | NA | OTHER | 1 | U | NO | X | |
| F79 | | | | | | | | | | |
| F80 | | | | | | | | | | |
| F81 | | | | | | | | | | |
| F82 | | | | | | | | | | |
| F83 | | | | | | | | | | |
| F84 | | | | | | | | | | |
| F85 | | 9:36 | | | | | | | | |
| F86 | | | | | | | | | | |
| F87 | | | | | | | | | | |
| F88 | | | | | | | | | | |
| F89 | | | | | | | | | | |
| F90 | | | | | | | | | | |
| TOTAL | | | | — | | 13 | — | | 13 | |

| RELINQUISHED BY | TIME/DATE | RECEIVED BY COMPANY | TIME/DATE |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

TURNAROUND TIME (CIRCLE ONE): SAME DAY / 24 HOURS / 48 HOURS / 72 HOURS / 5 DAYS / NORMAL

SAMPLE INTEGRITY: INTACT Y N TEMP ______

IF SEALED, SEAL INTEGRITY: INTACT Y N

H = HCL: N = $HNO_3$: S = $H_2SO$: U = UNKNOWN: NO = NONE: O = OTHER: V = VARIOUS

SWBU Office Locations:
- ☐ 18100 Von Karman Avenue, Suite 600, Irvine, CA 92612 (949) 261-5151 | (949) 261-6202 Fax
- ☐ 707 Wilshire Boulevard, Suite 4950, Los Angeles, CA 90017 (213) 943-6300 | (213) 943-6301 Fax
- ☐ 2111 East Highland Avenue, Suite 402, Phoenix, AZ 85016 (602) 734-7700 | (602) 734-7701 Fax
- ☐ 501 West Broadway, Suite 800, San Diego, CA 92101 (619) 400-4934

# RAMBOLL ENVIRON

# CHAIN-OF-CUSTODY FORM № 11714

UST PROJECT OR IS EDF REQUIRED? Y N IF YES, GLOBAL ID #: ____ MSA# ____ WO# ____

PROJECT NAME/FACILITY ID Quantico 12-Month FIELD PERSON ____

PROJECT LOCATION ____ DATE ____ PROJECT MANAGER ____

PROJECT NUMBER ____ LABORATORY ____

SAMPLER ____ YEAR: ____

SIGNATURE ____

| SAMPLE I.D. NUMBER | SAMPLE DATE | SAMPLE TIME | SAMPLE DEPTH (FT) | AIR SAMPLE VOLUME (L) | MATRIX (A) AIR (S) SOIL (G) GAS (W) WATER | NUMBER OF CONTAINERS | FILTERED/UNFILTERED (F/U) | PRESERVATION (SEE KEY) | ANALYSIS REQUIRED: DDX EPA8081A | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|
| F91 | 10/1 | 9:36 | NA | NA | other | 1 | U | NO | X | |
| F92 | | 10:14 | | | | | | | | |
| F93 | | | | | | | | | | |
| F94 | | | | | | | | | | |
| F95 | | | | | | | | | | |
| F96 | | | | | | | | | | |
| F97 | | | | | | | | | | |
| F98 | | | | | | | | | | |
| F99 | | 10:48 | | | | | | | | |
| F100 | | | | | | | | | | |
| F101 | | | | | | | | | | |
| F102 | | | | | | | | | | |
| F103 | | | | | | | | | | |
| TOTAL | | | | | | | | | | |

| RELINQUISHED BY | TIME/DATE | RECEIVED BY COMPANY | TIME/DATE |
|---|---|---|---|
| RELINQUISHED BY | TIME/DATE | RECEIVED BY COMPANY | TIME/DATE |
| RELINQUISHED BY | TIME/DATE | RECEIVED BY COMPANY | TIME/DATE |

TURNAROUND TIME (CIRCLE ONE): SAME DAY, 24 HOURS, 48 HOURS, 72 HOURS, 5 DAYS, NORMAL

SAMPLE INTEGRITY INTACT Y N TEMP ____

IF SEALED, SEAL INTEGRITY INTACT Y N

H = HCL: N = $HNO_3$: S = $H_2SO$: U = UNKNOWN: NO = NONE: O = OTHER: V = VARIOUS

SWBU Office Locations:

- ☐ 18100 Von Karman Avenue, Suite 600, Irvine, CA 92612 — (949) 261-5151 | (949) 261-6202 Fax
- ☐ 707 Wilshire Boulevard, Suite 4950, Los Angeles, CA 90017 — (213) 943-6300 | (213) 943-6301 Fax
- ☐ 2111 East Highland Avenue, Suite 402, Phoenix, AZ 85016 — (602) 734-7700 | (602) 734-7701 Fax
- ☐ 501 West Broadway, Suite 800, San Diego, CA 92101 — (619) 400-4934

RAMBOLL ENVIRON

# CHAIN-OF-CUSTODY FORM

№ 11715

UST PROJECT OR IS EDF REQUIRED? Y N IF YES, GLOBAL ID #: ______ MSA# ______ WO# ______

PROJECT NAME/FACILITY ID Quantico 12-Month

FIELD PERSON ______

PROJECT LOCATION ______ DATE ______

PROJECT MANAGER ______

PROJECT NUMBER ______

LABORATORY ______

SAMPLER

SIGNATURE

YEAR:

| SAMPLE I.D. NUMBER | SAMPLE DATE | SAMPLE TIME | SAMPLE DEPTH (FT) | AIR SAMPLE VOLUME (L) | MATRIX (A) AIR (S) SOIL (G) GAS (W) WATER | NUMBER OF CONTAINERS | FILTERED/UNFILTERED (F/U) | PRESERVATION (SEE KEY) | DDX EPA 8081A | | | | | | | | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F104 | 10/1 | 10:48 | NA | NA | other | 1 | U | No | X | | | | | | | | | | | | |
| F105 | | | | | | | | | | | | | | | | | | | | | |
| F106 | | 11:22 | | | | | | | | | | | | | | | | | | | |
| F107 | | | | | | | | | | | | | | | | | | | | | |
| F108 | | | | | | | | | | | | | | | | | | | | | |
| F109 | | | | | | | | | | | | | | | | | | | | | |
| F110 | | | | | | | | | | | | | | | | | | | | | |
| F111 | | | | | | | | | | | | | | | | | | | | | |
| F112 | | | | | | | | | | | | | | | | | | | | | |
| F113 | | 12:58 | | | | | | | | | | | | | | | | | | | |
| F114 | | | | | | | | | | | | | | | | | | | | | |
| F115 | | | | | | | | | | | | | | | | | | | | | |
| F116 | | | | | | | | | | | | | | | | | | | | | |
| TOTAL | | | | | | | | | | | | | | | | | | | | | |

| RELINQUISHED BY | TIME/DATE | RECEIVED BY COMPANY | TIME/DATE |
|---|---|---|---|
| RELINQUISHED BY | TIME/DATE | RECEIVED BY COMPANY | TIME/DATE |
| RELINQUISHED BY | TIME/DATE | RECEIVED BY COMPANY | TIME/DATE |

TURNAROUND TIME (CIRCLE ONE) SAME DAY 24 HOURS 48 HOURS 72 HOURS 5 DAYS NORMAL

SAMPLE INTEGRITY INTACT Y N TEMP______

IF SEALED, SEAL INTEGRITY INTACT Y N

H = HCL: N = $HNO_3$: S = $H_2SO$: U = UNKNOWN: NO = NONE: O = OTHER: V = VARIOUS

SWBU Office Locations:
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- ☐ 707 Wilshire Boulevard, Suite 4950, Los Angeles, CA 90017 (213) 943-6300 | (213) 943-6301 Fax
- ☐ 2111 East Highland Avenue, Suite 402, Phoenix, AZ 85016 (602) 734-7700 | (602) 734-7701 Fax
- ☐ 501 West Broadway, Suite 800, San Diego, CA 92101 (619) 400-4934

# RAMBØLL ENVIRON

# CHAIN-OF-CUSTODY FORM № 11716

UST PROJECT OR IS EDF REQUIRED? Y N IF YES, GLOBAL ID #: ____ MSA# ____ WO# ____

PROJECT NAME/FACILITY ID Quantico 12-Month

FIELD PERSON ____

PROJECT LOCATION ____ DATE ____

PROJECT MANAGER ____

PROJECT NUMBER ____

LABORATORY ____

SAMPLER

SIGNATURE

| SAMPLE I.D. NUMBER | SAMPLE DATE (YEAR: ) | SAMPLE TIME | SAMPLE DEPTH (FT) | AIR SAMPLE VOLUME (L) | MATRIX (A) AIR (S) SOIL (G) GAS (W) WATER | NUMBER OF CONTAINERS | FILTERED/UNFILTERED (F/U) | PRESERVATION (SEE KEY) | ANALYSIS REQUIRED: DDX EPA 8081A | COMMENTS: * See email from Victoria Kirtay, SPAWAR prior to analysis. |
|---|---|---|---|---|---|---|---|---|---|---|
| F117 | 10/1 | 12:58 | NA | NA | other | 1 | U | NO | X | |
| F118 | | | | | | | | | | |
| F119 | | | | | | | | | | |
| F120 | | 13:29 | | | | | | | | |
| F121 | | | | | | | | | | |
| F122 | | | | | | | | | | SPME Surrogate DUPLICATE * |
| F123 | | | | | | | | | | * |
| F124 | | | | | | | | | | * |
| F125 | | 14:00 | | | | | | | | |
| F127 | | | | | | | | | | |
| F128 | | | | | | | | | | |
| TOTAL | | | | | | | | | | |

| RELINQUISHED BY | TIME/DATE | RECEIVED BY COMPANY | TIME/DATE |
|---|---|---|---|
| RELINQUISHED BY | TIME/DATE | RECEIVED BY COMPANY | TIME/DATE |
| RELINQUISHED BY | TIME/DATE | RECEIVED BY COMPANY | TIME/DATE |

TURNAROUND TIME (CIRCLE ONE): SAME DAY / 24 HOURS / 48 HOURS / 72 HOURS / 5 DAYS / NORMAL

SAMPLE INTEGRITY INTACT Y N TEMP ____

IF SEALED, SEAL INTEGRITY INTACT Y N

H = HCL: N = $HNO_3$: S = $H_2SO$: U = UNKNOWN: NO = NONE: O = OTHER: V = VARIOUS

SWBU Office Locations:
- ☐ 18100 Von Karman Avenue, Suite 600, Irvine, CA 92612 (949) 261-5151 | (949) 261-6202 Fax
- ☐ 707 Wilshire Boulevard, Suite 4950, Los Angeles, CA 90017 (213) 943-6300 | (213) 943-6301 Fax
- ☐ 2111 East Highland Avenue, Suite 402, Phoenix, AZ 85016 (602) 734-7700 | (602) 734-7701 Fax
- ☐ 501 West Broadway, Suite 800, San Diego, CA 92101 (619) 400-4934

SHIPPING CONTAINER TALLY — 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

# REQUISITION AND INVOICE/SHIPPING DOCUMENT

OMB No. 0704-0246
OMB approval expires Apr 30, 2009



**PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ORGANIZATION. RETURN COMPLETED FORM TO THE ADDRESS IN ITEM 2.**

**1. FROM:** *(Include ZIP Code)*
N66001 SPAWARSYSCEN PACIFIC
4297 PACIFIC HWY. BLDG 7
SAN DIEGO, CA, 92001
POC: Victoria Kirtay
TEL: (619) 553-1395

**SHEET NO.** 1 | **NO. OF SHEETS** 1 | **5. REQUISITION DATE**

**6. REQUISITION NUMBER** N66001 5278 B009

**7. DATE MATERIAL REQUIRED** *(YYYYMMDD)* 20151007

**8. PRIORITY** 03

**2. TO:** *(Include ZIP Code)*
ERDC-EPC
3909 Halls Ferry Rd,
Building 3299
Vicksburg, MS 39180

**9. AUTHORITY OR PURPOSE**
Environmental Samples ESTCP - MCB Quantico EMNR Project (SPME)

**10. SIGNATURE**
GEORGE.ROBERT.D.1232187413
Digitally signed by GEORGE.ROBERT.D.1232187413 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USN, cn=GEORGE.ROBERT.D.1232187413 Date: 2015.10.05 10:42:54 -07'00'

**11a. VOUCHER NUMBER & DATE** *(YYYYMMDD)*

**b.**

**3. SHIP TO - MARK FOR**
ATTN: DALE ROSADO
TEL: (601) 534-3084

**12. DATE SHIPPED** *(YYYYMMDD)* 20151006

**13. MODE OF SHIPMENT** FEDEX PRIORITY OVERNIGH

**14. BILL OF LADING NUMBER**

**15. AIR MOVEMENT DESIGNATOR OR PORT REFERENCE NO.**
Delivery on 10-06-15: Mission essential to avoid work stoppage

**4. APPROPRIATIONS DATA**
NWA/WBS: 100001075252 0020
COST CENTER: 71750

**AMOUNT**

| ITEM NO. (a) | FEDERAL STOCK NUMBER, DESCRIPTION, AND CODING OF MATERIEL AND/OR SERVICES (b) | UNIT OF ISSUE (c) | QUANTITY REQUESTED (d) | SUPPLY ACTION (e) | TYPE CON-TAINER (f) | CON-TAINER NOS. (g) | UNIT PRICE (h) | TOTAL COST (i) |
|---|---|---|---|---|---|---|---|---|
| 1 | EMR PROJECT PROJECT - ENVIRONMENTAL SAMPLES (SPME)<br>ICE CHEST IN CARDBOARD BOX (CONTAINING ENVIRONMENTAL SAMPLES)<br>14" x 12" x 13" (LxWxH): APPROX WT. 5 lbs | EA | 1 | | | | 500.00 | 500.00 |
| | | | | | | | 0.00 | 0.00 |
| | | | | | | | 0.00 | 0.00 |
| | | | | | | | 0.00 | 0.00 |
| | | | | | | | 0.00 | 0.00 |

**16. TRANSPORTATION VIA AMC OR MSC CHARGEABLE TO**

**17. SPECIAL HANDLING**

| 18. RECAPITULATION OF SHIPMENT | TOTAL CON-TAINERS | TYPE CON-TAINER | DESCRIPTION | TOTAL WEIGHT | TOTAL CUBE |
|---|---|---|---|---|---|
| ISSUED BY<br>Leo Mendoza | | | | | |
| CHECKED BY | | | | | |
| PACKED BY | | | | | |
| | | | ← TOTAL → | | |

| 19. RECEIPT | DATE | BY | |
|---|---|---|---|
| CONTAINERS RECEIVED EXCEPT AS NOTED | *(YYYYMMDD)* | | SHEET TOTAL<br>500.00 |
| QUANTITIES RECEIVED EXCEPT AS NOTED | *(YYYYMMDD)* | | GRAND TOTAL |
| POSTED | *(YYYYMMDD)* | | 20. RECEIVER'S VOUCHER NO. |

**DD FORM 1149, JUL 2006** 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

PREVIOUS EDITION IS OBSOLETE.

Adobe Designer 8.0

SHIPPING CONTAINER TALLY —— 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

# REQUISITION AND INVOICE/SHIPPING DOCUMENT

OMB No. 0704-0246
OMB approval expires Apr 30, 2009



**PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ORGANIZATION. RETURN COMPLETED FORM TO THE ADDRESS IN ITEM 2.**

**1. FROM:** *(Include ZIP Code)*
N66001 SPAWARSYSCEN PACIFIC
4297 PACIFIC HWY. BLDG 7
SAN DIEGO, CA, 92001
POC: Victoria Kirtay
TEL: (619) 553-1395

| SHEET NO. | NO. OF SHEETS | 5. REQUISITION DATE | 6. REQUISITION NUMBER |
|---|---|---|---|
| 1 | 1 | | N66001 5278 B009 |

**7. DATE MATERIAL REQUIRED** *(YYYYMMDD)*: 20151007
**8. PRIORITY**: 03

**2. TO:** *(Include ZIP Code)*
ERDC-EPC
3909 Halls Ferry Rd,
Building 3299
Vicksburg, MS 39180

**9. AUTHORITY OR PURPOSE**
Environmental Samples ESTCP - MCB Quantico EMNR Project (SPME)

**10. SIGNATURE**
GEORGE.ROBERT.D.1232187413
Digitally signed by GEORGE.ROBERT.D.1232187413
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USN, cn=GEORGE.ROBERT.D.1232187413
Date: 2015.10.05 10:42:54 -07'00'

**11a. VOUCHER NUMBER & DATE** *(YYYYMMDD)*

**3. SHIP TO - MARK FOR**
ATTN: DALE ROSADO
TEL: (601) 534-3084

**12. DATE SHIPPED** *(YYYYMMDD)*: 20151006

**b.**

**13. MODE OF SHIPMENT**: FEDEX PRIORITY OVERNIGH

**14. BILL OF LADING NUMBER**

**15. AIR MOVEMENT DESIGNATOR OR PORT REFERENCE NO.**
Delivery on 10-06-15: Mission essential to avoid work stoppage

**4. APPROPRIATIONS DATA**
NWA/WBS: 100001075252 0020
COST CENTER: 71750

AMOUNT

| ITEM NO. (a) | FEDERAL STOCK NUMBER, DESCRIPTION, AND CODING OF MATERIEL AND/OR SERVICES (b) | UNIT OF ISSUE (c) | QUANTITY REQUESTED (d) | SUPPLY ACTION (e) | TYPE CON-TAINER (f) | CON-TAINER NOS. (g) | UNIT PRICE (h) | TOTAL COST (i) |
|---|---|---|---|---|---|---|---|---|
| 1 | EMR PROJECT PROJECT - ENVIRONMENTAL SAMPLES (SPME)<br>ICE CHEST IN CARDBOARD BOX (CONTAINING ENVIRONMENTAL SAMPLES)<br>14" x 12" x 13" (LxWxH): APPROX WT. 5 lbs | EA | 1 | | | | 500.00 | 500.00 |
| | | | | | | | 0.00 | 0.00 |
| | | | | | | | 0.00 | 0.00 |
| | | | | | | | 0.00 | 0.00 |
| | | | | | | | 0.00 | 0.00 |

**16. TRANSPORTATION VIA AMC OR MSC CHARGEABLE TO**

**17. SPECIAL HANDLING**

**18. RECAPITULATION OF SHIPMENT**

| | TOTAL CON-TAINERS | TYPE CON-TAINER | DESCRIPTION | TOTAL WEIGHT | TOTAL CUBE |
|---|---|---|---|---|---|
| ISSUED BY<br>Leo Mendoza | | | | | |
| CHECKED BY | | | | | |
| PACKED BY | | | | | |
| | | | ← TOTAL → | | |

**19. RECEIPT**

| | DATE *(YYYYMMDD)* | BY | |
|---|---|---|---|
| CONTAINERS RECEIVED EXCEPT AS NOTED | | | SHEET TOTAL<br>500.00 |
| QUANTITIES RECEIVED EXCEPT AS NOTED | | | GRAND TOTAL |
| POSTED | | | 20. RECEIVER'S VOUCHER NO. |

**DD FORM 1149, JUL 2006** 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

PREVIOUS EDITION IS OBSOLETE.

Adobe Designer 8.0

## Items for Project Manager Review

| LabNumber | Analysis | Analyte | Exception |
|---|---|---|---|

**25-Month *ex situ* Porewater Sample ID Lookup Table**

| Sample Name | Extract Sample Number |
|---|---|
| QT25-1-0002 | F129 |
| QT25-1-0205 | F130 |
| QT25-1-0507 | F131 |
| QT25-1-0002-AI | F132 |
| QT25-1-0002-BI | F133 |
| QT25-1-0205-BI | F134 |
| QT25-1-0507-BI | F135 |
| QT25-2-0002 | F136 |
| QT25-2-0205 | F137 |
| QT25-2-0507 | F138 |
| QT25-2-0002-AI | F139 |
| QT25-2-0002-BI | F140 |
| QT25-2-0205-BI | F141 |
| QT25-2-0507-BI | F142 |
| QT25-3-0002 | F143 |
| QT25-3-0205 | F144 |
| QT25-3-0507 | F145 |
| QT25-3-0002-AI | F146 |
| QT25-3-0002-BI | F147 |
| QT25-3-0205-BI | F148 |
| QT25-3-0507-BI | F149 |
| QT25-4-0002 | F150 |
| QT25-4-0205 | F151 |
| QT25-4-0507 | F152 |
| QT25-4-0002-AI | F153 |
| QT25-4-0002-BI | F154 |
| QT25-4-0205-BI | F155 |
| QT25-4-0507-BI | F156 |
| QT25-5-0002 | F157 |
| QT25-5-0205 | F158 |
| QT25-5-0507 | F159 |
| QT25-5-0002-AI | F160 |
| QT25-5-0002-BI | F161 |
| QT25-5-0205-BI | F162 |
| QT25-5-0507-BI | F163 |
| QT25-5DUP-0002 | F164 |
| QT25-5DUP-0205 | F165 |
| QT25-5DUP-0507 | F166 |
| QT25-5DUP-0002-AI | F167 |
| QT25-5DUP-0002-BI | F168 |
| QT25-5DUP-0205-BI | F169 |
| QT25-5DUP-0507-BI | F170 |
| QT25-6-GRAB | F171 |
| QT25-7-GRAB | F172 |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

07 December 2016

SPARWAR
SPARWAR

,
RE: Quantico

Enclosed are the results of analyses for samples received by the laboratory on 30-Sep-2016. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Madeline Tarasar For Allyson Wooley
Biologist

# USACE ERDC-EP-C
# 3909 Halls Ferry Road
# Vicksburg, MS 39180-6199

| SPARWAR | Project: Quantico | |
|---|---|---|
| , | Project Manager: SPARWAR | **Reported:** 07-Dec-2016 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| F129 | 6093001-01 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F130 | 6093001-02 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F131 | 6093001-03 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F132 | 6093001-04 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F133 | 6093001-05 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F134 | 6093001-06 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F135 | 6093001-07 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F136 | 6093001-08 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F137 | 6093001-09 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F138 | 6093001-10 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F139 | 6093001-11 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F140 | 6093001-12 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F141 | 6093001-13 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F142 | 6093001-14 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F143 | 6093001-15 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F144 | 6093001-16 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F145 | 6093001-17 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F146 | 6093001-18 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F147 | 6093001-19 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F148 | 6093001-20 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F149 | 6093001-21 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F150 | 6093001-22 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F151 | 6093001-23 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F152 | 6093001-24 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F153 | 6093001-25 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F154 | 6093001-26 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F155 | 6093001-27 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F156 | 6093001-28 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F157 | 6093001-29 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F158 | 6093001-30 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F159 | 6093001-31 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

# USACE ERDC-EP-C
# 3909 Halls Ferry Road
# Vicksburg, MS 39180-6199

| | | |
|---|---|---|
| SPARWAR | Project: Quantico | |
| | | **Reported:** |
| , | Project Manager: SPARWAR | 07-Dec-2016 |

## WORK ORDER SUMMARY

| **Sample ID** | **Laboratory ID** | **Matrix** | **Date Sampled** | **Date of Work Order** |
|---|---|---|---|---|
| F160 | 6093001-32 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F161 | 6093001-33 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F162 | 6093001-34 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F163 | 6093001-35 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F164 | 6093001-36 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F165 | 6093001-37 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F166 | 6093001-38 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F167 | 6093001-39 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F168 | 6093001-40 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F169 | 6093001-41 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F170 | 6093001-42 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F171 | 6093001-43 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |
| F172 | 6093001-44 | Passive Sampler | 27-Sep-2016 | 30-Sep-2016 |

| | | |
|---|---|---|
| SPARWAR | Project: Quantico | |
| , | Project Manager: SPARWAR | **Reported:** 07-Dec-2016 |

**Case Narrative**

Samples F138, F140, F141, F142, F144, F148, F149 contain PCBs which caused interferences with some of the DDX compounds. As a result, the RPDs between the two analytical columns were >40% for some of the compounds. The lower concentration was reported and the analytes were flagged. For some of the other samples, there were also some RPDs >40% between the analytical columns, these also have the lower value reported and are flagged.

Sample PCB1 was labeled on the COC as hexane. After an extended time trying to concentrate the sample, the lab was told that it was actually methanol/water. This sample is still being processed and the data is not included in this report.

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| SPARWAR | Project: Quantico | |
| , | Project Manager: SPARWAR | **Reported:** 07-Dec-2016 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| RPD-04 | RPD between primary and confirmation column values >40%. Per SW846 8000C, the lower result has been reported. |
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration. |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

| | | |
|---|---|---|
| SPARWAR | Project: Quantico | |
| , | Project Manager: SPARWAR | **Reported:** 07-Dec-2016 |

## F129

### 6093001-01 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.08** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.14** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.29** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.33** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.83** | | *60.9 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.97** | | *65.7 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| SPARWAR | Project: Quantico | |
|---|---|---|
| , | Project Manager: SPARWAR | **Reported:** 07-Dec-2016 |

## F130

### 6093001-02 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.08** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.12** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.26** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.62** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.19** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.77** | | *58.9 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.96** | | *65.2 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| SPARWAR | Project: Quantico | |
| , | Project Manager: SPARWAR | **Reported:** 07-Dec-2016 |

## F131

### 6093001-03 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.07** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.13** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.43** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.41** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.07** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04, J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.74** | | *57.9 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.80** | | *60.2 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**


| SPARWAR | Project: Quantico | Reported: |
|---|---|---|
| , | Project Manager: SPARWAR | 07-Dec-2016 |

## F132

### 6093001-04 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.11** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.18** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.42** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.55** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.07** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04, J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.72** | | *57.2 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.97** | | *65.6 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| SPARWAR | Project: Quantico | |
| , | Project Manager: SPARWAR | **Reported:** 07-Dec-2016 |

## F133

### 6093001-05 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.08** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.13** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04, J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **1.34** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.37** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.21** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.67** | | *55.5 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.83** | | *61.1 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

USACE ERDC-EP-C
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

| | | |
|---|---|---|
| SPARWAR | Project: Quantico | |
| , | Project Manager: SPARWAR | **Reported:** 07-Dec-2016 |

## F134

### 6093001-06 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.27** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **2,4´-DDE** | **0.22** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| **2,4´-DDT** | **0.12** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| **4,4´-DDD** | **16.2** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.43** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.78** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.87** | | *62.4 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.10** | | *69.8 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

USACE ERDC-EP-C
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

| SPARWAR | Project: Quantico | Reported: |
|---|---|---|
| , | Project Manager: SPARWAR | 07-Dec-2016 |

# F135

## 6093001-07 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.05** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.13** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04, J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.17** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| **4,4´-DDE** | **0.22** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.14** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.780** | | *26.0 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.99** | | *66.4 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

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|---|---|---|
| SPARWAR | Project: Quantico | |
| , | Project Manager: SPARWAR | **Reported:** 07-Dec-2016 |

## F136

### 6093001-08 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.16** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.19** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.05** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.964** | | *32.2 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.94** | | *64.8 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| SPARWAR | Project: Quantico | |
| , | Project Manager: SPARWAR | **Reported:** 07-Dec-2016 |

# F137

## 6093001-09 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.18** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.33** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.06** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04, J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.03** | | *34.4 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.03** | | *67.5 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

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| SPARWAR | Project: Quantico | Reported: |
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## F138

### 6093001-10 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.41** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDE** | **0.34** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **2.75** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.01** | | *33.5 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.05** | | *68.4 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

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# F139

## 6093001-11 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.08** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.21** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **8.71** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.21** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.34** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.88** | | *62.7 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.28** | | *76.1 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

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| SPARWAR | Project: Quantico | |
| , | Project Manager: SPARWAR | **Reported:** 07-Dec-2016 |

## F140

### 6093001-12 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.35** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **1.40** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| **4,4´-DDE** | **0.33** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| **4,4´-DDT** | **2.09** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.92** | | *64.1 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.13** | | *71.0 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

## F141

### 6093001-13 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.30** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **1.70** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| **4,4´-DDE** | **0.74** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **1.29** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.00** | | *66.6 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.26** | | *75.2 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

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## F142

### 6093001-14 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.21** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.65** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.55** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.30** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.97** | | *65.6 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.35** | | *78.4 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

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# F143

## 6093001-15 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.10** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.15** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.29** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.74** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.05** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.99** | | *66.3 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.25** | | *75.0 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

| SPARWAR | Project: Quantico | Reported: |
|---|---|---|
| , | Project Manager: SPARWAR | 07-Dec-2016 |

# F144

## 6093001-16 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.31** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.25** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| **4,4´-DDE** | **0.68** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.92** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.05** | | *68.2 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.34** | | *77.9 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

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## F145

### 6093001-17 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.17** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **2,4´-DDE** | **0.20** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **2,4´-DDT** | **0.05** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| **4,4´-DDD** | **0.42** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.71** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.83** | | *61.2 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.36** | | *78.6 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

| SPARWAR | Project: Quantico | Reported: |
|---|---|---|
| , | Project Manager: SPARWAR | 07-Dec-2016 |

# F146

## 6093001-18 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.34** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **2,4´-DDE** | **0.20** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.47** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| **4,4´-DDE** | **0.84** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.26** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.73** | | *57.7 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.17** | | *72.4 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

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## F147

### 6093001-19 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.29** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **15.1** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.40** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.81** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.77** | | *59.1 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.32** | | *77.3 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

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## F148

### 6093001-20 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.44** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.50** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| **4,4´-DDE** | **0.32** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| **4,4´-DDT** | **1.09** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.68** | | *56.0 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.17** | | *72.4 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

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| SPARWAR | Project: Quantico | |
|---|---|---|
| , | Project Manager: SPARWAR | **Reported:** 07-Dec-2016 |

## F149

### 6093001-21 (Passive Sampler)

#### ERDC-EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.41** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.34** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| **4,4´-DDE** | **0.38** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.54** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.81** | | *60.4 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.17** | | *72.4 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

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| | | |
|---|---|---|
| SPARWAR | Project: Quantico | |
| , | Project Manager: SPARWAR | Reported: 07-Dec-2016 |

# F150

## 6093001-22 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.05** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.07** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.12** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.19** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.98** | | *66.0 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.26** | | *75.5 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

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| SPARWAR | Project: Quantico | |
| , | Project Manager: SPARWAR | **Reported:** 07-Dec-2016 |

## F151

### 6093001-23 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.05** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.10** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.12** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.36** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.12** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.90** | | *63.5 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.14** | | *71.2 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

| SPARWAR | Project: Quantico | Reported: |
|---|---|---|
| , | Project Manager: SPARWAR | 07-Dec-2016 |

## F152

### 6093001-24 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.27** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.60** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.13** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.92** | | *63.9 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.40** | | *80.0 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

| SPARWAR | Project: Quantico | Reported: |
|---|---|---|
| , | Project Manager: SPARWAR | 07-Dec-2016 |

# F153

## 6093001-25 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.16** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.27** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.79** | | *59.6 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.13** | | *71.0 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

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| , | Project Manager: SPARWAR | **Reported:** 07-Dec-2016 |

## F154

### 6093001-26 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.05** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.06** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.24** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.22** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.02** | | *67.2 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.37** | | *79.0 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

| SPARWAR | Project: Quantico | Reported: |
|---|---|---|
| , | Project Manager: SPARWAR | 07-Dec-2016 |

# F155

## 6093001-27 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.08** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.09** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04, J |
| **4,4´-DDE** | **0.20** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.07** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04, J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.59** | | *52.9 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.46** | | *82.0 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

| SPARWAR | Project: Quantico | Reported: |
|---|---|---|
| , | Project Manager: SPARWAR | 07-Dec-2016 |

# F156

## 6093001-28 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.13** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.20** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDE** | **1.02** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.05** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.75** | | *58.4 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.06** | | *68.6 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

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## F157

### 6093001-29 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.10** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.41** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.32** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.29** | | *43.1 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.42** | | *80.6 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

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| SPARWAR | Project: Quantico | Reported: |
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| , | Project Manager: SPARWAR | 07-Dec-2016 |

# F158

## 6093001-30 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.12** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.43** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.06** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.64** | | *54.6 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.28** | | *75.9 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

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# F159

## 6093001-31 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **2,4´-DDT** | **1.72** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDD** | **0.13** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.29** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **1.63** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **5.38** | | *89.7 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **6.29** | | *105 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

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# F160

## 6093001-32 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.10** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.41** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.07** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **5.25** | | *87.6 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **6.60** | | *110 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

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| SPARWAR | Project: Quantico | |
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## F161

### 6093001-33 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.13** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.25** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.39** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.08** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **5.19** | | *86.5 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **6.16** | | *103 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

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| SPARWAR | Project: Quantico | **Reported:** |
|---|---|---|
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## F162

### 6093001-34 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.20** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.51** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.44** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.10** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **5.30** | | *88.3 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **6.14** | | *102 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

| SPARWAR | Project: Quantico | |
|---|---|---|
| , | Project Manager: SPARWAR | **Reported:** 07-Dec-2016 |

## F163

### 6093001-35 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.20** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.65** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.21** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| **4,4´-DDT** | **0.08** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04, J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **5.39** | | *89.8 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **6.39** | | *106 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| SPARWAR | Project: Quantico | |
|---|---|---|
| , | Project Manager: SPARWAR | **Reported:** 07-Dec-2016 |

# F164

## 6093001-36 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDE** | **0.19** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **5.06** | | *84.4 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **6.28** | | *105 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

| SPARWAR | Project: Quantico | |
|---|---|---|
| , | Project Manager: SPARWAR | **Reported:** 07-Dec-2016 |

# F165

## 6093001-37 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.11** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.40** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.07** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **4.56** | | *76.1 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **5.68** | | *94.7 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

# USACE ERDC-EP-C
# 3909 Halls Ferry Road
# Vicksburg, MS 39180-6199

| | | |
|---|---|---|
| SPARWAR | Project: Quantico | |
| | | **Reported:** |
| , | Project Manager: SPARWAR | 07-Dec-2016 |

## F166

### 6093001-38 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.16** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.38** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.25** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **4.92** | | *82.0 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **5.94** | | *98.9 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

# USACE ERDC-EP-C
# 3909 Halls Ferry Road
# Vicksburg, MS 39180-6199

| | | |
|---|---|---|
| SPARWAR | Project: Quantico | |
| , | Project Manager: SPARWAR | **Reported:** 07-Dec-2016 |

## F167

### 6093001-39 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDE** | **0.17** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **5.21** | | *86.9 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **6.29** | | *105 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| SPARWAR | Project: Quantico | |
| | | **Reported:** |
| , | Project Manager: SPARWAR | 07-Dec-2016 |

# F168

## 6093001-40 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.05** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.15** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDE** | **0.42** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.11** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **4.99** | | *83.1 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **6.04** | | *101 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| SPARWAR | Project: Quantico | |
| , | Project Manager: SPARWAR | **Reported:** 07-Dec-2016 |

## F169

### 6093001-41 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.14** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.44** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.22** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| **4,4´-DDT** | **0.09** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.89** | | *63.2 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.19** | | *73.1 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

USACE ERDC-EP-C
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

| SPARWAR | Project: Quantico | Reported: |
|---|---|---|
| , | Project Manager: SPARWAR | 07-Dec-2016 |

# F170

## 6093001-42 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.21** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.76** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.25** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04 |
| **4,4´-DDT** | **0.13** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.59** | | *53.2 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.88** | | *62.6 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| SPARWAR | Project: Quantico | **Reported:** |
| , | Project Manager: SPARWAR | 07-Dec-2016 |

## F171

### 6093001-43 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| **4,4´-DDE** | **0.08** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | RPD-04, J |
| **4,4´-DDT** | **0.05** | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.70** | | *56.6 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.94** | | *64.8 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| SPARWAR | Project: Quantico | |
| , | Project Manager: SPARWAR | **Reported:** 07-Dec-2016 |

## F172

### 6093001-44 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 24-Oct-2016 | 30-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.53** | | *51.1 %* | *25-140* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.73** | | *57.7 %* | *30-135* | *24-Oct-2016* | *30-Nov-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| SPARWAR | Project: Quantico | |
| , | Project Manager: SPARWAR | **Reported:** 07-Dec-2016 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC-EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B610274 - *** DEFAULT PREP ***** | | | | | | | | | | | |
| **Blank (B610274-BLK2)** | | | | | Prepared: 24-Oct-2016 Analyzed: 30-Nov-2016 | | | | | | |
| 2,4′-DDD | ND | 0.05 | 0.15 | ng | | | | | | | U |
| 2,4′-DDE | ND | 0.05 | 0.15 | ng | | | | | | | U |
| 2,4′-DDT | ND | 0.05 | 0.15 | ng | | | | | | | U |
| 4,4′-DDD | ND | 0.05 | 0.15 | ng | | | | | | | U |
| 4,4′-DDE | ND | 0.05 | 0.15 | ng | | | | | | | U |
| 4,4′-DDT | ND | 0.05 | 0.15 | ng | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *2.03* | | | *ng* | *3.000* | | *67.8* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.39* | | | *ng* | *3.000* | | *79.7* | *30-135* | | | |
| **LCS (B610274-BS1)** | | | | | Prepared: 24-Oct-2016 Analyzed: 30-Nov-2016 | | | | | | |
| 2,4′-DDD | 3.6 | 0.05 | 0.15 | ng | 4.000 | | 89.9 | 50-125 | | | |
| 2,4′-DDE | 3.8 | 0.05 | 0.15 | ng | 4.000 | | 94.1 | 50-125 | | | |
| 2,4′-DDT | 4.0 | 0.05 | 0.15 | ng | 4.000 | | 100 | 50-125 | | | |
| 4,4′-DDD | 3.8 | 0.05 | 0.15 | ng | 4.000 | | 94.2 | 25-150 | | | |
| 4,4′-DDE | 3.8 | 0.05 | 0.15 | ng | 4.000 | | 93.8 | 35-140 | | | |
| 4,4′-DDT | 4.0 | 0.05 | 0.15 | ng | 4.000 | | 101 | 45-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *2.40* | | | *ng* | *3.000* | | *79.9* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.74* | | | *ng* | *3.000* | | *91.2* | *30-135* | | | |
| **LCS (B610274-BS2)** | | | | | Prepared: 24-Oct-2016 Analyzed: 30-Nov-2016 | | | | | | |
| 2,4′-DDD | 3.4 | 0.05 | 0.15 | ng | 4.000 | | 85.3 | 50-125 | | | |
| 2,4′-DDE | 3.9 | 0.05 | 0.15 | ng | 4.000 | | 97.4 | 50-125 | | | |
| 2,4′-DDT | 3.9 | 0.05 | 0.15 | ng | 4.000 | | 97.6 | 50-125 | | | |
| 4,4′-DDD | 3.6 | 0.05 | 0.15 | ng | 4.000 | | 90.4 | 25-150 | | | |
| 4,4′-DDE | 3.7 | 0.05 | 0.15 | ng | 4.000 | | 92.0 | 35-140 | | | |
| 4,4′-DDT | 3.9 | 0.05 | 0.15 | ng | 4.000 | | 98.7 | 45-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *2.21* | | | *ng* | *3.000* | | *73.7* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.81* | | | *ng* | *3.000* | | *93.6* | *30-135* | | | |

| SPARWAR | Project: Quantico | |
|---|---|---|
| , | Project Manager: SPARWAR | Reported: 07-Dec-2016 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC-EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B610274 - *** DEFAULT PREP ***** | | | | | | | | | | | |
| **LCS (B610274-BS3)** | | | | | Prepared: 24-Oct-2016 Analyzed: 30-Nov-2016 | | | | | | |
| 2,4´-DDD | 3.3 | 0.05 | 0.15 | ng | 4.000 | | 81.7 | 50-125 | | | |
| 2,4´-DDE | 3.4 | 0.05 | 0.15 | ng | 4.000 | | 83.8 | 50-125 | | | |
| 2,4´-DDT | 3.7 | 0.05 | 0.15 | ng | 4.000 | | 93.2 | 50-125 | | | |
| 4,4´-DDD | 3.4 | 0.05 | 0.15 | ng | 4.000 | | 84.2 | 25-150 | | | |
| 4,4´-DDE | 3.4 | 0.05 | 0.15 | ng | 4.000 | | 85.0 | 35-140 | | | |
| 4,4´-DDT | 3.8 | 0.05 | 0.15 | ng | 4.000 | | 94.1 | 45-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *2.10* | | | *ng* | *3.000* | | *70.2* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.47* | | | *ng* | *3.000* | | *82.4* | *30-135* | | | |
| **LCS (B610274-BS4)** | | | | | Prepared: 24-Oct-2016 Analyzed: 30-Nov-2016 | | | | | | |
| 2,4´-DDD | 3.1 | 0.05 | 0.15 | ng | 4.000 | | 76.4 | 50-125 | | | |
| 2,4´-DDE | 3.2 | 0.05 | 0.15 | ng | 4.000 | | 80.7 | 50-125 | | | |
| 2,4´-DDT | 3.3 | 0.05 | 0.15 | ng | 4.000 | | 82.8 | 50-125 | | | |
| 4,4´-DDD | 3.0 | 0.05 | 0.15 | ng | 4.000 | | 76.0 | 25-150 | | | |
| 4,4´-DDE | 3.1 | 0.05 | 0.15 | ng | 4.000 | | 76.9 | 35-140 | | | |
| 4,4´-DDT | 3.3 | 0.05 | 0.15 | ng | 4.000 | | 83.0 | 45-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *2.09* | | | *ng* | *3.000* | | *69.7* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.49* | | | *ng* | *3.000* | | *82.9* | *30-135* | | | |

# ERDC SAMPLE RECEIPT CHECKLIST

| | |
|---|---|
| Client: SPAWAR | Work Order: 6093001 |
| Project: | Date/Time Received 9/30/16 12:12 |
| Shipping Company: | |

| Suspected Hazard Information | Yes | No | NA | Comments: |
|---|---|---|---|---|
| Shipped as DOT Hazardous? | | ✓ | | |
| Samples identified as Foreign Material? | | ✓ | | |

| Sample Receipt Criteria | Yes | No | NA | Comments: |
|---|---|---|---|---|
| 1. Shipping containers received intact and sealed? | ✓ | | | |
| 2. Chain of Custody documents included with shipment? | ✓ | | | |
| 3. COC form is properly signed in relinquished/received sections? | ✓ | | | |
| 4. Samples requiring chemical preservation at proper pH? | ✓ | | | |
| 5. Samples requiring cold preservation within 0-5°C? | | ✓ | | 19.5 °C |
| 6. Samples IDs on COC match IDs on containers? | ✓ | | | |
| 7. Date and time of COC match date and time on containers? | | | ✓ | |
| 8. Number of containers received match number indicated on COC? | ✓ | | | |
| 9. Samples received within holding time? | ✓ | | | |
| 10. Aqueous samples found to have visible solids? | | | ✓ | |

Additional Comments:

Checklist preformed by: NG

Time/Date: 9/30/16 12:16

# CHAIN OF COUSTODY RECORD



| | | | | | |
|---|---|---|---|---|---|
| Sampling Company: | Ramboll-Environ | Client: | SPAWAR Systems Center Pacific | Laboratory: | USACE ERDC-EP-C |
| POC: | Melissa Grover | POC: | Dr. Bart Chadwick | POC: | Madeline Tarasar |
| Address: | 16644 West Bernardo Drive, Suite 301 | Address: | 53475 Strothe Road | Address: | 3909 Halls Ferry RD Bldg 3299 |
| | San Diego, California 92127 | | San Diego, CA 92152 | | Vicksburg, MS 39180 |
| Email: | mgrover@geosyntec.com; | Email: | bart.chadwick@navy.mil | Email: | madeline..k.tarasar@usace.army.mil |
| Phone: | 858-716-2928 | Phone: | 619-553-5333 | Phone: | 601-634-3966 |
| Project: | Quantico 25-Month; Quantico, VA. | | | | |

| # of Sampling Sites | Sample ID | Date | Time | Depth | Matrix | # of Containers | DDX Congeners USEPA Method 8081A | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | F129 | 9/27/2016 | 9:05 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 2 | F130 | 9/27/2016 | 9:05 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 3 | F131 | 9/27/2016 | 9:05 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 4 | F132 | 9/27/2016 | 9:05 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 5 | F133 | 9/27/2016 | 9:05 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 6 | F134 | 9/27/2016 | 9:05 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 7 | F135 | 9/27/2016 | 9:05 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 8 | F136 | 9/27/2016 | 10:44 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 9 | F137 | 9/27/2016 | 10:44 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 10 | F138 | 9/27/2016 | 10:44 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 11 | F139 | 9/27/2016 | 10:44 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 12 | F140 | 9/27/2016 | 10:44 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| Total | | | | | | | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Requested Analyses

**Please return coolers to :**

1. I hereby transfer the sample containers to ERDC. Samples have been properly labeled and kept on ice or refrigerated.

12 — Total # of Containers; J.Guerrero (SPAWAR/USN) — Name; 9-29-16 — Date; 1030 — Time

2. I accept these samples for transfer to ERDC:

Total # of Containers; MEP — Name; 9/[illegible]/16 — Date; 1213 — Time

3. Condition of samples upon arrival at ERDC:

4 Cooler temperature upon arrival at ERDC:

5. Additional Information:
NP
N.P. = no preserved, HNO3 = preserved with nitric acid, H2SO4 = preserved with sulfuric acid

6. Send Copy of COC: USACE-ERDC-EP-C
POC: Amber Russell, Madeline Tarasar and Jenifer Milam
Email: amber.l.russell@usace.army.mil
madeline.k.tarasar@usace.army.mil
jenifer.milam@usace.army.mil
Phone: 601-634-4302 & 601-634-7431

# CHAIN OF CUSTODY RECORD



| | | | | | |
|---|---|---|---|---|---|
| Sampling Company: | Ramboll-Environ | Client: | SPAWAR Systems Center Pacific | Laboratory: | USACE ERDC-EP-C |
| POC: | Melissa Grover | POC: | Dr. Bart Chadwick | POC: | Madeline Tarasar |
| Address: | 16644 West Bernardo Drive, Suite 301 | Address: | 53475 Strothe Road | Address: | 3909 Halls Ferry RD Bldg 3299 |
| | San Diego, California 92127 | | San Diego, CA 92152 | | Vicksburg, MS 39180 |
| Email: | mgrover@geosyntec.com; | Email: | bart.chadwick@navy.mil | Email: | madeline..k.tarasar@usace.army.mil |
| Phone: | 858-716-2928 | Phone: | 619-553-5333 | Phone: | 601-634-3966 |
| Project: | Quantico 25-Month; Quantico, VA. | | | | |

| # of Sampling Sites | Sample ID | Date | Time | Depth | Matrix | # of Containers | DDX Congeners USEPA Method 8081A | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | F141 | 9/27/2016 | 10:44 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 2 | F142 | 9/27/2016 | 10:44 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 3 | F143 | 9/27/2016 | 11:26 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 4 | F144 | 9/27/2016 | 11:26 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 5 | F145 | 9/27/2016 | 11:26 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 6 | F146 | 9/27/2016 | 11:26 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 7 | F147 | 9/27/2016 | 11:26 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 8 | F148 | 9/27/2016 | 11:26 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 9 | F149 | 9/27/2016 | 11:26 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 10 | F150 | 9/27/2016 | 13:37 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 11 | F151 | 9/27/2016 | 13:37 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 12 | F152 | 9/27/2016 | 13:37 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| Total | | | | | | | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Please return coolers to :

1. I hereby transfer the sample containers to ERDC. Samples have been properly labeled and kept on ice or refrigerated.

12 — Total # of Containers

Name: J.Guerrero (SPAWAR/USN) [signature] Date: 9-29-16 Time: 1030

2. I accept these samples for transfer to ERDC:

Total # of Containers

Name: [signature] Date: 9/30/16 Time: 12:13

3. Condition of samples upon arrival at ERDC:

4 Cooler temperature upon arrival at ERDC:

5. Additional Information:
NP
N.P. = no preserved, HNO3 = preserved with nitric acid, H2SO4 = preserved with sulfuric acid

6. Send Copy of COC: USACE-ERDC-EP-C
POC: Amber Russell, Madeline Tarasar and Jenifer Milam
Email: amber.l.russell@usace.army.mil
madeline.k.tarasar@usace.army.mil
jenifer.milam@usace.army.mil
Phone: 601-634-4302 & 601-634-7431

# CHAIN OF CUSTODY RECORD



| | | | | | |
|---|---|---|---|---|---|
| **Sampling Company:** | **Ramboll-Environ** | **Client:** | **SPAWAR Systems Center Pacific** | **Laboratory:** | **USACE ERDC-EP-C** |
| **POC:** | **Melissa Grover** | **POC:** | **Dr. Bart Chadwick** | **POC:** | **Madeline Tarasar** |
| **Address:** | **16644 West Bernardo Drive, Suite 301** | **Address:** | **53475 Strothe Road** | **Address:** | **3909 Halls Ferry RD Bldg 3299** |
| | **San Diego, California 92127** | | **San Diego, CA 92152** | | **Vicksburg, MS 39180** |
| **Email:** | mgrover@geosyntec.com; | **Email:** | bart.chadwick@navy.mil | **Email:** | madeline..k.tarasar@usace.army.mil |
| **Phone:** | **858-716-2928** | **Phone:** | **619-553-5333** | **Phone:** | **601-634-3966** |
| **Project:** | **Quantico 25-Month; Quantico, VA.** | | | | |

| # of Sampling Sites | Sample ID | Date | Time | Depth | Matrix | # of Containers | Requested Analyses: DDX Congeners USEPA Method 8081A | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | F153 | 9/27/2016 | 13:37 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 2 | F154 | 9/27/2016 | 13:37 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 3 | F155 | 9/27/2016 | 13:37 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 4 | F156 | 9/27/2016 | 13:37 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 5 | F157 | 9/27/2016 | 14:25 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 6 | F158 | 9/27/2016 | 14:25 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 7 | F159 | 9/27/2016 | 14:25 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 8 | F160 | 9/27/2016 | 14:25 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 9 | F161 | 9/27/2016 | 14:25 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 10 | F162 | 9/27/2016 | 14:25 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 11 | F163 | 9/27/2016 | 14:25 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 12 | F164 | 9/27/2016 | 15:08 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| Total | | | | | | | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Please return coolers to :

1. I hereby transfer the sample containers to ERDC. Samples have been properly labeled and kept on ice or refrigerated.

12 | J.Guerrero (SPAWAR/USN) | 9-29-16 | 1030

**Total # of Containers** | Name | Date | Time

2. I accept these samples for transfer to ERDC:

| 9/30/16 | 12:13

**Total # of Containers** | Name | Date | Time

3. Condition of samples upon arrival at ERDC:

4 Cooler temperature upon arrival at ERDC:

5. Additional Information:
NP
N.P. = no preserved, HNO3 = preserved with nitric acid, H2SO4 = preserved with sulfuric acid

6. Send Copy of COC: USACE-ERDC-EP-C
POC: Amber Russell, Madeline Tarasar and Jenifer Milam
Email: amber.l.russell@usace.army.mil
madeline.k.tarasar@usace.army.mil
jenifer.milam@usace.army.mil
Phone: 601-634-4302 & 601-634-7431

# CHAIN OF CUSTODY RECORD



| | | | | | |
|---|---|---|---|---|---|
| Sampling Company: | Ramboll-Environ | Client: | SPAWAR Systems Center Pacific | Laboratory: | USACE ERDC-EP-C |
| POC: | Melissa Grover | POC: | Dr. Bart Chadwick | POC: | Madeline Tarasar |
| Address: | 16644 West Bernardo Drive, Suite 301 | Address: | 53475 Strothe Road | Address: | 3909 Halls Ferry RD Bldg 3299 |
| | San Diego, California 92127 | | San Diego, CA 92152 | | Vicksburg, MS 39180 |
| Email: | mgrover@geosyntec.com; | Email: | bart.chadwick@navy.mil | Email: | madeline..k.tarasar@usace.army.mil |
| Phone: | 858-716-2928 | Phone: | 619-553-5333 | Phone: | 601-634-3966 |
| Project: | Quantico 25-Month; Quantico, VA. | | | | |

| # of Sampling Sites | Sample ID | Date | Time | Depth | Matrix | # of Containers | DDX Congeners USEPA Method 8081A | PCB Congeners USEPA Method 8082 | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | F165 | 9/27/2016 | 15:08 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 2 | F166 | 9/27/2016 | 15:08 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 3 | F167 | 9/27/2016 | 15:08 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 4 | F168 | 9/27/2016 | 15:08 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 5 | F169 | 9/27/2016 | 15:08 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 6 | F170 | 9/27/2016 | 15:08 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 7 | F171 | 9/27/2016 | 15:48 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 8 | F172 | 9/27/2016 | 15:58 | NA | Hexane | 1 | 1 | | | | | | | | | | | | | | | |
| 9 | PCB1 | 9/27/2016 | 16:00 | NA | Hexane | 1 | | 1 | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | | | | |
| Total | | | | | | | 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Please return coolers to :**

1. I hereby transfer the sample containers to ERDC. Samples have been properly labeled and kept on ice or refrigerated.

12 — Total # of Containers

J.Guerrero (SPAWAR/USN) — Name

9-29-16 — Date

1038 — Time

2. I accept these samples for transfer to ERDC:

Total # of Containers

Name

9/30/16 — Date

12:13 — Time

3. Condition of samples upon arrival at ERDC:

4 Cooler temperature upon arrival at ERDC:

5. Additional Information:
NP
N.P. = no preserved, HNO3 = preserved with nitric acid, H2SO4 = preserved with sulfuric acid

6. Send Copy of COC — USACE-ERDC-EP-C
POC: Amber Russell, Madeline Tarasar and Jenifer Milam
Email: amber.l.russell@usace.army.mil
madeline.k.tarasar@usace.army.mil
jenifer.milam@usace.army.mil
Phone: 601-634-4302 & 601-634-7431

## Items for Project Manager Review

| LabNumber | Analysis | Analyte | Exception |
|---|---|---|---|

# Appendix E-6

## *In Situ* Porewater Chemistry

## Data Compilation, Calculations and Laboratory Reports

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| Baseline 3 | 1 | 4-6 | Sample | Native Sediment | Station-1-(4-6) | On Cap | 4,4´-DDD | 0.98 |
| Baseline 3 | 1 | 4-6 | Sample | Native Sediment | Station-1-(4-6) | On Cap | 4,4´-DDE | <0.07 |
| Baseline 3 | 1 | 4-6 | Sample | Native Sediment | Station-1-(4-6) | On Cap | 4,4´-DDT | <0.14 |
| Baseline 3 | 1 | 4-6 | Sample | Native Sediment | Station-1-(4-6) | On Cap | Total DDX | 0.98 |
| Baseline 3 | 2 | 4-6 | Sample | Native Sediment | Station-2-(4-6) | On Cap | 4,4´-DDD | 0.58 |
| Baseline 3 | 2 | 4-6 | Sample | Native Sediment | Station-2-(4-6) | On Cap | 4,4´-DDE | <0.08 |
| Baseline 3 | 2 | 4-6 | Sample | Native Sediment | Station-2-(4-6) | On Cap | 4,4´-DDT | <0.15 |
| Baseline 3 | 2 | 4-6 | Sample | Native Sediment | Station-2-(4-6) | On Cap | Total DDX | 0.58 |
| Baseline 3 | 3 | 4-6 | Sample | Native Sediment | Station-3-(4-6) | On Cap | 4,4´-DDD | 0.77 |
| Baseline 3 | 3 | 4-6 | Sample | Native Sediment | Station-3-(4-6) | On Cap | 4,4´-DDE | <0.08 |
| Baseline 3 | 3 | 4-6 | Sample | Native Sediment | Station-3-(4-6) | On Cap | 4,4´-DDT | <0.14 |
| Baseline 3 | 3 | 4-6 | Sample | Native Sediment | Station-3-(4-6) | On Cap | Total DDX | 0.77 |
| Baseline 3 | 4 | 4-6 | Sample | Native Sediment | Station-4-(4-6) | On Cap | 4,4´-DDD | 0.46 |
| Baseline 3 | 4 | 4-6 | Sample | Native Sediment | Station-4-(4-6) | On Cap | 4,4´-DDE | 0.07 |
| Baseline 3 | 4 | 4-6 | Sample | Native Sediment | Station-4-(4-6) | On Cap | 4,4´-DDT | <0.11 |
| Baseline 3 | 4 | 4-6 | Sample | Native Sediment | Station-4-(4-6) | On Cap | Total DDX | 0.53 |
| Baseline 3 | 5 | 4-6 | Sample | Native Sediment | Station-5-(4-6) | On Cap | 4,4´-DDD | 0.47 |
| Baseline 3 | 5 | 4-6 | Sample | Native Sediment | Station-5-(4-6) | On Cap | 4,4´-DDE | <0.06 |
| Baseline 3 | 5 | 4-6 | Sample | Native Sediment | Station-5-(4-6) | On Cap | 4,4´-DDT | <0.13 |
| Baseline 3 | 5 | 4-6 | Sample | Native Sediment | Station-5-(4-6) | On Cap | Total DDX | 0.47 |
| Baseline 3 | 6 | 4-6 | Sample | Native Sediment-Off Cap | Station-6-(4-6) | Off Cap | 4,4´-DDD | <0.6 |
| Baseline 3 | 6 | 4-6 | Sample | Native Sediment-Off Cap | Station-6-(4-6) | Off Cap | 4,4´-DDE | <0.14 |
| Baseline 3 | 6 | 4-6 | Sample | Native Sediment-Off Cap | Station-6-(4-6) | Off Cap | 4,4´-DDT | <0.2 |
| Baseline 3 | 6 | 4-6 | Sample | Native Sediment-Off Cap | Station-6-(4-6) | Off Cap | Total DDX | <0.6 |
| 2-MONTH | 1 | 0-5 | Sample | Cap Material | Station-1-(0-5) | On Cap | 2,4´-DDD | <0.56 |
| 2-MONTH | 1 | 0-5 | Sample | Cap Material | Station-1-(0-5) | On Cap | 2,4´-DDE | 0.11 |
| 2-MONTH | 1 | 0-5 | Sample | Cap Material | Station-1-(0-5) | On Cap | 2,4´-DDT | <0.09 |
| 2-MONTH | 1 | 0-5 | Sample | Cap Material | Station-1-(0-5) | On Cap | 4,4´-DDD | 0.96 |
| 2-MONTH | 1 | 0-5 | Sample | Cap Material | Station-1-(0-5) | On Cap | 4,4´-DDT | <0.16 |
| 2-MONTH | 1 | 0-5 | Sample | Cap Material | Station-1-(0-5) | On Cap | 4,4´-DDE | 0.47 |
| 2-MONTH | 1 | 0-5 | Sample | Cap Material | Station-1-(0-5) | On Cap | Total DDX | 1.54 |
| 2-MONTH | 1 | 10-15 | Sample | Cap Material | Station-1-(10-15) | On Cap | 2,4´-DDD | <0.56 |
| 2-MONTH | 1 | 10-15 | Sample | Cap Material | Station-1-(10-15) | On Cap | 2,4´-DDE | <0.09 |
| 2-MONTH | 1 | 10-15 | Sample | Cap Material | Station-1-(10-15) | On Cap | 2,4´-DDT | <0.09 |
| 2-MONTH | 1 | 10-15 | Sample | Cap Material | Station-1-(10-15) | On Cap | 4,4´-DDD | 1.32 |
| 2-MONTH | 1 | 10-15 | Sample | Cap Material | Station-1-(10-15) | On Cap | 4,4´-DDT | <0.16 |
| 2-MONTH | 1 | 10-15 | Sample | Cap Material | Station-1-(10-15) | On Cap | 4,4´-DDE | 0.45 |
| 2-MONTH | 1 | 10-15 | Sample | Cap Material | Station-1-(10-15) | On Cap | Total DDX | 1.77 |
| 2-MONTH | 1 | 15-20 | Sample | Native Sediment | Station-1-(15-20) | On Cap | 2,4´-DDD | 0.45 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 2-MONTH | 1 | 15-20 | Sample | Native Sediment | Station-1-(15-20) | On Cap | 2,4′-DDE | <0.11 |
| 2-MONTH | 1 | 15-20 | Sample | Native Sediment | Station-1-(15-20) | On Cap | 2,4′-DDT | <0.1 |
| 2-MONTH | 1 | 15-20 | Sample | Native Sediment | Station-1-(15-20) | On Cap | 4,4′-DDD | 0.88 |
| 2-MONTH | 1 | 15-20 | Sample | Native Sediment | Station-1-(15-20) | On Cap | 4,4′-DDT | <0.18 |
| 2-MONTH | 1 | 15-20 | Sample | Native Sediment | Station-1-(15-20) | On Cap | 4,4′-DDE | 0.23 |
| 2-MONTH | 1 | 15-20 | Sample | Transition Depth | Station-1-(15-20) | On Cap | Total DDX | 1.57 |
| 2-MONTH | 1 | 20-25 | Sample | Native Sediment | Station-1-(20-25) | On Cap | 2,4′-DDD | <0.6 |
| 2-MONTH | 1 | 20-25 | Sample | Native Sediment | Station-1-(20-25) | On Cap | 2,4′-DDE | 0.09 |
| 2-MONTH | 1 | 20-25 | Sample | Native Sediment | Station-1-(20-25) | On Cap | 2,4′-DDT | <0.1 |
| 2-MONTH | 1 | 20-25 | Sample | Native Sediment | Station-1-(20-25) | On Cap | 4,4′-DDD | 1.05 |
| 2-MONTH | 1 | 20-25 | Sample | Native Sediment | Station-1-(20-25) | On Cap | 4,4′-DDT | <0.18 |
| 2-MONTH | 1 | 20-25 | Sample | Native Sediment | Station-1-(20-25) | On Cap | 4,4′-DDE | <0.11 |
| 2-MONTH | 1 | 20-25 | Sample | Native Sediment | Station-1-(20-25) | On Cap | Total DDX | 1.14 |
| 2-MONTH | 1 | 25-30 | Sample | Native Sediment | Station-1-(25-30) | On Cap | 2,4′-DDD | <0.6 |
| 2-MONTH | 1 | 25-30 | Sample | Native Sediment | Station-1-(25-30) | On Cap | 2,4′-DDE | <0.11 |
| 2-MONTH | 1 | 25-30 | Sample | Native Sediment | Station-1-(25-30) | On Cap | 2,4′-DDT | <0.1 |
| 2-MONTH | 1 | 25-30 | Sample | Native Sediment | Station-1-(25-30) | On Cap | 4,4′-DDD | 1.27 |
| 2-MONTH | 1 | 25-30 | Sample | Native Sediment | Station-1-(25-30) | On Cap | 4,4′-DDT | <0.18 |
| 2-MONTH | 1 | 25-30 | Sample | Native Sediment | Station-1-(25-30) | On Cap | 4,4′-DDE | <0.11 |
| 2-MONTH | 1 | 25-30 | Sample | Native Sediment | Station-1-(25-30) | On Cap | Total DDX | 1.27 |
| 2-MONTH | 1 | 30-35 | Sample | Native Sediment | Station-1-(30-35) | On Cap | 2,4′-DDD | <0.6 |
| 2-MONTH | 1 | 30-35 | Sample | Native Sediment | Station-1-(30-35) | On Cap | 2,4′-DDE | 0.25 |
| 2-MONTH | 1 | 30-35 | Sample | Native Sediment | Station-1-(30-35) | On Cap | 2,4′-DDT | <0.1 |
| 2-MONTH | 1 | 30-35 | Sample | Native Sediment | Station-1-(30-35) | On Cap | 4,4′-DDD | 0.69 |
| 2-MONTH | 1 | 30-35 | Sample | Native Sediment | Station-1-(30-35) | On Cap | 4,4′-DDT | <0.18 |
| 2-MONTH | 1 | 30-35 | Sample | Native Sediment | Station-1-(30-35) | On Cap | 4,4′-DDE | <0.11 |
| 2-MONTH | 1 | 30-35 | Sample | Native Sediment | Station-1-(30-35) | On Cap | Total DDX | 0.94 |
| 2-MONTH | 1 | 35-40 | Sample | Native Sediment | Station-1-(35-40) | On Cap | 2,4′-DDD | <0.71 |
| 2-MONTH | 1 | 35-40 | Sample | Native Sediment | Station-1-(35-40) | On Cap | 2,4′-DDE | 0.20 |
| 2-MONTH | 1 | 35-40 | Sample | Native Sediment | Station-1-(35-40) | On Cap | 2,4′-DDT | <0.1 |
| 2-MONTH | 1 | 35-40 | Sample | Native Sediment | Station-1-(35-40) | On Cap | 4,4′-DDD | 1.14 |
| 2-MONTH | 1 | 35-40 | Sample | Native Sediment | Station-1-(35-40) | On Cap | 4,4′-DDT | <0.19 |
| 2-MONTH | 1 | 35-40 | Sample | Native Sediment | Station-1-(35-40) | On Cap | 4,4′-DDE | 0.31 |
| 2-MONTH | 1 | 35-40 | Sample | Native Sediment | Station-1-(35-40) | On Cap | Total DDX | 1.65 |
| 2-MONTH | 1 | 40-45 | Sample | Native Sediment | Station-1-(40-45) | On Cap | 2,4′-DDD | <0.71 |
| 2-MONTH | 1 | 40-45 | Sample | Native Sediment | Station-1-(40-45) | On Cap | 2,4′-DDE | <0.11 |
| 2-MONTH | 1 | 40-45 | Sample | Native Sediment | Station-1-(40-45) | On Cap | 2,4′-DDT | <0.1 |
| 2-MONTH | 1 | 40-45 | Sample | Native Sediment | Station-1-(40-45) | On Cap | 4,4′-DDD | 0.91 |
| 2-MONTH | 1 | 40-45 | Sample | Native Sediment | Station-1-(40-45) | On Cap | 4,4′-DDT | <0.19 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 2-MONTH | 1 | 40-45 | Sample | Native Sediment | Station-1-(40-45) | On Cap | 4,4´-DDE | <0.11 |
| 2-MONTH | 1 | 40-45 | Sample | Native Sediment | Station-1-(40-45) | On Cap | Total DDX | 0.91 |
| 2-MONTH | 1 | 45-50 | Sample | Native Sediment | Station-1-(45-50) | On Cap | 2,4´-DDD | <0.71 |
| 2-MONTH | 1 | 45-50 | Sample | Native Sediment | Station-1-(45-50) | On Cap | 2,4´-DDE | <0.11 |
| 2-MONTH | 1 | 45-50 | Sample | Native Sediment | Station-1-(45-50) | On Cap | 2,4´-DDT | <0.1 |
| 2-MONTH | 1 | 45-50 | Sample | Native Sediment | Station-1-(45-50) | On Cap | 4,4´-DDD | <0.8 |
| 2-MONTH | 1 | 45-50 | Sample | Native Sediment | Station-1-(45-50) | On Cap | 4,4´-DDT | <0.19 |
| 2-MONTH | 1 | 45-50 | Sample | Native Sediment | Station-1-(45-50) | On Cap | 4,4´-DDE | <0.11 |
| 2-MONTH | 1 | 45-50 | Sample | Native Sediment | Station-1-(45-50) | On Cap | Total DDX | <0.8 |
| 2-MONTH | 1 | 50-55 | Sample | Native Sediment | Station-1-(50-55) | On Cap | 2,4´-DDD | <0.71 |
| 2-MONTH | 1 | 50-55 | Sample | Native Sediment | Station-1-(50-55) | On Cap | 2,4´-DDE | <0.11 |
| 2-MONTH | 1 | 50-55 | Sample | Native Sediment | Station-1-(50-55) | On Cap | 2,4´-DDT | <0.1 |
| 2-MONTH | 1 | 50-55 | Sample | Native Sediment | Station-1-(50-55) | On Cap | 4,4´-DDD | 0.98 |
| 2-MONTH | 1 | 50-55 | Sample | Native Sediment | Station-1-(50-55) | On Cap | 4,4´-DDT | <0.19 |
| 2-MONTH | 1 | 50-55 | Sample | Native Sediment | Station-1-(50-55) | On Cap | 4,4´-DDE | <0.11 |
| 2-MONTH | 1 | 50-55 | Sample | Native Sediment | Station-1-(50-55) | On Cap | Total DDX | 0.98 |
| 2-MONTH | 1 | 5-10 | Sample | Cap Material | Station-1-(5-10) | On Cap | 2,4´-DDD | <0.56 |
| 2-MONTH | 1 | 5-10 | Sample | Cap Material | Station-1-(5-10) | On Cap | 2,4´-DDE | <0.09 |
| 2-MONTH | 1 | 5-10 | Sample | Cap Material | Station-1-(5-10) | On Cap | 2,4´-DDT | <0.09 |
| 2-MONTH | 1 | 5-10 | Sample | Cap Material | Station-1-(5-10) | On Cap | 4,4´-DDD | <0.62 |
| 2-MONTH | 1 | 5-10 | Sample | Cap Material | Station-1-(5-10) | On Cap | 4,4´-DDT | <0.16 |
| 2-MONTH | 1 | 5-10 | Sample | Cap Material | Station-1-(5-10) | On Cap | 4,4´-DDE | <0.09 |
| 2-MONTH | 1 | 5-10 | Sample | Cap Material | Station-1-(5-10) | On Cap | Total DDX | <0.62 |
| 2-MONTH | 1 | 55-60 | Sample | Native Sediment | Station-1-(55-60) | On Cap | 2,4´-DDD | <0.73 |
| 2-MONTH | 1 | 55-60 | Sample | Native Sediment | Station-1-(55-60) | On Cap | 2,4´-DDE | 0.22 |
| 2-MONTH | 1 | 55-60 | Sample | Native Sediment | Station-1-(55-60) | On Cap | 2,4´-DDT | <0.1 |
| 2-MONTH | 1 | 55-60 | Sample | Native Sediment | Station-1-(55-60) | On Cap | 4,4´-DDD | 0.65 |
| 2-MONTH | 1 | 55-60 | Sample | Native Sediment | Station-1-(55-60) | On Cap | 4,4´-DDT | <0.2 |
| 2-MONTH | 1 | 55-60 | Sample | Native Sediment | Station-1-(55-60) | On Cap | 4,4´-DDE | <0.11 |
| 2-MONTH | 1 | 55-60 | Sample | Native Sediment | Station-1-(55-60) | On Cap | Total DDX | 0.87 |
| 2-MONTH | 2 | 0-5 | Sample | Cap Material | Station-2-(0-5) | On Cap | 2,4´-DDD | <0.66 |
| 2-MONTH | 2 | 0-5 | Sample | Cap Material | Station-2-(0-5) | On Cap | 2,4´-DDE | <0.12 |
| 2-MONTH | 2 | 0-5 | Sample | Cap Material | Station-2-(0-5) | On Cap | 2,4´-DDT | <0.11 |
| 2-MONTH | 2 | 0-5 | Sample | Cap Material | Station-2-(0-5) | On Cap | 4,4´-DDD | <0.73 |
| 2-MONTH | 2 | 0-5 | Sample | Cap Material | Station-2-(0-5) | On Cap | 4,4´-DDT | <0.2 |
| 2-MONTH | 2 | 0-5 | Sample | Cap Material | Station-2-(0-5) | On Cap | 4,4´-DDE | <0.12 |
| 2-MONTH | 2 | 0-5 | Sample | Cap Material | Station-2-(0-5) | On Cap | Total DDX | <0.73 |
| 2-MONTH | 2 | 10-15 | Sample | Cap Material | Station-2-(10-15) | On Cap | 2,4´-DDD | <0.66 |
| 2-MONTH | 2 | 10-15 | Sample | Cap Material | Station-2-(10-15) | On Cap | 2,4´-DDE | <0.12 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 2-MONTH | 2 | 10-15 | Sample | Cap Material | Station-2-(10-15) | On Cap | 2,4´-DDT | <0.11 |
| 2-MONTH | 2 | 10-15 | Sample | Cap Material | Station-2-(10-15) | On Cap | 4,4´-DDD | <0.73 |
| 2-MONTH | 2 | 10-15 | Sample | Cap Material | Station-2-(10-15) | On Cap | 4,4´-DDT | <0.2 |
| 2-MONTH | 2 | 10-15 | Sample | Cap Material | Station-2-(10-15) | On Cap | 4,4´-DDE | <0.12 |
| 2-MONTH | 2 | 10-15 | Sample | Cap Material | Station-2-(10-15) | On Cap | Total DDX | <0.73 |
| 2-MONTH | 2 | 15-20 | Sample | Cap Material | Station-2-(15-20) | On Cap | 2,4´-DDD | <0.67 |
| 2-MONTH | 2 | 15-20 | Sample | Cap Material | Station-2-(15-20) | On Cap | 2,4´-DDE | <0.13 |
| 2-MONTH | 2 | 15-20 | Sample | Cap Material | Station-2-(15-20) | On Cap | 2,4´-DDT | <0.12 |
| 2-MONTH | 2 | 15-20 | Sample | Cap Material | Station-2-(15-20) | On Cap | 4,4´-DDD | 0.97 |
| 2-MONTH | 2 | 15-20 | Sample | Cap Material | Station-2-(15-20) | On Cap | 4,4´-DDT | <0.21 |
| 2-MONTH | 2 | 15-20 | Sample | Cap Material | Station-2-(15-20) | On Cap | 4,4´-DDE | <0.13 |
| 2-MONTH | 2 | 15-20 | Sample | Cap Material | Station-2-(15-20) | On Cap | Total DDX | 0.97 |
| 2-MONTH | 2 | 20-25 | Sample | Cap Material | Station-2-(20-25) | On Cap | 2,4´-DDD | <0.67 |
| 2-MONTH | 2 | 20-25 | Sample | Cap Material | Station-2-(20-25) | On Cap | 2,4´-DDE | <0.13 |
| 2-MONTH | 2 | 20-25 | Sample | Cap Material | Station-2-(20-25) | On Cap | 2,4´-DDT | <0.12 |
| 2-MONTH | 2 | 20-25 | Sample | Cap Material | Station-2-(20-25) | On Cap | 4,4´-DDD | 1.27 |
| 2-MONTH | 2 | 20-25 | Sample | Cap Material | Station-2-(20-25) | On Cap | 4,4´-DDT | <0.21 |
| 2-MONTH | 2 | 20-25 | Sample | Cap Material | Station-2-(20-25) | On Cap | 4,4´-DDE | <0.13 |
| 2-MONTH | 2 | 20-25 | Sample | Cap Material | Station-2-(20-25) | On Cap | Total DDX | 1.27 |
| 2-MONTH | 2 | 25-30 | Sample | Cap Material | Station-2-(25-30) | On Cap | 2,4´-DDD | <0.67 |
| 2-MONTH | 2 | 25-30 | Sample | Cap Material | Station-2-(25-30) | On Cap | 2,4´-DDE | <0.13 |
| 2-MONTH | 2 | 25-30 | Sample | Cap Material | Station-2-(25-30) | On Cap | 2,4´-DDT | <0.12 |
| 2-MONTH | 2 | 25-30 | Sample | Cap Material | Station-2-(25-30) | On Cap | 4,4´-DDD | 1.71 |
| 2-MONTH | 2 | 25-30 | Sample | Cap Material | Station-2-(25-30) | On Cap | 4,4´-DDT | <0.21 |
| 2-MONTH | 2 | 25-30 | Sample | Cap Material | Station-2-(25-30) | On Cap | 4,4´-DDE | <0.13 |
| 2-MONTH | 2 | 25-30 | Sample | Cap Material | Station-2-(25-30) | On Cap | Total DDX | 1.71 |
| 2-MONTH | 2 | 30-35 | Sample | Cap Material | Station-2-(30-35) | On Cap | 2,4´-DDD | <0.67 |
| 2-MONTH | 2 | 30-35 | Sample | Cap Material | Station-2-(30-35) | On Cap | 2,4´-DDE | 0.28 |
| 2-MONTH | 2 | 30-35 | Sample | Cap Material | Station-2-(30-35) | On Cap | 2,4´-DDT | <0.12 |
| 2-MONTH | 2 | 30-35 | Sample | Cap Material | Station-2-(30-35) | On Cap | 4,4´-DDD | 1.15 |
| 2-MONTH | 2 | 30-35 | Sample | Cap Material | Station-2-(30-35) | On Cap | 4,4´-DDT | <0.21 |
| 2-MONTH | 2 | 30-35 | Sample | Cap Material | Station-2-(30-35) | On Cap | 4,4´-DDE | <0.13 |
| 2-MONTH | 2 | 30-35 | Sample | Cap Material | Station-2-(30-35) | On Cap | Total DDX | 1.44 |
| 2-MONTH | 2 | 35-40 | Sample | Cap Material | Station-2-(35-40) | On Cap | 2,4´-DDD | <0.76 |
| 2-MONTH | 2 | 35-40 | Sample | Cap Material | Station-2-(35-40) | On Cap | 2,4´-DDE | <0.15 |
| 2-MONTH | 2 | 35-40 | Sample | Cap Material | Station-2-(35-40) | On Cap | 2,4´-DDT | <0.14 |
| 2-MONTH | 2 | 35-40 | Sample | Cap Material | Station-2-(35-40) | On Cap | 4,4´-DDD | 0.70 |
| 2-MONTH | 2 | 35-40 | Sample | Cap Material | Station-2-(35-40) | On Cap | 4,4´-DDT | <0.24 |
| 2-MONTH | 2 | 35-40 | Sample | Cap Material | Station-2-(35-40) | On Cap | 4,4´-DDE | <0.15 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 2-MONTH | 2 | 35-40 | Sample | Cap Material | Station-2-(35-40) | On Cap | Total DDX | 0.70 |
| 2-MONTH | 2 | 40-45 | Sample | Native Sediment | Station-2-(40-45) | On Cap | 2,4′-DDD | <0.76 |
| 2-MONTH | 2 | 40-45 | Sample | Native Sediment | Station-2-(40-45) | On Cap | 2,4′-DDE | <0.15 |
| 2-MONTH | 2 | 40-45 | Sample | Native Sediment | Station-2-(40-45) | On Cap | 2,4′-DDT | <0.14 |
| 2-MONTH | 2 | 40-45 | Sample | Native Sediment | Station-2-(40-45) | On Cap | 4,4′-DDD | 1.33 |
| 2-MONTH | 2 | 40-45 | Sample | Native Sediment | Station-2-(40-45) | On Cap | 4,4′-DDT | <0.24 |
| 2-MONTH | 2 | 40-45 | Sample | Native Sediment | Station-2-(40-45) | On Cap | 4,4′-DDE | <0.15 |
| 2-MONTH | 2 | 40-45 | Sample | Native Sediment | Station-2-(40-45) | On Cap | Total DDX | 1.33 |
| 2-MONTH | 2 | 45-50 | Sample | Native Sediment | Station-2-(45-50) | On Cap | 2,4′-DDD | <0.76 |
| 2-MONTH | 2 | 45-50 | Sample | Native Sediment | Station-2-(45-50) | On Cap | 2,4′-DDE | 0.15 |
| 2-MONTH | 2 | 45-50 | Sample | Native Sediment | Station-2-(45-50) | On Cap | 2,4′-DDT | <0.14 |
| 2-MONTH | 2 | 45-50 | Sample | Native Sediment | Station-2-(45-50) | On Cap | 4,4′-DDD | <0.84 |
| 2-MONTH | 2 | 45-50 | Sample | Native Sediment | Station-2-(45-50) | On Cap | 4,4′-DDT | <0.24 |
| 2-MONTH | 2 | 45-50 | Sample | Native Sediment | Station-2-(45-50) | On Cap | 4,4′-DDE | <0.15 |
| 2-MONTH | 2 | 45-50 | Sample | Native Sediment | Station-2-(45-50) | On Cap | Total DDX | 0.15 |
| 2-MONTH | 2 | 50-55 | Sample | Native Sediment | Station-2-(50-55) | On Cap | 2,4′-DDD | <0.76 |
| 2-MONTH | 2 | 50-55 | Sample | Native Sediment | Station-2-(50-55) | On Cap | 2,4′-DDE | <0.15 |
| 2-MONTH | 2 | 50-55 | Sample | Native Sediment | Station-2-(50-55) | On Cap | 2,4′-DDT | <0.14 |
| 2-MONTH | 2 | 50-55 | Sample | Native Sediment | Station-2-(50-55) | On Cap | 4,4′-DDD | <0.84 |
| 2-MONTH | 2 | 50-55 | Sample | Native Sediment | Station-2-(50-55) | On Cap | 4,4′-DDT | <0.24 |
| 2-MONTH | 2 | 50-55 | Sample | Native Sediment | Station-2-(50-55) | On Cap | 4,4′-DDE | <0.15 |
| 2-MONTH | 2 | 50-55 | Sample | Native Sediment | Station-2-(50-55) | On Cap | Total DDX | <0.84 |
| 2-MONTH | 2 | 5-10 | Sample | Cap Material | Station-2-(5-10) | On Cap | 2,4′-DDD | <0.66 |
| 2-MONTH | 2 | 5-10 | Sample | Cap Material | Station-2-(5-10) | On Cap | 2,4′-DDE | <0.12 |
| 2-MONTH | 2 | 5-10 | Sample | Cap Material | Station-2-(5-10) | On Cap | 2,4′-DDT | <0.11 |
| 2-MONTH | 2 | 5-10 | Sample | Cap Material | Station-2-(5-10) | On Cap | 4,4′-DDD | <0.73 |
| 2-MONTH | 2 | 5-10 | Sample | Cap Material | Station-2-(5-10) | On Cap | 4,4′-DDT | <0.2 |
| 2-MONTH | 2 | 5-10 | Sample | Cap Material | Station-2-(5-10) | On Cap | 4,4′-DDE | <0.12 |
| 2-MONTH | 2 | 5-10 | Sample | Cap Material | Station-2-(5-10) | On Cap | Total DDX | <0.73 |
| 2-MONTH | 2 | 55-60 | Sample | Native Sediment | Station-2-(55-60) | On Cap | 2,4′-DDD | <0.86 |
| 2-MONTH | 2 | 55-60 | Sample | Native Sediment | Station-2-(55-60) | On Cap | 2,4′-DDE | 0.19 |
| 2-MONTH | 2 | 55-60 | Sample | Native Sediment | Station-2-(55-60) | On Cap | 2,4′-DDT | <0.16 |
| 2-MONTH | 2 | 55-60 | Sample | Native Sediment | Station-2-(55-60) | On Cap | 4,4′-DDD | 0.92 |
| 2-MONTH | 2 | 55-60 | Sample | Native Sediment | Station-2-(55-60) | On Cap | 4,4′-DDT | <0.28 |
| 2-MONTH | 2 | 55-60 | Sample | Native Sediment | Station-2-(55-60) | On Cap | 4,4′-DDE | <0.17 |
| 2-MONTH | 2 | 55-60 | Sample | Native Sediment | Station-2-(55-60) | On Cap | Total DDX | 1.11 |
| 2-MONTH | 3 | 0-5 | Sample | Cap Material | Station-3-(0-5) | On Cap | 2,4′-DDD | 1.30 |
| 2-MONTH | 3 | 0-5 | Sample | Cap Material | Station-3-(0-5) | On Cap | 2,4′-DDE | 0.14 |
| 2-MONTH | 3 | 0-5 | Sample | Cap Material | Station-3-(0-5) | On Cap | 2,4′-DDT | <0.12 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 2-MONTH | 3 | 0-5 | Sample | Cap Material | Station-3-(0-5) | On Cap | 4,4′-DDD | <0.74 |
| 2-MONTH | 3 | 0-5 | Sample | Cap Material | Station-3-(0-5) | On Cap | 4,4′-DDT | <0.21 |
| 2-MONTH | 3 | 0-5 | Sample | Cap Material | Station-3-(0-5) | On Cap | 4,4′-DDE | <0.13 |
| 2-MONTH | 3 | 0-5 | Sample | Cap Material | Station-3-(0-5) | On Cap | Total DDX | 1.43 |
| 2-MONTH | 3 | 10-15 | Sample | Cap Material | Station-3-(10-15) | On Cap | 2,4′-DDD | 0.55 |
| 2-MONTH | 3 | 10-15 | Sample | Cap Material | Station-3-(10-15) | On Cap | 2,4′-DDE | <0.13 |
| 2-MONTH | 3 | 10-15 | Sample | Cap Material | Station-3-(10-15) | On Cap | 2,4′-DDT | <0.12 |
| 2-MONTH | 3 | 10-15 | Sample | Cap Material | Station-3-(10-15) | On Cap | 4,4′-DDD | <0.74 |
| 2-MONTH | 3 | 10-15 | Sample | Cap Material | Station-3-(10-15) | On Cap | 4,4′-DDT | <0.21 |
| 2-MONTH | 3 | 10-15 | Sample | Cap Material | Station-3-(10-15) | On Cap | 4,4′-DDE | <0.13 |
| 2-MONTH | 3 | 10-15 | Sample | Cap Material | Station-3-(10-15) | On Cap | Total DDX | 0.55 |
| 2-MONTH | 3 | 15-20 | Sample | Cap Material | Station-3-(15-20) | On Cap | 2,4′-DDD | <0.86 |
| 2-MONTH | 3 | 15-20 | Sample | Cap Material | Station-3-(15-20) | On Cap | 2,4′-DDE | <0.25 |
| 2-MONTH | 3 | 15-20 | Sample | Cap Material | Station-3-(15-20) | On Cap | 2,4′-DDT | <0.24 |
| 2-MONTH | 3 | 15-20 | Sample | Cap Material | Station-3-(15-20) | On Cap | 4,4′-DDD | 2.12 |
| 2-MONTH | 3 | 15-20 | Sample | Cap Material | Station-3-(15-20) | On Cap | 4,4′-DDT | <0.36 |
| 2-MONTH | 3 | 15-20 | Sample | Cap Material | Station-3-(15-20) | On Cap | 4,4′-DDE | <0.25 |
| 2-MONTH | 3 | 15-20 | Sample | Cap Material | Station-3-(15-20) | On Cap | Total DDX | 2.12 |
| 2-MONTH | 3 | 20-25 | Sample | Cap Material | Station-3-(20-25) | On Cap | 2,4′-DDD | <0.86 |
| 2-MONTH | 3 | 20-25 | Sample | Cap Material | Station-3-(20-25) | On Cap | 2,4′-DDE | <0.25 |
| 2-MONTH | 3 | 20-25 | Sample | Cap Material | Station-3-(20-25) | On Cap | 2,4′-DDT | <0.24 |
| 2-MONTH | 3 | 20-25 | Sample | Cap Material | Station-3-(20-25) | On Cap | 4,4′-DDD | 2.26 |
| 2-MONTH | 3 | 20-25 | Sample | Cap Material | Station-3-(20-25) | On Cap | 4,4′-DDT | <0.36 |
| 2-MONTH | 3 | 20-25 | Sample | Cap Material | Station-3-(20-25) | On Cap | 4,4′-DDE | <0.25 |
| 2-MONTH | 3 | 20-25 | Sample | Cap Material | Station-3-(20-25) | On Cap | Total DDX | 2.26 |
| 2-MONTH | 3 | 25-30 | Sample | Native Sediment | Station-3-(25-30) | On Cap | 2,4′-DDD | <0.86 |
| 2-MONTH | 3 | 25-30 | Sample | Native Sediment | Station-3-(25-30) | On Cap | 2,4′-DDE | <0.25 |
| 2-MONTH | 3 | 25-30 | Sample | Native Sediment | Station-3-(25-30) | On Cap | 2,4′-DDT | <0.24 |
| 2-MONTH | 3 | 25-30 | Sample | Native Sediment | Station-3-(25-30) | On Cap | 4,4′-DDD | 1.35 |
| 2-MONTH | 3 | 25-30 | Sample | Native Sediment | Station-3-(25-30) | On Cap | 4,4′-DDT | <0.36 |
| 2-MONTH | 3 | 25-30 | Sample | Native Sediment | Station-3-(25-30) | On Cap | 4,4′-DDE | <0.25 |
| 2-MONTH | 3 | 25-30 | Sample | Transition Depth | Station-3-(25-30) | On Cap | Total DDX | 1.35 |
| 2-MONTH | 3 | 30-35 | Sample | Native Sediment | Station-3-(30-35) | On Cap | 2,4′-DDD | <0.86 |
| 2-MONTH | 3 | 30-35 | Sample | Native Sediment | Station-3-(30-35) | On Cap | 2,4′-DDE | 0.34 |
| 2-MONTH | 3 | 30-35 | Sample | Native Sediment | Station-3-(30-35) | On Cap | 2,4′-DDT | <0.24 |
| 2-MONTH | 3 | 30-35 | Sample | Native Sediment | Station-3-(30-35) | On Cap | 4,4′-DDD | 0.94 |
| 2-MONTH | 3 | 30-35 | Sample | Native Sediment | Station-3-(30-35) | On Cap | 4,4′-DDT | <0.36 |
| 2-MONTH | 3 | 30-35 | Sample | Native Sediment | Station-3-(30-35) | On Cap | 4,4′-DDE | 0.12 |
| 2-MONTH | 3 | 30-35 | Sample | Native Sediment | Station-3-(30-35) | On Cap | Total DDX | 1.40 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 2-MONTH | 3 | 35-40 | Sample | Native Sediment | Station-3-(35-40) | On Cap | 2,4′-DDD | 1.21 |
| 2-MONTH | 3 | 35-40 | Sample | Native Sediment | Station-3-(35-40) | On Cap | 2,4′-DDE | 0.13 |
| 2-MONTH | 3 | 35-40 | Sample | Native Sediment | Station-3-(35-40) | On Cap | 2,4′-DDT | <0.11 |
| 2-MONTH | 3 | 35-40 | Sample | Native Sediment | Station-3-(35-40) | On Cap | 4,4′-DDD | 2.65 |
| 2-MONTH | 3 | 35-40 | Sample | Native Sediment | Station-3-(35-40) | On Cap | 4,4′-DDT | <0.19 |
| 2-MONTH | 3 | 35-40 | Sample | Native Sediment | Station-3-(35-40) | On Cap | 4,4′-DDE | 0.47 |
| 2-MONTH | 3 | 35-40 | Sample | Native Sediment | Station-3-(35-40) | On Cap | Total DDX | 4.46 |
| 2-MONTH | 3 | 40-45 | Sample | Native Sediment | Station-3-(40-45) | On Cap | 2,4′-DDD | <0.65 |
| 2-MONTH | 3 | 40-45 | Sample | Native Sediment | Station-3-(40-45) | On Cap | 2,4′-DDE | 0.12 |
| 2-MONTH | 3 | 40-45 | Sample | Native Sediment | Station-3-(40-45) | On Cap | 2,4′-DDT | <0.11 |
| 2-MONTH | 3 | 40-45 | Sample | Native Sediment | Station-3-(40-45) | On Cap | 4,4′-DDD | 0.72 |
| 2-MONTH | 3 | 40-45 | Sample | Native Sediment | Station-3-(40-45) | On Cap | 4,4′-DDT | <0.19 |
| 2-MONTH | 3 | 40-45 | Sample | Native Sediment | Station-3-(40-45) | On Cap | 4,4′-DDE | 0.33 |
| 2-MONTH | 3 | 40-45 | Sample | Native Sediment | Station-3-(40-45) | On Cap | Total DDX | 1.17 |
| 2-MONTH | 3 | 45-50 | Sample | Native Sediment | Station-3-(45-50) | On Cap | 2,4′-DDD | <0.65 |
| 2-MONTH | 3 | 45-50 | Sample | Native Sediment | Station-3-(45-50) | On Cap | 2,4′-DDE | <0.11 |
| 2-MONTH | 3 | 45-50 | Sample | Native Sediment | Station-3-(45-50) | On Cap | 2,4′-DDT | <0.11 |
| 2-MONTH | 3 | 45-50 | Sample | Native Sediment | Station-3-(45-50) | On Cap | 4,4′-DDD | 0.65 |
| 2-MONTH | 3 | 45-50 | Sample | Native Sediment | Station-3-(45-50) | On Cap | 4,4′-DDT | <0.19 |
| 2-MONTH | 3 | 45-50 | Sample | Native Sediment | Station-3-(45-50) | On Cap | 4,4′-DDE | <0.11 |
| 2-MONTH | 3 | 45-50 | Sample | Native Sediment | Station-3-(45-50) | On Cap | Total DDX | 0.65 |
| 2-MONTH | 3 | 50-55 | Sample | Native Sediment | Station-3-(50-55) | On Cap | 2,4′-DDD | <0.65 |
| 2-MONTH | 3 | 50-55 | Sample | Native Sediment | Station-3-(50-55) | On Cap | 2,4′-DDE | <0.11 |
| 2-MONTH | 3 | 50-55 | Sample | Native Sediment | Station-3-(50-55) | On Cap | 2,4′-DDT | <0.11 |
| 2-MONTH | 3 | 50-55 | Sample | Native Sediment | Station-3-(50-55) | On Cap | 4,4′-DDD | 1.31 |
| 2-MONTH | 3 | 50-55 | Sample | Native Sediment | Station-3-(50-55) | On Cap | 4,4′-DDT | <0.19 |
| 2-MONTH | 3 | 50-55 | Sample | Native Sediment | Station-3-(50-55) | On Cap | 4,4′-DDE | <0.11 |
| 2-MONTH | 3 | 50-55 | Sample | Native Sediment | Station-3-(50-55) | On Cap | Total DDX | 1.31 |
| 2-MONTH | 3 | 5-10 | Sample | Cap Material | Station-3-(5-10) | On Cap | 2,4′-DDD | <0.67 |
| 2-MONTH | 3 | 5-10 | Sample | Cap Material | Station-3-(5-10) | On Cap | 2,4′-DDE | <0.13 |
| 2-MONTH | 3 | 5-10 | Sample | Cap Material | Station-3-(5-10) | On Cap | 2,4′-DDT | <0.12 |
| 2-MONTH | 3 | 5-10 | Sample | Cap Material | Station-3-(5-10) | On Cap | 4,4′-DDD | 0.73 |
| 2-MONTH | 3 | 5-10 | Sample | Cap Material | Station-3-(5-10) | On Cap | 4,4′-DDT | <0.21 |
| 2-MONTH | 3 | 5-10 | Sample | Cap Material | Station-3-(5-10) | On Cap | 4,4′-DDE | <0.13 |
| 2-MONTH | 3 | 5-10 | Sample | Cap Material | Station-3-(5-10) | On Cap | Total DDX | 0.73 |
| 2-MONTH | 3 | 55-60 | Sample | Native Sediment | Station-3-(55-60) | On Cap | 2,4′-DDD | <1.01 |
| 2-MONTH | 3 | 55-60 | Sample | Native Sediment | Station-3-(55-60) | On Cap | 2,4′-DDE | 0.17 |
| 2-MONTH | 3 | 55-60 | Sample | Native Sediment | Station-3-(55-60) | On Cap | 2,4′-DDT | <0.18 |
| 2-MONTH | 3 | 55-60 | Sample | Native Sediment | Station-3-(55-60) | On Cap | 4,4′-DDD | 1.71 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 2-MONTH | 3 | 55-60 | Sample | Native Sediment | Station-3-(55-60) | On Cap | 4,4′-DDT | 0.19 |
| 2-MONTH | 3 | 55-60 | Sample | Native Sediment | Station-3-(55-60) | On Cap | 4,4′-DDE | <0.19 |
| 2-MONTH | 3 | 55-60 | Sample | Native Sediment | Station-3-(55-60) | On Cap | Total DDX | 2.08 |
| 2-MONTH | 4 | 0-5 | Sample | Cap Material | Station-4-(0-5) | On Cap | 2,4′-DDD | <0.61 |
| 2-MONTH | 4 | 0-5 | Sample | Cap Material | Station-4-(0-5) | On Cap | 2,4′-DDE | <0.12 |
| 2-MONTH | 4 | 0-5 | Sample | Cap Material | Station-4-(0-5) | On Cap | 2,4′-DDT | <0.11 |
| 2-MONTH | 4 | 0-5 | Sample | Cap Material | Station-4-(0-5) | On Cap | 4,4′-DDD | <0.67 |
| 2-MONTH | 4 | 0-5 | Sample | Cap Material | Station-4-(0-5) | On Cap | 4,4′-DDT | <0.19 |
| 2-MONTH | 4 | 0-5 | Sample | Cap Material | Station-4-(0-5) | On Cap | 4,4′-DDE | <0.12 |
| 2-MONTH | 4 | 0-5 | Sample | Cap Material | Station-4-(0-5) | On Cap | Total DDX | <0.67 |
| 2-MONTH | 4 | 10-15 | Sample | Cap Material | Station-4-(10-15) | On Cap | 2,4′-DDD | <0.61 |
| 2-MONTH | 4 | 10-15 | Sample | Cap Material | Station-4-(10-15) | On Cap | 2,4′-DDE | <0.12 |
| 2-MONTH | 4 | 10-15 | Sample | Cap Material | Station-4-(10-15) | On Cap | 2,4′-DDT | <0.11 |
| 2-MONTH | 4 | 10-15 | Sample | Cap Material | Station-4-(10-15) | On Cap | 4,4′-DDD | 1.65 |
| 2-MONTH | 4 | 10-15 | Sample | Cap Material | Station-4-(10-15) | On Cap | 4,4′-DDT | <0.19 |
| 2-MONTH | 4 | 10-15 | Sample | Cap Material | Station-4-(10-15) | On Cap | 4,4′-DDE | 1.00 |
| 2-MONTH | 4 | 10-15 | Sample | Cap Material | Station-4-(10-15) | On Cap | Total DDX | 2.65 |
| 2-MONTH | 4 | 15-20 | Sample | Cap Material | Station-4-(15-20) | On Cap | 2,4′-DDD | <0.61 |
| 2-MONTH | 4 | 15-20 | Sample | Cap Material | Station-4-(15-20) | On Cap | 2,4′-DDE | <0.11 |
| 2-MONTH | 4 | 15-20 | Sample | Cap Material | Station-4-(15-20) | On Cap | 2,4′-DDT | <0.1 |
| 2-MONTH | 4 | 15-20 | Sample | Cap Material | Station-4-(15-20) | On Cap | 4,4′-DDD | 0.56 |
| 2-MONTH | 4 | 15-20 | Sample | Cap Material | Station-4-(15-20) | On Cap | 4,4′-DDT | <0.19 |
| 2-MONTH | 4 | 15-20 | Sample | Cap Material | Station-4-(15-20) | On Cap | 4,4′-DDE | <0.11 |
| 2-MONTH | 4 | 15-20 | Sample | Cap Material | Station-4-(15-20) | On Cap | Total DDX | 0.56 |
| 2-MONTH | 4 | 20-25 | Sample | Cap Material | Station-4-(20-25) | On Cap | 2,4′-DDD | <0.61 |
| 2-MONTH | 4 | 20-25 | Sample | Cap Material | Station-4-(20-25) | On Cap | 2,4′-DDE | <0.11 |
| 2-MONTH | 4 | 20-25 | Sample | Cap Material | Station-4-(20-25) | On Cap | 2,4′-DDT | <0.1 |
| 2-MONTH | 4 | 20-25 | Sample | Cap Material | Station-4-(20-25) | On Cap | 4,4′-DDD | <0.68 |
| 2-MONTH | 4 | 20-25 | Sample | Cap Material | Station-4-(20-25) | On Cap | 4,4′-DDT | <0.19 |
| 2-MONTH | 4 | 20-25 | Sample | Cap Material | Station-4-(20-25) | On Cap | 4,4′-DDE | <0.11 |
| 2-MONTH | 4 | 20-25 | Sample | Cap Material | Station-4-(20-25) | On Cap | Total DDX | <0.68 |
| 2-MONTH | 4 | 25-30 | Sample | Cap Material | Station-4-(25-30) | On Cap | 2,4′-DDD | <0.61 |
| 2-MONTH | 4 | 25-30 | Sample | Cap Material | Station-4-(25-30) | On Cap | 2,4′-DDE | <0.11 |
| 2-MONTH | 4 | 25-30 | Sample | Cap Material | Station-4-(25-30) | On Cap | 2,4′-DDT | <0.1 |
| 2-MONTH | 4 | 25-30 | Sample | Cap Material | Station-4-(25-30) | On Cap | 4,4′-DDD | <0.68 |
| 2-MONTH | 4 | 25-30 | Sample | Cap Material | Station-4-(25-30) | On Cap | 4,4′-DDT | <0.19 |
| 2-MONTH | 4 | 25-30 | Sample | Cap Material | Station-4-(25-30) | On Cap | 4,4′-DDE | <0.11 |
| 2-MONTH | 4 | 25-30 | Sample | Cap Material | Station-4-(25-30) | On Cap | Total DDX | <0.68 |
| 2-MONTH | 4 | 30-35 | Sample | Native Sediment | Station-4-(30-35) | On Cap | 2,4′-DDD | <0.61 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 2-MONTH | 4 | 30-35 | Sample | Native Sediment | Station-4-(30-35) | On Cap | 2,4′-DDE | 0.19 |
| 2-MONTH | 4 | 30-35 | Sample | Native Sediment | Station-4-(30-35) | On Cap | 2,4′-DDT | <0.1 |
| 2-MONTH | 4 | 30-35 | Sample | Native Sediment | Station-4-(30-35) | On Cap | 4,4′-DDD | <0.68 |
| 2-MONTH | 4 | 30-35 | Sample | Native Sediment | Station-4-(30-35) | On Cap | 4,4′-DDT | <0.19 |
| 2-MONTH | 4 | 30-35 | Sample | Native Sediment | Station-4-(30-35) | On Cap | 4,4′-DDE | <0.11 |
| 2-MONTH | 4 | 30-35 | Sample | Transition Depth | Station-4-(30-35) | On Cap | Total DDX | 0.19 |
| 2-MONTH | 4 | 35-40 | Sample | Native Sediment | Station-4-(35-40) | On Cap | 2,4′-DDD | 0.47 |
| 2-MONTH | 4 | 35-40 | Sample | Native Sediment | Station-4-(35-40) | On Cap | 2,4′-DDE | <0.12 |
| 2-MONTH | 4 | 35-40 | Sample | Native Sediment | Station-4-(35-40) | On Cap | 2,4′-DDT | <0.11 |
| 2-MONTH | 4 | 35-40 | Sample | Native Sediment | Station-4-(35-40) | On Cap | 4,4′-DDD | 2.03 |
| 2-MONTH | 4 | 35-40 | Sample | Native Sediment | Station-4-(35-40) | On Cap | 4,4′-DDT | 0.21 |
| 2-MONTH | 4 | 35-40 | Sample | Native Sediment | Station-4-(35-40) | On Cap | 4,4′-DDE | 0.39 |
| 2-MONTH | 4 | 35-40 | Sample | Native Sediment | Station-4-(35-40) | On Cap | Total DDX | 3.09 |
| 2-MONTH | 4 | 40-45 | Sample | Native Sediment | Station-4-(40-45) | On Cap | 2,4′-DDD | <0.63 |
| 2-MONTH | 4 | 40-45 | Sample | Native Sediment | Station-4-(40-45) | On Cap | 2,4′-DDE | <0.12 |
| 2-MONTH | 4 | 40-45 | Sample | Native Sediment | Station-4-(40-45) | On Cap | 2,4′-DDT | <0.11 |
| 2-MONTH | 4 | 40-45 | Sample | Native Sediment | Station-4-(40-45) | On Cap | 4,4′-DDD | 0.70 |
| 2-MONTH | 4 | 40-45 | Sample | Native Sediment | Station-4-(40-45) | On Cap | 4,4′-DDT | <0.19 |
| 2-MONTH | 4 | 40-45 | Sample | Native Sediment | Station-4-(40-45) | On Cap | 4,4′-DDE | <0.11 |
| 2-MONTH | 4 | 40-45 | Sample | Native Sediment | Station-4-(40-45) | On Cap | Total DDX | 0.70 |
| 2-MONTH | 4 | 45-50 | Sample | Native Sediment | Station-4-(45-50) | On Cap | 2,4′-DDD | <0.63 |
| 2-MONTH | 4 | 45-50 | Sample | Native Sediment | Station-4-(45-50) | On Cap | 2,4′-DDE | <0.12 |
| 2-MONTH | 4 | 45-50 | Sample | Native Sediment | Station-4-(45-50) | On Cap | 2,4′-DDT | <0.11 |
| 2-MONTH | 4 | 45-50 | Sample | Native Sediment | Station-4-(45-50) | On Cap | 4,4′-DDD | <0.69 |
| 2-MONTH | 4 | 45-50 | Sample | Native Sediment | Station-4-(45-50) | On Cap | 4,4′-DDT | <0.19 |
| 2-MONTH | 4 | 45-50 | Sample | Native Sediment | Station-4-(45-50) | On Cap | 4,4′-DDE | <0.11 |
| 2-MONTH | 4 | 45-50 | Sample | Native Sediment | Station-4-(45-50) | On Cap | Total DDX | <0.69 |
| 2-MONTH | 4 | 50-55 | Sample | Native Sediment | Station-4-(50-55) | On Cap | 2,4′-DDD | <0.63 |
| 2-MONTH | 4 | 50-55 | Sample | Native Sediment | Station-4-(50-55) | On Cap | 2,4′-DDE | <0.12 |
| 2-MONTH | 4 | 50-55 | Sample | Native Sediment | Station-4-(50-55) | On Cap | 2,4′-DDT | <0.11 |
| 2-MONTH | 4 | 50-55 | Sample | Native Sediment | Station-4-(50-55) | On Cap | 4,4′-DDD | 0.53 |
| 2-MONTH | 4 | 50-55 | Sample | Native Sediment | Station-4-(50-55) | On Cap | 4,4′-DDT | <0.19 |
| 2-MONTH | 4 | 50-55 | Sample | Native Sediment | Station-4-(50-55) | On Cap | 4,4′-DDE | <0.11 |
| 2-MONTH | 4 | 50-55 | Sample | Native Sediment | Station-4-(50-55) | On Cap | Total DDX | 0.53 |
| 2-MONTH | 4 | 5-10 | Sample | Cap Material | Station-4-(5-10) | On Cap | 2,4′-DDD | <0.61 |
| 2-MONTH | 4 | 5-10 | Sample | Cap Material | Station-4-(5-10) | On Cap | 2,4′-DDE | <0.12 |
| 2-MONTH | 4 | 5-10 | Sample | Cap Material | Station-4-(5-10) | On Cap | 2,4′-DDT | <0.11 |
| 2-MONTH | 4 | 5-10 | Sample | Cap Material | Station-4-(5-10) | On Cap | 4,4′-DDD | <0.67 |
| 2-MONTH | 4 | 5-10 | Sample | Cap Material | Station-4-(5-10) | On Cap | 4,4′-DDT | <0.19 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 2-MONTH | 4 | 5-10 | Sample | Cap Material | Station-4-(5-10) | On Cap | 4,4′-DDE | <0.12 |
| 2-MONTH | 4 | 5-10 | Sample | Cap Material | Station-4-(5-10) | On Cap | Total DDX | <0.67 |
| 2-MONTH | 4 | 55-60 | Sample | Native Sediment | Station-4-(55-60) | On Cap | 2,4′-DDD | 0.66 |
| 2-MONTH | 4 | 55-60 | Sample | Native Sediment | Station-4-(55-60) | On Cap | 2,4′-DDE | 0.19 |
| 2-MONTH | 4 | 55-60 | Sample | Native Sediment | Station-4-(55-60) | On Cap | 2,4′-DDT | 0.14 |
| 2-MONTH | 4 | 55-60 | Sample | Native Sediment | Station-4-(55-60) | On Cap | 4,4′-DDD | 0.87 |
| 2-MONTH | 4 | 55-60 | Sample | Native Sediment | Station-4-(55-60) | On Cap | 4,4′-DDT | 0.22 |
| 2-MONTH | 4 | 55-60 | Sample | Native Sediment | Station-4-(55-60) | On Cap | 4,4′-DDE | 0.20 |
| 2-MONTH | 4 | 55-60 | Sample | Native Sediment | Station-4-(55-60) | On Cap | Total DDX | 2.28 |
| 2-MONTH | 5 | 0-5 | Sample | Cap Material | Station-5-(0-5) | On Cap | 2,4′-DDD | <0.52 |
| 2-MONTH | 5 | 0-5 | Sample | Cap Material | Station-5-(0-5) | On Cap | 2,4′-DDE | 0.18 |
| 2-MONTH | 5 | 0-5 | Sample | Cap Material | Station-5-(0-5) | On Cap | 2,4′-DDT | <0.11 |
| 2-MONTH | 5 | 0-5 | Sample | Cap Material | Station-5-(0-5) | On Cap | 4,4′-DDD | <0.58 |
| 2-MONTH | 5 | 0-5 | Sample | Cap Material | Station-5-(0-5) | On Cap | 4,4′-DDT | <0.18 |
| 2-MONTH | 5 | 0-5 | Sample | Cap Material | Station-5-(0-5) | On Cap | 4,4′-DDE | <0.11 |
| 2-MONTH | 5 | 0-5 | Sample | Cap Material | Station-5-(0-5) | On Cap | Total DDX | 0.18 |
| 2-MONTH | 5 | 10-15 | Sample | Cap Material | Station-5-(10-15) | On Cap | 2,4′-DDD | <0.52 |
| 2-MONTH | 5 | 10-15 | Sample | Cap Material | Station-5-(10-15) | On Cap | 2,4′-DDE | <0.12 |
| 2-MONTH | 5 | 10-15 | Sample | Cap Material | Station-5-(10-15) | On Cap | 2,4′-DDT | <0.11 |
| 2-MONTH | 5 | 10-15 | Sample | Cap Material | Station-5-(10-15) | On Cap | 4,4′-DDD | 1.10 |
| 2-MONTH | 5 | 10-15 | Sample | Cap Material | Station-5-(10-15) | On Cap | 4,4′-DDT | <0.18 |
| 2-MONTH | 5 | 10-15 | Sample | Cap Material | Station-5-(10-15) | On Cap | 4,4′-DDE | 0.57 |
| 2-MONTH | 5 | 10-15 | Sample | Cap Material | Station-5-(10-15) | On Cap | Total DDX | 1.67 |
| 2-MONTH | 5 | 15-20 | Sample | Cap Material | Station-5-(15-20) | On Cap | 2,4′-DDD | <0.77 |
| 2-MONTH | 5 | 15-20 | Sample | Cap Material | Station-5-(15-20) | On Cap | 2,4′-DDE | <0.15 |
| 2-MONTH | 5 | 15-20 | Sample | Cap Material | Station-5-(15-20) | On Cap | 2,4′-DDT | <0.14 |
| 2-MONTH | 5 | 15-20 | Sample | Cap Material | Station-5-(15-20) | On Cap | 4,4′-DDD | 0.66 |
| 2-MONTH | 5 | 15-20 | Sample | Cap Material | Station-5-(15-20) | On Cap | 4,4′-DDT | <0.25 |
| 2-MONTH | 5 | 15-20 | Sample | Cap Material | Station-5-(15-20) | On Cap | 4,4′-DDE | 0.11 |
| 2-MONTH | 5 | 15-20 | Sample | Cap Material | Station-5-(15-20) | On Cap | Total DDX | 0.77 |
| 2-MONTH | 5 | 20-25 | Sample | Cap Material | Station-5-(20-25) | On Cap | 2,4′-DDD | <0.77 |
| 2-MONTH | 5 | 20-25 | Sample | Cap Material | Station-5-(20-25) | On Cap | 2,4′-DDE | <0.15 |
| 2-MONTH | 5 | 20-25 | Sample | Cap Material | Station-5-(20-25) | On Cap | 2,4′-DDT | <0.14 |
| 2-MONTH | 5 | 20-25 | Sample | Cap Material | Station-5-(20-25) | On Cap | 4,4′-DDD | <0.85 |
| 2-MONTH | 5 | 20-25 | Sample | Cap Material | Station-5-(20-25) | On Cap | 4,4′-DDT | <0.25 |
| 2-MONTH | 5 | 20-25 | Sample | Cap Material | Station-5-(20-25) | On Cap | 4,4′-DDE | <0.15 |
| 2-MONTH | 5 | 20-25 | Sample | Cap Material | Station-5-(20-25) | On Cap | Total DDX | <0.85 |
| 2-MONTH | 5 | 25-30 | Sample | Cap Material | Station-5-(25-30) | On Cap | 2,4′-DDD | <0.77 |
| 2-MONTH | 5 | 25-30 | Sample | Cap Material | Station-5-(25-30) | On Cap | 2,4′-DDE | <0.15 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 2-MONTH | 5 | 25-30 | Sample | Cap Material | Station-5-(25-30) | On Cap | 2,4′-DDT | <0.14 |
| 2-MONTH | 5 | 25-30 | Sample | Cap Material | Station-5-(25-30) | On Cap | 4,4′-DDD | 0.76 |
| 2-MONTH | 5 | 25-30 | Sample | Cap Material | Station-5-(25-30) | On Cap | 4,4′-DDT | <0.25 |
| 2-MONTH | 5 | 25-30 | Sample | Cap Material | Station-5-(25-30) | On Cap | 4,4′-DDE | <0.15 |
| 2-MONTH | 5 | 25-30 | Sample | Cap Material | Station-5-(25-30) | On Cap | Total DDX | 0.76 |
| 2-MONTH | 5 | 30-35 | Sample | Native Sediment | Station-5-(30-35) | On Cap | 2,4′-DDD | <0.77 |
| 2-MONTH | 5 | 30-35 | Sample | Native Sediment | Station-5-(30-35) | On Cap | 2,4′-DDE | 0.13 |
| 2-MONTH | 5 | 30-35 | Sample | Native Sediment | Station-5-(30-35) | On Cap | 2,4′-DDT | <0.14 |
| 2-MONTH | 5 | 30-35 | Sample | Native Sediment | Station-5-(30-35) | On Cap | 4,4′-DDD | <0.85 |
| 2-MONTH | 5 | 30-35 | Sample | Native Sediment | Station-5-(30-35) | On Cap | 4,4′-DDT | <0.25 |
| 2-MONTH | 5 | 30-35 | Sample | Native Sediment | Station-5-(30-35) | On Cap | 4,4′-DDE | <0.15 |
| 2-MONTH | 5 | 30-35 | Sample | Transition Depth | Station-5-(30-35) | On Cap | Total DDX | 0.13 |
| 2-MONTH | 5 | 35-40 | Sample | Native Sediment | Station-5-(35-40) | On Cap | 2,4′-DDD | 0.68 |
| 2-MONTH | 5 | 35-40 | Sample | Native Sediment | Station-5-(35-40) | On Cap | 2,4′-DDE | <0.12 |
| 2-MONTH | 5 | 35-40 | Sample | Native Sediment | Station-5-(35-40) | On Cap | 2,4′-DDT | <0.11 |
| 2-MONTH | 5 | 35-40 | Sample | Native Sediment | Station-5-(35-40) | On Cap | 4,4′-DDD | <0.65 |
| 2-MONTH | 5 | 35-40 | Sample | Native Sediment | Station-5-(35-40) | On Cap | 4,4′-DDT | <0.19 |
| 2-MONTH | 5 | 35-40 | Sample | Native Sediment | Station-5-(35-40) | On Cap | 4,4′-DDE | 0.12 |
| 2-MONTH | 5 | 35-40 | Sample | Native Sediment | Station-5-(35-40) | On Cap | Total DDX | 0.80 |
| 2-MONTH | 5 | 40-45 | Sample | Native Sediment | Station-5-(40-45) | On Cap | 2,4′-DDD | <0.59 |
| 2-MONTH | 5 | 40-45 | Sample | Native Sediment | Station-5-(40-45) | On Cap | 2,4′-DDE | <0.12 |
| 2-MONTH | 5 | 40-45 | Sample | Native Sediment | Station-5-(40-45) | On Cap | 2,4′-DDT | <0.11 |
| 2-MONTH | 5 | 40-45 | Sample | Native Sediment | Station-5-(40-45) | On Cap | 4,4′-DDD | 0.58 |
| 2-MONTH | 5 | 40-45 | Sample | Native Sediment | Station-5-(40-45) | On Cap | 4,4′-DDT | <0.19 |
| 2-MONTH | 5 | 40-45 | Sample | Native Sediment | Station-5-(40-45) | On Cap | 4,4′-DDE | <0.12 |
| 2-MONTH | 5 | 40-45 | Sample | Native Sediment | Station-5-(40-45) | On Cap | Total DDX | 0.58 |
| 2-MONTH | 5 | 45-50 | Sample | Native Sediment | Station-5-(45-50) | On Cap | 2,4′-DDD | 0.52 |
| 2-MONTH | 5 | 45-50 | Sample | Native Sediment | Station-5-(45-50) | On Cap | 2,4′-DDE | 0.13 |
| 2-MONTH | 5 | 45-50 | Sample | Native Sediment | Station-5-(45-50) | On Cap | 2,4′-DDT | <0.11 |
| 2-MONTH | 5 | 45-50 | Sample | Native Sediment | Station-5-(45-50) | On Cap | 4,4′-DDD | 0.70 |
| 2-MONTH | 5 | 45-50 | Sample | Native Sediment | Station-5-(45-50) | On Cap | 4,4′-DDT | <0.19 |
| 2-MONTH | 5 | 45-50 | Sample | Native Sediment | Station-5-(45-50) | On Cap | 4,4′-DDE | <0.12 |
| 2-MONTH | 5 | 45-50 | Sample | Native Sediment | Station-5-(45-50) | On Cap | Total DDX | 1.35 |
| 2-MONTH | 5 | 50-55 | Sample | Native Sediment | Station-5-(50-55) | On Cap | 2,4′-DDD | <0.59 |
| 2-MONTH | 5 | 50-55 | Sample | Native Sediment | Station-5-(50-55) | On Cap | 2,4′-DDE | <0.12 |
| 2-MONTH | 5 | 50-55 | Sample | Native Sediment | Station-5-(50-55) | On Cap | 2,4′-DDT | <0.11 |
| 2-MONTH | 5 | 50-55 | Sample | Native Sediment | Station-5-(50-55) | On Cap | 4,4′-DDD | 1.12 |
| 2-MONTH | 5 | 50-55 | Sample | Native Sediment | Station-5-(50-55) | On Cap | 4,4′-DDT | <0.19 |
| 2-MONTH | 5 | 50-55 | Sample | Native Sediment | Station-5-(50-55) | On Cap | 4,4′-DDE | <0.12 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 2-MONTH | 5 | 50-55 | Sample | Native Sediment | Station-5-(50-55) | On Cap | Total DDX | 1.12 |
| 2-MONTH | 5 | 5-10 | Sample | Cap Material | Station-5-(5-10) | On Cap | 2,4′-DDD | 0.42 |
| 2-MONTH | 5 | 5-10 | Sample | Cap Material | Station-5-(5-10) | On Cap | 2,4′-DDE | <0.12 |
| 2-MONTH | 5 | 5-10 | Sample | Cap Material | Station-5-(5-10) | On Cap | 2,4′-DDT | <0.11 |
| 2-MONTH | 5 | 5-10 | Sample | Cap Material | Station-5-(5-10) | On Cap | 4,4′-DDD | 0.98 |
| 2-MONTH | 5 | 5-10 | Sample | Cap Material | Station-5-(5-10) | On Cap | 4,4′-DDT | <0.18 |
| 2-MONTH | 5 | 5-10 | Sample | Cap Material | Station-5-(5-10) | On Cap | 4,4′-DDE | <0.11 |
| 2-MONTH | 5 | 5-10 | Sample | Cap Material | Station-5-(5-10) | On Cap | Total DDX | 1.40 |
| 2-MONTH | 5 | 55-60 | Sample | Native Sediment | Station-5-(55-60) | On Cap | 2,4′-DDD | 0.89 |
| 2-MONTH | 5 | 55-60 | Sample | Native Sediment | Station-5-(55-60) | On Cap | 2,4′-DDE | 0.16 |
| 2-MONTH | 5 | 55-60 | Sample | Native Sediment | Station-5-(55-60) | On Cap | 2,4′-DDT | <0.13 |
| 2-MONTH | 5 | 55-60 | Sample | Native Sediment | Station-5-(55-60) | On Cap | 4,4′-DDD | 0.73 |
| 2-MONTH | 5 | 55-60 | Sample | Native Sediment | Station-5-(55-60) | On Cap | 4,4′-DDT | <0.23 |
| 2-MONTH | 5 | 55-60 | Sample | Native Sediment | Station-5-(55-60) | On Cap | 4,4′-DDE | 0.10 |
| 2-MONTH | 5 | 55-60 | Sample | Native Sediment | Station-5-(55-60) | On Cap | Total DDX | 1.88 |
| 2-MONTH | 6 | 0-5 | Sample | Native Sediment-Off Cap | Station-6-(0-5) | Off Cap | 2,4′-DDD | <0.4 |
| 2-MONTH | 6 | 0-5 | Sample | Native Sediment-Off Cap | Station-6-(0-5) | Off Cap | 2,4′-DDE | 0.07 |
| 2-MONTH | 6 | 0-5 | Sample | Native Sediment-Off Cap | Station-6-(0-5) | Off Cap | 2,4′-DDT | <0.07 |
| 2-MONTH | 6 | 0-5 | Sample | Native Sediment-Off Cap | Station-6-(0-5) | Off Cap | 4,4′-DDD | <0.44 |
| 2-MONTH | 6 | 0-5 | Sample | Native Sediment-Off Cap | Station-6-(0-5) | Off Cap | 4,4′-DDT | <0.12 |
| 2-MONTH | 6 | 0-5 | Sample | Native Sediment-Off Cap | Station-6-(0-5) | Off Cap | 4,4′-DDE | 0.35 |
| 2-MONTH | 6 | 0-5 | Sample | Native Sediment-Off Cap | Station-6-(0-5) | Off Cap | Total DDX | 0.42 |
| 2-MONTH | 6 | 10-15 | Sample | Native Sediment-Off Cap | Station-6-(10-15) | Off Cap | 2,4′-DDD | <0.4 |
| 2-MONTH | 6 | 10-15 | Sample | Native Sediment-Off Cap | Station-6-(10-15) | Off Cap | 2,4′-DDE | <0.07 |
| 2-MONTH | 6 | 10-15 | Sample | Native Sediment-Off Cap | Station-6-(10-15) | Off Cap | 2,4′-DDT | <0.07 |
| 2-MONTH | 6 | 10-15 | Sample | Native Sediment-Off Cap | Station-6-(10-15) | Off Cap | 4,4′-DDD | <0.44 |
| 2-MONTH | 6 | 10-15 | Sample | Native Sediment-Off Cap | Station-6-(10-15) | Off Cap | 4,4′-DDT | <0.12 |
| 2-MONTH | 6 | 10-15 | Sample | Native Sediment-Off Cap | Station-6-(10-15) | Off Cap | 4,4′-DDE | <0.07 |
| 2-MONTH | 6 | 10-15 | Sample | Native Sediment-Off Cap | Station-6-(10-15) | Off Cap | Total DDX | <0.44 |
| 2-MONTH | 6 | 15-20 | Sample | Native Sediment-Off Cap | Station-6-(15-20) | Off Cap | 2,4′-DDD | <0.43 |
| 2-MONTH | 6 | 15-20 | Sample | Native Sediment-Off Cap | Station-6-(15-20) | Off Cap | 2,4′-DDE | <0.08 |
| 2-MONTH | 6 | 15-20 | Sample | Native Sediment-Off Cap | Station-6-(15-20) | Off Cap | 2,4′-DDT | <0.07 |
| 2-MONTH | 6 | 15-20 | Sample | Native Sediment-Off Cap | Station-6-(15-20) | Off Cap | 4,4′-DDD | <0.47 |
| 2-MONTH | 6 | 15-20 | Sample | Native Sediment-Off Cap | Station-6-(15-20) | Off Cap | 4,4′-DDT | <0.13 |
| 2-MONTH | 6 | 15-20 | Sample | Native Sediment-Off Cap | Station-6-(15-20) | Off Cap | 4,4′-DDE | <0.08 |
| 2-MONTH | 6 | 15-20 | Sample | Native Sediment-Off Cap | Station-6-(15-20) | Off Cap | Total DDX | <0.47 |
| 2-MONTH | 6 | 20-25 | Sample | Native Sediment-Off Cap | Station-6-(20-25) | Off Cap | 2,4′-DDD | <0.43 |
| 2-MONTH | 6 | 20-25 | Sample | Native Sediment-Off Cap | Station-6-(20-25) | Off Cap | 2,4′-DDE | <0.08 |
| 2-MONTH | 6 | 20-25 | Sample | Native Sediment-Off Cap | Station-6-(20-25) | Off Cap | 2,4′-DDT | <0.07 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 2-MONTH | 6 | 20-25 | Sample | Native Sediment-Off Cap | Station-6-(20-25) | Off Cap | 4,4´-DDD | <0.47 |
| 2-MONTH | 6 | 20-25 | Sample | Native Sediment-Off Cap | Station-6-(20-25) | Off Cap | 4,4´-DDT | <0.13 |
| 2-MONTH | 6 | 20-25 | Sample | Native Sediment-Off Cap | Station-6-(20-25) | Off Cap | 4,4´-DDE | <0.08 |
| 2-MONTH | 6 | 20-25 | Sample | Native Sediment-Off Cap | Station-6-(20-25) | Off Cap | Total DDX | <0.47 |
| 2-MONTH | 6 | 25-30 | Sample | Native Sediment-Off Cap | Station-6-(25-30) | Off Cap | 2,4´-DDD | <0.43 |
| 2-MONTH | 6 | 25-30 | Sample | Native Sediment-Off Cap | Station-6-(25-30) | Off Cap | 2,4´-DDE | 0.07 |
| 2-MONTH | 6 | 25-30 | Sample | Native Sediment-Off Cap | Station-6-(25-30) | Off Cap | 2,4´-DDT | <0.07 |
| 2-MONTH | 6 | 25-30 | Sample | Native Sediment-Off Cap | Station-6-(25-30) | Off Cap | 4,4´-DDD | <0.47 |
| 2-MONTH | 6 | 25-30 | Sample | Native Sediment-Off Cap | Station-6-(25-30) | Off Cap | 4,4´-DDT | <0.13 |
| 2-MONTH | 6 | 25-30 | Sample | Native Sediment-Off Cap | Station-6-(25-30) | Off Cap | 4,4´-DDE | <0.08 |
| 2-MONTH | 6 | 25-30 | Sample | Native Sediment-Off Cap | Station-6-(25-30) | Off Cap | Total DDX | 0.07 |
| 2-MONTH | 6 | 30-35 | Sample | Native Sediment-Off Cap | Station-6-(30-35) | Off Cap | 2,4´-DDD | <0.43 |
| 2-MONTH | 6 | 30-35 | Sample | Native Sediment-Off Cap | Station-6-(30-35) | Off Cap | 2,4´-DDE | 0.08 |
| 2-MONTH | 6 | 30-35 | Sample | Native Sediment-Off Cap | Station-6-(30-35) | Off Cap | 2,4´-DDT | <0.07 |
| 2-MONTH | 6 | 30-35 | Sample | Native Sediment-Off Cap | Station-6-(30-35) | Off Cap | 4,4´-DDD | <0.47 |
| 2-MONTH | 6 | 30-35 | Sample | Native Sediment-Off Cap | Station-6-(30-35) | Off Cap | 4,4´-DDT | <0.13 |
| 2-MONTH | 6 | 30-35 | Sample | Native Sediment-Off Cap | Station-6-(30-35) | Off Cap | 4,4´-DDE | <0.08 |
| 2-MONTH | 6 | 30-35 | Sample | Native Sediment-Off Cap | Station-6-(30-35) | Off Cap | Total DDX | 0.08 |
| 2-MONTH | 6 | 35-40 | Sample | Native Sediment-Off Cap | Station-6-(35-40) | Off Cap | 2,4´-DDD | <0.67 |
| 2-MONTH | 6 | 35-40 | Sample | Native Sediment-Off Cap | Station-6-(35-40) | Off Cap | 2,4´-DDE | <0.12 |
| 2-MONTH | 6 | 35-40 | Sample | Native Sediment-Off Cap | Station-6-(35-40) | Off Cap | 2,4´-DDT | <0.11 |
| 2-MONTH | 6 | 35-40 | Sample | Native Sediment-Off Cap | Station-6-(35-40) | Off Cap | 4,4´-DDD | <0.75 |
| 2-MONTH | 6 | 35-40 | Sample | Native Sediment-Off Cap | Station-6-(35-40) | Off Cap | 4,4´-DDT | <0.21 |
| 2-MONTH | 6 | 35-40 | Sample | Native Sediment-Off Cap | Station-6-(35-40) | Off Cap | 4,4´-DDE | <0.12 |
| 2-MONTH | 6 | 35-40 | Sample | Native Sediment-Off Cap | Station-6-(35-40) | Off Cap | Total DDX | <0.75 |
| 2-MONTH | 6 | 40-45 | Sample | Native Sediment-Off Cap | Station-6-(40-45) | Off Cap | 2,4´-DDD | <0.67 |
| 2-MONTH | 6 | 40-45 | Sample | Native Sediment-Off Cap | Station-6-(40-45) | Off Cap | 2,4´-DDE | <0.12 |
| 2-MONTH | 6 | 40-45 | Sample | Native Sediment-Off Cap | Station-6-(40-45) | Off Cap | 2,4´-DDT | <0.11 |
| 2-MONTH | 6 | 40-45 | Sample | Native Sediment-Off Cap | Station-6-(40-45) | Off Cap | 4,4´-DDD | <0.75 |
| 2-MONTH | 6 | 40-45 | Sample | Native Sediment-Off Cap | Station-6-(40-45) | Off Cap | 4,4´-DDT | <0.21 |
| 2-MONTH | 6 | 40-45 | Sample | Native Sediment-Off Cap | Station-6-(40-45) | Off Cap | 4,4´-DDE | <0.12 |
| 2-MONTH | 6 | 40-45 | Sample | Native Sediment-Off Cap | Station-6-(40-45) | Off Cap | Total DDX | <0.75 |
| 2-MONTH | 6 | 45-50 | Sample | Native Sediment-Off Cap | Station-6-(45-50) | Off Cap | 2,4´-DDD | 0.59 |
| 2-MONTH | 6 | 45-50 | Sample | Native Sediment-Off Cap | Station-6-(45-50) | Off Cap | 2,4´-DDE | <0.12 |
| 2-MONTH | 6 | 45-50 | Sample | Native Sediment-Off Cap | Station-6-(45-50) | Off Cap | 2,4´-DDT | <0.11 |
| 2-MONTH | 6 | 45-50 | Sample | Native Sediment-Off Cap | Station-6-(45-50) | Off Cap | 4,4´-DDD | 0.46 |
| 2-MONTH | 6 | 45-50 | Sample | Native Sediment-Off Cap | Station-6-(45-50) | Off Cap | 4,4´-DDT | <0.21 |
| 2-MONTH | 6 | 45-50 | Sample | Native Sediment-Off Cap | Station-6-(45-50) | Off Cap | 4,4´-DDE | <0.12 |
| 2-MONTH | 6 | 45-50 | Sample | Native Sediment-Off Cap | Station-6-(45-50) | Off Cap | Total DDX | 1.04 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 2-MONTH | 6 | 50-55 | Sample | Native Sediment-Off Cap | Station-6-(50-55) | Off Cap | 2,4′-DDD | <0.67 |
| 2-MONTH | 6 | 50-55 | Sample | Native Sediment-Off Cap | Station-6-(50-55) | Off Cap | 2,4′-DDE | <0.12 |
| 2-MONTH | 6 | 50-55 | Sample | Native Sediment-Off Cap | Station-6-(50-55) | Off Cap | 2,4′-DDT | <0.11 |
| 2-MONTH | 6 | 50-55 | Sample | Native Sediment-Off Cap | Station-6-(50-55) | Off Cap | 4,4′-DDD | <0.75 |
| 2-MONTH | 6 | 50-55 | Sample | Native Sediment-Off Cap | Station-6-(50-55) | Off Cap | 4,4′-DDT | <0.21 |
| 2-MONTH | 6 | 50-55 | Sample | Native Sediment-Off Cap | Station-6-(50-55) | Off Cap | 4,4′-DDE | <0.12 |
| 2-MONTH | 6 | 50-55 | Sample | Native Sediment-Off Cap | Station-6-(50-55) | Off Cap | Total DDX | <0.75 |
| 2-MONTH | 6 | 5-10 | Sample | Native Sediment-Off Cap | Station-6-(5-10) | Off Cap | 2,4′-DDD | <0.4 |
| 2-MONTH | 6 | 5-10 | Sample | Native Sediment-Off Cap | Station-6-(5-10) | Off Cap | 2,4′-DDE | <0.07 |
| 2-MONTH | 6 | 5-10 | Sample | Native Sediment-Off Cap | Station-6-(5-10) | Off Cap | 2,4′-DDT | <0.07 |
| 2-MONTH | 6 | 5-10 | Sample | Native Sediment-Off Cap | Station-6-(5-10) | Off Cap | 4,4′-DDD | <0.44 |
| 2-MONTH | 6 | 5-10 | Sample | Native Sediment-Off Cap | Station-6-(5-10) | Off Cap | 4,4′-DDT | <0.12 |
| 2-MONTH | 6 | 5-10 | Sample | Native Sediment-Off Cap | Station-6-(5-10) | Off Cap | 4,4′-DDE | <0.07 |
| 2-MONTH | 6 | 5-10 | Sample | Native Sediment-Off Cap | Station-6-(5-10) | Off Cap | Total DDX | <0.44 |
| 2-MONTH | 6 | 55-60 | Sample | Native Sediment-Off Cap | Station-6-(55-60) | Off Cap | 2,4′-DDD | <1.16 |
| 2-MONTH | 6 | 55-60 | Sample | Native Sediment-Off Cap | Station-6-(55-60) | Off Cap | 2,4′-DDE | 0.11 |
| 2-MONTH | 6 | 55-60 | Sample | Native Sediment-Off Cap | Station-6-(55-60) | Off Cap | 2,4′-DDT | <0.2 |
| 2-MONTH | 6 | 55-60 | Sample | Native Sediment-Off Cap | Station-6-(55-60) | Off Cap | 4,4′-DDD | <1.29 |
| 2-MONTH | 6 | 55-60 | Sample | Native Sediment-Off Cap | Station-6-(55-60) | Off Cap | 4,4′-DDT | <0.36 |
| 2-MONTH | 6 | 55-60 | Sample | Native Sediment-Off Cap | Station-6-(55-60) | Off Cap | 4,4′-DDE | <0.21 |
| 2-MONTH | 6 | 55-60 | Sample | Native Sediment-Off Cap | Station-6-(55-60) | Off Cap | Total DDX | 0.11 |
| 2-MONTH | 7 | 0-5 | Sample | Native Sediment-Off Cap | Station-7-(0-5) | Off Cap | 2,4′-DDD | <0.45 |
| 2-MONTH | 7 | 0-5 | Sample | Native Sediment-Off Cap | Station-7-(0-5) | Off Cap | 2,4′-DDE | <0.09 |
| 2-MONTH | 7 | 0-5 | Sample | Native Sediment-Off Cap | Station-7-(0-5) | Off Cap | 2,4′-DDT | <0.08 |
| 2-MONTH | 7 | 0-5 | Sample | Native Sediment-Off Cap | Station-7-(0-5) | Off Cap | 4,4′-DDD | <0.49 |
| 2-MONTH | 7 | 0-5 | Sample | Native Sediment-Off Cap | Station-7-(0-5) | Off Cap | 4,4′-DDT | <0.15 |
| 2-MONTH | 7 | 0-5 | Sample | Native Sediment-Off Cap | Station-7-(0-5) | Off Cap | 4,4′-DDE | <0.09 |
| 2-MONTH | 7 | 0-5 | Sample | Native Sediment-Off Cap | Station-7-(0-5) | Off Cap | Total DDX | <0.49 |
| 2-MONTH | 7 | 10-15 | Sample | Native Sediment-Off Cap | Station-7-(10-15) | Off Cap | 2,4′-DDD | <0.45 |
| 2-MONTH | 7 | 10-15 | Sample | Native Sediment-Off Cap | Station-7-(10-15) | Off Cap | 2,4′-DDE | <0.09 |
| 2-MONTH | 7 | 10-15 | Sample | Native Sediment-Off Cap | Station-7-(10-15) | Off Cap | 2,4′-DDT | <0.08 |
| 2-MONTH | 7 | 10-15 | Sample | Native Sediment-Off Cap | Station-7-(10-15) | Off Cap | 4,4′-DDD | <0.49 |
| 2-MONTH | 7 | 10-15 | Sample | Native Sediment-Off Cap | Station-7-(10-15) | Off Cap | 4,4′-DDT | <0.15 |
| 2-MONTH | 7 | 10-15 | Sample | Native Sediment-Off Cap | Station-7-(10-15) | Off Cap | 4,4′-DDE | <0.09 |
| 2-MONTH | 7 | 10-15 | Sample | Native Sediment-Off Cap | Station-7-(10-15) | Off Cap | Total DDX | <0.49 |
| 2-MONTH | 7 | 15-20 | Sample | Native Sediment-Off Cap | Station-7-(15-20) | Off Cap | 2,4′-DDD | <0.44 |
| 2-MONTH | 7 | 15-20 | Sample | Native Sediment-Off Cap | Station-7-(15-20) | Off Cap | 2,4′-DDE | <0.08 |
| 2-MONTH | 7 | 15-20 | Sample | Native Sediment-Off Cap | Station-7-(15-20) | Off Cap | 2,4′-DDT | <0.08 |
| 2-MONTH | 7 | 15-20 | Sample | Native Sediment-Off Cap | Station-7-(15-20) | Off Cap | 4,4′-DDD | <0.49 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 2-MONTH | 7 | 15-20 | Sample | Native Sediment-Off Cap | Station-7-(15-20) | Off Cap | 4,4′-DDT | <0.14 |
| 2-MONTH | 7 | 15-20 | Sample | Native Sediment-Off Cap | Station-7-(15-20) | Off Cap | 4,4′-DDE | <0.08 |
| 2-MONTH | 7 | 15-20 | Sample | Native Sediment-Off Cap | Station-7-(15-20) | Off Cap | Total DDX | <0.49 |
| 2-MONTH | 7 | 20-25 | Sample | Native Sediment-Off Cap | Station-7-(20-25) | Off Cap | 2,4′-DDD | <0.44 |
| 2-MONTH | 7 | 20-25 | Sample | Native Sediment-Off Cap | Station-7-(20-25) | Off Cap | 2,4′-DDE | <0.08 |
| 2-MONTH | 7 | 20-25 | Sample | Native Sediment-Off Cap | Station-7-(20-25) | Off Cap | 2,4′-DDT | <0.08 |
| 2-MONTH | 7 | 20-25 | Sample | Native Sediment-Off Cap | Station-7-(20-25) | Off Cap | 4,4′-DDD | <0.49 |
| 2-MONTH | 7 | 20-25 | Sample | Native Sediment-Off Cap | Station-7-(20-25) | Off Cap | 4,4′-DDT | <0.14 |
| 2-MONTH | 7 | 20-25 | Sample | Native Sediment-Off Cap | Station-7-(20-25) | Off Cap | 4,4′-DDE | <0.08 |
| 2-MONTH | 7 | 20-25 | Sample | Native Sediment-Off Cap | Station-7-(20-25) | Off Cap | Total DDX | <0.49 |
| 2-MONTH | 7 | 25-30 | Sample | Native Sediment-Off Cap | Station-7-(25-30) | Off Cap | 2,4′-DDD | <0.44 |
| 2-MONTH | 7 | 25-30 | Sample | Native Sediment-Off Cap | Station-7-(25-30) | Off Cap | 2,4′-DDE | <0.08 |
| 2-MONTH | 7 | 25-30 | Sample | Native Sediment-Off Cap | Station-7-(25-30) | Off Cap | 2,4′-DDT | <0.08 |
| 2-MONTH | 7 | 25-30 | Sample | Native Sediment-Off Cap | Station-7-(25-30) | Off Cap | 4,4′-DDD | <0.49 |
| 2-MONTH | 7 | 25-30 | Sample | Native Sediment-Off Cap | Station-7-(25-30) | Off Cap | 4,4′-DDT | <0.14 |
| 2-MONTH | 7 | 25-30 | Sample | Native Sediment-Off Cap | Station-7-(25-30) | Off Cap | 4,4′-DDE | <0.08 |
| 2-MONTH | 7 | 25-30 | Sample | Native Sediment-Off Cap | Station-7-(25-30) | Off Cap | Total DDX | <0.49 |
| 2-MONTH | 7 | 30-35 | Sample | Native Sediment-Off Cap | Station-7-(30-35) | Off Cap | 2,4′-DDD | <0.44 |
| 2-MONTH | 7 | 30-35 | Sample | Native Sediment-Off Cap | Station-7-(30-35) | Off Cap | 2,4′-DDE | <0.08 |
| 2-MONTH | 7 | 30-35 | Sample | Native Sediment-Off Cap | Station-7-(30-35) | Off Cap | 2,4′-DDT | <0.08 |
| 2-MONTH | 7 | 30-35 | Sample | Native Sediment-Off Cap | Station-7-(30-35) | Off Cap | 4,4′-DDD | <0.49 |
| 2-MONTH | 7 | 30-35 | Sample | Native Sediment-Off Cap | Station-7-(30-35) | Off Cap | 4,4′-DDT | <0.14 |
| 2-MONTH | 7 | 30-35 | Sample | Native Sediment-Off Cap | Station-7-(30-35) | Off Cap | 4,4′-DDE | <0.08 |
| 2-MONTH | 7 | 30-35 | Sample | Native Sediment-Off Cap | Station-7-(30-35) | Off Cap | Total DDX | <0.49 |
| 2-MONTH | 7 | 35-40 | Sample | Native Sediment-Off Cap | Station-7-(35-40) | Off Cap | 2,4′-DDD | <0.46 |
| 2-MONTH | 7 | 35-40 | Sample | Native Sediment-Off Cap | Station-7-(35-40) | Off Cap | 2,4′-DDE | <0.09 |
| 2-MONTH | 7 | 35-40 | Sample | Native Sediment-Off Cap | Station-7-(35-40) | Off Cap | 2,4′-DDT | <0.08 |
| 2-MONTH | 7 | 35-40 | Sample | Native Sediment-Off Cap | Station-7-(35-40) | Off Cap | 4,4′-DDD | <0.51 |
| 2-MONTH | 7 | 35-40 | Sample | Native Sediment-Off Cap | Station-7-(35-40) | Off Cap | 4,4′-DDT | <0.14 |
| 2-MONTH | 7 | 35-40 | Sample | Native Sediment-Off Cap | Station-7-(35-40) | Off Cap | 4,4′-DDE | <0.09 |
| 2-MONTH | 7 | 35-40 | Sample | Native Sediment-Off Cap | Station-7-(35-40) | Off Cap | Total DDX | <0.51 |
| 2-MONTH | 7 | 40-45 | Sample | Native Sediment-Off Cap | Station-7-(40-45) | Off Cap | 2,4′-DDD | <0.46 |
| 2-MONTH | 7 | 40-45 | Sample | Native Sediment-Off Cap | Station-7-(40-45) | Off Cap | 2,4′-DDE | <0.09 |
| 2-MONTH | 7 | 40-45 | Sample | Native Sediment-Off Cap | Station-7-(40-45) | Off Cap | 2,4′-DDT | <0.08 |
| 2-MONTH | 7 | 40-45 | Sample | Native Sediment-Off Cap | Station-7-(40-45) | Off Cap | 4,4′-DDD | <0.51 |
| 2-MONTH | 7 | 40-45 | Sample | Native Sediment-Off Cap | Station-7-(40-45) | Off Cap | 4,4′-DDT | <0.14 |
| 2-MONTH | 7 | 40-45 | Sample | Native Sediment-Off Cap | Station-7-(40-45) | Off Cap | 4,4′-DDE | <0.09 |
| 2-MONTH | 7 | 40-45 | Sample | Native Sediment-Off Cap | Station-7-(40-45) | Off Cap | Total DDX | <0.51 |
| 2-MONTH | 7 | 45-50 | Sample | Native Sediment-Off Cap | Station-7-(45-50) | Off Cap | 2,4′-DDD | <0.46 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 2-MONTH | 7 | 45-50 | Sample | Native Sediment-Off Cap | Station-7-(45-50) | Off Cap | 2,4′-DDE | <0.09 |
| 2-MONTH | 7 | 45-50 | Sample | Native Sediment-Off Cap | Station-7-(45-50) | Off Cap | 2,4′-DDT | <0.08 |
| 2-MONTH | 7 | 45-50 | Sample | Native Sediment-Off Cap | Station-7-(45-50) | Off Cap | 4,4′-DDD | <0.51 |
| 2-MONTH | 7 | 45-50 | Sample | Native Sediment-Off Cap | Station-7-(45-50) | Off Cap | 4,4′-DDT | <0.14 |
| 2-MONTH | 7 | 45-50 | Sample | Native Sediment-Off Cap | Station-7-(45-50) | Off Cap | 4,4′-DDE | <0.09 |
| 2-MONTH | 7 | 45-50 | Sample | Native Sediment-Off Cap | Station-7-(45-50) | Off Cap | Total DDX | <0.51 |
| 2-MONTH | 7 | 50-55 | Sample | Native Sediment-Off Cap | Station-7-(50-55) | Off Cap | 2,4′-DDD | <0.46 |
| 2-MONTH | 7 | 50-55 | Sample | Native Sediment-Off Cap | Station-7-(50-55) | Off Cap | 2,4′-DDE | <0.09 |
| 2-MONTH | 7 | 50-55 | Sample | Native Sediment-Off Cap | Station-7-(50-55) | Off Cap | 2,4′-DDT | <0.08 |
| 2-MONTH | 7 | 50-55 | Sample | Native Sediment-Off Cap | Station-7-(50-55) | Off Cap | 4,4′-DDD | <0.51 |
| 2-MONTH | 7 | 50-55 | Sample | Native Sediment-Off Cap | Station-7-(50-55) | Off Cap | 4,4′-DDT | <0.14 |
| 2-MONTH | 7 | 50-55 | Sample | Native Sediment-Off Cap | Station-7-(50-55) | Off Cap | 4,4′-DDE | <0.09 |
| 2-MONTH | 7 | 50-55 | Sample | Native Sediment-Off Cap | Station-7-(50-55) | Off Cap | Total DDX | <0.51 |
| 2-MONTH | 7 | 5-10 | Sample | Native Sediment-Off Cap | Station-7-(5-10) | Off Cap | 2,4′-DDD | <0.45 |
| 2-MONTH | 7 | 5-10 | Sample | Native Sediment-Off Cap | Station-7-(5-10) | Off Cap | 2,4′-DDE | <0.09 |
| 2-MONTH | 7 | 5-10 | Sample | Native Sediment-Off Cap | Station-7-(5-10) | Off Cap | 2,4′-DDT | <0.08 |
| 2-MONTH | 7 | 5-10 | Sample | Native Sediment-Off Cap | Station-7-(5-10) | Off Cap | 4,4′-DDD | <0.49 |
| 2-MONTH | 7 | 5-10 | Sample | Native Sediment-Off Cap | Station-7-(5-10) | Off Cap | 4,4′-DDT | <0.15 |
| 2-MONTH | 7 | 5-10 | Sample | Native Sediment-Off Cap | Station-7-(5-10) | Off Cap | 4,4′-DDE | <0.09 |
| 2-MONTH | 7 | 5-10 | Sample | Native Sediment-Off Cap | Station-7-(5-10) | Off Cap | Total DDX | <0.49 |
| 2-MONTH | 7 | 55-60 | Sample | Native Sediment-Off Cap | Station-7-(55-60) | Off Cap | 2,4′-DDD | <0.46 |
| 2-MONTH | 7 | 55-60 | Sample | Native Sediment-Off Cap | Station-7-(55-60) | Off Cap | 2,4′-DDE | 0.08 |
| 2-MONTH | 7 | 55-60 | Sample | Native Sediment-Off Cap | Station-7-(55-60) | Off Cap | 2,4′-DDT | <0.08 |
| 2-MONTH | 7 | 55-60 | Sample | Native Sediment-Off Cap | Station-7-(55-60) | Off Cap | 4,4′-DDD | <0.51 |
| 2-MONTH | 7 | 55-60 | Sample | Native Sediment-Off Cap | Station-7-(55-60) | Off Cap | 4,4′-DDT | <0.14 |
| 2-MONTH | 7 | 55-60 | Sample | Native Sediment-Off Cap | Station-7-(55-60) | Off Cap | 4,4′-DDE | <0.09 |
| 2-MONTH | 7 | 55-60 | Sample | Native Sediment-Off Cap | Station-7-(55-60) | Off Cap | Total DDX | 0.08 |
| 14-MONTH | 1 | 0-5 | Sample | Cap Material | Site 1 (0-5cm) | On Cap | 4,4′-DDE | <0.08 |
| 14-MONTH | 1 | 0-5 | Sample | Cap Material | Site 1 (0-5cm) | On Cap | 4,4′-DDT | <0.11 |
| 14-MONTH | 1 | 0-5 | Sample | Cap Material | Site 1 (0-5cm) | On Cap | 2,4′-DDD | <0.31 |
| 14-MONTH | 1 | 0-5 | Sample | Cap Material | Site 1 (0-5cm) | On Cap | 2,4′-DDE | <0.08 |
| 14-MONTH | 1 | 0-5 | Sample | Cap Material | Site 1 (0-5cm) | On Cap | 2,4′-DDT | <0.07 |
| 14-MONTH | 1 | 0-5 | Sample | Cap Material | Site 1 (0-5cm) | On Cap | 4,4′-DDD | 0.41 |
| 14-MONTH | 1 | 0-5 | Sample | Cap Material | Site 1 (0-5cm) | On Cap | Total DDX | 0.41 |
| 14-MONTH | 1 | 10-15 | Sample | Cap Material | Site 1 (10-15cm) | On Cap | 4,4′-DDE | <0.08 |
| 14-MONTH | 1 | 10-15 | Sample | Cap Material | Site 1 (10-15cm) | On Cap | 4,4′-DDT | <0.11 |
| 14-MONTH | 1 | 10-15 | Sample | Cap Material | Site 1 (10-15cm) | On Cap | 2,4′-DDD | <0.31 |
| 14-MONTH | 1 | 10-15 | Sample | Cap Material | Site 1 (10-15cm) | On Cap | 2,4′-DDE | <0.08 |
| 14-MONTH | 1 | 10-15 | Sample | Cap Material | Site 1 (10-15cm) | On Cap | 2,4′-DDT | <0.07 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 14-MONTH | 1 | 10-15 | Sample | Cap Material | Site 1 (10-15cm) | On Cap | 4,4´-DDD | <0.34 |
| 14-MONTH | 1 | 10-15 | Sample | Cap Material | Site 1 (10-15cm) | On Cap | Total DDX | <0.341 |
| 14-MONTH | 1 | 15-20 | Sample | Native Sediment | Site 1 (15-20cm) | On Cap | 4,4´-DDE | <0.03 |
| 14-MONTH | 1 | 15-20 | Sample | Native Sediment | Site 1 (15-20cm) | On Cap | 4,4´-DDT | <0.06 |
| 14-MONTH | 1 | 15-20 | Sample | Native Sediment | Site 1 (15-20cm) | On Cap | 2,4´-DDD | <0.25 |
| 14-MONTH | 1 | 15-20 | Sample | Native Sediment | Site 1 (15-20cm) | On Cap | 2,4´-DDE | <0.03 |
| 14-MONTH | 1 | 15-20 | Sample | Native Sediment | Site 1 (15-20cm) | On Cap | 2,4´-DDT | <0.03 |
| 14-MONTH | 1 | 15-20 | Sample | Native Sediment | Site 1 (15-20cm) | On Cap | 4,4´-DDD | <0.28 |
| 14-MONTH | 1 | 15-20 | Sample | Native Sediment | Site 1 (15-20cm) | On Cap | Total DDX | <0.277 |
| 14-MONTH | 1 | 20-25 | Sample | Native Sediment | Site 1 (20-25cm) | On Cap | 4,4´-DDE | <0.03 |
| 14-MONTH | 1 | 20-25 | Sample | Native Sediment | Site 1 (20-25cm) | On Cap | 4,4´-DDT | <0.06 |
| 14-MONTH | 1 | 20-25 | Sample | Native Sediment | Site 1 (20-25cm) | On Cap | 2,4´-DDD | <0.25 |
| 14-MONTH | 1 | 20-25 | Sample | Native Sediment | Site 1 (20-25cm) | On Cap | 2,4´-DDE | <0.03 |
| 14-MONTH | 1 | 20-25 | Sample | Native Sediment | Site 1 (20-25cm) | On Cap | 2,4´-DDT | <0.03 |
| 14-MONTH | 1 | 20-25 | Sample | Native Sediment | Site 1 (20-25cm) | On Cap | 4,4´-DDD | 0.44 |
| 14-MONTH | 1 | 20-25 | Sample | Native Sediment | Site 1 (20-25cm) | On Cap | Total DDX | 0.44 |
| 14-MONTH | 2 | 0-5 | Sample | Cap Material | Site 2 (0-5cm) | On Cap | 4,4´-DDE | <0.05 |
| 14-MONTH | 2 | 0-5 | Sample | Cap Material | Site 2 (0-5cm) | On Cap | 4,4´-DDT | <0.08 |
| 14-MONTH | 2 | 0-5 | Sample | Cap Material | Site 2 (0-5cm) | On Cap | 2,4´-DDD | <0.27 |
| 14-MONTH | 2 | 0-5 | Sample | Cap Material | Site 2 (0-5cm) | On Cap | 2,4´-DDE | <0.05 |
| 14-MONTH | 2 | 0-5 | Sample | Cap Material | Site 2 (0-5cm) | On Cap | 2,4´-DDT | <0.05 |
| 14-MONTH | 2 | 0-5 | Sample | Cap Material | Site 2 (0-5cm) | On Cap | 4,4´-DDD | 0.36 |
| 14-MONTH | 2 | 0-5 | Sample | Cap Material | Site 2 (0-5cm) | On Cap | Total DDX | 0.36 |
| 14-MONTH | 2 | 10-15 | Sample | Cap Material | Site 2 (10-15cm) | On Cap | 4,4´-DDE | 0.09 |
| 14-MONTH | 2 | 10-15 | Sample | Cap Material | Site 2 (10-15cm) | On Cap | 4,4´-DDT | 0.24 |
| 14-MONTH | 2 | 10-15 | Sample | Cap Material | Site 2 (10-15cm) | On Cap | 2,4´-DDD | <0.27 |
| 14-MONTH | 2 | 10-15 | Sample | Cap Material | Site 2 (10-15cm) | On Cap | 2,4´-DDE | <0.05 |
| 14-MONTH | 2 | 10-15 | Sample | Cap Material | Site 2 (10-15cm) | On Cap | 2,4´-DDT | <0.05 |
| 14-MONTH | 2 | 10-15 | Sample | Cap Material | Site 2 (10-15cm) | On Cap | 4,4´-DDD | 1.38 |
| 14-MONTH | 2 | 10-15 | Sample | Cap Material | Site 2 (10-15cm) | On Cap | Total DDX | 1.72 |
| 14-MONTH | 2 | 15-20 | Sample | Native Sediment | Site 2 (15-20cm) | On Cap | 4,4´-DDE | <0.03 |
| 14-MONTH | 2 | 15-20 | Sample | Native Sediment | Site 2 (15-20cm) | On Cap | 4,4´-DDT | <0.07 |
| 14-MONTH | 2 | 15-20 | Sample | Native Sediment | Site 2 (15-20cm) | On Cap | 2,4´-DDD | <0.26 |
| 14-MONTH | 2 | 15-20 | Sample | Native Sediment | Site 2 (15-20cm) | On Cap | 2,4´-DDE | <0.03 |
| 14-MONTH | 2 | 15-20 | Sample | Native Sediment | Site 2 (15-20cm) | On Cap | 2,4´-DDT | <0.03 |
| 14-MONTH | 2 | 15-20 | Sample | Native Sediment | Site 2 (15-20cm) | On Cap | 4,4´-DDD | 0.93 |
| 14-MONTH | 2 | 15-20 | Sample | Transition Depth | Site 2 (15-20cm) | On Cap | Total DDX | 0.93 |
| 14-MONTH | 2 | 20-25 | Sample | Native Sediment | Site 2 (20-25cm) | On Cap | 4,4´-DDE | 0.04 |
| 14-MONTH | 2 | 20-25 | Sample | Native Sediment | Site 2 (20-25cm) | On Cap | 4,4´-DDT | <0.07 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 14-MONTH | 2 | 20-25 | Sample | Native Sediment | Site 2 (20-25cm) | On Cap | 2,4′-DDD | <0.26 |
| 14-MONTH | 2 | 20-25 | Sample | Native Sediment | Site 2 (20-25cm) | On Cap | 2,4′-DDE | <0.03 |
| 14-MONTH | 2 | 20-25 | Sample | Native Sediment | Site 2 (20-25cm) | On Cap | 2,4′-DDT | <0.03 |
| 14-MONTH | 2 | 20-25 | Sample | Native Sediment | Site 2 (20-25cm) | On Cap | 4,4′-DDD | 1.10 |
| 14-MONTH | 2 | 20-25 | Sample | Native Sediment | Site 2 (20-25cm) | On Cap | Total DDX | 1.14 |
| 14-MONTH | 3 | 0-5 | Primary | Cap Material | Site 3 (0-5cm) | On Cap | 4,4′-DDE | 0.11 |
| 14-MONTH | 3 | 0-5 | Primary | Cap Material | Site 3 (0-5cm) | On Cap | 4,4′-DDT | <0.09 |
| 14-MONTH | 3 | 0-5 | Primary | Cap Material | Site 3 (0-5cm) | On Cap | 2,4′-DDD | <0.28 |
| 14-MONTH | 3 | 0-5 | Primary | Cap Material | Site 3 (0-5cm) | On Cap | 2,4′-DDE | <0.06 |
| 14-MONTH | 3 | 0-5 | Primary | Cap Material | Site 3 (0-5cm) | On Cap | 2,4′-DDT | <0.06 |
| 14-MONTH | 3 | 0-5 | Primary | Cap Material | Site 3 (0-5cm) | On Cap | 4,4′-DDD | 1.59 |
| 14-MONTH | 3 | 0-5 | Primary | Cap Material | Site 3 (0-5cm) | On Cap | Total DDX | 1.70 |
| 14-MONTH | 3 | 0-5 | Sample | Cap Material | Site 3 (0-5cm)-Avg | On Cap | 4,4′-DDE | 0.07 |
| 14-MONTH | 3 | 0-5 | Sample | Cap Material | Site 3 (0-5cm)-Avg | On Cap | 4,4′-DDT | <0.1 |
| 14-MONTH | 3 | 0-5 | Sample | Cap Material | Site 3 (0-5cm)-Avg | On Cap | 2,4′-DDD | <0.29 |
| 14-MONTH | 3 | 0-5 | Sample | Cap Material | Site 3 (0-5cm)-Avg | On Cap | 2,4′-DDE | <0.07 |
| 14-MONTH | 3 | 0-5 | Sample | Cap Material | Site 3 (0-5cm)-Avg | On Cap | 2,4′-DDT | <0.07 |
| 14-MONTH | 3 | 0-5 | Sample | Cap Material | Site 3 (0-5cm)-Avg | On Cap | 4,4′-DDD | 1.31 |
| 14-MONTH | 3 | 0-5 | Sample | Cap Material | Site 3 (0-5cm)-Avg | On Cap | Total DDX | 1.38 |
| 14-MONTH | 3 | 20-25 | Primary | Native Sediment | Site 3 (20-25cm) | On Cap | 4,4′-DDE | 0.10 |
| 14-MONTH | 3 | 20-25 | Primary | Native Sediment | Site 3 (20-25cm) | On Cap | 4,4′-DDT | <0.08 |
| 14-MONTH | 3 | 20-25 | Primary | Native Sediment | Site 3 (20-25cm) | On Cap | 2,4′-DDD | <0.27 |
| 14-MONTH | 3 | 20-25 | Primary | Native Sediment | Site 3 (20-25cm) | On Cap | 2,4′-DDE | <0.05 |
| 14-MONTH | 3 | 20-25 | Primary | Native Sediment | Site 3 (20-25cm) | On Cap | 2,4′-DDT | <0.05 |
| 14-MONTH | 3 | 20-25 | Primary | Native Sediment | Site 3 (20-25cm) | On Cap | 4,4′-DDD | 2.01 |
| 14-MONTH | 3 | 20-25 | Primary | Transition Depth | Site 3 (20-25cm) | On Cap | Total DDX | 2.11 |
| 14-MONTH | 3 | 20-25 | Sample | Native Sediment | Site 3 (20-25cm)-Avg | On Cap | 4,4′-DDE | 0.07 |
| 14-MONTH | 3 | 20-25 | Sample | Native Sediment | Site 3 (20-25cm)-Avg | On Cap | 4,4′-DDT | <0.1 |
| 14-MONTH | 3 | 20-25 | Sample | Native Sediment | Site 3 (20-25cm)-Avg | On Cap | 2,4′-DDD | <0.3 |
| 14-MONTH | 3 | 20-25 | Sample | Native Sediment | Site 3 (20-25cm)-Avg | On Cap | 2,4′-DDE | <0.07 |
| 14-MONTH | 3 | 20-25 | Sample | Native Sediment | Site 3 (20-25cm)-Avg | On Cap | 2,4′-DDT | <0.06 |
| 14-MONTH | 3 | 20-25 | Sample | Native Sediment | Site 3 (20-25cm)-Avg | On Cap | 4,4′-DDD | 1.37 |
| 14-MONTH | 3 | 20-25 | Sample | Transition Depth | Site 3 (20-25cm)-Avg | On Cap | Total DDX | 1.44 |
| 14-MONTH | 3 | 25-30 | Primary | Native Sediment | Site 3 (25-30cm) | On Cap | 4,4′-DDE | <0.05 |
| 14-MONTH | 3 | 25-30 | Primary | Native Sediment | Site 3 (25-30cm) | On Cap | 4,4′-DDT | <0.08 |
| 14-MONTH | 3 | 25-30 | Primary | Native Sediment | Site 3 (25-30cm) | On Cap | 2,4′-DDD | <0.27 |
| 14-MONTH | 3 | 25-30 | Primary | Native Sediment | Site 3 (25-30cm) | On Cap | 2,4′-DDE | <0.05 |
| 14-MONTH | 3 | 25-30 | Primary | Native Sediment | Site 3 (25-30cm) | On Cap | 2,4′-DDT | <0.05 |
| 14-MONTH | 3 | 25-30 | Primary | Native Sediment | Site 3 (25-30cm) | On Cap | 4,4′-DDD | 0.65 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 14-MONTH | 3 | 25-30 | Primary | Native Sediment | Site 3 (25-30cm) | On Cap | Total DDX | 0.65 |
| 14-MONTH | 3 | 25-30 | Sample | Native Sediment | Site 3 (25-30cm)-Avg | On Cap | 4,4′-DDE | <0.07 |
| 14-MONTH | 3 | 25-30 | Sample | Native Sediment | Site 3 (25-30cm)-Avg | On Cap | 4,4′-DDT | <0.1 |
| 14-MONTH | 3 | 25-30 | Sample | Native Sediment | Site 3 (25-30cm)-Avg | On Cap | 2,4′-DDD | <0.3 |
| 14-MONTH | 3 | 25-30 | Sample | Native Sediment | Site 3 (25-30cm)-Avg | On Cap | 2,4′-DDE | <0.07 |
| 14-MONTH | 3 | 25-30 | Sample | Native Sediment | Site 3 (25-30cm)-Avg | On Cap | 2,4′-DDT | <0.06 |
| 14-MONTH | 3 | 25-30 | Sample | Native Sediment | Site 3 (25-30cm)-Avg | On Cap | 4,4′-DDD | 0.66 |
| 14-MONTH | 3 | 25-30 | Sample | Native Sediment | Site 3 (25-30cm)-Avg | On Cap | Total DDX | 0.66 |
| 14-MONTH | 3 | 0-5 | Duplicate | Cap Material | Site 3 duo (0-5cm) | On Cap | 4,4′-DDE | <0.07 |
| 14-MONTH | 3 | 0-5 | Duplicate | Cap Material | Site 3 duo (0-5cm) | On Cap | 4,4′-DDT | <0.1 |
| 14-MONTH | 3 | 0-5 | Duplicate | Cap Material | Site 3 duo (0-5cm) | On Cap | 2,4′-DDD | <0.29 |
| 14-MONTH | 3 | 0-5 | Duplicate | Cap Material | Site 3 duo (0-5cm) | On Cap | 2,4′-DDE | <0.07 |
| 14-MONTH | 3 | 0-5 | Duplicate | Cap Material | Site 3 duo (0-5cm) | On Cap | 2,4′-DDT | <0.07 |
| 14-MONTH | 3 | 0-5 | Duplicate | Cap Material | Site 3 duo (0-5cm) | On Cap | 4,4′-DDD | 1.03 |
| 14-MONTH | 3 | 0-5 | Duplicate | Cap Material | Site 3 duo (0-5cm) | On Cap | Total DDX | 1.03 |
| 14-MONTH | 3 | 20-25 | Duplicate | Native Sediment | Site 3 duo (20-25cm) | On Cap | 4,4′-DDE | <0.07 |
| 14-MONTH | 3 | 20-25 | Duplicate | Native Sediment | Site 3 duo (20-25cm) | On Cap | 4,4′-DDT | <0.1 |
| 14-MONTH | 3 | 20-25 | Duplicate | Native Sediment | Site 3 duo (20-25cm) | On Cap | 2,4′-DDD | <0.3 |
| 14-MONTH | 3 | 20-25 | Duplicate | Native Sediment | Site 3 duo (20-25cm) | On Cap | 2,4′-DDE | <0.07 |
| 14-MONTH | 3 | 20-25 | Duplicate | Native Sediment | Site 3 duo (20-25cm) | On Cap | 2,4′-DDT | <0.06 |
| 14-MONTH | 3 | 20-25 | Duplicate | Native Sediment | Site 3 duo (20-25cm) | On Cap | 4,4′-DDD | 0.74 |
| 14-MONTH | 3 | 20-25 | Duplicate | Transition Depth | Site 3 duo (20-25cm) | On Cap | Total DDX | 0.74 |
| 14-MONTH | 3 | 25-30 | Duplicate | Native Sediment | Site 3 duo (25-30cm) | On Cap | 4,4′-DDE | <0.07 |
| 14-MONTH | 3 | 25-30 | Duplicate | Native Sediment | Site 3 duo (25-30cm) | On Cap | 4,4′-DDT | <0.1 |
| 14-MONTH | 3 | 25-30 | Duplicate | Native Sediment | Site 3 duo (25-30cm) | On Cap | 2,4′-DDD | <0.3 |
| 14-MONTH | 3 | 25-30 | Duplicate | Native Sediment | Site 3 duo (25-30cm) | On Cap | 2,4′-DDE | <0.07 |
| 14-MONTH | 3 | 25-30 | Duplicate | Native Sediment | Site 3 duo (25-30cm) | On Cap | 2,4′-DDT | <0.06 |
| 14-MONTH | 3 | 25-30 | Duplicate | Native Sediment | Site 3 duo (25-30cm) | On Cap | 4,4′-DDD | 0.67 |
| 14-MONTH | 3 | 25-30 | Duplicate | Native Sediment | Site 3 duo (25-30cm) | On Cap | Total DDX | 0.67 |
| 14-MONTH | 3 | 30-35 | Sample | Native Sediment | Site 3 duo (30-35cm) | On Cap | 4,4′-DDE | <0.05 |
| 14-MONTH | 3 | 30-35 | Sample | Native Sediment | Site 3 duo (30-35cm) | On Cap | 4,4′-DDT | <0.09 |
| 14-MONTH | 3 | 30-35 | Sample | Native Sediment | Site 3 duo (30-35cm) | On Cap | 2,4′-DDD | <0.27 |
| 14-MONTH | 3 | 30-35 | Sample | Native Sediment | Site 3 duo (30-35cm) | On Cap | 2,4′-DDE | <0.05 |
| 14-MONTH | 3 | 30-35 | Sample | Native Sediment | Site 3 duo (30-35cm) | On Cap | 2,4′-DDT | <0.05 |
| 14-MONTH | 3 | 30-35 | Sample | Native Sediment | Site 3 duo (30-35cm) | On Cap | 4,4′-DDD | 0.65 |
| 14-MONTH | 3 | 30-35 | Sample | Native Sediment | Site 3 duo (30-35cm) | On Cap | Total DDX | 0.65 |
| 14-MONTH | 3 | 31-36 | Sample | Native Sediment | Site 3 duo (31-36cm) | On Cap | 4,4′-DDE | <0.05 |
| 14-MONTH | 3 | 31-36 | Sample | Native Sediment | Site 3 duo (31-36cm) | On Cap | 4,4′-DDT | <0.09 |
| 14-MONTH | 3 | 31-36 | Sample | Native Sediment | Site 3 duo (31-36cm) | On Cap | 2,4′-DDD | <0.27 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 14-MONTH | 3 | 31-36 | Sample | Native Sediment | Site 3 duo (31-36cm) | On Cap | 2,4′-DDE | <0.05 |
| 14-MONTH | 3 | 31-36 | Sample | Native Sediment | Site 3 duo (31-36cm) | On Cap | 2,4′-DDT | <0.05 |
| 14-MONTH | 3 | 31-36 | Sample | Native Sediment | Site 3 duo (31-36cm) | On Cap | 4,4′-DDD | 1.01 |
| 14-MONTH | 3 | 31-36 | Sample | Native Sediment | Site 3 duo (31-36cm) | On Cap | Total DDX | 1.01 |
| 14-MONTH | 4 | 0-5 | Sample | Cap Material | Site 4 (0-5cm) | On Cap | 4,4′-DDE | 0.11 |
| 14-MONTH | 4 | 0-5 | Sample | Cap Material | Site 4 (0-5cm) | On Cap | 4,4′-DDT | <0.08 |
| 14-MONTH | 4 | 0-5 | Sample | Cap Material | Site 4 (0-5cm) | On Cap | 2,4′-DDD | <0.28 |
| 14-MONTH | 4 | 0-5 | Sample | Cap Material | Site 4 (0-5cm) | On Cap | 2,4′-DDE | <0.05 |
| 14-MONTH | 4 | 0-5 | Sample | Cap Material | Site 4 (0-5cm) | On Cap | 2,4′-DDT | <0.05 |
| 14-MONTH | 4 | 0-5 | Sample | Cap Material | Site 4 (0-5cm) | On Cap | 4,4′-DDD | 0.82 |
| 14-MONTH | 4 | 0-5 | Sample | Cap Material | Site 4 (0-5cm) | On Cap | Total DDX | 0.93 |
| 14-MONTH | 4 | 36-41 | Sample | Native Sediment | Site 4 (36-41cm) | On Cap | 4,4′-DDE | <0.07 |
| 14-MONTH | 4 | 36-41 | Sample | Native Sediment | Site 4 (36-41cm) | On Cap | 4,4′-DDT | <0.12 |
| 14-MONTH | 4 | 36-41 | Sample | Native Sediment | Site 4 (36-41cm) | On Cap | 2,4′-DDD | <0.34 |
| 14-MONTH | 4 | 36-41 | Sample | Native Sediment | Site 4 (36-41cm) | On Cap | 2,4′-DDE | <0.08 |
| 14-MONTH | 4 | 36-41 | Sample | Native Sediment | Site 4 (36-41cm) | On Cap | 2,4′-DDT | <0.07 |
| 14-MONTH | 4 | 36-41 | Sample | Native Sediment | Site 4 (36-41cm) | On Cap | 4,4′-DDD | 1.13 |
| 14-MONTH | 4 | 36-41 | Sample | Transition Depth | Site 4 (36-41cm) | On Cap | Total DDX | 1.13 |
| 14-MONTH | 4 | 41-46 | Sample | Native Sediment | Site 4 (41-46cm) | On Cap | 4,4′-DDE | 0.10 |
| 14-MONTH | 4 | 41-46 | Sample | Native Sediment | Site 4 (41-46cm) | On Cap | 4,4′-DDT | <0.12 |
| 14-MONTH | 4 | 41-46 | Sample | Native Sediment | Site 4 (41-46cm) | On Cap | 2,4′-DDD | <0.34 |
| 14-MONTH | 4 | 41-46 | Sample | Native Sediment | Site 4 (41-46cm) | On Cap | 2,4′-DDE | <0.08 |
| 14-MONTH | 4 | 41-46 | Sample | Native Sediment | Site 4 (41-46cm) | On Cap | 2,4′-DDT | <0.07 |
| 14-MONTH | 4 | 41-46 | Sample | Native Sediment | Site 4 (41-46cm) | On Cap | 4,4′-DDD | 0.83 |
| 14-MONTH | 4 | 41-46 | Sample | Native Sediment | Site 4 (41-46cm) | On Cap | Total DDX | 0.93 |
| 14-MONTH | 4 | 46-54 | Sample | Native Sediment | Site 4 (46-54cm) | On Cap | 4,4′-DDE | 0.03 |
| 14-MONTH | 4 | 46-54 | Sample | Native Sediment | Site 4 (46-54cm) | On Cap | 4,4′-DDT | <0.05 |
| 14-MONTH | 4 | 46-54 | Sample | Native Sediment | Site 4 (46-54cm) | On Cap | 2,4′-DDD | <0.17 |
| 14-MONTH | 4 | 46-54 | Sample | Native Sediment | Site 4 (46-54cm) | On Cap | 2,4′-DDE | <0.03 |
| 14-MONTH | 4 | 46-54 | Sample | Native Sediment | Site 4 (46-54cm) | On Cap | 2,4′-DDT | <0.03 |
| 14-MONTH | 4 | 46-54 | Sample | Native Sediment | Site 4 (46-54cm) | On Cap | 4,4′-DDD | 0.33 |
| 14-MONTH | 4 | 46-54 | Sample | Native Sediment | Site 4 (46-54cm) | On Cap | Total DDX | 0.37 |
| 14-MONTH | 5 | 0-5 | Sample | Cap Material | Site 5 (0-5cm) | On Cap | 4,4′-DDE | 0.07 |
| 14-MONTH | 5 | 0-5 | Sample | Cap Material | Site 5 (0-5cm) | On Cap | 4,4′-DDT | <0.08 |
| 14-MONTH | 5 | 0-5 | Sample | Cap Material | Site 5 (0-5cm) | On Cap | 2,4′-DDD | <0.28 |
| 14-MONTH | 5 | 0-5 | Sample | Cap Material | Site 5 (0-5cm) | On Cap | 2,4′-DDE | <0.05 |
| 14-MONTH | 5 | 0-5 | Sample | Cap Material | Site 5 (0-5cm) | On Cap | 2,4′-DDT | <0.04 |
| 14-MONTH | 5 | 0-5 | Sample | Cap Material | Site 5 (0-5cm) | On Cap | 4,4′-DDD | 0.56 |
| 14-MONTH | 5 | 0-5 | Sample | Cap Material | Site 5 (0-5cm) | On Cap | Total DDX | 0.63 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 14-MONTH | 5 | 37-42 | Sample | Native Sediment | Site 5 (37-42cm) | On Cap | 4,4´-DDE | <0.05 |
| 14-MONTH | 5 | 37-42 | Sample | Native Sediment | Site 5 (37-42cm) | On Cap | 4,4´-DDT | <0.08 |
| 14-MONTH | 5 | 37-42 | Sample | Native Sediment | Site 5 (37-42cm) | On Cap | 2,4´-DDD | <0.28 |
| 14-MONTH | 5 | 37-42 | Sample | Native Sediment | Site 5 (37-42cm) | On Cap | 2,4´-DDE | <0.05 |
| 14-MONTH | 5 | 37-42 | Sample | Native Sediment | Site 5 (37-42cm) | On Cap | 2,4´-DDT | <0.05 |
| 14-MONTH | 5 | 37-42 | Sample | Native Sediment | Site 5 (37-42cm) | On Cap | 4,4´-DDD | <0.32 |
| 14-MONTH | 5 | 37-42 | Sample | Transition Depth | Site 5 (37-42cm) | On Cap | Total DDX | <0.316 |
| 14-MONTH | 5 | 42-47 | Sample | Native Sediment | Site 5 (42-47cm) | On Cap | 4,4´-DDE | <0.05 |
| 14-MONTH | 5 | 42-47 | Sample | Native Sediment | Site 5 (42-47cm) | On Cap | 4,4´-DDT | <0.08 |
| 14-MONTH | 5 | 42-47 | Sample | Native Sediment | Site 5 (42-47cm) | On Cap | 2,4´-DDD | <0.28 |
| 14-MONTH | 5 | 42-47 | Sample | Native Sediment | Site 5 (42-47cm) | On Cap | 2,4´-DDE | <0.05 |
| 14-MONTH | 5 | 42-47 | Sample | Native Sediment | Site 5 (42-47cm) | On Cap | 2,4´-DDT | <0.05 |
| 14-MONTH | 5 | 42-47 | Sample | Native Sediment | Site 5 (42-47cm) | On Cap | 4,4´-DDD | <0.32 |
| 14-MONTH | 5 | 42-47 | Sample | Native Sediment | Site 5 (42-47cm) | On Cap | Total DDX | <0.316 |
| 14-MONTH | 5 | 47-52 | Sample | Native Sediment | Site 5 (47-52cm)-0.5ml | On Cap | 4,4´-DDE | <0.08 |
| 14-MONTH | 5 | 47-52 | Sample | Native Sediment | Site 5 (47-52cm)-0.5ml | On Cap | 4,4´-DDT | <0.12 |
| 14-MONTH | 5 | 47-52 | Sample | Native Sediment | Site 5 (47-52cm)-0.5ml | On Cap | 2,4´-DDD | <0.35 |
| 14-MONTH | 5 | 47-52 | Sample | Native Sediment | Site 5 (47-52cm)-0.5ml | On Cap | 2,4´-DDE | <0.08 |
| 14-MONTH | 5 | 47-52 | Sample | Native Sediment | Site 5 (47-52cm)-0.5ml | On Cap | 2,4´-DDT | <0.07 |
| 14-MONTH | 5 | 47-52 | Sample | Native Sediment | Site 5 (47-52cm)-0.5ml | On Cap | 4,4´-DDD | <0.39 |
| 14-MONTH | 5 | 47-52 | Sample | Native Sediment | Site 5 (47-52cm)-0.5ml | On Cap | Total DDX | <0.39 |
| 14-MONTH | 6 | 0-10 | Sample | Native Sediment-Off Cap | Site 6 (0-10cm)-1ml | Off Cap | 4,4´-DDE | 0.02 |
| 14-MONTH | 6 | 0-10 | Sample | Native Sediment-Off Cap | Site 6 (0-10cm)-1ml | Off Cap | 4,4´-DDT | <0.04 |
| 14-MONTH | 6 | 0-10 | Sample | Native Sediment-Off Cap | Site 6 (0-10cm)-1ml | Off Cap | 2,4´-DDD | <0.13 |
| 14-MONTH | 6 | 0-10 | Sample | Native Sediment-Off Cap | Site 6 (0-10cm)-1ml | Off Cap | 2,4´-DDE | <0.02 |
| 14-MONTH | 6 | 0-10 | Sample | Native Sediment-Off Cap | Site 6 (0-10cm)-1ml | Off Cap | 2,4´-DDT | <0.01 |
| 14-MONTH | 6 | 0-10 | Sample | Native Sediment-Off Cap | Site 6 (0-10cm)-1ml | Off Cap | 4,4´-DDD | 0.17 |
| 14-MONTH | 6 | 0-10 | Sample | Native Sediment-Off Cap | Site 6 (0-10cm)-1ml | Off Cap | Total DDX | 0.19 |
| 14-MONTH | 7 | 0-10 | Sample | Native Sediment-Off Cap | Site 7 (0-10cm)-1ml | Off Cap | 4,4´-DDE | 0.03 |
| 14-MONTH | 7 | 0-10 | Sample | Native Sediment-Off Cap | Site 7 (0-10cm)-1ml | Off Cap | 4,4´-DDT | <0.04 |
| 14-MONTH | 7 | 0-10 | Sample | Native Sediment-Off Cap | Site 7 (0-10cm)-1ml | Off Cap | 2,4´-DDD | <0.13 |
| 14-MONTH | 7 | 0-10 | Sample | Native Sediment-Off Cap | Site 7 (0-10cm)-1ml | Off Cap | 2,4´-DDE | <0.02 |
| 14-MONTH | 7 | 0-10 | Sample | Native Sediment-Off Cap | Site 7 (0-10cm)-1ml | Off Cap | 2,4´-DDT | <0.02 |
| 14-MONTH | 7 | 0-10 | Sample | Native Sediment-Off Cap | Site 7 (0-10cm)-1ml | Off Cap | 4,4´-DDD | <0.15 |
| 14-MONTH | 7 | 0-10 | Sample | Native Sediment-Off Cap | Site 7 (0-10cm)-1ml | Off Cap | Total DDX | 0.03 |
| 25-MONTH | 1 | 10.5-15.5 | Sample | Native Sediment | STN 1 1A+1B 10.5-15.5 cm | On Cap | 4,4´-DDE | 0.07 |
| 25-MONTH | 1 | 10.5-15.5 | Sample | Native Sediment | STN 1 1A+1B 10.5-15.5 cm | On Cap | 4,4´-DDT | <0.027 |
| 25-MONTH | 1 | 10.5-15.5 | Sample | Native Sediment | STN 1 1A+1B 10.5-15.5 cm | On Cap | 2,4´-DDD | 0.12 |
| 25-MONTH | 1 | 10.5-15.5 | Sample | Native Sediment | STN 1 1A+1B 10.5-15.5 cm | On Cap | 2,4´-DDE | <0.016 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 25-MONTH | 1 | 10.5-15.5 | Sample | Native Sediment | STN 1 1A+1B 10.5-15.5 cm | On Cap | 2,4´-DDT | <0.015 |
| 25-MONTH | 1 | 10.5-15.5 | Sample | Native Sediment | STN 1 1A+1B 10.5-15.5 cm | On Cap | 4,4´-DDD | 0.34 |
| 25-MONTH | 1 | 10.5-15.5 | Sample | Transition Depth | STN 1 1A+1B 10.5-15.5 cm | On Cap | Total DDX | 0.54 |
| 25-MONTH | 1 | 15.5-20.5 | Sample | Native Sediment | STN 1 1A+1B 15.5-20.5 cm | On Cap | 4,4´-DDE | 0.06 |
| 25-MONTH | 1 | 15.5-20.5 | Sample | Native Sediment | STN 1 1A+1B 15.5-20.5 cm | On Cap | 4,4´-DDT | <0.027 |
| 25-MONTH | 1 | 15.5-20.5 | Sample | Native Sediment | STN 1 1A+1B 15.5-20.5 cm | On Cap | 2,4´-DDD | 0.12 |
| 25-MONTH | 1 | 15.5-20.5 | Sample | Native Sediment | STN 1 1A+1B 15.5-20.5 cm | On Cap | 2,4´-DDE | <0.016 |
| 25-MONTH | 1 | 15.5-20.5 | Sample | Native Sediment | STN 1 1A+1B 15.5-20.5 cm | On Cap | 2,4´-DDT | <0.015 |
| 25-MONTH | 1 | 15.5-20.5 | Sample | Native Sediment | STN 1 1A+1B 15.5-20.5 cm | On Cap | 4,4´-DDD | 0.27 |
| 25-MONTH | 1 | 15.5-20.5 | Sample | Native Sediment | STN 1 1A+1B 15.5-20.5 cm | On Cap | Total DDX | 0.46 |
| 25-MONTH | 1 | 20.5-25.5 | Sample | Native Sediment | STN 1 1A+1B 20.5-25.5 cm | On Cap | 4,4´-DDE | 0.08 |
| 25-MONTH | 1 | 20.5-25.5 | Sample | Native Sediment | STN 1 1A+1B 20.5-25.5 cm | On Cap | 4,4´-DDT | <0.026 |
| 25-MONTH | 1 | 20.5-25.5 | Sample | Native Sediment | STN 1 1A+1B 20.5-25.5 cm | On Cap | 2,4´-DDD | 0.15 |
| 25-MONTH | 1 | 20.5-25.5 | Sample | Native Sediment | STN 1 1A+1B 20.5-25.5 cm | On Cap | 2,4´-DDE | <0.015 |
| 25-MONTH | 1 | 20.5-25.5 | Sample | Native Sediment | STN 1 1A+1B 20.5-25.5 cm | On Cap | 2,4´-DDT | <0.014 |
| 25-MONTH | 1 | 20.5-25.5 | Sample | Native Sediment | STN 1 1A+1B 20.5-25.5 cm | On Cap | 4,4´-DDD | 0.40 |
| 25-MONTH | 1 | 20.5-25.5 | Sample | Native Sediment | STN 1 1A+1B 20.5-25.5 cm | On Cap | Total DDX | 0.62 |
| 25-MONTH | 1 | 5.5-10.5 | Sample | Cap Material | STN 1 1A+1B 5.5-10.5 cm | On Cap | 4,4´-DDE | 0.04 |
| 25-MONTH | 1 | 5.5-10.5 | Sample | Cap Material | STN 1 1A+1B 5.5-10.5 cm | On Cap | 4,4´-DDT | <0.024 |
| 25-MONTH | 1 | 5.5-10.5 | Sample | Cap Material | STN 1 1A+1B 5.5-10.5 cm | On Cap | 2,4´-DDD | 0.11 |
| 25-MONTH | 1 | 5.5-10.5 | Sample | Cap Material | STN 1 1A+1B 5.5-10.5 cm | On Cap | 2,4´-DDE | <0.014 |
| 25-MONTH | 1 | 5.5-10.5 | Sample | Cap Material | STN 1 1A+1B 5.5-10.5 cm | On Cap | 2,4´-DDT | <0.012 |
| 25-MONTH | 1 | 5.5-10.5 | Sample | Cap Material | STN 1 1A+1B 5.5-10.5 cm | On Cap | 4,4´-DDD | 0.31 |
| 25-MONTH | 1 | 5.5-10.5 | Sample | Cap Material | STN 1 1A+1B 5.5-10.5 cm | On Cap | Total DDX | 0.46 |
| 25-MONTH | 2 | 0-5 | Sample | Cap Material | STN 2 2A+2B 0-5 cm | On Cap | 4,4´-DDE | 0.01 |
| 25-MONTH | 2 | 0-5 | Sample | Cap Material | STN 2 2A+2B 0-5 cm | On Cap | 4,4´-DDT | <0.023 |
| 25-MONTH | 2 | 0-5 | Sample | Cap Material | STN 2 2A+2B 0-5 cm | On Cap | 2,4´-DDD | <0.082 |
| 25-MONTH | 2 | 0-5 | Sample | Cap Material | STN 2 2A+2B 0-5 cm | On Cap | 2,4´-DDE | <0.014 |
| 25-MONTH | 2 | 0-5 | Sample | Cap Material | STN 2 2A+2B 0-5 cm | On Cap | 2,4´-DDT | <0.012 |
| 25-MONTH | 2 | 0-5 | Sample | Cap Material | STN 2 2A+2B 0-5 cm | On Cap | 4,4´-DDD | 0.09 |
| 25-MONTH | 2 | 0-5 | Sample | Cap Material | STN 2 2A+2B 0-5 cm | On Cap | Total DDX | 0.10 |
| 25-MONTH | 2 | 10-15 | Sample | Cap Material | STN 2 2A+2B 10-15 cm | On Cap | 4,4´-DDE | <0.033 |
| 25-MONTH | 2 | 10-15 | Sample | Cap Material | STN 2 2A+2B 10-15 cm | On Cap | 4,4´-DDT | <0.048 |
| 25-MONTH | 2 | 10-15 | Sample | Cap Material | STN 2 2A+2B 10-15 cm | On Cap | 2,4´-DDD | <0.129 |
| 25-MONTH | 2 | 10-15 | Sample | Cap Material | STN 2 2A+2B 10-15 cm | On Cap | 2,4´-DDE | <0.033 |
| 25-MONTH | 2 | 10-15 | Sample | Cap Material | STN 2 2A+2B 10-15 cm | On Cap | 2,4´-DDT | <0.031 |
| 25-MONTH | 2 | 10-15 | Sample | Cap Material | STN 2 2A+2B 10-15 cm | On Cap | 4,4´-DDD | 0.19 |
| 25-MONTH | 2 | 10-15 | Sample | Cap Material | STN 2 2A+2B 10-15 cm | On Cap | Total DDX | 0.19 |
| 25-MONTH | 2 | 15-20 | Sample | Native Sediment | STN 2 2A+2B 15-20 cm | On Cap | 4,4´-DDE | 0.02 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 25-MONTH | 2 | 15-20 | Sample | Native Sediment | STN 2 2A+2B 15-20 cm | On Cap | 4,4´-DDT | 0.06 |
| 25-MONTH | 2 | 15-20 | Sample | Native Sediment | STN 2 2A+2B 15-20 cm | On Cap | 2,4´-DDD | <0.11 |
| 25-MONTH | 2 | 15-20 | Sample | Native Sediment | STN 2 2A+2B 15-20 cm | On Cap | 2,4´-DDE | 0.08 |
| 25-MONTH | 2 | 15-20 | Sample | Native Sediment | STN 2 2A+2B 15-20 cm | On Cap | 2,4´-DDT | <0.019 |
| 25-MONTH | 2 | 15-20 | Sample | Native Sediment | STN 2 2A+2B 15-20 cm | On Cap | 4,4´-DDD | 0.28 |
| 25-MONTH | 2 | 15-20 | Sample | Transition Depth | STN 2 2A+2B 15-20 cm | On Cap | Total DDX | 0.44 |
| 25-MONTH | 2 | 20-25 | Sample | Native Sediment | STN 2 2A+2B 20-25 cm | On Cap | 4,4´-DDE | 0.03 |
| 25-MONTH | 2 | 20-25 | Sample | Native Sediment | STN 2 2A+2B 20-25 cm | On Cap | 4,4´-DDT | 0.04 |
| 25-MONTH | 2 | 20-25 | Sample | Native Sediment | STN 2 2A+2B 20-25 cm | On Cap | 2,4´-DDD | <0.107 |
| 25-MONTH | 2 | 20-25 | Sample | Native Sediment | STN 2 2A+2B 20-25 cm | On Cap | 2,4´-DDE | 0.03 |
| 25-MONTH | 2 | 20-25 | Sample | Native Sediment | STN 2 2A+2B 20-25 cm | On Cap | 2,4´-DDT | <0.019 |
| 25-MONTH | 2 | 20-25 | Sample | Native Sediment | STN 2 2A+2B 20-25 cm | On Cap | 4,4´-DDD | 0.39 |
| 25-MONTH | 2 | 20-25 | Sample | Native Sediment | STN 2 2A+2B 20-25 cm | On Cap | Total DDX | 0.50 |
| 25-MONTH | 2 | 25-30 | Sample | Native Sediment | STN 2 2A+2B 25-30 cm | On Cap | 4,4´-DDE | 0.04 |
| 25-MONTH | 2 | 25-30 | Sample | Native Sediment | STN 2 2A+2B 25-30 cm | On Cap | 4,4´-DDT | 0.05 |
| 25-MONTH | 2 | 25-30 | Sample | Native Sediment | STN 2 2A+2B 25-30 cm | On Cap | 2,4´-DDD | <0.113 |
| 25-MONTH | 2 | 25-30 | Sample | Native Sediment | STN 2 2A+2B 25-30 cm | On Cap | 2,4´-DDE | 0.11 |
| 25-MONTH | 2 | 25-30 | Sample | Native Sediment | STN 2 2A+2B 25-30 cm | On Cap | 2,4´-DDT | <0.022 |
| 25-MONTH | 2 | 25-30 | Sample | Native Sediment | STN 2 2A+2B 25-30 cm | On Cap | 4,4´-DDD | 0.33 |
| 25-MONTH | 2 | 25-30 | Sample | Native Sediment | STN 2 2A+2B 25-30 cm | On Cap | Total DDX | 0.53 |
| 25-MONTH | 2 | 30-35 | Sample | Native Sediment | STN 2 2A+2B 30-35 cm | On Cap | 4,4´-DDE | 0.02 |
| 25-MONTH | 2 | 30-35 | Sample | Native Sediment | STN 2 2A+2B 30-35 cm | On Cap | 4,4´-DDT | 0.03 |
| 25-MONTH | 2 | 30-35 | Sample | Native Sediment | STN 2 2A+2B 30-35 cm | On Cap | 2,4´-DDD | <0.094 |
| 25-MONTH | 2 | 30-35 | Sample | Native Sediment | STN 2 2A+2B 30-35 cm | On Cap | 2,4´-DDE | 0.07 |
| 25-MONTH | 2 | 30-35 | Sample | Native Sediment | STN 2 2A+2B 30-35 cm | On Cap | 2,4´-DDT | <0.015 |
| 25-MONTH | 2 | 30-35 | Sample | Native Sediment | STN 2 2A+2B 30-35 cm | On Cap | 4,4´-DDD | 0.31 |
| 25-MONTH | 2 | 30-35 | Sample | Native Sediment | STN 2 2A+2B 30-35 cm | On Cap | Total DDX | 0.43 |
| 25-MONTH | 2 | 35-40 | Sample | Native Sediment | STN 2 2A+2B 35-40 cm | On Cap | 4,4´-DDE | 0.03 |
| 25-MONTH | 2 | 35-40 | Sample | Native Sediment | STN 2 2A+2B 35-40 cm | On Cap | 4,4´-DDT | 0.06 |
| 25-MONTH | 2 | 35-40 | Sample | Native Sediment | STN 2 2A+2B 35-40 cm | On Cap | 2,4´-DDD | 0.11 |
| 25-MONTH | 2 | 35-40 | Sample | Native Sediment | STN 2 2A+2B 35-40 cm | On Cap | 2,4´-DDE | <0.021 |
| 25-MONTH | 2 | 35-40 | Sample | Native Sediment | STN 2 2A+2B 35-40 cm | On Cap | 2,4´-DDT | <0.019 |
| 25-MONTH | 2 | 35-40 | Sample | Native Sediment | STN 2 2A+2B 35-40 cm | On Cap | 4,4´-DDD | 0.35 |
| 25-MONTH | 2 | 35-40 | Sample | Native Sediment | STN 2 2A+2B 35-40 cm | On Cap | Total DDX | 0.55 |
| 25-MONTH | 2 | 40-45 | Sample | Native Sediment | STN 2 2A+2B 40-45 cm | On Cap | 4,4´-DDE | 0.01 |
| 25-MONTH | 2 | 40-45 | Sample | Native Sediment | STN 2 2A+2B 40-45 cm | On Cap | 4,4´-DDT | 0.04 |
| 25-MONTH | 2 | 40-45 | Sample | Native Sediment | STN 2 2A+2B 40-45 cm | On Cap | 2,4´-DDD | 0.08 |
| 25-MONTH | 2 | 40-45 | Sample | Native Sediment | STN 2 2A+2B 40-45 cm | On Cap | 2,4´-DDE | <0.014 |
| 25-MONTH | 2 | 40-45 | Sample | Native Sediment | STN 2 2A+2B 40-45 cm | On Cap | 2,4´-DDT | <0.013 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 25-MONTH | 2 | 40-45 | Sample | Native Sediment | STN 2 2A+2B 40-45 cm | On Cap | 4,4´-DDD | 0.35 |
| 25-MONTH | 2 | 40-45 | Sample | Native Sediment | STN 2 2A+2B 40-45 cm | On Cap | Total DDX | 0.48 |
| 25-MONTH | 2 | 45-50 | Sample | Native Sediment | STN 2 2A+2B 45-50 cm | On Cap | 4,4´-DDE | <0.021 |
| 25-MONTH | 2 | 45-50 | Sample | Native Sediment | STN 2 2A+2B 45-50 cm | On Cap | 4,4´-DDT | <0.035 |
| 25-MONTH | 2 | 45-50 | Sample | Native Sediment | STN 2 2A+2B 45-50 cm | On Cap | 2,4´-DDD | <0.112 |
| 25-MONTH | 2 | 45-50 | Sample | Native Sediment | STN 2 2A+2B 45-50 cm | On Cap | 2,4´-DDE | <0.022 |
| 25-MONTH | 2 | 45-50 | Sample | Native Sediment | STN 2 2A+2B 45-50 cm | On Cap | 2,4´-DDT | <0.02 |
| 25-MONTH | 2 | 45-50 | Sample | Native Sediment | STN 2 2A+2B 45-50 cm | On Cap | 4,4´-DDD | 0.29 |
| 25-MONTH | 2 | 45-50 | Sample | Native Sediment | STN 2 2A+2B 45-50 cm | On Cap | Total DDX | 0.29 |
| 25-MONTH | 2 | 50-55 | Sample | Native Sediment | STN 2 2A+2B 50-55 cm | On Cap | 4,4´-DDE | <0.016 |
| 25-MONTH | 2 | 50-55 | Sample | Native Sediment | STN 2 2A+2B 50-55 cm | On Cap | 4,4´-DDT | 0.04 |
| 25-MONTH | 2 | 50-55 | Sample | Native Sediment | STN 2 2A+2B 50-55 cm | On Cap | 2,4´-DDD | 0.09 |
| 25-MONTH | 2 | 50-55 | Sample | Native Sediment | STN 2 2A+2B 50-55 cm | On Cap | 2,4´-DDE | 0.06 |
| 25-MONTH | 2 | 50-55 | Sample | Native Sediment | STN 2 2A+2B 50-55 cm | On Cap | 2,4´-DDT | <0.015 |
| 25-MONTH | 2 | 50-55 | Sample | Native Sediment | STN 2 2A+2B 50-55 cm | On Cap | 4,4´-DDD | 0.28 |
| 25-MONTH | 2 | 50-55 | Sample | Native Sediment | STN 2 2A+2B 50-55 cm | On Cap | Total DDX | 0.47 |
| 25-MONTH | 2 | 5-10 | Sample | Cap Material | STN 2 2A+2B 5-10 cm | On Cap | 4,4´-DDE | <0.02 |
| 25-MONTH | 2 | 5-10 | Sample | Cap Material | STN 2 2A+2B 5-10 cm | On Cap | 4,4´-DDT | <0.033 |
| 25-MONTH | 2 | 5-10 | Sample | Cap Material | STN 2 2A+2B 5-10 cm | On Cap | 2,4´-DDD | <0.107 |
| 25-MONTH | 2 | 5-10 | Sample | Cap Material | STN 2 2A+2B 5-10 cm | On Cap | 2,4´-DDE | <0.02 |
| 25-MONTH | 2 | 5-10 | Sample | Cap Material | STN 2 2A+2B 5-10 cm | On Cap | 2,4´-DDT | <0.019 |
| 25-MONTH | 2 | 5-10 | Sample | Cap Material | STN 2 2A+2B 5-10 cm | On Cap | 4,4´-DDD | 0.12 |
| 25-MONTH | 2 | 5-10 | Sample | Cap Material | STN 2 2A+2B 5-10 cm | On Cap | Total DDX | 0.12 |
| 25-MONTH | 3 | 10-15 | Sample | Cap Material | STN 3 3A+3B 10-15 cm | On Cap | 4,4´-DDE | 0.07 |
| 25-MONTH | 3 | 10-15 | Sample | Cap Material | STN 3 3A+3B 10-15 cm | On Cap | 4,4´-DDT | <0.021 |
| 25-MONTH | 3 | 10-15 | Sample | Cap Material | STN 3 3A+3B 10-15 cm | On Cap | 2,4´-DDD | 0.16 |
| 25-MONTH | 3 | 10-15 | Sample | Cap Material | STN 3 3A+3B 10-15 cm | On Cap | 2,4´-DDE | <0.012 |
| 25-MONTH | 3 | 10-15 | Sample | Cap Material | STN 3 3A+3B 10-15 cm | On Cap | 2,4´-DDT | <0.011 |
| 25-MONTH | 3 | 10-15 | Sample | Cap Material | STN 3 3A+3B 10-15 cm | On Cap | 4,4´-DDD | 0.32 |
| 25-MONTH | 3 | 10-15 | Sample | Cap Material | STN 3 3A+3B 10-15 cm | On Cap | Total DDX | 0.55 |
| 25-MONTH | 3 | 15-20 | Sample | Cap Material | STN 3 3A+3B 15-20 cm | On Cap | 4,4´-DDE | 0.05 |
| 25-MONTH | 3 | 15-20 | Sample | Cap Material | STN 3 3A+3B 15-20 cm | On Cap | 4,4´-DDT | <0.026 |
| 25-MONTH | 3 | 15-20 | Sample | Cap Material | STN 3 3A+3B 15-20 cm | On Cap | 2,4´-DDD | 0.18 |
| 25-MONTH | 3 | 15-20 | Sample | Cap Material | STN 3 3A+3B 15-20 cm | On Cap | 2,4´-DDE | <0.016 |
| 25-MONTH | 3 | 15-20 | Sample | Cap Material | STN 3 3A+3B 15-20 cm | On Cap | 2,4´-DDT | <0.014 |
| 25-MONTH | 3 | 15-20 | Sample | Cap Material | STN 3 3A+3B 15-20 cm | On Cap | 4,4´-DDD | 0.30 |
| 25-MONTH | 3 | 15-20 | Sample | Cap Material | STN 3 3A+3B 15-20 cm | On Cap | Total DDX | 0.52 |
| 25-MONTH | 3 | 20-25 | Sample | Cap Material | STN 3 3A+3B 20-25 cm | On Cap | 4,4´-DDE | 0.07 |
| 25-MONTH | 3 | 20-25 | Sample | Cap Material | STN 3 3A+3B 20-25 cm | On Cap | 4,4´-DDT | <0.024 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 25-MONTH | 3 | 20-25 | Sample | Cap Material | STN 3 3A+3B 20-25 cm | On Cap | 2,4′-DDD | 0.20 |
| 25-MONTH | 3 | 20-25 | Sample | Cap Material | STN 3 3A+3B 20-25 cm | On Cap | 2,4′-DDE | <0.014 |
| 25-MONTH | 3 | 20-25 | Sample | Cap Material | STN 3 3A+3B 20-25 cm | On Cap | 2,4′-DDT | <0.013 |
| 25-MONTH | 3 | 20-25 | Sample | Cap Material | STN 3 3A+3B 20-25 cm | On Cap | 4,4′-DDD | 0.38 |
| 25-MONTH | 3 | 20-25 | Sample | Cap Material | STN 3 3A+3B 20-25 cm | On Cap | Total DDX | 0.64 |
| 25-MONTH | 3 | 25-30 | Sample | Native Sediment | STN 3 3A+3B 25-30 cm | On Cap | 4,4′-DDE | 0.05 |
| 25-MONTH | 3 | 25-30 | Sample | Native Sediment | STN 3 3A+3B 25-30 cm | On Cap | 4,4′-DDT | <0.025 |
| 25-MONTH | 3 | 25-30 | Sample | Native Sediment | STN 3 3A+3B 25-30 cm | On Cap | 2,4′-DDD | 0.12 |
| 25-MONTH | 3 | 25-30 | Sample | Native Sediment | STN 3 3A+3B 25-30 cm | On Cap | 2,4′-DDE | <0.015 |
| 25-MONTH | 3 | 25-30 | Sample | Native Sediment | STN 3 3A+3B 25-30 cm | On Cap | 2,4′-DDT | <0.013 |
| 25-MONTH | 3 | 25-30 | Sample | Native Sediment | STN 3 3A+3B 25-30 cm | On Cap | 4,4′-DDD | 0.38 |
| 25-MONTH | 3 | 25-30 | Sample | Native Sediment | STN 3 3A+3B 25-30 cm | On Cap | Total DDX | 0.55 |
| 25-MONTH | 3 | 30-35 | Sample | Native Sediment | STN 3 3A+3B 30-35 cm | On Cap | 4,4′-DDE | 0.04 |
| 25-MONTH | 3 | 30-35 | Sample | Native Sediment | STN 3 3A+3B 30-35 cm | On Cap | 4,4′-DDT | <0.021 |
| 25-MONTH | 3 | 30-35 | Sample | Native Sediment | STN 3 3A+3B 30-35 cm | On Cap | 2,4′-DDD | 0.13 |
| 25-MONTH | 3 | 30-35 | Sample | Native Sediment | STN 3 3A+3B 30-35 cm | On Cap | 2,4′-DDE | <0.012 |
| 25-MONTH | 3 | 30-35 | Sample | Native Sediment | STN 3 3A+3B 30-35 cm | On Cap | 2,4′-DDT | <0.011 |
| 25-MONTH | 3 | 30-35 | Sample | Native Sediment | STN 3 3A+3B 30-35 cm | On Cap | 4,4′-DDD | 0.32 |
| 25-MONTH | 3 | 30-35 | Sample | Native Sediment | STN 3 3A+3B 30-35 cm | On Cap | Total DDX | 0.50 |
| 25-MONTH | 3 | 35-40 | Sample | Native Sediment | STN 3 3A+3B 35-40 cm | On Cap | 4,4′-DDE | 0.04 |
| 25-MONTH | 3 | 35-40 | Sample | Native Sediment | STN 3 3A+3B 35-40 cm | On Cap | 4,4′-DDT | <0.023 |
| 25-MONTH | 3 | 35-40 | Sample | Native Sediment | STN 3 3A+3B 35-40 cm | On Cap | 2,4′-DDD | 0.16 |
| 25-MONTH | 3 | 35-40 | Sample | Native Sediment | STN 3 3A+3B 35-40 cm | On Cap | 2,4′-DDE | <0.013 |
| 25-MONTH | 3 | 35-40 | Sample | Native Sediment | STN 3 3A+3B 35-40 cm | On Cap | 2,4′-DDT | <0.012 |
| 25-MONTH | 3 | 35-40 | Sample | Native Sediment | STN 3 3A+3B 35-40 cm | On Cap | 4,4′-DDD | 0.30 |
| 25-MONTH | 3 | 35-40 | Sample | Native Sediment | STN 3 3A+3B 35-40 cm | On Cap | Total DDX | 0.51 |
| 25-MONTH | 3 | 40-45 | Sample | Native Sediment | STN 3 3A+3B 40-45 cm | On Cap | 4,4′-DDE | 0.05 |
| 25-MONTH | 3 | 40-45 | Sample | Native Sediment | STN 3 3A+3B 40-45 cm | On Cap | 4,4′-DDT | <0.024 |
| 25-MONTH | 3 | 40-45 | Sample | Native Sediment | STN 3 3A+3B 40-45 cm | On Cap | 2,4′-DDD | 0.11 |
| 25-MONTH | 3 | 40-45 | Sample | Native Sediment | STN 3 3A+3B 40-45 cm | On Cap | 2,4′-DDE | <0.014 |
| 25-MONTH | 3 | 40-45 | Sample | Native Sediment | STN 3 3A+3B 40-45 cm | On Cap | 2,4′-DDT | <0.013 |
| 25-MONTH | 3 | 40-45 | Sample | Native Sediment | STN 3 3A+3B 40-45 cm | On Cap | 4,4′-DDD | 0.35 |
| 25-MONTH | 3 | 40-45 | Sample | Native Sediment | STN 3 3A+3B 40-45 cm | On Cap | Total DDX | 0.51 |
| 25-MONTH | 3 | 45-50 | Sample | Native Sediment | STN 3 3A+3B 45-50 cm | On Cap | 4,4′-DDE | 0.05 |
| 25-MONTH | 3 | 45-50 | Sample | Native Sediment | STN 3 3A+3B 45-50 cm | On Cap | 4,4′-DDT | <0.023 |
| 25-MONTH | 3 | 45-50 | Sample | Native Sediment | STN 3 3A+3B 45-50 cm | On Cap | 2,4′-DDD | 0.14 |
| 25-MONTH | 3 | 45-50 | Sample | Native Sediment | STN 3 3A+3B 45-50 cm | On Cap | 2,4′-DDE | <0.013 |
| 25-MONTH | 3 | 45-50 | Sample | Native Sediment | STN 3 3A+3B 45-50 cm | On Cap | 2,4′-DDT | <0.012 |
| 25-MONTH | 3 | 45-50 | Sample | Native Sediment | STN 3 3A+3B 45-50 cm | On Cap | 4,4′-DDD | 0.37 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 25-MONTH | 3 | 45-50 | Sample | Native Sediment | STN 3 3A+3B 45-50 cm | On Cap | Total DDX | 0.55 |
| 25-MONTH | 3 | 50-55 | Sample | Native Sediment | STN 3 3A+3B 50-55 cm | On Cap | 4,4′-DDE | 0.05 |
| 25-MONTH | 3 | 50-55 | Sample | Native Sediment | STN 3 3A+3B 50-55 cm | On Cap | 4,4′-DDT | <0.022 |
| 25-MONTH | 3 | 50-55 | Sample | Native Sediment | STN 3 3A+3B 50-55 cm | On Cap | 2,4′-DDD | 0.11 |
| 25-MONTH | 3 | 50-55 | Sample | Native Sediment | STN 3 3A+3B 50-55 cm | On Cap | 2,4′-DDE | <0.013 |
| 25-MONTH | 3 | 50-55 | Sample | Native Sediment | STN 3 3A+3B 50-55 cm | On Cap | 2,4′-DDT | <0.011 |
| 25-MONTH | 3 | 50-55 | Sample | Native Sediment | STN 3 3A+3B 50-55 cm | On Cap | 4,4′-DDD | 0.27 |
| 25-MONTH | 3 | 50-55 | Sample | Native Sediment | STN 3 3A+3B 50-55 cm | On Cap | Total DDX | 0.42 |
| 25-MONTH | 3 | 5-10 | Sample | Cap Material | STN 3 3A+3B 5-10 cm | On Cap | 4,4′-DDE | 0.06 |
| 25-MONTH | 3 | 5-10 | Sample | Cap Material | STN 3 3A+3B 5-10 cm | On Cap | 4,4′-DDT | <0.023 |
| 25-MONTH | 3 | 5-10 | Sample | Cap Material | STN 3 3A+3B 5-10 cm | On Cap | 2,4′-DDD | 0.14 |
| 25-MONTH | 3 | 5-10 | Sample | Cap Material | STN 3 3A+3B 5-10 cm | On Cap | 2,4′-DDE | <0.014 |
| 25-MONTH | 3 | 5-10 | Sample | Cap Material | STN 3 3A+3B 5-10 cm | On Cap | 2,4′-DDT | <0.012 |
| 25-MONTH | 3 | 5-10 | Sample | Cap Material | STN 3 3A+3B 5-10 cm | On Cap | 4,4′-DDD | 0.27 |
| 25-MONTH | 3 | 5-10 | Sample | Cap Material | STN 3 3A+3B 5-10 cm | On Cap | Total DDX | 0.47 |
| 25-MONTH | 3 | 0-5 | Sample | Cap Material | STN 3 3B 0-5 cm | On Cap | 4,4′-DDE | 0.12 |
| 25-MONTH | 3 | 0-5 | Sample | Cap Material | STN 3 3B 0-5 cm | On Cap | 4,4′-DDT | <0.021 |
| 25-MONTH | 3 | 0-5 | Sample | Cap Material | STN 3 3B 0-5 cm | On Cap | 2,4′-DDD | 0.25 |
| 25-MONTH | 3 | 0-5 | Sample | Cap Material | STN 3 3B 0-5 cm | On Cap | 2,4′-DDE | <0.012 |
| 25-MONTH | 3 | 0-5 | Sample | Cap Material | STN 3 3B 0-5 cm | On Cap | 2,4′-DDT | <0.011 |
| 25-MONTH | 3 | 0-5 | Sample | Cap Material | STN 3 3B 0-5 cm | On Cap | 4,4′-DDD | 0.22 |
| 25-MONTH | 3 | 0-5 | Sample | Cap Material | STN 3 3B 0-5 cm | On Cap | Total DDX | 0.30 |
| 25-MONTH | 4 | 0-5 | Sample | Cap Material | STN 4 4A+4B 0-5 cm | On Cap | 4,4′-DDE | <0.017 |
| 25-MONTH | 4 | 0-5 | Sample | Cap Material | STN 4 4A+4B 0-5 cm | On Cap | 4,4′-DDT | <0.029 |
| 25-MONTH | 4 | 0-5 | Sample | Cap Material | STN 4 4A+4B 0-5 cm | On Cap | 2,4′-DDD | <0.1 |
| 25-MONTH | 4 | 0-5 | Sample | Cap Material | STN 4 4A+4B 0-5 cm | On Cap | 2,4′-DDE | <0.017 |
| 25-MONTH | 4 | 0-5 | Sample | Cap Material | STN 4 4A+4B 0-5 cm | On Cap | 2,4′-DDT | <0.016 |
| 25-MONTH | 4 | 0-5 | Sample | Cap Material | STN 4 4A+4B 0-5 cm | On Cap | 4,4′-DDD | <0.111 |
| 25-MONTH | 4 | 0-5 | Sample | Cap Material | STN 4 4A+4B 0-5 cm | On Cap | Total DDX | <0.111 |
| 25-MONTH | 4 | 20-25 | Sample | Native Sediment | STN 4 4A+4B 20-25 cm | On Cap | 4,4′-DDE | 0.02 |
| 25-MONTH | 4 | 20-25 | Sample | Native Sediment | STN 4 4A+4B 20-25 cm | On Cap | 4,4′-DDT | <0.028 |
| 25-MONTH | 4 | 20-25 | Sample | Native Sediment | STN 4 4A+4B 20-25 cm | On Cap | 2,4′-DDD | <0.097 |
| 25-MONTH | 4 | 20-25 | Sample | Native Sediment | STN 4 4A+4B 20-25 cm | On Cap | 2,4′-DDE | <0.017 |
| 25-MONTH | 4 | 20-25 | Sample | Native Sediment | STN 4 4A+4B 20-25 cm | On Cap | 2,4′-DDT | <0.015 |
| 25-MONTH | 4 | 20-25 | Sample | Native Sediment | STN 4 4A+4B 20-25 cm | On Cap | 4,4′-DDD | <0.108 |
| 25-MONTH | 4 | 20-25 | Sample | Transition Depth | STN 4 4A+4B 20-25 cm | On Cap | Total DDX | 0.02 |
| 25-MONTH | 4 | 25-30 | Sample | Native Sediment | STN 4 4A+4B 25-30 cm | On Cap | 4,4′-DDE | 0.02 |
| 25-MONTH | 4 | 25-30 | Sample | Native Sediment | STN 4 4A+4B 25-30 cm | On Cap | 4,4′-DDT | <0.026 |
| 25-MONTH | 4 | 25-30 | Sample | Native Sediment | STN 4 4A+4B 25-30 cm | On Cap | 2,4′-DDD | <0.091 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 25-MONTH | 4 | 25-30 | Sample | Native Sediment | STN 4 4A+4B 25-30 cm | On Cap | 2,4′-DDE | <0.015 |
| 25-MONTH | 4 | 25-30 | Sample | Native Sediment | STN 4 4A+4B 25-30 cm | On Cap | 2,4′-DDT | <0.014 |
| 25-MONTH | 4 | 25-30 | Sample | Native Sediment | STN 4 4A+4B 25-30 cm | On Cap | 4,4′-DDD | <0.101 |
| 25-MONTH | 4 | 25-30 | Sample | Native Sediment | STN 4 4A+4B 25-30 cm | On Cap | Total DDX | 0.02 |
| 25-MONTH | 4 | 30-35 | Sample | Native Sediment | STN 4 4A+4B 30-35 cm | On Cap | 4,4′-DDE | 0.02 |
| 25-MONTH | 4 | 30-35 | Sample | Native Sediment | STN 4 4A+4B 30-35 cm | On Cap | 4,4′-DDT | <0.024 |
| 25-MONTH | 4 | 30-35 | Sample | Native Sediment | STN 4 4A+4B 30-35 cm | On Cap | 2,4′-DDD | <0.084 |
| 25-MONTH | 4 | 30-35 | Sample | Native Sediment | STN 4 4A+4B 30-35 cm | On Cap | 2,4′-DDE | <0.014 |
| 25-MONTH | 4 | 30-35 | Sample | Native Sediment | STN 4 4A+4B 30-35 cm | On Cap | 2,4′-DDT | <0.013 |
| 25-MONTH | 4 | 30-35 | Sample | Native Sediment | STN 4 4A+4B 30-35 cm | On Cap | 4,4′-DDD | <0.094 |
| 25-MONTH | 4 | 30-35 | Sample | Native Sediment | STN 4 4A+4B 30-35 cm | On Cap | Total DDX | 0.02 |
| 25-MONTH | 4 | 5-10 | Sample | Cap Material | STN 4 4A+4B 5-10 cm | On Cap | 4,4′-DDE | <0.022 |
| 25-MONTH | 4 | 5-10 | Sample | Cap Material | STN 4 4A+4B 5-10 cm | On Cap | 4,4′-DDT | <0.036 |
| 25-MONTH | 4 | 5-10 | Sample | Cap Material | STN 4 4A+4B 5-10 cm | On Cap | 2,4′-DDD | <0.112 |
| 25-MONTH | 4 | 5-10 | Sample | Cap Material | STN 4 4A+4B 5-10 cm | On Cap | 2,4′-DDE | <0.023 |
| 25-MONTH | 4 | 5-10 | Sample | Cap Material | STN 4 4A+4B 5-10 cm | On Cap | 2,4′-DDT | <0.021 |
| 25-MONTH | 4 | 5-10 | Sample | Cap Material | STN 4 4A+4B 5-10 cm | On Cap | 4,4′-DDD | <0.124 |
| 25-MONTH | 4 | 5-10 | Sample | Cap Material | STN 4 4A+4B 5-10 cm | On Cap | Total DDX | <0.124 |
| 25-MONTH | 5 | 19-24 | Sample | Cap Material | STN 5 5A+5B 19-24 cm | On Cap | 4,4′-DDE | 0.02 |
| 25-MONTH | 5 | 19-24 | Sample | Cap Material | STN 5 5A+5B 19-24 cm | On Cap | 4,4′-DDT | <0.031 |
| 25-MONTH | 5 | 19-24 | Sample | Cap Material | STN 5 5A+5B 19-24 cm | On Cap | 2,4′-DDD | <0.101 |
| 25-MONTH | 5 | 19-24 | Sample | Cap Material | STN 5 5A+5B 19-24 cm | On Cap | 2,4′-DDE | <0.019 |
| 25-MONTH | 5 | 19-24 | Sample | Cap Material | STN 5 5A+5B 19-24 cm | On Cap | 2,4′-DDT | <0.018 |
| 25-MONTH | 5 | 19-24 | Sample | Cap Material | STN 5 5A+5B 19-24 cm | On Cap | 4,4′-DDD | <0.111 |
| 25-MONTH | 5 | 19-24 | Sample | Cap Material | STN 5 5A+5B 19-24 cm | On Cap | Total DDX | 0.02 |
| 25-MONTH | 5 | 29-34 | Sample | Cap Material | STN 5 5A+5B 29-34 cm | On Cap | 4,4′-DDE | 0.02 |
| 25-MONTH | 5 | 29-34 | Sample | Cap Material | STN 5 5A+5B 29-34 cm | On Cap | 4,4′-DDT | <0.027 |
| 25-MONTH | 5 | 29-34 | Sample | Cap Material | STN 5 5A+5B 29-34 cm | On Cap | 2,4′-DDD | <0.093 |
| 25-MONTH | 5 | 29-34 | Sample | Cap Material | STN 5 5A+5B 29-34 cm | On Cap | 2,4′-DDE | 0.02 |
| 25-MONTH | 5 | 29-34 | Sample | Cap Material | STN 5 5A+5B 29-34 cm | On Cap | 2,4′-DDT | <0.014 |
| 25-MONTH | 5 | 29-34 | Sample | Cap Material | STN 5 5A+5B 29-34 cm | On Cap | 4,4′-DDD | <0.104 |
| 25-MONTH | 5 | 29-34 | Sample | Cap Material | STN 5 5A+5B 29-34 cm | On Cap | Total DDX | 0.03 |
| 25-MONTH | 5 | 34-39 | Sample | Cap Material | STN 5 5A+5B 34-39 cm | On Cap | 4,4′-DDE | 0.02 |
| 25-MONTH | 5 | 34-39 | Sample | Cap Material | STN 5 5A+5B 34-39 cm | On Cap | 4,4′-DDT | <0.028 |
| 25-MONTH | 5 | 34-39 | Sample | Cap Material | STN 5 5A+5B 34-39 cm | On Cap | 2,4′-DDD | <0.096 |
| 25-MONTH | 5 | 34-39 | Sample | Cap Material | STN 5 5A+5B 34-39 cm | On Cap | 2,4′-DDE | <0.017 |
| 25-MONTH | 5 | 34-39 | Sample | Cap Material | STN 5 5A+5B 34-39 cm | On Cap | 2,4′-DDT | <0.016 |
| 25-MONTH | 5 | 34-39 | Sample | Cap Material | STN 5 5A+5B 34-39 cm | On Cap | 4,4′-DDD | <0.106 |
| 25-MONTH | 5 | 34-39 | Sample | Cap Material | STN 5 5A+5B 34-39 cm | On Cap | Total DDX | 0.02 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 25-MONTH | 5 | 39-44 | Sample | Cap Material | STN 5 5A+5B 39-44 cm | On Cap | 4,4′-DDE | 0.03 |
| 25-MONTH | 5 | 39-44 | Sample | Cap Material | STN 5 5A+5B 39-44 cm | On Cap | 4,4′-DDT | <0.027 |
| 25-MONTH | 5 | 39-44 | Sample | Cap Material | STN 5 5A+5B 39-44 cm | On Cap | 2,4′-DDD | <0.092 |
| 25-MONTH | 5 | 39-44 | Sample | Cap Material | STN 5 5A+5B 39-44 cm | On Cap | 2,4′-DDE | <0.016 |
| 25-MONTH | 5 | 39-44 | Sample | Cap Material | STN 5 5A+5B 39-44 cm | On Cap | 2,4′-DDT | <0.015 |
| 25-MONTH | 5 | 39-44 | Sample | Cap Material | STN 5 5A+5B 39-44 cm | On Cap | 4,4′-DDD | <0.102 |
| 25-MONTH | 5 | 39-44 | Sample | Cap Material | STN 5 5A+5B 39-44 cm | On Cap | Total DDX | 0.03 |
| 25-MONTH | 5 | 44-49 | Sample | Native Sediment | STN 5 5A+5B 44-49 cm | On Cap | 4,4′-DDE | 0.03 |
| 25-MONTH | 5 | 44-49 | Sample | Native Sediment | STN 5 5A+5B 44-49 cm | On Cap | 4,4′-DDT | <0.028 |
| 25-MONTH | 5 | 44-49 | Sample | Native Sediment | STN 5 5A+5B 44-49 cm | On Cap | 2,4′-DDD | <0.096 |
| 25-MONTH | 5 | 44-49 | Sample | Native Sediment | STN 5 5A+5B 44-49 cm | On Cap | 2,4′-DDE | <0.017 |
| 25-MONTH | 5 | 44-49 | Sample | Native Sediment | STN 5 5A+5B 44-49 cm | On Cap | 2,4′-DDT | <0.015 |
| 25-MONTH | 5 | 44-49 | Sample | Native Sediment | STN 5 5A+5B 44-49 cm | On Cap | 4,4′-DDD | 0.14 |
| 25-MONTH | 5 | 44-49 | Sample | Transition Depth | STN 5 5A+5B 44-49 cm | On Cap | Total DDX | 0.17 |
| 25-MONTH | 5 | 4-9 | Sample | Cap Material | STN 5 5A+5B 4-9 cm | On Cap | 4,4′-DDE | <0.014 |
| 25-MONTH | 5 | 4-9 | Sample | Cap Material | STN 5 5A+5B 4-9 cm | On Cap | 4,4′-DDT | <0.024 |
| 25-MONTH | 5 | 4-9 | Sample | Cap Material | STN 5 5A+5B 4-9 cm | On Cap | 2,4′-DDD | <0.085 |
| 25-MONTH | 5 | 4-9 | Sample | Cap Material | STN 5 5A+5B 4-9 cm | On Cap | 2,4′-DDE | <0.014 |
| 25-MONTH | 5 | 4-9 | Sample | Cap Material | STN 5 5A+5B 4-9 cm | On Cap | 2,4′-DDT | <0.013 |
| 25-MONTH | 5 | 4-9 | Sample | Cap Material | STN 5 5A+5B 4-9 cm | On Cap | 4,4′-DDD | <0.095 |
| 25-MONTH | 5 | 4-9 | Sample | Cap Material | STN 5 5A+5B 4-9 cm | On Cap | Total DDX | <0.095 |
| 25-MONTH | 5 | 1-4 | Sample | Cap Material | STN 5 5B 1-4 cm | On Cap | 4,4′-DDE | <0.013 |
| 25-MONTH | 5 | 1-4 | Sample | Cap Material | STN 5 5B 1-4 cm | On Cap | 4,4′-DDT | <0.023 |
| 25-MONTH | 5 | 1-4 | Sample | Cap Material | STN 5 5B 1-4 cm | On Cap | 2,4′-DDD | <0.085 |
| 25-MONTH | 5 | 1-4 | Sample | Cap Material | STN 5 5B 1-4 cm | On Cap | 2,4′-DDE | <0.013 |
| 25-MONTH | 5 | 1-4 | Sample | Cap Material | STN 5 5B 1-4 cm | On Cap | 2,4′-DDT | <0.012 |
| 25-MONTH | 5 | 1-4 | Sample | Cap Material | STN 5 5B 1-4 cm | On Cap | 4,4′-DDD | <0.096 |
| 25-MONTH | 5 | 1-4 | Sample | Cap Material | STN 5 5B 1-4 cm | On Cap | Total DDX | <0.319 |
| 25-MONTH | 6 | 0-5 | Sample | Native Sediment-Off Cap | STN 6 6A+6B 0-5 cm | Off Cap | 4,4′-DDE | 0.02 |
| 25-MONTH | 6 | 0-5 | Sample | Native Sediment-Off Cap | STN 6 6A+6B 0-5 cm | Off Cap | 4,4′-DDT | <0.022 |
| 25-MONTH | 6 | 0-5 | Sample | Native Sediment-Off Cap | STN 6 6A+6B 0-5 cm | Off Cap | 2,4′-DDD | <0.079 |
| 25-MONTH | 6 | 0-5 | Sample | Native Sediment-Off Cap | STN 6 6A+6B 0-5 cm | Off Cap | 2,4′-DDE | <0.013 |
| 25-MONTH | 6 | 0-5 | Sample | Native Sediment-Off Cap | STN 6 6A+6B 0-5 cm | Off Cap | 2,4′-DDT | <0.012 |
| 25-MONTH | 6 | 0-5 | Sample | Native Sediment-Off Cap | STN 6 6A+6B 0-5 cm | Off Cap | 4,4′-DDD | <0.089 |
| 25-MONTH | 6 | 0-5 | Sample | Native Sediment-Off Cap | STN 6 6A+6B 0-5 cm | Off Cap | Total DDX | 0.02 |
| 25-MONTH | 6 | 5-10 | Sample | Native Sediment-Off Cap | STN 6 6A+6B 5-10 cm | Off Cap | 4,4′-DDE | 0.02 |
| 25-MONTH | 6 | 5-10 | Sample | Native Sediment-Off Cap | STN 6 6A+6B 5-10 cm | Off Cap | 4,4′-DDT | <0.022 |
| 25-MONTH | 6 | 5-10 | Sample | Native Sediment-Off Cap | STN 6 6A+6B 5-10 cm | Off Cap | 2,4′-DDD | <0.08 |
| 25-MONTH | 6 | 5-10 | Sample | Native Sediment-Off Cap | STN 6 6A+6B 5-10 cm | Off Cap | 2,4′-DDE | <0.013 |

**Table 1. Compilation of *in situ* Porewater DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Sample Interval (cm) | Sample Type | Sample Interface[2] | Sample ID[3] | Within Cap Footprint? | Analyte[4] | Result (ng/L; ND=<DL) |
|---|---|---|---|---|---|---|---|---|
| 25-MONTH | 6 | 5-10 | Sample | Native Sediment-Off Cap | STN 6 6A+6B 5-10 cm | Off Cap | 2,4′-DDT | <0.012 |
| 25-MONTH | 6 | 5-10 | Sample | Native Sediment-Off Cap | STN 6 6A+6B 5-10 cm | Off Cap | 4,4′-DDD | <0.089 |
| 25-MONTH | 6 | 5-10 | Sample | Native Sediment-Off Cap | STN 6 6A+6B 5-10 cm | Off Cap | Total DDX | 0.02 |
| 25-MONTH | 7 | 4-9 | Sample | Native Sediment-Off Cap | STN 7 7A+7B 4-9 cm | Off Cap | 4,4′-DDE | <0.012 |
| 25-MONTH | 7 | 4-9 | Sample | Native Sediment-Off Cap | STN 7 7A+7B 4-9 cm | Off Cap | 4,4′-DDT | <0.021 |
| 25-MONTH | 7 | 4-9 | Sample | Native Sediment-Off Cap | STN 7 7A+7B 4-9 cm | Off Cap | 2,4′-DDD | <0.077 |
| 25-MONTH | 7 | 4-9 | Sample | Native Sediment-Off Cap | STN 7 7A+7B 4-9 cm | Off Cap | 2,4′-DDE | <0.012 |
| 25-MONTH | 7 | 4-9 | Sample | Native Sediment-Off Cap | STN 7 7A+7B 4-9 cm | Off Cap | 2,4′-DDT | <0.011 |
| 25-MONTH | 7 | 4-9 | Sample | Native Sediment-Off Cap | STN 7 7A+7B 4-9 cm | Off Cap | 4,4′-DDD | <0.086 |
| 25-MONTH | 7 | 4-9 | Sample | Native Sediment-Off Cap | STN 7 7A+7B 4-9 cm | Off Cap | Total DDX | <0.086 |
| 25-MONTH | 7 | 9-14 | Sample | Native Sediment-Off Cap | STN 7 7A+7B 9-14 cm | Off Cap | 4,4′-DDE | <0.013 |
| 25-MONTH | 7 | 9-14 | Sample | Native Sediment-Off Cap | STN 7 7A+7B 9-14 cm | Off Cap | 4,4′-DDT | <0.022 |
| 25-MONTH | 7 | 9-14 | Sample | Native Sediment-Off Cap | STN 7 7A+7B 9-14 cm | Off Cap | 2,4′-DDD | <0.08 |
| 25-MONTH | 7 | 9-14 | Sample | Native Sediment-Off Cap | STN 7 7A+7B 9-14 cm | Off Cap | 2,4′-DDE | <0.013 |
| 25-MONTH | 7 | 9-14 | Sample | Native Sediment-Off Cap | STN 7 7A+7B 9-14 cm | Off Cap | 2,4′-DDT | <0.012 |
| 25-MONTH | 7 | 9-14 | Sample | Native Sediment-Off Cap | STN 7 7A+7B 9-14 cm | Off Cap | 4,4′-DDD | <0.089 |
| 25-MONTH | 7 | 9-14 | Sample | Native Sediment-Off Cap | STN 7 7A+7B 9-14 cm | Off Cap | Total DDX | <0.089 |

**Notes:**

1. Sample collections dates: Baseline 3 (October, 2012), 2-Month (September, 2014), 14-Month (September, 2015) and 25-Month (August, 2016)
2. Sample interface determined by comparing sample interval (cm) to depth to cap-native sediment interface. Sample intervals containing the depth to cap-native sediment interface were labeled as transition depths.
3. Sample ID's with -Avg suffix represented an average of primary and duplicate samples.
4. Total DDX represents the sum of detected congeners.

cm: centimeter(s)
DL: detection limit
ND: not detected
ng/L: nanogram(s)/liter

**Table 2: Field, Laboratory Data and Calculations for *in-situ* SPME Study during Baseline 3 Event**
SSC Pacific
Quantico, Virginia

| Sample ID | Sample Interval (cm) | Station ID | Within Cap Footprint? | Sample Type[1] | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QU-101012-1-1B | 4-6 | 1 | In Cap | Primary | 4,4′-DDE | ND | 0.03 | 2 | 1.19E-06 | 526667 | 0.64 | <25122.16 | <0.07 |
| QU-101012-1-1B | 4-6 | 1 | In Cap | Primary | 4,4′-DDT | ND | 0.03 | 2 | 1.19E-06 | 288937 | 0.64 | <25122.16 | <0.14 |
| QU-101012-1-1B | 4-6 | 1 | In Cap | Primary | 4,4′-DDD | 0.05 | 0.03 | 2 | 1.19E-06 | 67258 | 0.63 | 41870.27455 | 0.98 |
| QU-101012-PRC-1-1B | 4-6 | 1 | In Cap | Duplicate | 4,4′-DDE | ND | 0.03 | 2 | 1.19E-06 | 526667 | 0.64 | <25122.16 | <0.07 |
| QU-101012-PRC-1-1B | 4-6 | 1 | In Cap | Duplicate | 4,4′-DDT | ND | 0.03 | 2 | 1.19E-06 | 288937 | 0.64 | <25122.16 | <0.14 |
| QU-101012-PRC-1-1B | 4-6 | 1 | In Cap | Duplicate | 4,4′-DDD | 0.05 | 0.03 | 2 | 1.19E-06 | 67258 | 0.63 | 41870.27455 | 0.98 |
| QU-101012-2-1B | 4-6 | 2 | In Cap | Primary | 4,4′-DDE | ND | 0.03 | 2 | 1.19E-06 | 526667 | 0.58 | <25122.16 | <0.08 |
| QU-101012-2-1B | 4-6 | 2 | In Cap | Primary | 4,4′-DDT | ND | 0.03 | 2 | 1.19E-06 | 288937 | 0.58 | <25122.16 | <0.15 |
| QU-101012-2-1B | 4-6 | 2 | In Cap | Primary | 4,4′-DDD | ND | 0.03 | 2 | 1.19E-06 | 67258 | 0.60 | <25122.16 | <0.63 |
| QU-101012-PRC-2-1B | 4-6 | 2 | In Cap | Duplicate | 4,4′-DDE | ND | 0.03 | 2 | 1.19E-06 | 526667 | 0.58 | <25122.16 | <0.08 |
| QU-101012-PRC-2-1B | 4-6 | 2 | In Cap | Duplicate | 4,4′-DDT | ND | 0.03 | 2 | 1.19E-06 | 288937 | 0.58 | <25122.16 | <0.15 |
| QU-101012-PRC-2-1B | 4-6 | 2 | In Cap | Duplicate | 4,4′-DDD | 0.04 | 0.03 | 2 | 1.19E-06 | 67258 | 0.60 | 33496.21964 | 0.84 |
| QU-101012-3-1B | 4-6 | 3 | In Cap | Primary | 4,4′-DDE | ND | 0.03 | 2 | 1.19E-06 | 526667 | 0.61 | <25122.16 | <0.08 |
| QU-101012-3-1B | 4-6 | 3 | In Cap | Primary | 4,4′-DDT | ND | 0.03 | 2 | 1.19E-06 | 288937 | 0.61 | <25122.16 | <0.14 |
| QU-101012-3-1B | 4-6 | 3 | In Cap | Primary | 4,4′-DDD | 0.06 | 0.03 | 2 | 1.19E-06 | 67258 | 0.60 | 50244.32947 | 1.24 |
| QU-101012-PRC-3-1B | 4-6 | 3 | In Cap | Duplicate | 4,4′-DDE | ND | 0.03 | 2 | 1.19E-06 | 526667 | 0.61 | <25122.16 | <0.08 |
| QU-101012-PRC-3-1B | 4-6 | 3 | In Cap | Duplicate | 4,4′-DDT | ND | 0.03 | 2 | 1.19E-06 | 288937 | 0.61 | <25122.16 | <0.14 |
| QU-101012-PRC-3-1B | 4-6 | 3 | In Cap | Duplicate | 4,4′-DDD | ND | 0.03 | 2 | 1.19E-06 | 67258 | 0.60 | <25122.16 | <0.62 |
| QU-101012-4-1B | 4-6 | 4 | In Cap | Primary | 4,4′-DDE | 0.04 | 0.03 | 2 | 1.19E-06 | 526667 | 1.00 | 33496.21964 | 0.06 |
| QU-101012-4-1B | 4-6 | 4 | In Cap | Primary | 4,4′-DDT | ND | 0.03 | 2 | 1.19E-06 | 288937 | 0.77 | <25122.16 | <0.11 |
| QU-101012-4-1B | 4-6 | 4 | In Cap | Primary | 4,4′-DDD | 0.04 | 0.03 | 2 | 1.19E-06 | 67258 | 0.75 | 33496.21964 | 0.66 |
| QU-101012-PRC-4-1B | 4-6 | 4 | In Cap | Duplicate | 4,4′-DDE | 0.05 | 0.03 | 2 | 1.19E-06 | 526667 | 1.00 | 41870.27455 | 0.08 |
| QU-101012-PRC-4-1B | 4-6 | 4 | In Cap | Duplicate | 4,4′-DDT | ND | 0.03 | 2 | 1.19E-06 | 288937 | 0.77 | <25122.16 | <0.11 |
| QU-101012-PRC-4-1B | 4-6 | 4 | In Cap | Duplicate | 4,4′-DDD | ND | 0.03 | 2 | 1.19E-06 | 67258 | 0.75 | <25122.16 | <0.5 |
| QU-101012-5-1B | 4-6 | 5 | In Cap | Primary | 4,4′-DDE | ND | 0.03 | 2 | 1.19E-06 | 526667 | 0.80 | <25122.16 | <0.06 |
| QU-101012-5-1B | 4-6 | 5 | In Cap | Primary | 4,4′-DDT | ND | 0.03 | 2 | 1.19E-06 | 288937 | 0.67 | <25122.16 | <0.13 |
| QU-101012-5-1B | 4-6 | 5 | In Cap | Primary | 4,4′-DDD | 0.04 | 0.03 | 2 | 1.19E-06 | 67258 | 0.73 | 33496.21964 | 0.68 |
| QU-101012-PRC-5-1B | 4-6 | 5 | In Cap | Duplicate | 4,4′-DDE | ND | 0.03 | 2 | 1.19E-06 | 526667 | 0.80 | <25122.16 | <0.06 |
| QU-101012-PRC-5-1B | 4-6 | 5 | In Cap | Duplicate | 4,4′-DDT | ND | 0.03 | 2 | 1.19E-06 | 288937 | 0.67 | <25122.16 | <0.13 |
| QU-101012-PRC-5-1B | 4-6 | 5 | In Cap | Duplicate | 4,4′-DDD | ND | 0.03 | 2 | 1.19E-06 | 67258 | 0.73 | <25122.16 | <0.51 |
| QU-101012-6-1B | 4-6 | 6 | Off Cap | Primary | 4,4′-DDE | ND | 0.03 | 2 | 1.19E-06 | 526667 | 0.34 | <25122.16 | <0.14 |
| QU-101012-6-1B | 4-6 | 6 | Off Cap | Primary | 4,4′-DDT | ND | 0.03 | 2 | 1.19E-06 | 288937 | 0.42 | <25122.16 | <0.2 |
| QU-101012-6-1B | 4-6 | 6 | Off Cap | Primary | 4,4′-DDD | ND | 0.03 | 2 | 1.19E-06 | 67258 | 0.62 | <25122.16 | <0.6 |
| QU-101012-PRC-6-1B | 4-6 | 6 | Off Cap | Duplicate | 4,4′-DDE | ND | 0.03 | 2 | 1.19E-06 | 526667 | 0.34 | <25122.16 | <0.14 |
| QU-101012-PRC-6-1B | 4-6 | 6 | Off Cap | Duplicate | 4,4′-DDT | ND | 0.03 | 2 | 1.19E-06 | 288937 | 0.42 | <25122.16 | <0.2 |
| QU-101012-PRC-6-1B | 4-6 | 6 | Off Cap | Duplicate | 4,4′-DDD | ND | 0.03 | 2 | 1.19E-06 | 67258 | 0.62 | <25122.16 | <0.6 |

**Footnotes:**

1. Average of primary and duplicate samples are presented in Table 1. Compilation of in situ Porewater DDX Results for all Monitoring Events.
2. 0.597 µL polydimethylsiloxane (PDMS) per cm of this type of SPME fiber.
3. Fiber:Water Partition Coefficient calculated as Log Kfs = LogKow - 0.91 (Mayer et al. 2000). Log Kow referenced from ATSDR (2002).
4. Fraction to steady state (fss) calculated based on performance reference compound (PRC) mass transfer kinetics.
5. Concentration of exposure solution = (Concentration in fiber ÷ fss) ÷ Kfs. If not detected, reported as < detection limit.

**Abbreviations:**

cm: centimeter(s) — ng: nanogram(s)
L: Liter(s) — PDMS: Polydimethylsiloxane
ND: Not detected — SPME: solid phase microextraction

**Table 3: Field, Laboratory Data and Calculations for in-situ SPME Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2-1-SPME1-1 | 0-5 | 1 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.49 | <20097.73 | <0.541 |
| QT2-1-SPME2-1 | 0-5 | 1 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.48 | <20097.73 | <0.56 |
| QT2-1-SPME1-1 | 0-5 | 1 | In Cap | 2,4′-DDE | 0.13 | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.47 | 43545.09 | 0.18 |
| QT2-1-SPME2-1 | 0-5 | 1 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.41 | <20097.73 | <0.094 |
| QT2-1-SPME1-1 | 0-5 | 1 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.46 | <20097.73 | <0.076 |
| QT2-1-SPME2-1 | 0-5 | 1 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.41 | <20097.73 | <0.086 |
| QT2-1-SPME1-1 | 0-5 | 1 | In Cap | 4,4′-DDD | 0.16 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.49 | 53593.95 | 1.62 |
| QT2-1-SPME2-1 | 0-5 | 1 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.48 | <20097.73 | <0.624 |
| QT2-1-SPME1-1 | 0-5 | 1 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.47 | <20097.73 | <0.147 |
| QT2-1-SPME2-1 | 0-5 | 1 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.43 | <20097.73 | <0.161 |
| QT2-1-SPME1-1 | 0-5 | 1 | In Cap | 4,4'-DDE [2C] | 0.65 | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.47 | 217725.43 | 0.89 |
| QT2-1-SPME2-1 | 0-5 | 1 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.41 | <20097.73 | <0.093 |
| QT2-1-SPME1-3 | 10-15 | 1 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.49 | <20097.73 | <0.541 |
| QT2-1-SPME2-3 | 10-15 | 1 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.48 | <20097.73 | <0.56 |
| QT2-1-SPME1-3 | 10-15 | 1 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.47 | <20097.73 | <0.083 |
| QT2-1-SPME2-3 | 10-15 | 1 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.41 | <20097.73 | <0.094 |
| QT2-1-SPME1-3 | 10-15 | 1 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.46 | <20097.73 | <0.076 |
| QT2-1-SPME2-3 | 10-15 | 1 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.41 | <20097.73 | <0.086 |
| QT2-1-SPME1-3 | 10-15 | 1 | In Cap | 4,4′-DDD | 0.23 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.49 | 77041.31 | 2.32 |
| QT2-1-SPME2-3 | 10-15 | 1 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.48 | <20097.73 | <0.624 |
| QT2-1-SPME1-3 | 10-15 | 1 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.47 | <20097.73 | <0.147 |
| QT2-1-SPME2-3 | 10-15 | 1 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.43 | <20097.73 | <0.161 |
| QT2-1-SPME1-3 | 10-15 | 1 | In Cap | 4,4'-DDE [2C] | 0.63 | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.47 | 211026.18 | 0.86 |
| QT2-1-SPME2-3 | 10-15 | 1 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.41 | <20097.73 | <0.093 |
| QT2-1-SPME1-4 | 15-20 | 1 | In Cap | 2,4′-DDD | 0.07 | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.51 | 23447.35 | 0.60 |
| QT2-1-SPME2-4 | 15-20 | 1 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.45 | <20097.73 | <0.596 |
| QT2-1-SPME1-4 | 15-20 | 1 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.38 | <20097.73 | <0.102 |
| QT2-1-SPME2-4 | 15-20 | 1 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.36 | <20097.73 | <0.109 |
| QT2-1-SPME1-4 | 15-20 | 1 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.38 | <20097.73 | <0.094 |
| QT2-1-SPME2-4 | 15-20 | 1 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.35 | <20097.73 | <0.1 |
| QT2-1-SPME1-4 | 15-20 | 1 | In Cap | 4,4′-DDD | 0.15 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.52 | 50244.33 | 1.43 |
| QT2-1-SPME2-4 | 15-20 | 1 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.45 | <20097.73 | <0.661 |
| QT2-1-SPME1-4 | 15-20 | 1 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.42 | <20097.73 | <0.165 |
| QT2-1-SPME2-4 | 15-20 | 1 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.38 | <20097.73 | <0.181 |
| QT2-1-SPME1-4 | 15-20 | 1 | In Cap | 4,4'-DDE [2C] | 0.25 | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.38 | 83740.55 | 0.42 |
| QT2-1-SPME2-4 | 15-20 | 1 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.36 | <20097.73 | <0.107 |
| QT2 1 1-5 | 20-25 | 1 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.51 | <20097.73 | <0.518 |
| QT2 1 2-5 | 20-25 | 1 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.45 | <20097.73 | <0.596 |
| QT2 1 1-5 | 20-25 | 1 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.38 | <20097.73 | <0.102 |
| QT2 1 2-5 | 20-25 | 1 | In Cap | 2,4′-DDE | 0.07 | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.36 | 23447.35 | 0.13 |
| QT2 1 1-5 | 20-25 | 1 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.38 | <20097.73 | <0.094 |

**Table 3: Field, Laboratory Data and Calculations for in-situ SPME Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2 1 2-5 | 20-25 | 1 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.35 | <20097.73 | <0.1 |
| QT2 1 1-5 | 20-25 | 1 | In Cap | 4,4′-DDD | 0.14 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.52 | 46894.71 | 1.34 |
| QT2 1 2-5 | 20-25 | 1 | In Cap | 4,4′-DDD | 0.07 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.45 | 23447.35 | 0.77 |
| QT2 1 1-5 | 20-25 | 1 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.42 | <20097.73 | <0.165 |
| QT2 1 2-5 | 20-25 | 1 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.38 | <20097.73 | <0.181 |
| QT2 1 1-5 | 20-25 | 1 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.38 | <20097.73 | <0.1 |
| QT2 1 2-5 | 20-25 | 1 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.36 | <20097.73 | <0.107 |
| QT2-1-SPME1-6 | 25-30 | 1 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.51 | <20097.73 | <0.518 |
| QT2-1-SPME2-6 | 25-30 | 1 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.45 | <20097.73 | <0.596 |
| QT2-1-SPME1-6 | 25-30 | 1 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.38 | <20097.73 | <0.102 |
| QT2-1-SPME2-6 | 25-30 | 1 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.36 | <20097.73 | <0.109 |
| QT2-1-SPME1-6 | 25-30 | 1 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.38 | <20097.73 | <0.094 |
| QT2-1-SPME2-6 | 25-30 | 1 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.35 | <20097.73 | <0.1 |
| QT2-1-SPME1-6 | 25-30 | 1 | In Cap | 4,4′-DDD | 0.14 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.52 | 46894.71 | 1.34 |
| QT2-1-SPME2-6 | 25-30 | 1 | In Cap | 4,4′-DDD | 0.11 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.45 | 36845.84 | 1.21 |
| QT2-1-SPME1-6 | 25-30 | 1 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.42 | <20097.73 | <0.165 |
| QT2-1-SPME2-6 | 25-30 | 1 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.38 | <20097.73 | <0.181 |
| QT2-1-SPME1-6 | 25-30 | 1 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.38 | <20097.73 | <0.1 |
| QT2-1-SPME2-6 | 25-30 | 1 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.36 | <20097.73 | <0.107 |
| QT2-1-SPME1-7 | 30-35 | 1 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.51 | <20097.73 | <0.518 |
| QT2-1-SPME2-7 | 30-35 | 1 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.45 | <20097.73 | <0.596 |
| QT2-1-SPME1-7 | 30-35 | 1 | In Cap | 2,4′-DDE | 0.14 | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.38 | 46894.71 | 0.24 |
| QT2-1-SPME2-7 | 30-35 | 1 | In Cap | 2,4′-DDE | 0.15 | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.36 | 50244.33 | 0.27 |
| QT2-1-SPME1-7 | 30-35 | 1 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.38 | <20097.73 | <0.094 |
| QT2-1-SPME2-7 | 30-35 | 1 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.35 | <20097.73 | <0.1 |
| QT2-1-SPME1-7 | 30-35 | 1 | In Cap | 4,4′-DDD | 0.11 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.52 | 36845.84 | 1.05 |
| QT2-1-SPME2-7 | 30-35 | 1 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.45 | <20097.73 | <0.661 |
| QT2-1-SPME1-7 | 30-35 | 1 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.42 | <20097.73 | <0.165 |
| QT2-1-SPME2-7 | 30-35 | 1 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.38 | <20097.73 | <0.181 |
| QT2-1-SPME1-7 | 30-35 | 1 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.38 | <20097.73 | <0.1 |
| QT2-1-SPME2-7 | 30-35 | 1 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.36 | <20097.73 | <0.107 |
| QT2-1-SPME1-8 | 35-40 | 1 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.37 | <20097.73 | <0.712 |
| QT2-1-SPME2-8 | 35-40 | 1 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.50 | <20097.73 | <0.535 |
| QT2-1-SPME1-8 | 35-40 | 1 | In Cap | 2,4′-DDE | 0.19 | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.35 | 63642.82 | 0.35 |
| QT2-1-SPME2-8 | 35-40 | 1 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.45 | <20097.73 | <0.087 |
| QT2-1-SPME1-8 | 35-40 | 1 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.35 | <20097.73 | <0.101 |
| QT2-1-SPME2-8 | 35-40 | 1 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.45 | <20097.73 | <0.079 |
| QT2-1-SPME1-8 | 35-40 | 1 | In Cap | 4,4′-DDD | 0.15 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.38 | 50244.33 | 1.99 |
| QT2-1-SPME2-8 | 35-40 | 1 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.50 | <20097.73 | <0.597 |
| QT2-1-SPME1-8 | 35-40 | 1 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.36 | <20097.73 | <0.195 |
| QT2-1-SPME2-8 | 35-40 | 1 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.46 | <20097.73 | <0.15 |

**Table 3: Field, Laboratory Data and Calculations for in-situ SPME Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2-1-SPME1-8 | 35-40 | 1 | In Cap | 4,4'-DDE [2C] | 0.32 | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.35 | 107187.90 | 0.58 |
| QT2-1-SPME2-8 | 35-40 | 1 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.45 | <20097.73 | <0.085 |
| QT2-1-SPME1-9 | 40-45 | 1 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.37 | <20097.73 | <0.712 |
| QT2-1-SPME2-9 | 40-45 | 1 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.50 | <20097.73 | <0.535 |
| QT2-1-SPME1-9 | 40-45 | 1 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.35 | <20097.73 | <0.111 |
| QT2-1-SPME2-9 | 40-45 | 1 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.45 | <20097.73 | <0.087 |
| QT2-1-SPME1-9 | 40-45 | 1 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.35 | <20097.73 | <0.101 |
| QT2-1-SPME2-9 | 40-45 | 1 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.45 | <20097.73 | <0.079 |
| QT2-1-SPME1-9 | 40-45 | 1 | In Cap | 4,4´-DDD | 0.07 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.38 | 23447.35 | 0.93 |
| QT2-1-SPME2-9 | 40-45 | 1 | In Cap | 4,4´-DDD | 0.09 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.50 | 30146.60 | 0.90 |
| QT2-1-SPME1-9 | 40-45 | 1 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.36 | <20097.73 | <0.195 |
| QT2-1-SPME2-9 | 40-45 | 1 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.46 | <20097.73 | <0.15 |
| QT2-1-SPME1-9 | 40-45 | 1 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.35 | <20097.73 | <0.109 |
| QT2-1-SPME2-9 | 40-45 | 1 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.45 | <20097.73 | <0.085 |
| QT2 1 1-10 | 45-50 | 1 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.37 | <20097.73 | <0.712 |
| QT2 1 2-10 | 45-50 | 1 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.50 | <20097.73 | <0.535 |
| QT2 1 1-10 | 45-50 | 1 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.35 | <20097.73 | <0.111 |
| QT2 1 2-10 | 45-50 | 1 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.45 | <20097.73 | <0.087 |
| QT2 1 1-10 | 45-50 | 1 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.35 | <20097.73 | <0.101 |
| QT2 1 2-10 | 45-50 | 1 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.45 | <20097.73 | <0.079 |
| QT2 1 1-10 | 45-50 | 1 | In Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.38 | <20097.7318 | <0.796 |
| QT2 1 2-10 | 45-50 | 1 | In Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.50 | <20097.73 | <0.597 |
| QT2 1 1-10 | 45-50 | 1 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.36 | <20097.73 | <0.195 |
| QT2 1 2-10 | 45-50 | 1 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.46 | <20097.73 | <0.15 |
| QT2 1 1-10 | 45-50 | 1 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.35 | <20097.73 | <0.109 |
| QT2 1 2-10 | 45-50 | 1 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.45 | <20097.73 | <0.085 |
| QT2-1-SPME1-11 | 50-55 | 1 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.37 | <20097.73 | <0.712 |
| QT2-1-SPME2-11 | 50-55 | 1 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.50 | <20097.73 | <0.535 |
| QT2-1-SPME1-11 | 50-55 | 1 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.35 | <20097.73 | <0.111 |
| QT2-1-SPME2-11 | 50-55 | 1 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.45 | <20097.73 | <0.087 |
| QT2-1-SPME1-11 | 50-55 | 1 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.35 | <20097.73 | <0.101 |
| QT2-1-SPME2-11 | 50-55 | 1 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.45 | <20097.73 | <0.079 |
| QT2-1-SPME1-11 | 50-55 | 1 | In Cap | 4,4´-DDD | 0.08 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.38 | 26796.98 | 1.06 |
| QT2-1-SPME2-11 | 50-55 | 1 | In Cap | 4,4´-DDD | 0.09 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.50 | 30146.60 | 0.90 |
| QT2-1-SPME1-11 | 50-55 | 1 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.36 | <20097.73 | <0.195 |
| QT2-1-SPME2-11 | 50-55 | 1 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.46 | <20097.73 | <0.15 |
| QT2-1-SPME1-11 | 50-55 | 1 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.35 | <20097.73 | <0.109 |
| QT2-1-SPME2-11 | 50-55 | 1 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.45 | <20097.73 | <0.085 |
| QT2 1 1-2 | 5-10 | 1 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.49 | <20097.73 | <0.541 |
| QT2 1 2-2 | 5-10 | 1 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.48 | <20097.73 | <0.56 |
| QT2 1 1-2 | 5-10 | 1 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.47 | <20097.73 | <0.083 |

**Table 3: Field, Laboratory Data and Calculations for in-situ SPME Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2 1 2-2 | 5-10 | 1 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.41 | <20097.73 | <0.094 |
| QT2 1 1-2 | 5-10 | 1 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.46 | <20097.73 | <0.076 |
| QT2 1 2-2 | 5-10 | 1 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.41 | <20097.73 | <0.086 |
| QT2 1 1-2 | 5-10 | 1 | In Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.49 | <20097.73 | <0.606 |
| QT2 1 2-2 | 5-10 | 1 | In Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.48 | <20097.73 | <0.624 |
| QT2 1 1-2 | 5-10 | 1 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.47 | <20097.73 | <0.147 |
| QT2 1 2-2 | 5-10 | 1 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.43 | <20097.73 | <0.161 |
| QT2 1 1-2 | 5-10 | 1 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.47 | <20097.73 | <0.082 |
| QT2 1 2-2 | 5-10 | 1 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.41 | <20097.73 | <0.093 |
| QT2-1-SPME1-12 | 55-59.9 | 1 | In Cap | 2,4´-DDD | ND | 0.06 | 4.9 | 2.93E-06 | 7.55E+04 | 0.37 | <20507.89 | <0.726 |
| QT2-1-SPME1-12 | 55-59.9 | 1 | In Cap | 2,4´-DDE | 0.15 | 0.06 | 4.9 | 2.93E-06 | 5.17E+05 | 0.35 | 51269.72 | 0.28 |
| QT2-1-SPME1-12 | 55-59.9 | 1 | In Cap | 2,4´-DDT | ND | 0.06 | 4.9 | 2.93E-06 | 5.70E+05 | 0.35 | <20507.89 | <0.103 |
| QT2-1-SPME1-12 | 55-59.9 | 1 | In Cap | 4,4´-DDD | ND | 0.06 | 4.9 | 2.93E-06 | 6.73E+04 | 0.38 | <20507.89 | <0.813 |
| QT2-1-SPME1-12 | 55-59.9 | 1 | In Cap | 4,4´-DDT | ND | 0.06 | 4.9 | 2.93E-06 | 2.89E+05 | 0.36 | <20507.89 | <0.199 |
| QT2-1-SPME1-12 | 55-59.9 | 1 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 4.9 | 2.93E-06 | 5.27E+05 | 0.35 | <20507.89 | <0.111 |
| QT2-1-SPME2-12 | 55-60 | 1 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.50 | <20097.73 | <0.535 |
| QT2-1-SPME2-12 | 55-60 | 1 | In Cap | 2,4´-DDE | 0.11 | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.45 | 36845.84 | 0.16 |
| QT2-1-SPME2-12 | 55-60 | 1 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.45 | <20097.73 | <0.079 |
| QT2-1-SPME2-12 | 55-60 | 1 | In Cap | 4,4´-DDD | 0.09 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.50 | 30146.60 | 0.90 |
| QT2-1-SPME2-12 | 55-60 | 1 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.46 | <20097.73 | <0.15 |
| QT2-1-SPME2-12 | 55-60 | 1 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.45 | <20097.73 | <0.085 |
| QT2-2-SPME1-1 | 0-5 | 2 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.45 | <20097.73 | <0.596 |
| QT2-2-SPME2-1 | 0-5 | 2 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.40 | <20097.73 | <0.662 |
| QT2-2-SPME1-1 | 0-5 | 2 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.37 | <20097.73 | <0.104 |
| QT2-2-SPME2-1 | 0-5 | 2 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.31 | <20097.73 | <0.124 |
| QT2-2-SPME1-1 | 0-5 | 2 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.37 | <20097.73 | <0.096 |
| QT2-2-SPME2-1 | 0-5 | 2 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.31 | <20097.73 | <0.114 |
| QT2-2-SPME1-1 | 0-5 | 2 | In Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.45 | <20097.73 | <0.662 |
| QT2-2-SPME2-1 | 0-5 | 2 | In Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.41 | <20097.73 | <0.733 |
| QT2-2-SPME1-1 | 0-5 | 2 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.39 | <20097.73 | <0.176 |
| QT2-2-SPME2-1 | 0-5 | 2 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.34 | <20097.73 | <0.205 |
| QT2-2-SPME1-1 | 0-5 | 2 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.37 | <20097.73 | <0.103 |
| QT2-2-SPME2-1 | 0-5 | 2 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.31 | <20097.73 | <0.122 |
| QT2-2-SPME1-3 | 10-15 | 2 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.45 | <20097.73 | <0.596 |
| QT2-2-SPME2-3 | 10-15 | 2 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.40 | <20097.73 | <0.662 |
| QT2-2-SPME1-3 | 10-15 | 2 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.37 | <20097.73 | <0.104 |
| QT2-2-SPME2-3 | 10-15 | 2 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.31 | <20097.73 | <0.124 |
| QT2-2-SPME1-3 | 10-15 | 2 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.37 | <20097.73 | <0.096 |
| QT2-2-SPME2-3 | 10-15 | 2 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.31 | <20097.73 | <0.114 |
| QT2-2-SPME1-3 | 10-15 | 2 | In Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.45 | <20097.73 | <0.662 |
| QT2-2-SPME2-3 | 10-15 | 2 | In Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.41 | <20097.73 | <0.733 |

**Table 3: Field, Laboratory Data and Calculations for in-situ SPME Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2-2-SPME1-3 | 10-15 | 2 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.39 | <20097.73 | <0.176 |
| QT2-2-SPME2-3 | 10-15 | 2 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.34 | <20097.73 | <0.205 |
| QT2-2-SPME1-3 | 10-15 | 2 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.37 | <20097.73 | <0.103 |
| QT2-2-SPME2-3 | 10-15 | 2 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.31 | <20097.73 | <0.122 |
| QT2-2-SPME1-4 | 15-20 | 2 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.40 | <20097.73 | <0.67 |
| QT2-2-SPME2-4 | 15-20 | 2 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.45 | <20097.73 | <0.592 |
| QT2-2-SPME1-4 | 15-20 | 2 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.30 | <20097.73 | <0.131 |
| QT2-2-SPME2-4 | 15-20 | 2 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.35 | <20097.73 | <0.113 |
| QT2-2-SPME1-4 | 15-20 | 2 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.29 | <20097.73 | <0.121 |
| QT2-2-SPME2-4 | 15-20 | 2 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.34 | <20097.73 | <0.104 |
| QT2-2-SPME1-4 | 15-20 | 2 | In Cap | 4,4′-DDD | 0.13 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.40 | 43545.09 | 1.60 |
| QT2-2-SPME2-4 | 15-20 | 2 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.46 | <20097.73 | <0.655 |
| QT2-2-SPME1-4 | 15-20 | 2 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.33 | <20097.73 | <0.214 |
| QT2-2-SPME2-4 | 15-20 | 2 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.38 | <20097.73 | <0.185 |
| QT2-2-SPME1-4 | 15-20 | 2 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.30 | <20097.73 | <0.129 |
| QT2-2-SPME2-4 | 15-20 | 2 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.34 | <20097.73 | <0.111 |
| QT2 2 1-5 | 20-25 | 2 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.40 | <20097.73 | <0.67 |
| QT2 2 2-5 | 20-25 | 2 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.45 | <20097.73 | <0.592 |
| QT2 2 1-5 | 20-25 | 2 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.30 | <20097.73 | <0.131 |
| QT2 2 2-5 | 20-25 | 2 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.35 | <20097.73 | <0.113 |
| QT2 2 1-5 | 20-25 | 2 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.29 | <20097.73 | <0.121 |
| QT2 2 2-5 | 20-25 | 2 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.34 | <20097.73 | <0.104 |
| QT2 2 1-5 | 20-25 | 2 | In Cap | 4,4′-DDD | 0.18 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.40 | 60293.20 | 2.22 |
| QT2 2 2-5 | 20-25 | 2 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.46 | <20097.73 | <0.655 |
| QT2 2 1-5 | 20-25 | 2 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.33 | <20097.73 | <0.214 |
| QT2 2 2-5 | 20-25 | 2 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.38 | <20097.73 | <0.185 |
| QT2 2 1-5 | 20-25 | 2 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.30 | <20097.73 | <0.129 |
| QT2 2 2-5 | 20-25 | 2 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.34 | <20097.73 | <0.111 |
| QT2-2-SPME1-6 | 25-30 | 2 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.40 | <20097.73 | <0.67 |
| QT2-2-SPME2-6 | 25-30 | 2 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.45 | <20097.73 | <0.592 |
| QT2-2-SPME1-6 | 25-30 | 2 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.30 | <20097.73 | <0.131 |
| QT2-2-SPME2-6 | 25-30 | 2 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.35 | <20097.73 | <0.113 |
| QT2-2-SPME1-6 | 25-30 | 2 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.29 | <20097.73 | <0.121 |
| QT2-2-SPME2-6 | 25-30 | 2 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.34 | <20097.73 | <0.104 |
| QT2-2-SPME1-6 | 25-30 | 2 | In Cap | 4,4′-DDD | 0.25 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.40 | 83740.55 | 3.08 |
| QT2-2-SPME2-6 | 25-30 | 2 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.46 | <20097.73 | <0.655 |
| QT2-2-SPME1-6 | 25-30 | 2 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.33 | <20097.73 | <0.214 |
| QT2-2-SPME2-6 | 25-30 | 2 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.38 | <20097.73 | <0.185 |
| QT2-2-SPME1-6 | 25-30 | 2 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.30 | <20097.73 | <0.129 |
| QT2-2-SPME2-6 | 25-30 | 2 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.34 | <20097.73 | <0.111 |
| QT2-2-SPME1-7 | 30-35 | 2 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.40 | <20097.73 | <0.67 |

**Table 3: Field, Laboratory Data and Calculations for in-situ SPME Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2-2-SPME2-7 | 30-35 | 2 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.45 | <20097.73 | <0.592 |
| QT2-2-SPME1-7 | 30-35 | 2 | In Cap | 2,4′-DDE | 0.14 | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.30 | 46894.71 | 0.31 |
| QT2-2-SPME2-7 | 30-35 | 2 | In Cap | 2,4′-DDE | 0.14 | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.35 | 46894.71 | 0.26 |
| QT2-2-SPME1-7 | 30-35 | 2 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.29 | <20097.73 | <0.121 |
| QT2-2-SPME2-7 | 30-35 | 2 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.34 | <20097.73 | <0.104 |
| QT2-2-SPME1-7 | 30-35 | 2 | In Cap | 4,4′-DDD | 0.16 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.40 | 53593.95 | 1.97 |
| QT2-2-SPME2-7 | 30-35 | 2 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.46 | <20097.73 | <0.655 |
| QT2-2-SPME1-7 | 30-35 | 2 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.33 | <20097.73 | <0.214 |
| QT2-2-SPME2-7 | 30-35 | 2 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.38 | <20097.73 | <0.185 |
| QT2-2-SPME1-7 | 30-35 | 2 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.30 | <20097.73 | <0.129 |
| QT2-2-SPME2-7 | 30-35 | 2 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.34 | <20097.73 | <0.111 |
| QT2-2-SPME1-8 | 35-40 | 2 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.35 | <20097.73 | <0.759 |
| QT2-2-SPME2-8 | 35-40 | 2 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.35 | <20097.73 | <0.756 |
| QT2-2-SPME1-8 | 35-40 | 2 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.26 | <20097.73 | <0.15 |
| QT2-2-SPME2-8 | 35-40 | 2 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.30 | <20097.73 | <0.132 |
| QT2-2-SPME1-8 | 35-40 | 2 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.26 | <20097.73 | <0.138 |
| QT2-2-SPME2-8 | 35-40 | 2 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.29 | <20097.73 | <0.121 |
| QT2-2-SPME1-8 | 35-40 | 2 | In Cap | 4,4′-DDD | 0.07 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.36 | 23447.35 | 0.98 |
| QT2-2-SPME2-8 | 35-40 | 2 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.36 | <20097.73 | <0.84 |
| QT2-2-SPME1-8 | 35-40 | 2 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.29 | <20097.73 | <0.244 |
| QT2-2-SPME2-8 | 35-40 | 2 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.31 | <20097.73 | <0.223 |
| QT2-2-SPME1-8 | 35-40 | 2 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.26 | <20097.73 | <0.147 |
| QT2-2-SPME2-8 | 35-40 | 2 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.29 | <20097.73 | <0.13 |
| QT2-2-SPME1-9 | 40-45 | 2 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.35 | <20097.73 | <0.759 |
| QT2-2-SPME2-9 | 40-45 | 2 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.35 | <20097.73 | <0.756 |
| QT2-2-SPME1-9 | 40-45 | 2 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.26 | <20097.73 | <0.15 |
| QT2-2-SPME2-9 | 40-45 | 2 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.30 | <20097.73 | <0.132 |
| QT2-2-SPME1-9 | 40-45 | 2 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.26 | <20097.73 | <0.138 |
| QT2-2-SPME2-9 | 40-45 | 2 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.29 | <20097.73 | <0.121 |
| QT2-2-SPME1-9 | 40-45 | 2 | In Cap | 4,4′-DDD | 0.16 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.36 | 53593.95 | 2.24 |
| QT2-2-SPME2-9 | 40-45 | 2 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.36 | <20097.73 | <0.84 |
| QT2-2-SPME1-9 | 40-45 | 2 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.29 | <20097.73 | <0.244 |
| QT2-2-SPME2-9 | 40-45 | 2 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.31 | <20097.73 | <0.223 |
| QT2-2-SPME1-9 | 40-45 | 2 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.26 | <20097.73 | <0.147 |
| QT2-2-SPME2-9 | 40-45 | 2 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.29 | <20097.73 | <0.13 |
| QT2 2 1-10 | 45-50 | 2 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.35 | <20097.73 | <0.759 |
| QT2 2 2-10 | 45-50 | 2 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.35 | <20097.73 | <0.756 |
| QT2 2 1-10 | 45-50 | 2 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.26 | <20097.73 | <0.15 |
| QT2 2 2-10 | 45-50 | 2 | In Cap | 2,4′-DDE | 0.10 | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.30 | 33496.22 | 0.22 |
| QT2 2 1-10 | 45-50 | 2 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.26 | <20097.73 | <0.138 |
| QT2 2 2-10 | 45-50 | 2 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.29 | <20097.73 | <0.121 |

**Table 3: Field, Laboratory Data and Calculations for in-situ SPME Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2 2 1-10 | 45-50 | 2 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.36 | <20097.73 | <0.838 |
| QT2 2 2-10 | 45-50 | 2 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.36 | <20097.73 | <0.84 |
| QT2 2 1-10 | 45-50 | 2 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.29 | <20097.73 | <0.244 |
| QT2 2 2-10 | 45-50 | 2 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.31 | <20097.73 | <0.223 |
| QT2 2 1-10 | 45-50 | 2 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.26 | <20097.73 | <0.147 |
| QT2 2 2-10 | 45-50 | 2 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.29 | <20097.73 | <0.13 |
| QT2-2-SPME1-11 | 50-55 | 2 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.35 | <20097.73 | <0.759 |
| QT2-2-SPME2-11 | 50-55 | 2 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.35 | <20097.73 | <0.756 |
| QT2-2-SPME1-11 | 50-55 | 2 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.26 | <20097.73 | <0.15 |
| QT2-2-SPME2-11 | 50-55 | 2 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.30 | <20097.73 | <0.132 |
| QT2-2-SPME1-11 | 50-55 | 2 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.26 | <20097.73 | <0.138 |
| QT2-2-SPME2-11 | 50-55 | 2 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.29 | <20097.73 | <0.121 |
| QT2-2-SPME1-11 | 50-55 | 2 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.36 | <20097.73 | <0.838 |
| QT2-2-SPME2-11 | 50-55 | 2 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.36 | <20097.73 | <0.84 |
| QT2-2-SPME1-11 | 50-55 | 2 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.29 | <20097.73 | <0.244 |
| QT2-2-SPME2-11 | 50-55 | 2 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.31 | <20097.73 | <0.223 |
| QT2-2-SPME1-11 | 50-55 | 2 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.26 | <20097.73 | <0.147 |
| QT2-2-SPME2-11 | 50-55 | 2 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.29 | <20097.73 | <0.13 |
| QT2 2 1-2 | 5-10 | 2 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.45 | <20097.73 | <0.596 |
| QT2 2 2-2 | 5-10 | 2 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.40 | <20097.73 | <0.662 |
| QT2 2 1-2 | 5-10 | 2 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.37 | <20097.73 | <0.104 |
| QT2 2 2-2 | 5-10 | 2 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.31 | <20097.73 | <0.124 |
| QT2 2 1-2 | 5-10 | 2 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.37 | <20097.73 | <0.096 |
| QT2 2 2-2 | 5-10 | 2 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.31 | <20097.73 | <0.114 |
| QT2 2 1-2 | 5-10 | 2 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.45 | <20097.73 | <0.662 |
| QT2 2 2-2 | 5-10 | 2 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.41 | <20097.73 | <0.733 |
| QT2 2 1-2 | 5-10 | 2 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.39 | <20097.73 | <0.176 |
| QT2 2 2-2 | 5-10 | 2 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.34 | <20097.73 | <0.205 |
| QT2 2 1-2 | 5-10 | 2 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.37 | <20097.73 | <0.103 |
| QT2 2 2-2 | 5-10 | 2 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.31 | <20097.73 | <0.122 |
| QT2-2-SPME1-12 | 55-59.4 | 2 | In Cap | 2,4′-DDD | ND | 0.06 | 4.4 | 2.63E-06 | 7.55E+04 | 0.35 | <22838.33 | <0.863 |
| QT2-2-SPME1-12 | 55-59.4 | 2 | In Cap | 2,4′-DDE | 0.11 | 0.06 | 4.4 | 2.63E-06 | 5.17E+05 | 0.26 | 41870.27 | 0.31 |
| QT2-2-SPME1-12 | 55-59.4 | 2 | In Cap | 2,4′-DDT | ND | 0.06 | 4.4 | 2.63E-06 | 5.70E+05 | 0.26 | <22838.33 | <0.157 |
| QT2-2-SPME1-12 | 55-59.4 | 2 | In Cap | 4,4′-DDD | 0.09 | 0.06 | 4.4 | 2.63E-06 | 6.73E+04 | 0.36 | 34257.50 | 1.43 |
| QT2-2-SPME1-12 | 55-59.4 | 2 | In Cap | 4,4′-DDT | ND | 0.06 | 4.4 | 2.63E-06 | 2.89E+05 | 0.29 | <22838.33 | <0.277 |
| QT2-2-SPME1-12 | 55-59.4 | 2 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 4.4 | 2.63E-06 | 5.27E+05 | 0.26 | <22838.33 | <0.167 |
| QT2-2-SPME2-12 | 55-60 | 2 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.35 | <20097.73 | <0.756 |
| QT2-2-SPME2-12 | 55-60 | 2 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.30 | <20097.73 | <0.132 |
| QT2-2-SPME2-12 | 55-60 | 2 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.29 | <20097.73 | <0.121 |
| QT2-2-SPME2-12 | 55-60 | 2 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.36 | <20097.73 | <0.84 |
| QT2-2-SPME2-12 | 55-60 | 2 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.31 | <20097.73 | <0.223 |

**Table 3: Field, Laboratory Data and Calculations for in-situ SPME Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2-2-SPME2-12 | 55-60 | 2 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.29 | <20097.73 | <0.13 |
| QT2-3L-SPME1-1 | 0-5 | 3 | In Cap | 2,4´-DDD | 0.19 | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.40 | 63642.82 | 2.13 |
| QT2-3L-SPME2-1 | 0-5 | 3 | In Cap | 2,4´-DDD | 0.07 | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.67 | 23447.35 | 0.46 |
| QT2-3L-SPME1-1 | 0-5 | 3 | In Cap | 2,4´-DDE | 0.11 | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.30 | 36845.84 | 0.24 |
| QT2-3L-SPME2-1 | 0-5 | 3 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.54 | <20097.73 | <0.072 |
| QT2-3L-SPME1-1 | 0-5 | 3 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.30 | <20097.73 | <0.118 |
| QT2-3L-SPME2-1 | 0-5 | 3 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.53 | <20097.73 | <0.066 |
| QT2-3L-SPME1-1 | 0-5 | 3 | In Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.40 | <20097.73 | <0.744 |
| QT2-3L-SPME2-1 | 0-5 | 3 | In Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.68 | <20097.73 | <0.439 |
| QT2-3L-SPME1-1 | 0-5 | 3 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.33 | <20097.73 | <0.211 |
| QT2-3L-SPME2-1 | 0-5 | 3 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.58 | <20097.73 | <0.12 |
| QT2-3L-SPME1-1 | 0-5 | 3 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.30 | <20097.73 | <0.126 |
| QT2-3L-SPME2-1 | 0-5 | 3 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.54 | <20097.73 | <0.071 |
| QT2-3L-SPME1-3 | 10-15 | 3 | In Cap | 2,4´-DDD | 0.08 | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.40 | 26796.98 | 0.90 |
| QT2-3L-SPME2-3 | 10-15 | 3 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.67 | <20097.73 | <0.396 |
| QT2-3L-SPME1-3 | 10-15 | 3 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.30 | <20097.73 | <0.129 |
| QT2-3L-SPME2-3 | 10-15 | 3 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.54 | <20097.73 | <0.072 |
| QT2-3L-SPME1-3 | 10-15 | 3 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.30 | <20097.73 | <0.118 |
| QT2-3L-SPME2-3 | 10-15 | 3 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.53 | <20097.73 | <0.066 |
| QT2-3L-SPME1-3 | 10-15 | 3 | In Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.40 | <20097.73 | <0.744 |
| QT2-3L-SPME2-3 | 10-15 | 3 | In Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.68 | <20097.73 | <0.439 |
| QT2-3L-SPME1-3 | 10-15 | 3 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.33 | <20097.73 | <0.211 |
| QT2-3L-SPME2-3 | 10-15 | 3 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.58 | <20097.73 | <0.12 |
| QT2-3L-SPME1-3 | 10-15 | 3 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.30 | <20097.73 | <0.126 |
| QT2-3L-SPME2-3 | 10-15 | 3 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.54 | <20097.73 | <0.071 |
| QT2-3L-SPME1-4 | 15-20 | 3 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.31 | <20097.73 | <0.864 |
| QT2-3L-SPME2-4 | 15-20 | 3 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.49 | <20097.73 | <0.54 |
| QT2-3L-SPME1-4 | 15-20 | 3 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.15 | <20097.73 | <0.252 |
| QT2-3L-SPME2-4 | 15-20 | 3 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.43 | <20097.73 | <0.09 |
| QT2-3L-SPME1-4 | 15-20 | 3 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.15 | <20097.73 | <0.238 |
| QT2-3L-SPME2-4 | 15-20 | 3 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.43 | <20097.73 | <0.082 |
| QT2-3L-SPME1-4 | 15-20 | 3 | In Cap | 4,4´-DDD | 0.13 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.32 | 43545.09 | 2.02 |
| QT2-3L-SPME2-4 | 15-20 | 3 | In Cap | 4,4´-DDD | 0.22 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.50 | 73691.68 | 2.21 |
| QT2-3L-SPME1-4 | 15-20 | 3 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.19 | <20097.73 | <0.362 |
| QT2-3L-SPME2-4 | 15-20 | 3 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.45 | <20097.73 | <0.154 |
| QT2-3L-SPME1-4 | 15-20 | 3 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.15 | <20097.73 | <0.249 |
| QT2-3L-SPME2-4 | 15-20 | 3 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.43 | <20097.73 | <0.088 |
| QT2 3L 1-5 | 20-25 | 3 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.31 | <20097.73 | <0.864 |
| QT2 3L 2-5 | 20-25 | 3 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.49 | <20097.73 | <0.54 |
| QT2 3L 1-5 | 20-25 | 3 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.15 | <20097.73 | <0.252 |
| QT2 3L 2-5 | 20-25 | 3 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.43 | <20097.73 | <0.09 |

**Table 3: Field, Laboratory Data and Calculations for in-situ SPME Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2 3L 1-5 | 20-25 | 3 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.15 | <20097.73 | <0.238 |
| QT2 3L 2-5 | 20-25 | 3 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.43 | <20097.73 | <0.082 |
| QT2 3L 1-5 | 20-25 | 3 | In Cap | 4,4′-DDD | 0.09 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.32 | 30146.60 | 1.40 |
| QT2 3L 2-5 | 20-25 | 3 | In Cap | 4,4′-DDD | 0.31 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.50 | 103838.28 | 3.11 |
| QT2 3L 1-5 | 20-25 | 3 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.19 | <20097.73 | <0.362 |
| QT2 3L 2-5 | 20-25 | 3 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.45 | <20097.73 | <0.154 |
| QT2 3L 1-5 | 20-25 | 3 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.15 | <20097.73 | <0.249 |
| QT2 3L 2-5 | 20-25 | 3 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.43 | <20097.73 | <0.088 |
| QT2-3L-SPME1-6 | 25-30 | 3 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.31 | <20097.73 | <0.864 |
| QT2-3L-SPME2-6 | 25-30 | 3 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.49 | <20097.73 | <0.54 |
| QT2-3L-SPME1-6 | 25-30 | 3 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.15 | <20097.73 | <0.252 |
| QT2-3L-SPME2-6 | 25-30 | 3 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.43 | <20097.73 | <0.09 |
| QT2-3L-SPME1-6 | 25-30 | 3 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.15 | <20097.73 | <0.238 |
| QT2-3L-SPME2-6 | 25-30 | 3 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.43 | <20097.73 | <0.082 |
| QT2-3L-SPME1-6 | 25-30 | 3 | In Cap | 4,4′-DDD | 0.09 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.32 | 30146.60 | 1.40 |
| QT2-3L-SPME2-6 | 25-30 | 3 | In Cap | 4,4′-DDD | 0.13 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.50 | 43545.09 | 1.30 |
| QT2-3L-SPME1-6 | 25-30 | 3 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.19 | <20097.73 | <0.362 |
| QT2-3L-SPME2-6 | 25-30 | 3 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.45 | <20097.73 | <0.154 |
| QT2-3L-SPME1-6 | 25-30 | 3 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.15 | <20097.73 | <0.249 |
| QT2-3L-SPME2-6 | 25-30 | 3 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.43 | <20097.73 | <0.088 |
| QT2-3L-SPME1-7 | 30-35 | 3 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.31 | <20097.73 | <0.864 |
| QT2-3L-SPME2-7 | 30-35 | 3 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.49 | <20097.73 | <0.54 |
| QT2-3L-SPME1-7 | 30-35 | 3 | In Cap | 2,4′-DDE | 0.12 | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.15 | 40195.46 | 0.50 |
| QT2-3L-SPME2-7 | 30-35 | 3 | In Cap | 2,4′-DDE | 0.12 | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.43 | 40195.46 | 0.18 |
| QT2-3L-SPME1-7 | 30-35 | 3 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.15 | <20097.73 | <0.238 |
| QT2-3L-SPME2-7 | 30-35 | 3 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.43 | <20097.73 | <0.082 |
| QT2-3L-SPME1-7 | 30-35 | 3 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.32 | <20097.73 | <0.934 |
| QT2-3L-SPME2-7 | 30-35 | 3 | In Cap | 4,4′-DDD | 0.14 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.50 | 46894.71 | 1.40 |
| QT2-3L-SPME1-7 | 30-35 | 3 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.19 | <20097.73 | <0.362 |
| QT2-3L-SPME2-7 | 30-35 | 3 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.45 | <20097.73 | <0.154 |
| QT2-3L-SPME1-7 | 30-35 | 3 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.15 | <20097.73 | <0.249 |
| QT2-3L-SPME2-7 | 30-35 | 3 | In Cap | 4,4'-DDE [2C] | 0.08 | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.43 | 26796.98 | 0.12 |
| QT2-3L-SPME1-8 | 35-40 | 3 | In Cap | 2,4′-DDD | 0.07 | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.46 | 23447.35 | 0.68 |
| QT2-3L-SPME2-8 | 35-40 | 3 | In Cap | 2,4′-DDD | 0.16 | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.41 | 53593.95 | 1.74 |
| QT2-3L-SPME1-8 | 35-40 | 3 | In Cap | 2,4′-DDE | 0.11 | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.35 | 36845.84 | 0.20 |
| QT2-3L-SPME2-8 | 35-40 | 3 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.34 | <20097.73 | <0.115 |
| QT2-3L-SPME1-8 | 35-40 | 3 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.35 | <20097.73 | <0.102 |
| QT2-3L-SPME2-8 | 35-40 | 3 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.34 | <20097.73 | <0.105 |
| QT2-3L-SPME1-8 | 35-40 | 3 | In Cap | 4,4′-DDD | 0.11 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.46 | 36845.84 | 1.19 |
| QT2-3L-SPME2-8 | 35-40 | 3 | In Cap | 4,4′-DDD | 0.34 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.41 | 113887.15 | 4.11 |
| QT2-3L-SPME1-8 | 35-40 | 3 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.38 | <20097.73 | <0.182 |

**Table 3: Field, Laboratory Data and Calculations for in-situ SPME Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2-3L-SPME2-8 | 35-40 | 3 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.36 | <20097.73 | <0.194 |
| QT2-3L-SPME1-8 | 35-40 | 3 | In Cap | 4,4'-DDE [2C] | 0.29 | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.35 | 97139.04 | 0.53 |
| QT2-3L-SPME2-8 | 35-40 | 3 | In Cap | 4,4'-DDE [2C] | 0.22 | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.34 | 73691.68 | 0.41 |
| QT2-3L-SPME1-9 | 40-45 | 3 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.46 | <20097.73 | <0.585 |
| QT2-3L-SPME2-9 | 40-45 | 3 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.41 | <20097.73 | <0.653 |
| QT2-3L-SPME1-9 | 40-45 | 3 | In Cap | 2,4′-DDE | 0.10 | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.35 | 33496.22 | 0.18 |
| QT2-3L-SPME2-9 | 40-45 | 3 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.34 | <20097.73 | <0.115 |
| QT2-3L-SPME1-9 | 40-45 | 3 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.35 | <20097.73 | <0.102 |
| QT2-3L-SPME2-9 | 40-45 | 3 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.34 | <20097.73 | <0.105 |
| QT2-3L-SPME1-9 | 40-45 | 3 | In Cap | 4,4′-DDD | 0.10 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.46 | 33496.22 | 1.08 |
| QT2-3L-SPME2-9 | 40-45 | 3 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.41 | <20097.73 | <0.725 |
| QT2-3L-SPME1-9 | 40-45 | 3 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.38 | <20097.73 | <0.182 |
| QT2-3L-SPME2-9 | 40-45 | 3 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.36 | <20097.73 | <0.194 |
| QT2-3L-SPME1-9 | 40-45 | 3 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.35 | <20097.73 | <0.109 |
| QT2-3L-SPME2-9 | 40-45 | 3 | In Cap | 4,4'-DDE [2C] | 0.32 | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.34 | 107187.90 | 0.60 |
| QT2 3L 1-10 | 45-50 | 3 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.46 | <20097.73 | <0.585 |
| QT2 3L 2-10 | 45-50 | 3 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.41 | <20097.73 | <0.653 |
| QT2 3L 1-10 | 45-50 | 3 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.35 | <20097.73 | <0.111 |
| QT2 3L 2-10 | 45-50 | 3 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.34 | <20097.73 | <0.115 |
| QT2 3L 1-10 | 45-50 | 3 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.35 | <20097.73 | <0.102 |
| QT2 3L 2-10 | 45-50 | 3 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.34 | <20097.73 | <0.105 |
| QT2 3L 1-10 | 45-50 | 3 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.46 | <20097.73 | <0.647 |
| QT2 3L 2-10 | 45-50 | 3 | In Cap | 4,4′-DDD | 0.08 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.41 | 26796.98 | 0.97 |
| QT2 3L 1-10 | 45-50 | 3 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.38 | <20097.73 | <0.182 |
| QT2 3L 2-10 | 45-50 | 3 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.36 | <20097.73 | <0.194 |
| QT2 3L 1-10 | 45-50 | 3 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.35 | <20097.73 | <0.109 |
| QT2 3L 2-10 | 45-50 | 3 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.34 | <20097.73 | <0.113 |
| QT2-3L-SPME1-11 | 50-55 | 3 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.46 | <20097.73 | <0.585 |
| QT2-3L-SPME2-11 | 50-55 | 3 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.41 | <20097.73 | <0.653 |
| QT2-3L-SPME1-11 | 50-55 | 3 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.35 | <20097.73 | <0.111 |
| QT2-3L-SPME2-11 | 50-55 | 3 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.34 | <20097.73 | <0.115 |
| QT2-3L-SPME1-11 | 50-55 | 3 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.35 | <20097.73 | <0.102 |
| QT2-3L-SPME2-11 | 50-55 | 3 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.34 | <20097.73 | <0.105 |
| QT2-3L-SPME1-11 | 50-55 | 3 | In Cap | 4,4′-DDD | 0.12 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.46 | 40195.46 | 1.29 |
| QT2-3L-SPME2-11 | 50-55 | 3 | In Cap | 4,4′-DDD | 0.11 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.41 | 36845.84 | 1.33 |
| QT2-3L-SPME1-11 | 50-55 | 3 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.38 | <20097.73 | <0.182 |
| QT2-3L-SPME2-11 | 50-55 | 3 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.36 | <20097.73 | <0.194 |
| QT2-3L-SPME1-11 | 50-55 | 3 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.35 | <20097.73 | <0.109 |
| QT2-3L-SPME2-11 | 50-55 | 3 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.34 | <20097.73 | <0.113 |
| QT2 3L 1-2 | 5-10 | 3 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.40 | <20097.73 | <0.673 |
| QT2 3L 2-2 | 5-10 | 3 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.67 | <20097.73 | <0.396 |

**Table 3: Field, Laboratory Data and Calculations for in-situ SPME Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2 3L 1-2 | 5-10 | 3 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.30 | <20097.73 | <0.129 |
| QT2 3L 2-2 | 5-10 | 3 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.54 | <20097.73 | <0.072 |
| QT2 3L 1-2 | 5-10 | 3 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.30 | <20097.73 | <0.118 |
| QT2 3L 2-2 | 5-10 | 3 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.53 | <20097.73 | <0.066 |
| QT2 3L 1-2 | 5-10 | 3 | In Cap | 4,4´-DDD | 0.10 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.40 | 33496.22 | 1.24 |
| QT2 3L 2-2 | 5-10 | 3 | In Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.68 | <20097.73 | <0.439 |
| QT2 3L 1-2 | 5-10 | 3 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.33 | <20097.73 | <0.211 |
| QT2 3L 2-2 | 5-10 | 3 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.58 | <20097.73 | <0.12 |
| QT2 3L 1-2 | 5-10 | 3 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.30 | <20097.73 | <0.126 |
| QT2 3L 2-2 | 5-10 | 3 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.54 | <20097.73 | <0.071 |
| QT2-3L-SPME1-12 | 55-57.9 | 3 | In Cap | 2,4´-DDD | ND | 0.06 | 2.9 | 1.73E-06 | 7.55E+04 | 0.46 | <34651.26 | <1.008 |
| QT2-3L-SPME1-12 | 55-57.9 | 3 | In Cap | 2,4´-DDE | ND | 0.06 | 2.9 | 1.73E-06 | 5.17E+05 | 0.35 | <34651.26 | <0.191 |
| QT2-3L-SPME1-12 | 55-57.9 | 3 | In Cap | 2,4´-DDT | ND | 0.06 | 2.9 | 1.73E-06 | 5.70E+05 | 0.35 | <34651.26 | <0.176 |
| QT2-3L-SPME1-12 | 55-57.9 | 3 | In Cap | 4,4´-DDD | 0.08 | 0.06 | 2.9 | 1.73E-06 | 6.73E+04 | 0.46 | 46201.68 | 1.49 |
| QT2-3L-SPME1-12 | 55-57.9 | 3 | In Cap | 4,4´-DDT | ND | 0.06 | 2.9 | 1.73E-06 | 2.89E+05 | 0.38 | <34651.26 | <0.315 |
| QT2-3L-SPME1-12 | 55-57.9 | 3 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 2.9 | 1.73E-06 | 5.27E+05 | 0.35 | <34651.26 | <0.188 |
| QT2-3L-SPME2-12 | 55-60 | 3 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.41 | <20097.73 | <0.653 |
| QT2-3L-SPME2-12 | 55-60 | 3 | In Cap | 2,4´-DDE | 0.13 | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.34 | 43545.09 | 0.25 |
| QT2-3L-SPME2-12 | 55-60 | 3 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.34 | <20097.73 | <0.105 |
| QT2-3L-SPME2-12 | 55-60 | 3 | In Cap | 4,4´-DDD | 0.16 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.41 | 53593.95 | 1.93 |
| QT2-3L-SPME2-12 | 55-60 | 3 | In Cap | 4,4´-DDT | 0.07 | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.36 | 23447.35 | 0.23 |
| QT2-3L-SPME2-12 | 55-60 | 3 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.34 | <20097.73 | <0.113 |
| QT2-4-SPME1-1 | 0-5 | 4 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.44 | <20097.73 | <0.608 |
| QT2-4-SPME2-1 | 0-5 | 4 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.64 | <20097.73 | <0.417 |
| QT2-4-SPME1-1 | 0-5 | 4 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.32 | <20097.73 | <0.12 |
| QT2-4-SPME2-1 | 0-5 | 4 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.47 | <20097.73 | <0.083 |
| QT2-4-SPME1-1 | 0-5 | 4 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.32 | <20097.73 | <0.111 |
| QT2-4-SPME2-1 | 0-5 | 4 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.46 | <20097.73 | <0.076 |
| QT2-4-SPME1-1 | 0-5 | 4 | In Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.45 | <20097.73 | <0.671 |
| QT2-4-SPME2-1 | 0-5 | 4 | In Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.65 | <20097.73 | <0.461 |
| QT2-4-SPME1-1 | 0-5 | 4 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.36 | <20097.73 | <0.195 |
| QT2-4-SPME2-1 | 0-5 | 4 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.52 | <20097.73 | <0.133 |
| QT2-4-SPME1-1 | 0-5 | 4 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.32 | <20097.73 | <0.118 |
| QT2-4-SPME2-1 | 0-5 | 4 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.47 | <20097.73 | <0.081 |
| QT2-4-SPME1-3 | 10-15 | 4 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.44 | <20097.73 | <0.608 |
| QT2-4-SPME2-3 | 10-15 | 4 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.64 | <20097.73 | <0.417 |
| QT2-4-SPME1-3 | 10-15 | 4 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.32 | <20097.73 | <0.12 |
| QT2-4-SPME2-3 | 10-15 | 4 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.47 | <20097.73 | <0.083 |
| QT2-4-SPME1-3 | 10-15 | 4 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.32 | <20097.73 | <0.111 |
| QT2-4-SPME2-3 | 10-15 | 4 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.46 | <20097.73 | <0.076 |
| QT2-4-SPME1-3 | 10-15 | 4 | In Cap | 4,4´-DDD | 0.24 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.45 | 80390.93 | 2.69 |

**Table 3: Field, Laboratory Data and Calculations for in-situ SPME Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2-4-SPME2-3 | 10-15 | 4 | In Cap | 4,4′-DDD | 0.08 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.65 | 26796.98 | 0.61 |
| QT2-4-SPME1-3 | 10-15 | 4 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.36 | <20097.73 | <0.195 |
| QT2-4-SPME2-3 | 10-15 | 4 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.52 | <20097.73 | <0.133 |
| QT2-4-SPME1-3 | 10-15 | 4 | In Cap | 4,4'-DDE [2C] | 1.00 | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.32 | 334962.20 | 1.97 |
| QT2-4-SPME2-3 | 10-15 | 4 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.47 | <20097.73 | <0.081 |
| QT2-4-SPME1-4 | 15-20 | 4 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.43 | <20097.73 | <0.614 |
| QT2-4-SPME2-4 | 15-20 | 4 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.46 | <20097.73 | <0.575 |
| QT2-4-SPME1-4 | 15-20 | 4 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.34 | <20097.73 | <0.113 |
| QT2-4-SPME2-4 | 15-20 | 4 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.40 | <20097.73 | <0.097 |
| QT2-4-SPME1-4 | 15-20 | 4 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.34 | <20097.73 | <0.104 |
| QT2-4-SPME2-4 | 15-20 | 4 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.40 | <20097.73 | <0.088 |
| QT2-4-SPME1-4 | 15-20 | 4 | In Cap | 4,4′-DDD | 0.07 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.44 | 23447.35 | 0.79 |
| QT2-4-SPME2-4 | 15-20 | 4 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.47 | <20097.73 | <0.64 |
| QT2-4-SPME1-4 | 15-20 | 4 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.37 | <20097.73 | <0.188 |
| QT2-4-SPME2-4 | 15-20 | 4 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.42 | <20097.73 | <0.165 |
| QT2-4-SPME1-4 | 15-20 | 4 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.34 | <20097.73 | <0.111 |
| QT2-4-SPME2-4 | 15-20 | 4 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.40 | <20097.73 | <0.095 |
| QT2 4 1-5 | 20-25 | 4 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.43 | <20097.73 | <0.614 |
| QT2 4 2-5 | 20-25 | 4 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.46 | <20097.73 | <0.575 |
| QT2 4 1-5 | 20-25 | 4 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.34 | <20097.73 | <0.113 |
| QT2 4 2-5 | 20-25 | 4 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.40 | <20097.73 | <0.097 |
| QT2 4 1-5 | 20-25 | 4 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.34 | <20097.73 | <0.104 |
| QT2 4 2-5 | 20-25 | 4 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.40 | <20097.73 | <0.088 |
| QT2 4 1-5 | 20-25 | 4 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.44 | <20097.73 | <0.681 |
| QT2 4 2-5 | 20-25 | 4 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.47 | <20097.73 | <0.64 |
| QT2 4 1-5 | 20-25 | 4 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.37 | <20097.73 | <0.188 |
| QT2 4 2-5 | 20-25 | 4 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.42 | <20097.73 | <0.165 |
| QT2 4 1-5 | 20-25 | 4 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.34 | <20097.73 | <0.111 |
| QT2 4 2-5 | 20-25 | 4 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.40 | <20097.73 | <0.095 |
| QT2-4-SPME1-6 | 25-30 | 4 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.43 | <20097.73 | <0.614 |
| QT2-4-SPME2-6 | 25-30 | 4 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.46 | <20097.73 | <0.575 |
| QT2-4-SPME1-6 | 25-30 | 4 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.34 | <20097.73 | <0.113 |
| QT2-4-SPME2-6 | 25-30 | 4 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.40 | <20097.73 | <0.097 |
| QT2-4-SPME1-6 | 25-30 | 4 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.34 | <20097.73 | <0.104 |
| QT2-4-SPME2-6 | 25-30 | 4 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.40 | <20097.73 | <0.088 |
| QT2-4-SPME1-6 | 25-30 | 4 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.44 | <20097.73 | <0.681 |
| QT2-4-SPME2-6 | 25-30 | 4 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.47 | <20097.73 | <0.64 |
| QT2-4-SPME1-6 | 25-30 | 4 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.37 | <20097.73 | <0.188 |
| QT2-4-SPME2-6 | 25-30 | 4 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.42 | <20097.73 | <0.165 |
| QT2-4-SPME1-6 | 25-30 | 4 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.34 | <20097.73 | <0.111 |
| QT2-4-SPME2-6 | 25-30 | 4 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.40 | <20097.73 | <0.095 |

**Table 3: Field, Laboratory Data and Calculations for in-situ SPME Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2-4-SPME1-7 | 30-35 | 4 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.43 | <20097.73 | <0.614 |
| QT2-4-SPME2-7 | 30-35 | 4 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.46 | <20097.73 | <0.575 |
| QT2-4-SPME1-7 | 30-35 | 4 | In Cap | 2,4′-DDE | 0.18 | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.34 | 60293.20 | 0.34 |
| QT2-4-SPME2-7 | 30-35 | 4 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.40 | <20097.73 | <0.097 |
| QT2-4-SPME1-7 | 30-35 | 4 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.34 | <20097.73 | <0.104 |
| QT2-4-SPME2-7 | 30-35 | 4 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.40 | <20097.73 | <0.088 |
| QT2-4-SPME1-7 | 30-35 | 4 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.44 | <20097.73 | <0.681 |
| QT2-4-SPME2-7 | 30-35 | 4 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.47 | <20097.73 | <0.64 |
| QT2-4-SPME1-7 | 30-35 | 4 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.37 | <20097.73 | <0.188 |
| QT2-4-SPME2-7 | 30-35 | 4 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.42 | <20097.73 | <0.165 |
| QT2-4-SPME1-7 | 30-35 | 4 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.34 | <20097.73 | <0.111 |
| QT2-4-SPME2-7 | 30-35 | 4 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.40 | <20097.73 | <0.095 |
| QT2-4-SPME1-8 | 35-40 | 4 | In Cap | 2,4′-DDD | 0.07 | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.43 | 23447.35 | 0.73 |
| QT2-4-SPME2-8 | 35-40 | 4 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.61 | <20097.73 | <0.434 |
| QT2-4-SPME1-8 | 35-40 | 4 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.34 | <20097.73 | <0.116 |
| QT2-4-SPME2-8 | 35-40 | 4 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.57 | <20097.73 | <0.068 |
| QT2-4-SPME1-8 | 35-40 | 4 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.33 | <20097.73 | <0.106 |
| QT2-4-SPME2-8 | 35-40 | 4 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.57 | <20097.73 | <0.062 |
| QT2-4-SPME1-8 | 35-40 | 4 | In Cap | 4,4′-DDD | 0.33 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.43 | 110537.52 | 3.81 |
| QT2-4-SPME2-8 | 35-40 | 4 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.62 | <20097.73 | <0.486 |
| QT2-4-SPME1-8 | 35-40 | 4 | In Cap | 4,4′-DDT | 0.11 | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.36 | 36845.84 | 0.35 |
| QT2-4-SPME2-8 | 35-40 | 4 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.58 | <20097.73 | <0.119 |
| QT2-4-SPME1-8 | 35-40 | 4 | In Cap | 4,4'-DDE [2C] | 0.39 | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.34 | 130635.26 | 0.74 |
| QT2-4-SPME2-8 | 35-40 | 4 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.57 | <20097.73 | <0.067 |
| QT2-4-SPME1-9 | 40-45 | 4 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.43 | <20097.73 | <0.625 |
| QT2-4-SPME2-9 | 40-45 | 4 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.61 | <20097.73 | <0.434 |
| QT2-4-SPME1-9 | 40-45 | 4 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.34 | <20097.73 | <0.116 |
| QT2-4-SPME2-9 | 40-45 | 4 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.57 | <20097.73 | <0.068 |
| QT2-4-SPME1-9 | 40-45 | 4 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.33 | <20097.73 | <0.106 |
| QT2-4-SPME2-9 | 40-45 | 4 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.57 | <20097.73 | <0.062 |
| QT2-4-SPME1-9 | 40-45 | 4 | In Cap | 4,4′-DDD | 0.10 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.43 | 33496.22 | 1.15 |
| QT2-4-SPME2-9 | 40-45 | 4 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.62 | <20097.73 | <0.486 |
| QT2-4-SPME1-9 | 40-45 | 4 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.36 | <20097.73 | <0.192 |
| QT2-4-SPME2-9 | 40-45 | 4 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.58 | <20097.73 | <0.119 |
| QT2-4-SPME1-9 | 40-45 | 4 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.34 | <20097.73 | <0.114 |
| QT2-4-SPME2-9 | 40-45 | 4 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.57 | <20097.73 | <0.067 |
| QT2 4 1-10 | 45-50 | 4 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.43 | <20097.73 | <0.625 |
| QT2 4 2-10 | 45-50 | 4 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.61 | <20097.73 | <0.434 |
| QT2 4 1-10 | 45-50 | 4 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.34 | <20097.73 | <0.116 |
| QT2 4 2-10 | 45-50 | 4 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.57 | <20097.73 | <0.068 |
| QT2 4 1-10 | 45-50 | 4 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.33 | <20097.73 | <0.106 |

**Table 3: Field, Laboratory Data and Calculations for in-situ SPME Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2 4 2-10 | 45-50 | 4 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.57 | <20097.73 | <0.062 |
| QT2 4 1-10 | 45-50 | 4 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.43 | <20097.73 | <0.693 |
| QT2 4 2-10 | 45-50 | 4 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.62 | <20097.73 | <0.486 |
| QT2-4-SPME1-11 | 45-50 | 4 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.36 | <20097.73 | <0.192 |
| QT2 4 2-10 | 45-50 | 4 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.58 | <20097.73 | <0.119 |
| QT2 4 1-10 | 45-50 | 4 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.34 | <20097.73 | <0.114 |
| QT2 4 2-10 | 45-50 | 4 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.57 | <20097.73 | <0.067 |
| QT2-4-SPME1-11 | 50-55 | 4 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.43 | <20097.73 | <0.625 |
| QT2-4-SPME2-11 | 50-55 | 4 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.61 | <20097.73 | <0.434 |
| QT2-4-SPME1-11 | 50-55 | 4 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.34 | <20097.73 | <0.116 |
| QT2-4-SPME2-11 | 50-55 | 4 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.57 | <20097.73 | <0.068 |
| QT2-4-SPME1-11 | 50-55 | 4 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.33 | <20097.73 | <0.106 |
| QT2-4-SPME2-11 | 50-55 | 4 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.57 | <20097.73 | <0.062 |
| QT2-4-SPME1-11 | 50-55 | 4 | In Cap | 4,4′-DDD | 0.07 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.43 | 23447.35 | 0.81 |
| QT2-4-SPME2-11 | 50-55 | 4 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.62 | <20097.73 | <0.486 |
| QT2 4 1-10 | 50-55 | 4 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.36 | <20097.73 | <0.192 |
| QT2-4-SPME2-11 | 50-55 | 4 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.58 | <20097.73 | <0.119 |
| QT2-4-SPME1-11 | 50-55 | 4 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.34 | <20097.73 | <0.114 |
| QT2-4-SPME2-11 | 50-55 | 4 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.57 | <20097.73 | <0.067 |
| QT2 4 1-2 | 5-10 | 4 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.44 | <20097.73 | <0.608 |
| QT2 4 2-2 | 5-10 | 4 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.64 | <20097.73 | <0.417 |
| QT2 4 1-2 | 5-10 | 4 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.32 | <20097.73 | <0.12 |
| QT2 4 2-2 | 5-10 | 4 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.47 | <20097.73 | <0.083 |
| QT2 4 1-2 | 5-10 | 4 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.32 | <20097.73 | <0.111 |
| QT2 4 2-2 | 5-10 | 4 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.46 | <20097.73 | <0.076 |
| QT2 4 1-2 | 5-10 | 4 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.45 | <20097.73 | <0.671 |
| QT2 4 2-2 | 5-10 | 4 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.65 | <20097.73 | <0.461 |
| QT2 4 1-2 | 5-10 | 4 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.36 | <20097.73 | <0.195 |
| QT2 4 2-2 | 5-10 | 4 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.52 | <20097.73 | <0.133 |
| QT2 4 1-2 | 5-10 | 4 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.32 | <20097.73 | <0.118 |
| QT2 4 2-2 | 5-10 | 4 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.47 | <20097.73 | <0.081 |
| QT2-4-SPME1-12 | 55-59 | 4 | In Cap | 2,4′-DDD | 0.08 | 0.06 | 4 | 2.39E-06 | 7.55E+04 | 0.43 | 33496.22 | 1.04 |
| QT2-4-SPME2-12 | 55-59 | 4 | In Cap | 2,4′-DDD | ND | 0.06 | 4 | 2.39E-06 | 7.55E+04 | 0.61 | <25122.16 | <0.543 |
| QT2-4-SPME1-12 | 55-59 | 4 | In Cap | 2,4′-DDE | 0.14 | 0.06 | 4 | 2.39E-06 | 5.17E+05 | 0.34 | 58618.38 | 0.34 |
| QT2-4-SPME2-12 | 55-59 | 4 | In Cap | 2,4′-DDE | ND | 0.06 | 4 | 2.39E-06 | 5.17E+05 | 0.57 | <25122.16 | <0.085 |
| QT2-4-SPME1-12 | 55-59 | 4 | In Cap | 2,4′-DDT | 0.11 | 0.06 | 4 | 2.39E-06 | 5.70E+05 | 0.33 | 46057.30 | 0.24 |
| QT2-4-SPME2-12 | 55-59 | 4 | In Cap | 2,4′-DDT | ND | 0.06 | 4 | 2.39E-06 | 5.70E+05 | 0.57 | <25122.16 | <0.078 |
| QT2-4-SPME1-12 | 55-59 | 4 | In Cap | 4,4′-DDD | 0.10 | 0.06 | 4 | 2.39E-06 | 6.73E+04 | 0.43 | 41870.27 | 1.44 |
| QT2-4-SPME2-12 | 55-59 | 4 | In Cap | 4,4′-DDD | ND | 0.06 | 4 | 2.39E-06 | 6.73E+04 | 0.62 | <25122.16 | <0.607 |
| QT2-4-SPME1-12 | 55-59 | 4 | In Cap | 4,4′-DDT | 0.09 | 0.06 | 4 | 2.39E-06 | 2.89E+05 | 0.36 | 37683.25 | 0.36 |
| QT2-4-SPME2-12 | 55-59 | 4 | In Cap | 4,4′-DDT | ND | 0.06 | 4 | 2.39E-06 | 2.89E+05 | 0.58 | <25122.16 | <0.149 |

**Table 3: Field, Laboratory Data and Calculations for in-situ SPME Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2-4-SPME1-12 | 55-59 | 4 | In Cap | 4,4'-DDE [2C] | 0.15 | 0.06 | 4 | 2.39E-06 | 5.27E+05 | 0.34 | 62805.41 | 0.35 |
| QT2-4-SPME2-12 | 55-59 | 4 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 4 | 2.39E-06 | 5.27E+05 | 0.57 | <25122.16 | <0.084 |
| QT2-5-SPME1-1 | 0-5 | 5 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.51 | <20097.73 | <0.522 |
| QT2-5-SPME2-1 | 0-5 | 5 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.53 | <20097.73 | <0.5 |
| QT2-5-SPME1-1 | 0-5 | 5 | In Cap | 2,4′-DDE | 0.09 | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.40 | 30146.60 | 0.15 |
| QT2-5-SPME2-1 | 0-5 | 5 | In Cap | 2,4′-DDE | 0.11 | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.34 | 36845.84 | 0.21 |
| QT2-5-SPME1-1 | 0-5 | 5 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.39 | <20097.73 | <0.089 |
| QT2-5-SPME2-1 | 0-5 | 5 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.33 | <20097.73 | <0.108 |
| QT2-5-SPME1-1 | 0-5 | 5 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.52 | <20097.73 | <0.579 |
| QT2-5-SPME2-1 | 0-5 | 5 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.54 | <20097.73 | <0.548 |
| QT2-5-SPME1-1 | 0-5 | 5 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.43 | <20097.73 | <0.161 |
| QT2-5-SPME2-1 | 0-5 | 5 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.39 | <20097.73 | <0.177 |
| QT2-5-SPME1-1 | 0-5 | 5 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.40 | <20097.73 | <0.096 |
| QT2-5-SPME2-1 | 0-5 | 5 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.33 | <20097.73 | <0.114 |
| QT2-5-SPME1-3 | 10-15 | 5 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.51 | <20097.73 | <0.522 |
| QT2-5-SPME2-3 | 10-15 | 5 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.53 | <20097.73 | <0.5 |
| QT2-5-SPME1-3 | 10-15 | 5 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.40 | <20097.73 | <0.097 |
| QT2-5-SPME2-3 | 10-15 | 5 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.34 | <20097.73 | <0.116 |
| QT2-5-SPME1-3 | 10-15 | 5 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.39 | <20097.73 | <0.089 |
| QT2-5-SPME2-3 | 10-15 | 5 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.33 | <20097.73 | <0.108 |
| QT2-5-SPME1-3 | 10-15 | 5 | In Cap | 4,4′-DDD | 0.20 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.52 | 66992.44 | 1.93 |
| QT2-5-SPME2-3 | 10-15 | 5 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.54 | <20097.73 | <0.548 |
| QT2-5-SPME1-3 | 10-15 | 5 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.43 | <20097.73 | <0.161 |
| QT2-5-SPME2-3 | 10-15 | 5 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.39 | <20097.73 | <0.177 |
| QT2-5-SPME1-3 | 10-15 | 5 | In Cap | 4,4'-DDE [2C] | 0.68 | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.40 | 227774.29 | 1.09 |
| QT2-5-SPME2-3 | 10-15 | 5 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.33 | <20097.73 | <0.114 |
| QT2-5-SPME1-4 | 15-20 | 5 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.39 | <20097.73 | <0.689 |
| QT2-5-SPME2-4 | 15-20 | 5 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.35 | <20097.73 | <0.769 |
| QT2-5-SPME1-4 | 15-20 | 5 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.32 | <20097.73 | <0.122 |
| QT2-5-SPME2-4 | 15-20 | 5 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.26 | <20097.73 | <0.151 |
| QT2-5-SPME1-4 | 15-20 | 5 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.32 | <20097.73 | <0.112 |
| QT2-5-SPME2-4 | 15-20 | 5 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.25 | <20097.73 | <0.139 |
| QT2-5-SPME1-4 | 15-20 | 5 | In Cap | 4,4′-DDD | 0.07 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.39 | 23447.35 | 0.89 |
| QT2-5-SPME2-4 | 15-20 | 5 | In Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.35 | <20097.73 | <0.85 |
| QT2-5-SPME1-4 | 15-20 | 5 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.34 | <20097.73 | <0.206 |
| QT2-5-SPME2-4 | 15-20 | 5 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.28 | <20097.73 | <0.246 |
| QT2-5-SPME1-4 | 15-20 | 5 | In Cap | 4,4'-DDE [2C] | 0.07 | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.32 | 23447.35 | 0.14 |
| QT2-5-SPME2-4 | 15-20 | 5 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.26 | <20097.73 | <0.148 |
| QT2 5 1-5 | 20-25 | 5 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.39 | <20097.73 | <0.689 |
| QT2 5 2-5 | 20-25 | 5 | In Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.35 | <20097.73 | <0.769 |
| QT2 5 1-5 | 20-25 | 5 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.32 | <20097.73 | <0.122 |

**Table 3: Field, Laboratory Data and Calculations for in-situ SPME Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2 5 2-5 | 20-25 | 5 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.26 | <20097.73 | <0.151 |
| QT2 5 1-5 | 20-25 | 5 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.32 | <20097.73 | <0.112 |
| QT2 5 2-5 | 20-25 | 5 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.25 | <20097.73 | <0.139 |
| QT2 5 1-5 | 20-25 | 5 | In Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.39 | <20097.73 | <0.766 |
| QT2 5 2-5 | 20-25 | 5 | In Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.35 | <20097.73 | <0.85 |
| QT2 5 1-5 | 20-25 | 5 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.34 | <20097.73 | <0.206 |
| QT2 5 2-5 | 20-25 | 5 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.28 | <20097.73 | <0.246 |
| QT2 5 1-5 | 20-25 | 5 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.32 | <20097.73 | <0.12 |
| QT2 5 2-5 | 20-25 | 5 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.26 | <20097.73 | <0.148 |
| QT2-5-SPME1-6 | 25-30 | 5 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.39 | <20097.73 | <0.689 |
| QT2-5-SPME2-6 | 25-30 | 5 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.35 | <20097.73 | <0.769 |
| QT2-5-SPME1-6 | 25-30 | 5 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.32 | <20097.73 | <0.122 |
| QT2-5-SPME2-6 | 25-30 | 5 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.26 | <20097.73 | <0.151 |
| QT2-5-SPME1-6 | 25-30 | 5 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.32 | <20097.73 | <0.112 |
| QT2-5-SPME2-6 | 25-30 | 5 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.25 | <20097.73 | <0.139 |
| QT2-5-SPME1-6 | 25-30 | 5 | In Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.39 | <20097.73 | <0.766 |
| QT2-5-SPME2-6 | 25-30 | 5 | In Cap | 4,4´-DDD | 0.08 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.35 | 26796.98 | 1.13 |
| QT2-5-SPME1-6 | 25-30 | 5 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.34 | <20097.73 | <0.206 |
| QT2-5-SPME2-6 | 25-30 | 5 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.28 | <20097.73 | <0.246 |
| QT2-5-SPME1-6 | 25-30 | 5 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.32 | <20097.73 | <0.12 |
| QT2-5-SPME2-6 | 25-30 | 5 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.26 | <20097.73 | <0.148 |
| QT2-5-SPME1-7 | 30-35 | 5 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.39 | <20097.73 | <0.689 |
| QT2-5-SPME2-7 | 30-35 | 5 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.35 | <20097.73 | <0.769 |
| QT2-5-SPME1-7 | 30-35 | 5 | In Cap | 2,4´-DDE | 0.09 | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.32 | 30146.60 | 0.18 |
| QT2-5-SPME2-7 | 30-35 | 5 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.26 | <20097.73 | <0.151 |
| QT2-5-SPME1-7 | 30-35 | 5 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.32 | <20097.73 | <0.112 |
| QT2-5-SPME2-7 | 30-35 | 5 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.25 | <20097.73 | <0.139 |
| QT2-5-SPME1-7 | 30-35 | 5 | In Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.39 | <20097.73 | <0.766 |
| QT2-5-SPME2-7 | 30-35 | 5 | In Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.35 | <20097.73 | <0.85 |
| QT2-5-SPME1-7 | 30-35 | 5 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.34 | <20097.73 | <0.206 |
| QT2-5-SPME2-7 | 30-35 | 5 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.28 | <20097.73 | <0.246 |
| QT2-5-SPME1-7 | 30-35 | 5 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.32 | <20097.73 | <0.12 |
| QT2-5-SPME2-7 | 30-35 | 5 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.26 | <20097.73 | <0.148 |
| QT2-5-SPME1-8 | 35-40 | 5 | In Cap | 2,4´-DDD | 0.11 | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.45 | 36845.84 | 1.08 |
| QT2-5-SPME2-8 | 35-40 | 5 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.47 | <20097.73 | <0.561 |
| QT2-5-SPME1-8 | 35-40 | 5 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.32 | <20097.73 | <0.122 |
| QT2-5-SPME2-8 | 35-40 | 5 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.41 | <20097.73 | <0.095 |
| QT2-5-SPME1-8 | 35-40 | 5 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.31 | <20097.73 | <0.112 |
| QT2-5-SPME2-8 | 35-40 | 5 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.41 | <20097.73 | <0.087 |
| QT2-5-SPME1-8 | 35-40 | 5 | In Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.46 | <20097.73 | <0.649 |
| QT2-5-SPME2-8 | 35-40 | 5 | In Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.48 | <20097.73 | <0.625 |

**Table 3: Field, Laboratory Data and Calculations for in-situ SPME Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2-5-SPME1-8 | 35-40 | 5 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.36 | <20097.73 | <0.194 |
| QT2-5-SPME2-8 | 35-40 | 5 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.43 | <20097.73 | <0.162 |
| QT2-5-SPME1-8 | 35-40 | 5 | In Cap | 4,4'-DDE [2C] | 0.10 | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.32 | 33496.22 | 0.20 |
| QT2-5-SPME2-8 | 35-40 | 5 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.41 | <20097.73 | <0.094 |
| QT2-5-SPME1-9 | 40-45 | 5 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.45 | <20097.73 | <0.589 |
| QT2-5-SPME2-9 | 40-45 | 5 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.47 | <20097.73 | <0.561 |
| QT2-5-SPME1-9 | 40-45 | 5 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.32 | <20097.73 | <0.122 |
| QT2-5-SPME2-9 | 40-45 | 5 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.41 | <20097.73 | <0.095 |
| QT2-5-SPME1-9 | 40-45 | 5 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.31 | <20097.73 | <0.112 |
| QT2-5-SPME2-9 | 40-45 | 5 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.41 | <20097.73 | <0.087 |
| QT2-5-SPME1-9 | 40-45 | 5 | In Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.46 | <20097.73 | <0.649 |
| QT2-5-SPME2-9 | 40-45 | 5 | In Cap | 4,4´-DDD | 0.08 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.48 | 26796.98 | 0.83 |
| QT2-5-SPME1-9 | 40-45 | 5 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.36 | <20097.73 | <0.194 |
| QT2-5-SPME2-9 | 40-45 | 5 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.43 | <20097.73 | <0.162 |
| QT2-5-SPME1-9 | 40-45 | 5 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.32 | <20097.73 | <0.12 |
| QT2-5-SPME2-9 | 40-45 | 5 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.41 | <20097.73 | <0.094 |
| QT2 5 1-10 | 45-50 | 5 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.45 | <20097.73 | <0.589 |
| QT2 5 2-10 | 45-50 | 5 | In Cap | 2,4´-DDD | 0.08 | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.47 | 26796.98 | 0.75 |
| QT2 5 1-10 | 45-50 | 5 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.32 | <20097.73 | <0.122 |
| QT2 5 2-10 | 45-50 | 5 | In Cap | 2,4´-DDE | 0.13 | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.41 | 43545.09 | 0.21 |
| QT2 5 1-10 | 45-50 | 5 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.31 | <20097.73 | <0.112 |
| QT2 5 2-10 | 45-50 | 5 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.41 | <20097.73 | <0.087 |
| QT2 5 1-10 | 45-50 | 5 | In Cap | 4,4´-DDD | 0.10 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.46 | 33496.22 | 1.08 |
| QT2 5 2-10 | 45-50 | 5 | In Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.48 | <20097.73 | <0.625 |
| QT2 5 1-10 | 45-50 | 5 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.36 | <20097.73 | <0.194 |
| QT2 5 2-10 | 45-50 | 5 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.43 | <20097.73 | <0.162 |
| QT2 5 1-10 | 45-50 | 5 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.32 | <20097.73 | <0.12 |
| QT2 5 2-10 | 45-50 | 5 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.41 | <20097.73 | <0.094 |
| QT2-5-SPME1-11 | 50-55 | 5 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.45 | <20097.73 | <0.589 |
| QT2-5-SPME2-11 | 50-55 | 5 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.47 | <20097.73 | <0.561 |
| QT2-5-SPME1-11 | 50-55 | 5 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.32 | <20097.73 | <0.122 |
| QT2-5-SPME2-11 | 50-55 | 5 | In Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.41 | <20097.73 | <0.095 |
| QT2-5-SPME1-11 | 50-55 | 5 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.31 | <20097.73 | <0.112 |
| QT2-5-SPME2-11 | 50-55 | 5 | In Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.41 | <20097.73 | <0.087 |
| QT2-5-SPME1-11 | 50-55 | 5 | In Cap | 4,4´-DDD | 0.11 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.46 | 36845.84 | 1.19 |
| QT2-5-SPME2-11 | 50-55 | 5 | In Cap | 4,4´-DDD | 0.10 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.48 | 33496.22 | 1.04 |
| QT2-5-SPME1-11 | 50-55 | 5 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.36 | <20097.73 | <0.194 |
| QT2-5-SPME2-11 | 50-55 | 5 | In Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.43 | <20097.73 | <0.162 |
| QT2-5-SPME1-11 | 50-55 | 5 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.32 | <20097.73 | <0.12 |
| QT2-5-SPME2-11 | 50-55 | 5 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.41 | <20097.73 | <0.094 |
| QT2 5 1-2 | 5-10 | 5 | In Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.51 | <20097.73 | <0.522 |

**Table 3: Field, Laboratory Data and Calculations for in-situ SPME Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2 5 2-2 | 5-10 | 5 | In Cap | 2,4′-DDD | 0.07 | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.53 | 23447.35 | 0.58 |
| QT2 5 1-2 | 5-10 | 5 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.40 | <20097.73 | <0.097 |
| QT2 5 2-2 | 5-10 | 5 | In Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.34 | <20097.73 | <0.116 |
| QT2 5 1-2 | 5-10 | 5 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.39 | <20097.73 | <0.089 |
| QT2 5 2-2 | 5-10 | 5 | In Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.33 | <20097.73 | <0.108 |
| QT2 5 1-2 | 5-10 | 5 | In Cap | 4,4′-DDD | 0.09 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.52 | 30146.60 | 0.87 |
| QT2 5 2-2 | 5-10 | 5 | In Cap | 4,4′-DDD | 0.12 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.54 | 40195.46 | 1.10 |
| QT2 5 1-2 | 5-10 | 5 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.43 | <20097.73 | <0.161 |
| QT2 5 2-2 | 5-10 | 5 | In Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.39 | <20097.73 | <0.177 |
| QT2 5 1-2 | 5-10 | 5 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.40 | <20097.73 | <0.096 |
| QT2 5 2-2 | 5-10 | 5 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.33 | <20097.73 | <0.114 |
| QT2-5-SPME1-12 | 55-59.3 | 5 | In Cap | 2,4′-DDD | ND | 0.06 | 4.3 | 2.57E-06 | 7.55E+04 | 0.45 | <23369.46 | <0.684 |
| QT2-5-SPME1-12 | 55-59.3 | 5 | In Cap | 2,4′-DDE | 0.08 | 0.06 | 4.3 | 2.57E-06 | 5.17E+05 | 0.32 | 31159.27 | 0.19 |
| QT2-5-SPME1-12 | 55-59.3 | 5 | In Cap | 2,4′-DDT | ND | 0.06 | 4.3 | 2.57E-06 | 5.70E+05 | 0.31 | <23369.46 | <0.131 |
| QT2-5-SPME1-12 | 55-59.3 | 5 | In Cap | 4,4′-DDD | 0.09 | 0.06 | 4.3 | 2.57E-06 | 6.73E+04 | 0.46 | 35054.18 | 1.13 |
| QT2-5-SPME1-12 | 55-59.3 | 5 | In Cap | 4,4′-DDT | ND | 0.06 | 4.3 | 2.57E-06 | 2.89E+05 | 0.36 | <23369.46 | <0.226 |
| QT2-5-SPME1-12 | 55-59.3 | 5 | In Cap | 4,4'-DDE [2C] | 0.07 | 0.06 | 4.3 | 2.57E-06 | 5.27E+05 | 0.32 | 27264.36 | 0.16 |
| QT2-5-SPME2-12 | 55-59.9 | 5 | In Cap | 2,4′-DDD | 0.15 | 0.06 | 4.9 | 2.93E-06 | 7.55E+04 | 0.47 | 51269.72 | 1.43 |
| QT2-5-SPME2-12 | 55-59.9 | 5 | In Cap | 2,4′-DDE | 0.08 | 0.06 | 4.9 | 2.93E-06 | 5.17E+05 | 0.41 | 27343.85 | 0.13 |
| QT2-5-SPME2-12 | 55-59.9 | 5 | In Cap | 2,4′-DDT | ND | 0.06 | 4.9 | 2.93E-06 | 5.70E+05 | 0.41 | <20507.89 | <0.089 |
| QT2-5-SPME2-12 | 55-59.9 | 5 | In Cap | 4,4′-DDD | ND | 0.06 | 4.9 | 2.93E-06 | 6.73E+04 | 0.48 | <20507.89 | <0.638 |
| QT2-5-SPME2-12 | 55-59.9 | 5 | In Cap | 4,4′-DDT | ND | 0.06 | 4.9 | 2.93E-06 | 2.89E+05 | 0.43 | <20507.89 | <0.166 |
| QT2-5-SPME2-12 | 55-59.9 | 5 | In Cap | 4,4'-DDE [2C] | ND | 0.06 | 4.9 | 2.93E-06 | 5.27E+05 | 0.41 | <20507.89 | <0.095 |
| QT2-6-SPME1-1 | 0-5 | 6 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.69 | <20097.73 | <0.386 |
| QT2-6-SPME2-1 | 0-5 | 6 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.66 | <20097.73 | <0.4 |
| QT2-6-SPME1-1 | 0-5 | 6 | Off Cap | 2,4′-DDE | 0.09 | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.52 | 30146.60 | 0.11 |
| QT2-6-SPME2-1 | 0-5 | 6 | Off Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.53 | <20097.73 | <0.073 |
| QT2-6-SPME1-1 | 0-5 | 6 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.51 | <20097.73 | <0.069 |
| QT2-6-SPME2-1 | 0-5 | 6 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.52 | <20097.73 | <0.067 |
| QT2-6-SPME1-1 | 0-5 | 6 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.70 | <20097.73 | <0.427 |
| QT2-6-SPME2-1 | 0-5 | 6 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.67 | <20097.73 | <0.444 |
| QT2-6-SPME1-1 | 0-5 | 6 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.58 | <20097.73 | <0.121 |
| QT2-6-SPME2-1 | 0-5 | 6 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.57 | <20097.73 | <0.122 |
| QT2-6-SPME1-1 | 0-5 | 6 | Off Cap | 4,4'-DDE [2C] | 0.54 | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.52 | 180879.59 | 0.66 |
| QT2-6-SPME2-1 | 0-5 | 6 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.53 | <20097.73 | <0.072 |
| QT2-6-SPME1-3 | 10-15 | 6 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.69 | <20097.73 | <0.386 |
| QT2-6-SPME2-3 | 10-15 | 6 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.66 | <20097.73 | <0.4 |
| QT2-6-SPME1-3 | 10-15 | 6 | Off Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.52 | <20097.73 | <0.074 |
| QT2-6-SPME2-3 | 10-15 | 6 | Off Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.53 | <20097.73 | <0.073 |
| QT2-6-SPME1-3 | 10-15 | 6 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.51 | <20097.73 | <0.069 |
| QT2-6-SPME2-3 | 10-15 | 6 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.52 | <20097.73 | <0.067 |

**Table 3: Field, Laboratory Data and Calculations for in-situ SPME Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2-6-SPME1-3 | 10-15 | 6 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.70 | <20097.73 | <0.427 |
| QT2-6-SPME2-3 | 10-15 | 6 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.67 | <20097.73 | <0.444 |
| QT2-6-SPME1-3 | 10-15 | 6 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.58 | <20097.73 | <0.121 |
| QT2-6-SPME2-3 | 10-15 | 6 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.57 | <20097.73 | <0.122 |
| QT2-6-SPME1-3 | 10-15 | 6 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.52 | <20097.73 | <0.073 |
| QT2-6-SPME2-3 | 10-15 | 6 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.53 | <20097.73 | <0.072 |
| QT2-6-SPME1-4 | 15-20 | 6 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.62 | <20097.73 | <0.428 |
| QT2-6-SPME2-4 | 15-20 | 6 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.66 | <20097.73 | <0.4 |
| QT2-6-SPME1-4 | 15-20 | 6 | Off Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.48 | <20097.73 | <0.081 |
| QT2-6-SPME2-4 | 15-20 | 6 | Off Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.53 | <20097.73 | <0.073 |
| QT2-6-SPME1-4 | 15-20 | 6 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.47 | <20097.73 | <0.075 |
| QT2-6-SPME2-4 | 15-20 | 6 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.52 | <20097.73 | <0.067 |
| QT2-6-SPME1-4 | 15-20 | 6 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.63 | <20097.73 | <0.475 |
| QT2-6-SPME2-4 | 15-20 | 6 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.67 | <20097.73 | <0.444 |
| QT2-6-SPME1-4 | 15-20 | 6 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.52 | <20097.73 | <0.133 |
| QT2-6-SPME2-4 | 15-20 | 6 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.57 | <20097.73 | <0.122 |
| QT2-6-SPME1-4 | 15-20 | 6 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.48 | <20097.73 | <0.08 |
| QT2-6-SPME2-4 | 15-20 | 6 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.53 | <20097.73 | <0.072 |
| QT2 6 1-5 | 20-25 | 6 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.62 | <20097.73 | <0.428 |
| QT2 6 2-5 | 20-25 | 6 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.66 | <20097.73 | <0.4 |
| QT2 6 1-5 | 20-25 | 6 | Off Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.48 | <20097.73 | <0.081 |
| QT2 6 2-5 | 20-25 | 6 | Off Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.53 | <20097.73 | <0.073 |
| QT2 6 1-5 | 20-25 | 6 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.47 | <20097.73 | <0.075 |
| QT2 6 2-5 | 20-25 | 6 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.52 | <20097.73 | <0.067 |
| QT2 6 1-5 | 20-25 | 6 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.63 | <20097.73 | <0.475 |
| QT2 6 2-5 | 20-25 | 6 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.67 | <20097.73 | <0.444 |
| QT2 6 1-5 | 20-25 | 6 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.52 | <20097.73 | <0.133 |
| QT2 6 2-5 | 20-25 | 6 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.57 | <20097.73 | <0.122 |
| QT2 6 1-5 | 20-25 | 6 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.48 | <20097.73 | <0.08 |
| QT2 6 2-5 | 20-25 | 6 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.53 | <20097.73 | <0.072 |
| QT2-6-SPME1-6 | 25-30 | 6 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.62 | <20097.73 | <0.428 |
| QT2-6-SPME2-6 | 25-30 | 6 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.66 | <20097.73 | <0.4 |
| QT2-6-SPME1-6 | 25-30 | 6 | Off Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.48 | <20097.73 | <0.081 |
| QT2-6-SPME2-6 | 25-30 | 6 | Off Cap | 2,4′-DDE | 0.08 | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.53 | 26796.98 | 0.10 |
| QT2-6-SPME1-6 | 25-30 | 6 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.47 | <20097.73 | <0.075 |
| QT2-6-SPME2-6 | 25-30 | 6 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.52 | <20097.73 | <0.067 |
| QT2-6-SPME1-6 | 25-30 | 6 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.63 | <20097.73 | <0.475 |
| QT2-6-SPME2-6 | 25-30 | 6 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.67 | <20097.73 | <0.444 |
| QT2-6-SPME1-6 | 25-30 | 6 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.52 | <20097.73 | <0.133 |
| QT2-6-SPME2-6 | 25-30 | 6 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.57 | <20097.73 | <0.122 |
| QT2-6-SPME1-6 | 25-30 | 6 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.48 | <20097.73 | <0.08 |

**Table 3: Field, Laboratory Data and Calculations for in-situ SPME Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2-6-SPME2-6 | 25-30 | 6 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.53 | <20097.73 | <0.072 |
| QT2-6-SPME1-7 | 30-35 | 6 | Off Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.62 | <20097.73 | <0.428 |
| QT2-6-SPME2-7 | 30-35 | 6 | Off Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.66 | <20097.73 | <0.4 |
| QT2-6-SPME1-7 | 30-35 | 6 | Off Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.48 | <20097.73 | <0.081 |
| QT2-6-SPME2-7 | 30-35 | 6 | Off Cap | 2,4´-DDE | 0.10 | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.53 | 33496.22 | 0.12 |
| QT2-6-SPME1-7 | 30-35 | 6 | Off Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.47 | <20097.73 | <0.075 |
| QT2-6-SPME2-7 | 30-35 | 6 | Off Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.52 | <20097.73 | <0.067 |
| QT2-6-SPME1-7 | 30-35 | 6 | Off Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.63 | <20097.73 | <0.475 |
| QT2-6-SPME2-7 | 30-35 | 6 | Off Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.67 | <20097.73 | <0.444 |
| QT2-6-SPME1-7 | 30-35 | 6 | Off Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.52 | <20097.73 | <0.133 |
| QT2-6-SPME2-7 | 30-35 | 6 | Off Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.57 | <20097.73 | <0.122 |
| QT2-6-SPME1-7 | 30-35 | 6 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.48 | <20097.73 | <0.08 |
| QT2-6-SPME2-7 | 30-35 | 6 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.53 | <20097.73 | <0.072 |
| QT2-6-SPME1-8 | 35-40 | 6 | Off Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.64 | <20097.73 | <0.419 |
| QT2-6-SPME2-8 | 35-40 | 6 | Off Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.39 | <20097.73 | <0.674 |
| QT2-6-SPME1-8 | 35-40 | 6 | Off Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.48 | <20097.73 | <0.081 |
| QT2-6-SPME2-8 | 35-40 | 6 | Off Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.31 | <20097.73 | <0.125 |
| QT2-6-SPME1-8 | 35-40 | 6 | Off Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.47 | <20097.73 | <0.075 |
| QT2-6-SPME2-8 | 35-40 | 6 | Off Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.31 | <20097.73 | <0.114 |
| QT2-6-SPME1-8 | 35-40 | 6 | Off Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.64 | <20097.73 | <0.463 |
| QT2-6-SPME2-8 | 35-40 | 6 | Off Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.40 | <20097.73 | <0.747 |
| QT2-6-SPME1-8 | 35-40 | 6 | Off Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.53 | <20097.73 | <0.132 |
| QT2-6-SPME2-8 | 35-40 | 6 | Off Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.34 | <20097.73 | <0.207 |
| QT2-6-SPME1-8 | 35-40 | 6 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.48 | <20097.73 | <0.08 |
| QT2-6-SPME2-8 | 35-40 | 6 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.31 | <20097.73 | <0.122 |
| QT2-6-SPME1-9 | 40-45 | 6 | Off Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.64 | <20097.73 | <0.419 |
| QT2-6-SPME2-9 | 40-45 | 6 | Off Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.39 | <20097.73 | <0.674 |
| QT2-6-SPME1-9 | 40-45 | 6 | Off Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.48 | <20097.73 | <0.081 |
| QT2-6-SPME2-9 | 40-45 | 6 | Off Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.31 | <20097.73 | <0.125 |
| QT2-6-SPME1-9 | 40-45 | 6 | Off Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.47 | <20097.73 | <0.075 |
| QT2-6-SPME2-9 | 40-45 | 6 | Off Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.31 | <20097.73 | <0.114 |
| QT2-6-SPME1-9 | 40-45 | 6 | Off Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.64 | <20097.73 | <0.463 |
| QT2-6-SPME2-9 | 40-45 | 6 | Off Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.40 | <20097.73 | <0.747 |
| QT2-6-SPME1-9 | 40-45 | 6 | Off Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.53 | <20097.73 | <0.132 |
| QT2-6-SPME2-9 | 40-45 | 6 | Off Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.34 | <20097.73 | <0.207 |
| QT2-6-SPME1-9 | 40-45 | 6 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.48 | <20097.73 | <0.08 |
| QT2-6-SPME2-9 | 40-45 | 6 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.31 | <20097.73 | <0.122 |
| QT2 6 1-10 | 45-50 | 6 | Off Cap | 2,4´-DDD | 0.12 | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.64 | 40195.46 | 0.84 |
| QT2 6 2-10 | 45-50 | 6 | Off Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.39 | <20097.73 | <0.674 |
| QT2 6 1-10 | 45-50 | 6 | Off Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.48 | <20097.73 | <0.081 |
| QT2 6 2-10 | 45-50 | 6 | Off Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.31 | <20097.73 | <0.125 |

**Table 3: Field, Laboratory Data and Calculations for in-situ SPME Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2 6 1-10 | 45-50 | 6 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.47 | <20097.73 | <0.075 |
| QT2 6 2-10 | 45-50 | 6 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.31 | <20097.73 | <0.114 |
| QT2 6 1-10 | 45-50 | 6 | Off Cap | 4,4′-DDD | 0.07 | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.64 | 23447.35 | 0.54 |
| QT2 6 2-10 | 45-50 | 6 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.40 | <20097.73 | <0.747 |
| QT2 6 1-10 | 45-50 | 6 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.53 | <20097.73 | <0.132 |
| QT2 6 2-10 | 45-50 | 6 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.34 | <20097.73 | <0.207 |
| QT2 6 1-10 | 45-50 | 6 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.48 | <20097.73 | <0.08 |
| QT2 6 2-10 | 45-50 | 6 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.31 | <20097.73 | <0.122 |
| QT2-6-SPME1-11 | 50-55 | 6 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.64 | <20097.73 | <0.419 |
| QT2-6-SPME2-11 | 50-55 | 6 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.39 | <20097.73 | <0.674 |
| QT2-6-SPME1-11 | 50-55 | 6 | Off Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.48 | <20097.73 | <0.081 |
| QT2-6-SPME2-11 | 50-55 | 6 | Off Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.31 | <20097.73 | <0.125 |
| QT2-6-SPME1-11 | 50-55 | 6 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.47 | <20097.73 | <0.075 |
| QT2-6-SPME2-11 | 50-55 | 6 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.31 | <20097.73 | <0.114 |
| QT2-6-SPME1-11 | 50-55 | 6 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.64 | <20097.73 | <0.463 |
| QT2-6-SPME2-11 | 50-55 | 6 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.40 | <20097.73 | <0.747 |
| QT2-6-SPME1-11 | 50-55 | 6 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.53 | <20097.73 | <0.132 |
| QT2-6-SPME2-11 | 50-55 | 6 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.34 | <20097.73 | <0.207 |
| QT2-6-SPME1-11 | 50-55 | 6 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.48 | <20097.73 | <0.08 |
| QT2-6-SPME2-11 | 50-55 | 6 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.31 | <20097.73 | <0.122 |
| QT2 6 1-2 | 5-10 | 6 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.69 | <20097.73 | <0.386 |
| QT2 6 2-2 | 5-10 | 6 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.66 | <20097.73 | <0.4 |
| QT2 6 1-2 | 5-10 | 6 | Off Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.52 | <20097.73 | <0.074 |
| QT2 6 2-2 | 5-10 | 6 | Off Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.53 | <20097.73 | <0.073 |
| QT2 6 1-2 | 5-10 | 6 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.51 | <20097.73 | <0.069 |
| QT2 6 2-2 | 5-10 | 6 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.52 | <20097.73 | <0.067 |
| QT2 6 1-2 | 5-10 | 6 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.70 | <20097.73 | <0.427 |
| QT2 6 2-2 | 5-10 | 6 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.67 | <20097.73 | <0.444 |
| QT2 6 1-2 | 5-10 | 6 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.58 | <20097.73 | <0.121 |
| QT2 6 2-2 | 5-10 | 6 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.57 | <20097.73 | <0.122 |
| QT2 6 1-2 | 5-10 | 6 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.52 | <20097.73 | <0.073 |
| QT2 6 2-2 | 5-10 | 6 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.53 | <20097.73 | <0.072 |
| QT2-6-SPME2-12 | 55-57.9 | 6 | Off Cap | 2,4′-DDD | ND | 0.06 | 2.9 | 1.73E-06 | 7.55E+04 | 0.39 | <34651.26 | <1.163 |
| QT2-6-SPME2-12 | 55-57.9 | 6 | Off Cap | 2,4′-DDE | ND | 0.06 | 2.9 | 1.73E-06 | 5.17E+05 | 0.31 | <34651.26 | <0.215 |
| QT2-6-SPME2-12 | 55-57.9 | 6 | Off Cap | 2,4′-DDT | ND | 0.06 | 2.9 | 1.73E-06 | 5.70E+05 | 0.31 | <34651.26 | <0.197 |
| QT2-6-SPME2-12 | 55-57.9 | 6 | Off Cap | 4,4′-DDD | ND | 0.06 | 2.9 | 1.73E-06 | 6.73E+04 | 0.40 | <34651.26 | <1.289 |
| QT2-6-SPME2-12 | 55-57.9 | 6 | Off Cap | 4,4′-DDT | ND | 0.06 | 2.9 | 1.73E-06 | 2.89E+05 | 0.34 | <34651.26 | <0.357 |
| QT2-6-SPME2-12 | 55-57.9 | 6 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 2.9 | 1.73E-06 | 5.27E+05 | 0.31 | <34651.26 | <0.211 |
| QT2-6-SPME1-12 | 55-60 | 6 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.64 | <20097.73 | <0.419 |
| QT2-6-SPME1-12 | 55-60 | 6 | Off Cap | 2,4′-DDE | 0.08 | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.48 | 26796.98 | 0.11 |
| QT2-6-SPME1-12 | 55-60 | 6 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.47 | <20097.73 | <0.075 |

**Table 3: Field, Laboratory Data and Calculations for in-situ SPME Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2-6-SPME1-12 | 55-60 | 6 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.64 | <20097.73 | <0.463 |
| QT2-6-SPME1-12 | 55-60 | 6 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.53 | <20097.73 | <0.132 |
| QT2-6-SPME1-12 | 55-60 | 6 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.48 | <20097.73 | <0.08 |
| QT2-7-SPME1-1 | 0-5 | 7 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.59 | <20097.73 | <0.448 |
| QT2-7-SPME2-1 | 0-5 | 7 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.62 | <20097.73 | <0.429 |
| QT2-7-SPME1-1 | 0-5 | 7 | Off Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.43 | <20097.73 | <0.091 |
| QT2-7-SPME2-1 | 0-5 | 7 | Off Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.50 | <20097.73 | <0.079 |
| QT2-7-SPME1-1 | 0-5 | 7 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.42 | <20097.73 | <0.084 |
| QT2-7-SPME2-1 | 0-5 | 7 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.49 | <20097.73 | <0.072 |
| QT2-7-SPME1-1 | 0-5 | 7 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.60 | <20097.73 | <0.495 |
| QT2-7-SPME2-1 | 0-5 | 7 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.63 | <20097.73 | <0.476 |
| QT2-7-SPME1-1 | 0-5 | 7 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.48 | <20097.73 | <0.146 |
| QT2-7-SPME2-1 | 0-5 | 7 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.53 | <20097.73 | <0.13 |
| QT2-7-SPME1-1 | 0-5 | 7 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.42 | <20097.73 | <0.09 |
| QT2-7-SPME2-1 | 0-5 | 7 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.49 | <20097.73 | <0.077 |
| QT2-7-SPME1-3 | 10-15 | 7 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.59 | <20097.73 | <0.448 |
| QT2-7-SPME2-3 | 10-15 | 7 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.62 | <20097.73 | <0.429 |
| QT2-7-SPME1-3 | 10-15 | 7 | Off Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.43 | <20097.73 | <0.091 |
| QT2-7-SPME2-3 | 10-15 | 7 | Off Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.50 | <20097.73 | <0.079 |
| QT2-7-SPME1-3 | 10-15 | 7 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.42 | <20097.73 | <0.084 |
| QT2-7-SPME2-3 | 10-15 | 7 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.49 | <20097.73 | <0.072 |
| QT2-7-SPME1-3 | 10-15 | 7 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.60 | <20097.73 | <0.495 |
| QT2-7-SPME2-3 | 10-15 | 7 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.63 | <20097.73 | <0.476 |
| QT2-7-SPME1-3 | 10-15 | 7 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.48 | <20097.73 | <0.146 |
| QT2-7-SPME2-3 | 10-15 | 7 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.53 | <20097.73 | <0.13 |
| QT2-7-SPME1-3 | 10-15 | 7 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.42 | <20097.73 | <0.09 |
| QT2-7-SPME2-3 | 10-15 | 7 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.49 | <20097.73 | <0.077 |
| QT2-7-SPME1-4 | 15-20 | 7 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.61 | <20097.73 | <0.437 |
| QT2-7-SPME2-4 | 15-20 | 7 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.60 | <20097.73 | <0.442 |
| QT2-7-SPME1-4 | 15-20 | 7 | Off Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.46 | <20097.73 | <0.084 |
| QT2-7-SPME2-4 | 15-20 | 7 | Off Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.51 | <20097.73 | <0.077 |
| QT2-7-SPME1-4 | 15-20 | 7 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.45 | <20097.73 | <0.078 |
| QT2-7-SPME2-4 | 15-20 | 7 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.50 | <20097.73 | <0.07 |
| QT2-7-SPME1-4 | 15-20 | 7 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.62 | <20097.73 | <0.484 |
| QT2-7-SPME2-4 | 15-20 | 7 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.61 | <20097.73 | <0.492 |
| QT2-7-SPME1-4 | 15-20 | 7 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.51 | <20097.73 | <0.137 |
| QT2-7-SPME2-4 | 15-20 | 7 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.54 | <20097.73 | <0.13 |
| QT2-7-SPME1-4 | 15-20 | 7 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.46 | <20097.73 | <0.083 |
| QT2-7-SPME2-4 | 15-20 | 7 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.50 | <20097.73 | <0.076 |
| QT2 7 1-5 | 20-25 | 7 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.61 | <20097.73 | <0.437 |
| QT2 7 2-5 | 20-25 | 7 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.60 | <20097.73 | <0.442 |

**Table 3: Field, Laboratory Data and Calculations for in-situ SPME Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2 7 1-5 | 20-25 | 7 | Off Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.46 | <20097.73 | <0.084 |
| QT2 7 2-5 | 20-25 | 7 | Off Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.51 | <20097.73 | <0.077 |
| QT2 7 1-5 | 20-25 | 7 | Off Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.45 | <20097.73 | <0.078 |
| QT2 7 2-5 | 20-25 | 7 | Off Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.50 | <20097.73 | <0.07 |
| QT2 7 1-5 | 20-25 | 7 | Off Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.62 | <20097.73 | <0.484 |
| QT2 7 2-5 | 20-25 | 7 | Off Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.61 | <20097.73 | <0.492 |
| QT2 7 1-5 | 20-25 | 7 | Off Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.51 | <20097.73 | <0.137 |
| QT2 7 2-5 | 20-25 | 7 | Off Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.54 | <20097.73 | <0.13 |
| QT2 7 1-5 | 20-25 | 7 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.46 | <20097.73 | <0.083 |
| QT2 7 2-5 | 20-25 | 7 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.50 | <20097.73 | <0.076 |
| QT2-7-SPME1-6 | 25-30 | 7 | Off Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.61 | <20097.73 | <0.437 |
| QT2-7-SPME2-6 | 25-30 | 7 | Off Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.60 | <20097.73 | <0.442 |
| QT2-7-SPME1-6 | 25-30 | 7 | Off Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.46 | <20097.73 | <0.084 |
| QT2-7-SPME2-6 | 25-30 | 7 | Off Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.51 | <20097.73 | <0.077 |
| QT2-7-SPME1-6 | 25-30 | 7 | Off Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.45 | <20097.73 | <0.078 |
| QT2-7-SPME2-6 | 25-30 | 7 | Off Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.50 | <20097.73 | <0.07 |
| QT2-7-SPME1-6 | 25-30 | 7 | Off Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.62 | <20097.73 | <0.484 |
| QT2-7-SPME2-6 | 25-30 | 7 | Off Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.61 | <20097.73 | <0.492 |
| QT2-7-SPME1-6 | 25-30 | 7 | Off Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.51 | <20097.73 | <0.137 |
| QT2-7-SPME2-6 | 25-30 | 7 | Off Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.54 | <20097.73 | <0.13 |
| QT2-7-SPME1-6 | 25-30 | 7 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.46 | <20097.73 | <0.083 |
| QT2-7-SPME2-6 | 25-30 | 7 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.50 | <20097.73 | <0.076 |
| QT2-7-SPME1-7 | 30-35 | 7 | Off Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.61 | <20097.73 | <0.437 |
| QT2-7-SPME2-7 | 30-35 | 7 | Off Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.60 | <20097.73 | <0.442 |
| QT2-7-SPME1-7 | 30-35 | 7 | Off Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.46 | <20097.73 | <0.084 |
| QT2-7-SPME2-7 | 30-35 | 7 | Off Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.51 | <20097.73 | <0.077 |
| QT2-7-SPME1-7 | 30-35 | 7 | Off Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.45 | <20097.73 | <0.078 |
| QT2-7-SPME2-7 | 30-35 | 7 | Off Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.50 | <20097.73 | <0.07 |
| QT2-7-SPME1-7 | 30-35 | 7 | Off Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.62 | <20097.73 | <0.484 |
| QT2-7-SPME2-7 | 30-35 | 7 | Off Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.61 | <20097.73 | <0.492 |
| QT2-7-SPME1-7 | 30-35 | 7 | Off Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.51 | <20097.73 | <0.137 |
| QT2-7-SPME2-7 | 30-35 | 7 | Off Cap | 4,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.54 | <20097.73 | <0.13 |
| QT2-7-SPME1-7 | 30-35 | 7 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.46 | <20097.73 | <0.083 |
| QT2-7-SPME2-7 | 30-35 | 7 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.50 | <20097.73 | <0.076 |
| QT2-7-SPME1-8 | 35-40 | 7 | Off Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.60 | <20097.73 | <0.445 |
| QT2-7-SPME2-8 | 35-40 | 7 | Off Cap | 2,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.58 | <20097.73 | <0.455 |
| QT2-7-SPME1-8 | 35-40 | 7 | Off Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.43 | <20097.73 | <0.09 |
| QT2-7-SPME2-8 | 35-40 | 7 | Off Cap | 2,4´-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.47 | <20097.73 | <0.082 |
| QT2-7-SPME1-8 | 35-40 | 7 | Off Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.42 | <20097.73 | <0.084 |
| QT2-7-SPME2-8 | 35-40 | 7 | Off Cap | 2,4´-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.47 | <20097.73 | <0.076 |
| QT2-7-SPME1-8 | 35-40 | 7 | Off Cap | 4,4´-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.61 | <20097.73 | <0.491 |

**Table 3: Field, Laboratory Data and Calculations for in-situ SPME Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2-7-SPME2-8 | 35-40 | 7 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.59 | <20097.73 | <0.505 |
| QT2-7-SPME1-8 | 35-40 | 7 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.48 | <20097.73 | <0.145 |
| QT2-7-SPME2-8 | 35-40 | 7 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.51 | <20097.73 | <0.137 |
| QT2-7-SPME1-8 | 35-40 | 7 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.43 | <20097.73 | <0.089 |
| QT2-7-SPME2-8 | 35-40 | 7 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.47 | <20097.73 | <0.081 |
| QT2-7-SPME1-9 | 40-45 | 7 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.60 | <20097.73 | <0.445 |
| QT2-7-SPME2-9 | 40-45 | 7 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.58 | <20097.73 | <0.455 |
| QT2-7-SPME1-9 | 40-45 | 7 | Off Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.43 | <20097.73 | <0.09 |
| QT2-7-SPME2-9 | 40-45 | 7 | Off Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.47 | <20097.73 | <0.082 |
| QT2-7-SPME1-9 | 40-45 | 7 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.42 | <20097.73 | <0.084 |
| QT2-7-SPME2-9 | 40-45 | 7 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.47 | <20097.73 | <0.076 |
| QT2-7-SPME1-9 | 40-45 | 7 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.61 | <20097.73 | <0.491 |
| QT2-7-SPME2-9 | 40-45 | 7 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.59 | <20097.73 | <0.505 |
| QT2-7-SPME1-9 | 40-45 | 7 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.48 | <20097.73 | <0.145 |
| QT2-7-SPME2-9 | 40-45 | 7 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.51 | <20097.73 | <0.137 |
| QT2-7-SPME1-9 | 40-45 | 7 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.43 | <20097.73 | <0.089 |
| QT2-7-SPME2-9 | 40-45 | 7 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.47 | <20097.73 | <0.081 |
| QT2 7 1-10 | 45-50 | 7 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.60 | <20097.73 | <0.445 |
| QT2 7 2-10 | 45-50 | 7 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.58 | <20097.73 | <0.455 |
| QT2 7 1-10 | 45-50 | 7 | Off Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.43 | <20097.73 | <0.09 |
| QT2 7 2-10 | 45-50 | 7 | Off Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.47 | <20097.73 | <0.082 |
| QT2 7 1-10 | 45-50 | 7 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.42 | <20097.73 | <0.084 |
| QT2 7 2-10 | 45-50 | 7 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.47 | <20097.73 | <0.076 |
| QT2 7 1-10 | 45-50 | 7 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.61 | <20097.73 | <0.491 |
| QT2 7 2-10 | 45-50 | 7 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.59 | <20097.73 | <0.505 |
| QT2 7 1-10 | 45-50 | 7 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.48 | <20097.73 | <0.145 |
| QT2 7 2-10 | 45-50 | 7 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.51 | <20097.73 | <0.137 |
| QT2 7 1-10 | 45-50 | 7 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.43 | <20097.73 | <0.089 |
| QT2 7 2-10 | 45-50 | 7 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.47 | <20097.73 | <0.081 |
| QT2-7-SPME1-11 | 50-55 | 7 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.60 | <20097.73 | <0.445 |
| QT2-7-SPME2-11 | 50-55 | 7 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.58 | <20097.73 | <0.455 |
| QT2-7-SPME1-11 | 50-55 | 7 | Off Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.43 | <20097.73 | <0.09 |
| QT2-7-SPME2-11 | 50-55 | 7 | Off Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.47 | <20097.73 | <0.082 |
| QT2-7-SPME1-11 | 50-55 | 7 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.42 | <20097.73 | <0.084 |
| QT2-7-SPME2-11 | 50-55 | 7 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.47 | <20097.73 | <0.076 |
| QT2-7-SPME1-11 | 50-55 | 7 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.61 | <20097.73 | <0.491 |
| QT2-7-SPME2-11 | 50-55 | 7 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.59 | <20097.73 | <0.505 |
| QT2-7-SPME1-11 | 50-55 | 7 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.48 | <20097.73 | <0.145 |
| QT2-7-SPME2-11 | 50-55 | 7 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.51 | <20097.73 | <0.137 |
| QT2-7-SPME1-11 | 50-55 | 7 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.43 | <20097.73 | <0.089 |
| QT2-7-SPME2-11 | 50-55 | 7 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.47 | <20097.73 | <0.081 |

**Table 3: Field, Laboratory Data and Calculations for in-situ SPME Study during 2-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QT2 7 1-2 | 5-10 | 7 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.59 | <20097.73 | <0.448 |
| QT2 7 2-2 | 5-10 | 7 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.62 | <20097.73 | <0.429 |
| QT2 7 1-2 | 5-10 | 7 | Off Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.43 | <20097.73 | <0.091 |
| QT2 7 2-2 | 5-10 | 7 | Off Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.50 | <20097.73 | <0.079 |
| QT2 7 1-2 | 5-10 | 7 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.42 | <20097.73 | <0.084 |
| QT2 7 2-2 | 5-10 | 7 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.49 | <20097.73 | <0.072 |
| QT2 7 1-2 | 5-10 | 7 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.60 | <20097.73 | <0.495 |
| QT2 7 2-2 | 5-10 | 7 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.63 | <20097.73 | <0.476 |
| QT2 7 1-2 | 5-10 | 7 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.48 | <20097.73 | <0.146 |
| QT2 7 2-2 | 5-10 | 7 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.53 | <20097.73 | <0.13 |
| QT2 7 1-2 | 5-10 | 7 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.42 | <20097.73 | <0.09 |
| QT2 7 2-2 | 5-10 | 7 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.49 | <20097.73 | <0.077 |
| QT2-7-SPME1-12 | 55-60 | 7 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.60 | <20097.73 | <0.445 |
| QT2-7-SPME2-12 | 55-60 | 7 | Off Cap | 2,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 7.55E+04 | 0.58 | <20097.73 | <0.455 |
| QT2-7-SPME1-12 | 55-60 | 7 | Off Cap | 2,4′-DDE | ND | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.43 | <20097.73 | <0.09 |
| QT2-7-SPME2-12 | 55-60 | 7 | Off Cap | 2,4′-DDE | 0.09 | 0.06 | 5 | 2.99E-06 | 5.17E+05 | 0.47 | 30146.60 | 0.12 |
| QT2-7-SPME1-12 | 55-60 | 7 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.42 | <20097.73 | <0.084 |
| QT2-7-SPME2-12 | 55-60 | 7 | Off Cap | 2,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 5.70E+05 | 0.47 | <20097.73 | <0.076 |
| QT2-7-SPME1-12 | 55-60 | 7 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.61 | <20097.73 | <0.491 |
| QT2-7-SPME2-12 | 55-60 | 7 | Off Cap | 4,4′-DDD | ND | 0.06 | 5 | 2.99E-06 | 6.73E+04 | 0.59 | <20097.73 | <0.505 |
| QT2-7-SPME1-12 | 55-60 | 7 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.48 | <20097.73 | <0.145 |
| QT2-7-SPME2-12 | 55-60 | 7 | Off Cap | 4,4′-DDT | ND | 0.06 | 5 | 2.99E-06 | 2.89E+05 | 0.51 | <20097.73 | <0.137 |
| QT2-7-SPME1-12 | 55-60 | 7 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.43 | <20097.73 | <0.089 |
| QT2-7-SPME2-12 | 55-60 | 7 | Off Cap | 4,4'-DDE [2C] | ND | 0.06 | 5 | 2.99E-06 | 5.27E+05 | 0.47 | <20097.73 | <0.081 |

**Footnotes:**

1.Duplicate samples per station and interval deployed. Average of duplicates presented in Table 1. Compilation of in situ Porewater DDX Results for all Monitoring Events.
2. 0.597 µL polydimethylsiloxane (PDMS) per cm of this type of SPME fiber.
3. Fiber:Water Partition Coefficient calculated as Log Kfs = LogKow - 0.91 (Mayer et al. 2000). Log Kow referenced from ATDSR (2002).
4. Fraction to steady state (fss) calculated based on performance reference compound (PRC) mass transfer kinetics.
5. Concentration of exposure solution = (Concentration in fiber ÷ fss) ÷ Kfs. If not detected, reported as < detection limit.

**Abbreviations:**

cm: centimeter(s) — ng: nanogram(s)
L: Liter(s) — PDMS: Polydimethylsiloxane
ND: Not detected — SPME: solid phase microextraction

Table 4: Field, Laboratory Data and Calculations for *in-situ* SPME Study during 14-Month Event
SSC Pacific
Quantico, Virginia

| Sample ID | Sample Interval (cm) | Station ID | Within Cap Footprint? | Sample Type[1] | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site 1 (0-5cm) | 0-5 | 1 | In Cap | Sample | 4,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 526667 | 0.41 | <16748.11 | <0.08 |
| Site 1 (0-5cm) | 0-5 | 1 | In Cap | Sample | 4,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 288937 | 0.51 | <16748.11 | <0.11 |
| Site 1 (0-5cm) | 0-5 | 1 | In Cap | Sample | 2,4´-DDD | ND | 0.05 | 5 | 2.98541E-06 | 75521 | 0.71 | <16748.11 | <0.31 |
| Site 1 (0-5cm) | 0-5 | 1 | In Cap | Sample | 2,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 516595 | 0.41 | <16748.11 | <0.08 |
| Site 1 (0-5cm) | 0-5 | 1 | In Cap | Sample | 2,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 569687 | 0.40 | <16748.11 | <0.07 |
| Site 1 (0-5cm) | 0-5 | 1 | In Cap | Sample | 4,4´-DDD | 0.06 | 0.05 | 5 | 2.98541E-06 | 67258 | 0.73 | 20097.73179 | 0.41 |
| Site 1 (10-15cm) | 10-15 | 1 | In Cap | Sample | 4,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 526667 | 0.41 | <16748.11 | <0.08 |
| Site 1 (10-15cm) | 10-15 | 1 | In Cap | Sample | 4,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 288937 | 0.51 | <16748.11 | <0.11 |
| Site 1 (10-15cm) | 10-15 | 1 | In Cap | Sample | 2,4´-DDD | ND | 0.05 | 5 | 2.98541E-06 | 75521 | 0.71 | <16748.11 | <0.31 |
| Site 1 (10-15cm) | 10-15 | 1 | In Cap | Sample | 2,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 516595 | 0.41 | <16748.11 | <0.08 |
| Site 1 (10-15cm) | 10-15 | 1 | In Cap | Sample | 2,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 569687 | 0.40 | <16748.11 | <0.07 |
| Site 1 (10-15cm) | 10-15 | 1 | In Cap | Sample | 4,4´-DDD | ND | 0.05 | 5 | 2.98541E-06 | 67258 | 0.73 | <16748.11 | <0.34 |
| Site 1 (15-20cm) | 15-20 | 1 | In Cap | Sample | 4,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 526667 | 1.00 | <16748.11 | <0.03 |
| Site 1 (15-20cm) | 15-20 | 1 | In Cap | Sample | 4,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 288937 | 1.00 | <16748.11 | <0.06 |
| Site 1 (15-20cm) | 15-20 | 1 | In Cap | Sample | 2,4´-DDD | ND | 0.05 | 5 | 2.98541E-06 | 75521 | 0.90 | <16748.11 | <0.25 |
| Site 1 (15-20cm) | 15-20 | 1 | In Cap | Sample | 2,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 516595 | 1.00 | <16748.11 | <0.03 |
| Site 1 (15-20cm) | 15-20 | 1 | In Cap | Sample | 2,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 569687 | 1.00 | <16748.11 | <0.03 |
| Site 1 (15-20cm) | 15-20 | 1 | In Cap | Sample | 4,4´-DDD | ND | 0.05 | 5 | 2.98541E-06 | 67258 | 0.90 | <16748.11 | <0.28 |
| Site 1 (20-25cm) | 20-25 | 1 | In Cap | Sample | 4,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 526667 | 1.00 | <16748.11 | <0.03 |
| Site 1 (20-25cm) | 20-25 | 1 | In Cap | Sample | 4,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 288937 | 1.00 | <16748.11 | <0.06 |
| Site 1 (20-25cm) | 20-25 | 1 | In Cap | Sample | 2,4´-DDD | ND | 0.05 | 5 | 2.98541E-06 | 75521 | 0.90 | <16748.11 | <0.25 |
| Site 1 (20-25cm) | 20-25 | 1 | In Cap | Sample | 2,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 516595 | 1.00 | <16748.11 | <0.03 |
| Site 1 (20-25cm) | 20-25 | 1 | In Cap | Sample | 2,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 569687 | 1.00 | <16748.11 | <0.03 |
| Site 1 (20-25cm) | 20-25 | 1 | In Cap | Sample | 4,4´-DDD | 0.08 | 0.05 | 5 | 2.98541E-06 | 67258 | 0.90 | 26796.97571 | 0.44 |
| Site 2 (0-5cm) | 0-5 | 2 | In Cap | Sample | 4,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 526667 | 0.66 | <16748.11 | <0.05 |
| Site 2 (0-5cm) | 0-5 | 2 | In Cap | Sample | 4,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 288937 | 0.71 | <16748.11 | <0.08 |
| Site 2 (0-5cm) | 0-5 | 2 | In Cap | Sample | 2,4´-DDD | ND | 0.05 | 5 | 2.98541E-06 | 75521 | 0.82 | <16748.11 | <0.27 |
| Site 2 (0-5cm) | 0-5 | 2 | In Cap | Sample | 2,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 516595 | 0.66 | <16748.11 | <0.05 |
| Site 2 (0-5cm) | 0-5 | 2 | In Cap | Sample | 2,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 569687 | 0.65 | <16748.11 | <0.05 |
| Site 2 (0-5cm) | 0-5 | 2 | In Cap | Sample | 4,4´-DDD | 0.06 | 0.05 | 5 | 2.98541E-06 | 67258 | 0.83 | 20097.73179 | 0.36 |
| Site 2 (10-15cm) | 10-15 | 2 | In Cap | Sample | 4,4´-DDE | 0.09 | 0.05 | 5 | 2.98541E-06 | 526667 | 0.66 | 30146.59768 | 0.09 |
| Site 2 (10-15cm) | 10-15 | 2 | In Cap | Sample | 4,4´-DDT | 0.15 | 0.05 | 5 | 2.98541E-06 | 288937 | 0.71 | 50244.32947 | 0.24 |
| Site 2 (10-15cm) | 10-15 | 2 | In Cap | Sample | 2,4´-DDD | ND | 0.05 | 5 | 2.98541E-06 | 75521 | 0.82 | <16748.11 | <0.27 |
| Site 2 (10-15cm) | 10-15 | 2 | In Cap | Sample | 2,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 516595 | 0.66 | <16748.11 | <0.05 |
| Site 2 (10-15cm) | 10-15 | 2 | In Cap | Sample | 2,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 569687 | 0.65 | <16748.11 | <0.05 |
| Site 2 (10-15cm) | 10-15 | 2 | In Cap | Sample | 4,4´-DDD | 0.23 | 0.05 | 5 | 2.98541E-06 | 67258 | 0.83 | 77041.30518 | 1.38 |
| Site 2 (15-20cm) | 15-20 | 2 | In Cap | Sample | 4,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 526667 | 1.00 | <16748.11 | <0.03 |
| Site 2 (15-20cm) | 15-20 | 2 | In Cap | Sample | 4,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 288937 | 0.80 | <16748.11 | <0.07 |
| Site 2 (15-20cm) | 15-20 | 2 | In Cap | Sample | 2,4´-DDD | ND | 0.05 | 5 | 2.98541E-06 | 75521 | 0.85 | <16748.11 | <0.26 |
| Site 2 (15-20cm) | 15-20 | 2 | In Cap | Sample | 2,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 516595 | 1.00 | <16748.11 | <0.03 |
| Site 2 (15-20cm) | 15-20 | 2 | In Cap | Sample | 2,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 569687 | 1.00 | <16748.11 | <0.03 |
| Site 2 (15-20cm) | 15-20 | 2 | In Cap | Sample | 4,4´-DDD | 0.16 | 0.05 | 5 | 2.98541E-06 | 67258 | 0.86 | 53593.95143 | 0.93 |
| Site 2 (20-25cm) | 20-25 | 2 | In Cap | Sample | 4,4´-DDE | 0.06 | 0.05 | 5 | 2.98541E-06 | 526667 | 1.00 | 20097.73179 | 0.04 |

Table 4: Field, Laboratory Data and Calculations for *in-situ* SPME Study during 14-Month Event
SSC Pacific
Quantico, Virginia

| Sample ID | Sample Interval (cm) | Station ID | Within Cap Footprint? | Sample Type[1] | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site 2 (20-25cm) | 20-25 | 2 | In Cap | Sample | 4,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 288937 | 0.80 | <16748.11 | <0.07 |
| Site 2 (20-25cm) | 20-25 | 2 | In Cap | Sample | 2,4´-DDD | ND | 0.05 | 5 | 2.98541E-06 | 75521 | 0.85 | <16748.11 | <0.26 |
| Site 2 (20-25cm) | 20-25 | 2 | In Cap | Sample | 2,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 516595 | 1.00 | <16748.11 | <0.03 |
| Site 2 (20-25cm) | 20-25 | 2 | In Cap | Sample | 2,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 569687 | 1.00 | <16748.11 | <0.03 |
| Site 2 (20-25cm) | 20-25 | 2 | In Cap | Sample | 4,4´-DDD | 0.19 | 0.05 | 5 | 2.98541E-06 | 67258 | 0.86 | 63642.81732 | 1.10 |
| Site 3 (0-5cm) | 0-5 | 3 | In Cap | Primary | 4,4´-DDE | 0.09 | 0.05 | 5 | 2.98541E-06 | 526667 | 0.54 | 30146.59768 | 0.11 |
| Site 3 (0-5cm) | 0-5 | 3 | In Cap | Primary | 4,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 288937 | 0.63 | <16748.11 | <0.09 |
| Site 3 (0-5cm) | 0-5 | 3 | In Cap | Primary | 2,4´-DDD | ND | 0.05 | 5 | 2.98541E-06 | 75521 | 0.80 | <16748.11 | <0.28 |
| Site 3 (0-5cm) | 0-5 | 3 | In Cap | Primary | 2,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 516595 | 0.55 | <16748.11 | <0.06 |
| Site 3 (0-5cm) | 0-5 | 3 | In Cap | Primary | 2,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 569687 | 0.53 | <16748.11 | <0.06 |
| Site 3 (0-5cm) | 0-5 | 3 | In Cap | Primary | 4,4´-DDD | 0.26 | 0.05 | 5 | 2.98541E-06 | 67258 | 0.81 | 87090.17107 | 1.59 |
| Site 3 (20-25cm) | 20-25 | 3 | In Cap | Primary | 4,4´-DDE | 0.09 | 0.05 | 5 | 2.98541E-06 | 526667 | 0.60 | 30146.59768 | 0.10 |
| Site 3 (20-25cm) | 20-25 | 3 | In Cap | Primary | 4,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 288937 | 0.68 | <16748.11 | <0.08 |
| Site 3 (20-25cm) | 20-25 | 3 | In Cap | Primary | 2,4´-DDD | ND | 0.05 | 5 | 2.98541E-06 | 75521 | 0.83 | <16748.11 | <0.27 |
| Site 3 (20-25cm) | 20-25 | 3 | In Cap | Primary | 2,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 516595 | 0.60 | <16748.11 | <0.05 |
| Site 3 (20-25cm) | 20-25 | 3 | In Cap | Primary | 2,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 569687 | 0.59 | <16748.11 | <0.05 |
| Site 3 (20-25cm) | 20-25 | 3 | In Cap | Primary | 4,4´-DDD | 0.34 | 0.05 | 5 | 2.98541E-06 | 67258 | 0.84 | 113887.1468 | 2.01 |
| Site 3 (25-30cm) | 25-30 | 3 | In Cap | Primary | 4,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 526667 | 0.60 | <16748.11 | <0.05 |
| Site 3 (25-30cm) | 25-30 | 3 | In Cap | Primary | 4,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 288937 | 0.68 | <16748.11 | <0.08 |
| Site 3 (25-30cm) | 25-30 | 3 | In Cap | Primary | 2,4´-DDD | ND | 0.05 | 5 | 2.98541E-06 | 75521 | 0.83 | <16748.11 | <0.27 |
| Site 3 (25-30cm) | 25-30 | 3 | In Cap | Primary | 2,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 516595 | 0.60 | <16748.11 | <0.05 |
| Site 3 (25-30cm) | 25-30 | 3 | In Cap | Primary | 2,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 569687 | 0.59 | <16748.11 | <0.05 |
| Site 3 (25-30cm) | 25-30 | 3 | In Cap | Primary | 4,4´-DDD | 0.11 | 0.05 | 5 | 2.98541E-06 | 67258 | 0.84 | 36845.84161 | 0.65 |
| Site 3 duo (30-35cm) | 30-35 | 3 | In Cap | Sample | 4,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 526667 | 0.60 | <16748.11 | <0.05 |
| Site 3 duo (30-35cm) | 30-35 | 3 | In Cap | Sample | 4,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 288937 | 0.68 | <16748.11 | <0.09 |
| Site 3 duo (30-35cm) | 30-35 | 3 | In Cap | Sample | 2,4´-DDD | ND | 0.05 | 5 | 2.98541E-06 | 75521 | 0.83 | <16748.11 | <0.27 |
| Site 3 duo (30-35cm) | 30-35 | 3 | In Cap | Sample | 2,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 516595 | 0.60 | <16748.11 | <0.05 |
| Site 3 duo (30-35cm) | 30-35 | 3 | In Cap | Sample | 2,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 569687 | 0.58 | <16748.11 | <0.05 |
| Site 3 duo (30-35cm) | 30-35 | 3 | In Cap | Sample | 4,4´-DDD | 0.11 | 0.05 | 5 | 2.98541E-06 | 67258 | 0.84 | 36845.84161 | 0.65 |
| Site 3 duo (0-5cm) | 0-5 | 3 | In Cap | Duplicate | 4,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 526667 | 0.45 | <16748.11 | <0.07 |
| Site 3 duo (0-5cm) | 0-5 | 3 | In Cap | Duplicate | 4,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 288937 | 0.56 | <16748.11 | <0.1 |
| Site 3 duo (0-5cm) | 0-5 | 3 | In Cap | Duplicate | 2,4´-DDD | ND | 0.05 | 5 | 2.98541E-06 | 75521 | 0.76 | <16748.11 | <0.29 |
| Site 3 duo (0-5cm) | 0-5 | 3 | In Cap | Duplicate | 2,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 516595 | 0.46 | <16748.11 | <0.07 |
| Site 3 duo (0-5cm) | 0-5 | 3 | In Cap | Duplicate | 2,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 569687 | 0.44 | <16748.11 | <0.07 |
| Site 3 duo (0-5cm) | 0-5 | 3 | In Cap | Duplicate | 4,4´-DDD | 0.16 | 0.05 | 5 | 2.98541E-06 | 67258 | 0.77 | 53593.95143 | 1.03 |
| Site 3 duo (20-25cm) | 20-25 | 3 | In Cap | Duplicate | 4,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 526667 | 0.47 | <16748.11 | <0.07 |
| Site 3 duo (20-25cm) | 20-25 | 3 | In Cap | Duplicate | 4,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 288937 | 0.55 | <16748.11 | <0.1 |
| Site 3 duo (20-25cm) | 20-25 | 3 | In Cap | Duplicate | 2,4´-DDD | ND | 0.05 | 5 | 2.98541E-06 | 75521 | 0.73 | <16748.11 | <0.3 |
| Site 3 duo (20-25cm) | 20-25 | 3 | In Cap | Duplicate | 2,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 516595 | 0.47 | <16748.11 | <0.07 |
| Site 3 duo (20-25cm) | 20-25 | 3 | In Cap | Duplicate | 2,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 569687 | 0.46 | <16748.11 | <0.06 |
| Site 3 duo (20-25cm) | 20-25 | 3 | In Cap | Duplicate | 4,4´-DDD | 0.11 | 0.05 | 5 | 2.98541E-06 | 67258 | 0.75 | 36845.84161 | 0.74 |
| Site 3 duo (25-30cm) | 25-30 | 3 | In Cap | Duplicate | 4,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 526667 | 0.47 | <16748.11 | <0.07 |
| Site 3 duo (25-30cm) | 25-30 | 3 | In Cap | Duplicate | 4,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 288937 | 0.55 | <16748.11 | <0.1 |

Table 4: Field, Laboratory Data and Calculations for *in-situ* SPME Study during 14-Month Event
SSC Pacific
Quantico, Virginia

| Sample ID | Sample Interval (cm) | Station ID | Within Cap Footprint? | Sample Type[1] | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site 3 duo (25-30cm) | 25-30 | 3 | In Cap | Duplicate | 2,4′-DDD | ND | 0.05 | 5 | 2.98541E-06 | 75521 | 0.73 | <16748.11 | <0.3 |
| Site 3 duo (25-30cm) | 25-30 | 3 | In Cap | Duplicate | 2,4′-DDE | ND | 0.05 | 5 | 2.98541E-06 | 516595 | 0.47 | <16748.11 | <0.07 |
| Site 3 duo (25-30cm) | 25-30 | 3 | In Cap | Duplicate | 2,4′-DDT | ND | 0.05 | 5 | 2.98541E-06 | 569687 | 0.46 | <16748.11 | <0.06 |
| Site 3 duo (25-30cm) | 25-30 | 3 | In Cap | Duplicate | 4,4′-DDD | 0.10 | 0.05 | 5 | 2.98541E-06 | 67258 | 0.75 | 33496.21964 | 0.67 |
| Site 3 duo (31-36cm) | 31-36 | 3 | In Cap | Sample | 4,4′-DDE | ND | 0.05 | 5 | 2.98541E-06 | 526667 | 0.60 | <16748.11 | <0.05 |
| Site 3 duo (31-36cm) | 31-36 | 3 | In Cap | Sample | 4,4′-DDT | ND | 0.05 | 5 | 2.98541E-06 | 288937 | 0.68 | <16748.11 | <0.09 |
| Site 3 duo (31-36cm) | 31-36 | 3 | In Cap | Sample | 2,4′-DDD | ND | 0.05 | 5 | 2.98541E-06 | 75521 | 0.83 | <16748.11 | <0.27 |
| Site 3 duo (31-36cm) | 31-36 | 3 | In Cap | Sample | 2,4′-DDE | ND | 0.05 | 5 | 2.98541E-06 | 516595 | 0.60 | <16748.11 | <0.05 |
| Site 3 duo (31-36cm) | 31-36 | 3 | In Cap | Sample | 2,4′-DDT | ND | 0.05 | 5 | 2.98541E-06 | 569687 | 0.58 | <16748.11 | <0.05 |
| Site 3 duo (31-36cm) | 31-36 | 3 | In Cap | Sample | 4,4′-DDD | 0.17 | 0.05 | 5 | 2.98541E-06 | 67258 | 0.84 | 56943.57339 | 1.01 |
| Site 4 (0-5cm) | 0-5 | 4 | In Cap | Sample | 4,4′-DDE | 0.11 | 0.05 | 5 | 2.98541E-06 | 526667 | 0.63 | 36845.84161 | 0.11 |
| Site 4 (0-5cm) | 0-5 | 4 | In Cap | Sample | 4,4′-DDT | ND | 0.05 | 5 | 2.98541E-06 | 288937 | 0.68 | <16748.11 | <0.08 |
| Site 4 (0-5cm) | 0-5 | 4 | In Cap | Sample | 2,4′-DDD | ND | 0.05 | 5 | 2.98541E-06 | 75521 | 0.78 | <16748.11 | <0.28 |
| Site 4 (0-5cm) | 0-5 | 4 | In Cap | Sample | 2,4′-DDE | ND | 0.05 | 5 | 2.98541E-06 | 516595 | 0.63 | <16748.11 | <0.05 |
| Site 4 (0-5cm) | 0-5 | 4 | In Cap | Sample | 2,4′-DDT | ND | 0.05 | 5 | 2.98541E-06 | 569687 | 0.63 | <16748.11 | <0.05 |
| Site 4 (0-5cm) | 0-5 | 4 | In Cap | Sample | 4,4′-DDD | 0.13 | 0.05 | 5 | 2.98541E-06 | 67258 | 0.79 | 43545.08554 | 0.82 |
| Site 4 (36-41cm) | 36-41 | 4 | In Cap | Sample | 4,4′-DDE | ND | 0.05 | 5 | 2.98541E-06 | 526667 | 0.43 | <16748.11 | <0.07 |
| Site 4 (36-41cm) | 36-41 | 4 | In Cap | Sample | 4,4′-DDT | ND | 0.05 | 5 | 2.98541E-06 | 288937 | 0.50 | <16748.11 | <0.12 |
| Site 4 (36-41cm) | 36-41 | 4 | In Cap | Sample | 2,4′-DDD | ND | 0.05 | 5 | 2.98541E-06 | 75521 | 0.65 | <16748.11 | <0.34 |
| Site 4 (36-41cm) | 36-41 | 4 | In Cap | Sample | 2,4′-DDE | ND | 0.05 | 5 | 2.98541E-06 | 516595 | 0.43 | <16748.11 | <0.08 |
| Site 4 (36-41cm) | 36-41 | 4 | In Cap | Sample | 2,4′-DDT | ND | 0.05 | 5 | 2.98541E-06 | 569687 | 0.42 | <16748.11 | <0.07 |
| Site 4 (36-41cm) | 36-41 | 4 | In Cap | Sample | 4,4′-DDD | 0.15 | 0.05 | 5 | 2.98541E-06 | 67258 | 0.66 | 50244.32947 | 1.13 |
| Site 4 (41-46cm) | 41-46 | 4 | In Cap | Sample | 4,4′-DDE | 0.07 | 0.05 | 5 | 2.98541E-06 | 526667 | 0.43 | 23447.35375 | 0.10 |
| Site 4 (41-46cm) | 41-46 | 4 | In Cap | Sample | 4,4′-DDT | ND | 0.05 | 5 | 2.98541E-06 | 288937 | 0.50 | <16748.11 | <0.12 |
| Site 4 (41-46cm) | 41-46 | 4 | In Cap | Sample | 2,4′-DDD | ND | 0.05 | 5 | 2.98541E-06 | 75521 | 0.65 | <16748.11 | <0.34 |
| Site 4 (41-46cm) | 41-46 | 4 | In Cap | Sample | 2,4′-DDE | ND | 0.05 | 5 | 2.98541E-06 | 516595 | 0.43 | <16748.11 | <0.08 |
| Site 4 (41-46cm) | 41-46 | 4 | In Cap | Sample | 2,4′-DDT | ND | 0.05 | 5 | 2.98541E-06 | 569687 | 0.42 | <16748.11 | <0.07 |
| Site 4 (41-46cm) | 41-46 | 4 | In Cap | Sample | 4,4′-DDD | 0.11 | 0.05 | 5 | 2.98541E-06 | 67258 | 0.66 | 36845.84161 | 0.83 |
| Site 4 (46-54cm) | 46-54 | 4 | In Cap | Sample | 4,4′-DDE | 0.06 | 0.05 | 8 | 4.77666E-06 | 526667 | 0.69 | 12561.08237 | 0.03 |
| Site 4 (46-54cm) | 46-54 | 4 | In Cap | Sample | 4,4′-DDT | ND | 0.05 | 8 | 4.77666E-06 | 288937 | 0.74 | <10467.57 | <0.05 |
| Site 4 (46-54cm) | 46-54 | 4 | In Cap | Sample | 2,4′-DDD | ND | 0.05 | 8 | 4.77666E-06 | 75521 | 0.84 | <10467.57 | <0.17 |
| Site 4 (46-54cm) | 46-54 | 4 | In Cap | Sample | 2,4′-DDE | ND | 0.05 | 8 | 4.77666E-06 | 516595 | 0.69 | <10467.57 | <0.03 |
| Site 4 (46-54cm) | 46-54 | 4 | In Cap | Sample | 2,4′-DDT | ND | 0.05 | 8 | 4.77666E-06 | 569687 | 0.68 | <10467.57 | <0.03 |
| Site 4 (46-54cm) | 46-54 | 4 | In Cap | Sample | 4,4′-DDD | 0.09 | 0.05 | 8 | 4.77666E-06 | 67258 | 0.85 | 18841.62355 | 0.33 |
| Site 5 (0-5cm) | 0-5 | 5 | In Cap | Sample | 4,4′-DDE | 0.07 | 0.05 | 5 | 2.98541E-06 | 526667 | 0.66 | 23447.35375 | 0.07 |
| Site 5 (0-5cm) | 0-5 | 5 | In Cap | Sample | 4,4′-DDT | ND | 0.05 | 5 | 2.98541E-06 | 288937 | 0.71 | <16748.11 | <0.08 |
| Site 5 (0-5cm) | 0-5 | 5 | In Cap | Sample | 2,4′-DDD | ND | 0.05 | 5 | 2.98541E-06 | 75521 | 0.79 | <16748.11 | <0.28 |
| Site 5 (0-5cm) | 0-5 | 5 | In Cap | Sample | 2,4′-DDE | ND | 0.05 | 5 | 2.98541E-06 | 516595 | 0.67 | <16748.11 | <0.05 |
| Site 5 (0-5cm) | 0-5 | 5 | In Cap | Sample | 2,4′-DDT | ND | 0.05 | 5 | 2.98541E-06 | 569687 | 0.66 | <16748.11 | <0.04 |
| Site 5 (0-5cm) | 0-5 | 5 | In Cap | Sample | 4,4′-DDD | 0.09 | 0.05 | 5 | 2.98541E-06 | 67258 | 0.80 | 30146.59768 | 0.56 |
| Site 5 (37-42cm) | 37-42 | 5 | In Cap | Sample | 4,4′-DDE | ND | 0.05 | 5 | 2.98541E-06 | 526667 | 0.65 | <16748.11 | <0.05 |
| Site 5 (37-42cm) | 37-42 | 5 | In Cap | Sample | 4,4′-DDT | ND | 0.05 | 5 | 2.98541E-06 | 288937 | 0.70 | <16748.11 | <0.08 |
| Site 5 (37-42cm) | 37-42 | 5 | In Cap | Sample | 2,4′-DDD | ND | 0.05 | 5 | 2.98541E-06 | 75521 | 0.78 | <16748.11 | <0.28 |

Table 4: Field, Laboratory Data and Calculations for *in-situ* SPME Study during 14-Month Event
SSC Pacific
Quantico, Virginia

| Sample ID | Sample Interval (cm) | Station ID | Within Cap Footprint? | Sample Type[1] | Analyte | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site 5 (37-42cm) | 37-42 | 5 | In Cap | Sample | 2,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 516595 | 0.65 | <16748.11 | <0.05 |
| Site 5 (37-42cm) | 37-42 | 5 | In Cap | Sample | 2,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 569687 | 0.64 | <16748.11 | <0.05 |
| Site 5 (37-42cm) | 37-42 | 5 | In Cap | Sample | 4,4´-DDD | ND | 0.05 | 5 | 2.98541E-06 | 67258 | 0.79 | <16748.11 | <0.32 |
| Site 5 (42-47cm) | 42-47 | 5 | In Cap | Sample | 4,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 526667 | 0.65 | <16748.11 | <0.05 |
| Site 5 (42-47cm) | 42-47 | 5 | In Cap | Sample | 4,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 288937 | 0.70 | <16748.11 | <0.08 |
| Site 5 (42-47cm) | 42-47 | 5 | In Cap | Sample | 2,4´-DDD | ND | 0.05 | 5 | 2.98541E-06 | 75521 | 0.78 | <16748.11 | <0.28 |
| Site 5 (42-47cm) | 42-47 | 5 | In Cap | Sample | 2,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 516595 | 0.65 | <16748.11 | <0.05 |
| Site 5 (42-47cm) | 42-47 | 5 | In Cap | Sample | 2,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 569687 | 0.64 | <16748.11 | <0.05 |
| Site 5 (42-47cm) | 42-47 | 5 | In Cap | Sample | 4,4´-DDD | ND | 0.05 | 5 | 2.98541E-06 | 67258 | 0.79 | <16748.11 | <0.32 |
| Site 5 (47-52cm)-0.5ml | 47-52 | 5 | In Cap | Sample | 4,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 526667 | 0.42 | <16748.11 | <0.08 |
| Site 5 (47-52cm)-0.5ml | 47-52 | 5 | In Cap | Sample | 4,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 288937 | 0.49 | <16748.11 | <0.12 |
| Site 5 (47-52cm)-0.5ml | 47-52 | 5 | In Cap | Sample | 2,4´-DDD | ND | 0.05 | 5 | 2.98541E-06 | 75521 | 0.63 | <16748.11 | <0.35 |
| Site 5 (47-52cm)-0.5ml | 47-52 | 5 | In Cap | Sample | 2,4´-DDE | ND | 0.05 | 5 | 2.98541E-06 | 516595 | 0.42 | <16748.11 | <0.08 |
| Site 5 (47-52cm)-0.5ml | 47-52 | 5 | In Cap | Sample | 2,4´-DDT | ND | 0.05 | 5 | 2.98541E-06 | 569687 | 0.41 | <16748.11 | <0.07 |
| Site 5 (47-52cm)-0.5ml | 47-52 | 5 | In Cap | Sample | 4,4´-DDD | ND | 0.05 | 5 | 2.98541E-06 | 67258 | 0.64 | <16748.11 | <0.39 |
| Site 6 (0-10cm)-1ml | 0-10 | 6 | Off Cap | Sample | 4,4´-DDE | 0.07 | 0.05 | 10 | 5.97082E-06 | 526667 | 1.00 | 11723.67688 | 0.02 |
| Site 6 (0-10cm)-1ml | 0-10 | 6 | Off Cap | Sample | 4,4´-DDT | ND | 0.05 | 10 | 5.97082E-06 | 288937 | 0.81 | <8374.05 | <0.04 |
| Site 6 (0-10cm)-1ml | 0-10 | 6 | Off Cap | Sample | 2,4´-DDD | ND | 0.05 | 10 | 5.97082E-06 | 75521 | 0.87 | <8374.05 | <0.13 |
| Site 6 (0-10cm)-1ml | 0-10 | 6 | Off Cap | Sample | 2,4´-DDE | ND | 0.05 | 10 | 5.97082E-06 | 516595 | 1.00 | <8374.05 | <0.02 |
| Site 6 (0-10cm)-1ml | 0-10 | 6 | Off Cap | Sample | 2,4´-DDT | ND | 0.05 | 10 | 5.97082E-06 | 569687 | 1.00 | <8374.05 | <0.01 |
| Site 6 (0-10cm)-1ml | 0-10 | 6 | Off Cap | Sample | 4,4´-DDD | 0.06 | 0.05 | 10 | 5.97082E-06 | 67258 | 0.88 | 10048.86589 | 0.17 |
| Site 7 (0-10cm)-1ml | 0-10 | 7 | Off Cap | Sample | 4,4´-DDE | 0.06 | 0.05 | 10 | 5.97082E-06 | 526667 | 0.67 | 10048.86589 | 0.03 |
| Site 7 (0-10cm)-1ml | 0-10 | 7 | Off Cap | Sample | 4,4´-DDT | ND | 0.05 | 10 | 5.97082E-06 | 288937 | 0.72 | <8374.05 | <0.04 |
| Site 7 (0-10cm)-1ml | 0-10 | 7 | Off Cap | Sample | 2,4´-DDD | ND | 0.05 | 10 | 5.97082E-06 | 75521 | 0.83 | <8374.05 | <0.13 |
| Site 7 (0-10cm)-1ml | 0-10 | 7 | Off Cap | Sample | 2,4´-DDE | ND | 0.05 | 10 | 5.97082E-06 | 516595 | 0.67 | <8374.05 | <0.02 |
| Site 7 (0-10cm)-1ml | 0-10 | 7 | Off Cap | Sample | 2,4´-DDT | ND | 0.05 | 10 | 5.97082E-06 | 569687 | 0.66 | <8374.05 | <0.02 |
| Site 7 (0-10cm)-1ml | 0-10 | 7 | Off Cap | Sample | 4,4´-DDD | ND | 0.05 | 10 | 5.97082E-06 | 67258 | 0.83 | <8374.05 | <0.15 |

**Footnotes:**

1. Duplicate samples deployed at station 3, intervals 0-5, 20-25 and 25-30 cm.
2. 0.597 µL polydimethylsiloxane (PDMS) per cm of this type of SPME fiber.
3. Fiber:Water Partition Coefficient calculated as Log Kfs = LogKow - 0.91 (Mayer et al. 2000). Log Kow referenced from ATDSR (2002).
4. Fraction to steady state (fss) calculated based on performance reference compound (PRC) mass transfer kinetics.
5. Concentration of exposure solution = (Concentration in fiber ÷ fss) ÷ Kfs. If not detected, reported as < detection limit.

**Abbreviations:**

| | |
|---|---|
| cm: centimeter(s) | ng: nanogram(s) |
| L: Liter(s) | PDMS: Polydimethylsiloxane |
| ND: Not detected | SPME: solid phase microextraction |

**Table 5: Field, Laboratory Data and Calculations for *in-situ* SPME Study during 25-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | ANALYTE | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| STN 1 1A+1B 5.5-10.5 cm | 5.5-10.5 | 1 | In Cap | 4,4′-DDE | 0.09 | 0.03 | 5 | 5.971E-06 | 526667 | 0.71 | 15073.3 | 0.04 |
| STN 1 1A+1B 5.5-10.5 cm | 5.5-10.5 | 1 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.74 | <5024.43 | <0.024 |
| STN 1 1A+1B 5.5-10.5 cm | 5.5-10.5 | 1 | In Cap | 2,4′-DDD | 0.04 | 0.03 | 5 | 5.971E-06 | 75521 | 0.79 | 6699.2 | 0.11 |
| STN 1 1A+1B 5.5-10.5 cm | 5.5-10.5 | 1 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.71 | <5024.43 | <0.014 |
| STN 1 1A+1B 5.5-10.5 cm | 5.5-10.5 | 1 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.71 | <5024.43 | <0.012 |
| STN 1 1A+1B 5.5-10.5 cm | 5.5-10.5 | 1 | In Cap | 4,4′-DDD | 0.10 | 0.03 | 5 | 5.971E-06 | 67258 | 0.80 | 16748.1 | 0.31 |
| STN 1 1A+1B 10.5-15.5 cm | 10.5-15.5 | 1 | In Cap | 4,4′-DDE | 0.13 | 0.03 | 5 | 5.971E-06 | 526667 | 0.60 | 21772.5 | 0.07 |
| STN 1 1A+1B 10.5-15.5 cm | 10.5-15.5 | 1 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.64 | <5024.43 | <0.027 |
| STN 1 1A+1B 10.5-15.5 cm | 10.5-15.5 | 1 | In Cap | 2,4′-DDD | 0.04 | 0.03 | 5 | 5.971E-06 | 75521 | 0.72 | 6699.2 | 0.12 |
| STN 1 1A+1B 10.5-15.5 cm | 10.5-15.5 | 1 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.60 | <5024.43 | <0.016 |
| STN 1 1A+1B 10.5-15.5 cm | 10.5-15.5 | 1 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.60 | <5024.43 | <0.015 |
| STN 1 1A+1B 10.5-15.5 cm | 10.5-15.5 | 1 | In Cap | 4,4′-DDD | 0.10 | 0.03 | 5 | 5.971E-06 | 67258 | 0.72 | 16748.1 | 0.34 |
| STN 1 1A+1B 15.5-20.5 cm | 15.5-20.5 | 1 | In Cap | 4,4′-DDE | 0.12 | 0.03 | 5 | 5.971E-06 | 526667 | 0.61 | 20097.7 | 0.06 |
| STN 1 1A+1B 15.5-20.5 cm | 15.5-20.5 | 1 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.64 | <5024.43 | <0.027 |
| STN 1 1A+1B 15.5-20.5 cm | 15.5-20.5 | 1 | In Cap | 2,4′-DDD | 0.04 | 0.03 | 5 | 5.971E-06 | 75521 | 0.73 | 6699.2 | 0.12 |
| STN 1 1A+1B 15.5-20.5 cm | 15.5-20.5 | 1 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.61 | <5024.43 | <0.016 |
| STN 1 1A+1B 15.5-20.5 cm | 15.5-20.5 | 1 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.60 | <5024.43 | <0.015 |
| STN 1 1A+1B 15.5-20.5 cm | 15.5-20.5 | 1 | In Cap | 4,4′-DDD | 0.08 | 0.03 | 5 | 5.971E-06 | 67258 | 0.73 | 13398.5 | 0.27 |
| STN 1 1A+1B 20.5-25.5 cm | 20.5-25.5 | 1 | In Cap | 4,4′-DDE | 0.15 | 0.03 | 5 | 5.971E-06 | 526667 | 0.63 | 25122.2 | 0.08 |
| STN 1 1A+1B 20.5-25.5 cm | 20.5-25.5 | 1 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.67 | <5024.43 | <0.026 |
| STN 1 1A+1B 20.5-25.5 cm | 20.5-25.5 | 1 | In Cap | 2,4′-DDD | 0.05 | 0.03 | 5 | 5.971E-06 | 75521 | 0.74 | 8374.1 | 0.15 |
| STN 1 1A+1B 20.5-25.5 cm | 20.5-25.5 | 1 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.63 | <5024.43 | <0.015 |
| STN 1 1A+1B 20.5-25.5 cm | 20.5-25.5 | 1 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.63 | <5024.43 | <0.014 |
| STN 1 1A+1B 20.5-25.5 cm | 20.5-25.5 | 1 | In Cap | 4,4′-DDD | 0.12 | 0.03 | 5 | 5.971E-06 | 67258 | 0.75 | 20097.7 | 0.40 |
| STN 2 2A+2B 0-5 cm | 0-5 | 2 | In Cap | 4,4′-DDE | 0.03 | 0.03 | 5 | 5.971E-06 | 526667 | 0.71 | 5024.4 | 0.01 |
| STN 2 2A+2B 0-5 cm | 0-5 | 2 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.74 | <5024.43 | <0.023 |
| STN 2 2A+2B 0-5 cm | 0-5 | 2 | In Cap | 2,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 75521 | 0.82 | <5024.43 | <0.082 |
| STN 2 2A+2B 0-5 cm | 0-5 | 2 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.71 | <5024.43 | <0.014 |
| STN 2 2A+2B 0-5 cm | 0-5 | 2 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.71 | <5024.43 | <0.012 |
| STN 2 2A+2B 0-5 cm | 0-5 | 2 | In Cap | 4,4′-DDD | 0.03 | 0.03 | 5 | 5.971E-06 | 67258 | 0.82 | 5024.4 | 0.09 |
| STN 2 2A+2B 5-10 cm | 5-10 | 2 | In Cap | 4,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 526667 | 0.48 | <5024.43 | <0.02 |
| STN 2 2A+2B 5-10 cm | 5-10 | 2 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.52 | <5024.43 | <0.033 |
| STN 2 2A+2B 5-10 cm | 5-10 | 2 | In Cap | 2,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 75521 | 0.62 | <5024.43 | <0.107 |
| STN 2 2A+2B 5-10 cm | 5-10 | 2 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.48 | <5024.43 | <0.02 |
| STN 2 2A+2B 5-10 cm | 5-10 | 2 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.47 | <5024.43 | <0.019 |
| STN 2 2A+2B 5-10 cm | 5-10 | 2 | In Cap | 4,4′-DDD | 0.03 | 0.03 | 5 | 5.971E-06 | 67258 | 0.63 | 5024.4 | 0.12 |
| STN 2 2A+2B 10-15 cm | 10-15 | 2 | In Cap | 4,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 526667 | 0.29 | <5024.43 | <0.033 |
| STN 2 2A+2B 10-15 cm | 10-15 | 2 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.36 | <5024.43 | <0.048 |
| STN 2 2A+2B 10-15 cm | 10-15 | 2 | In Cap | 2,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 75521 | 0.51 | <5024.43 | <0.129 |
| STN 2 2A+2B 10-15 cm | 10-15 | 2 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.29 | <5024.43 | <0.033 |
| STN 2 2A+2B 10-15 cm | 10-15 | 2 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.28 | <5024.43 | <0.031 |

**Table 5: Field, Laboratory Data and Calculations for *in-situ* SPME Study during 25-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | ANALYTE | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| STN 2 2A+2B 10-15 cm | 10-15 | 2 | In Cap | 4,4′-DDD | 0.04 | 0.03 | 5 | 5.971E-06 | 67258 | 0.53 | 6699.2 | 0.19 |
| STN 2 2A+2B 15-20 cm | 15-20 | 2 | In Cap | 4,4′-DDE | 0.03 | 0.03 | 5 | 5.971E-06 | 526667 | 0.47 | 5024.4 | 0.02 |
| STN 2 2A+2B 15-20 cm | 15-20 | 2 | In Cap | 4,4′-DDT | 0.05 | 0.03 | 5 | 5.971E-06 | 288937 | 0.51 | 8374.1 | 0.06 |
| STN 2 2A+2B 15-20 cm | 15-20 | 2 | In Cap | 2,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 75521 | 0.61 | <5024.43 | <0.11 |
| STN 2 2A+2B 15-20 cm | 15-20 | 2 | In Cap | 2,4′-DDE | 0.12 | 0.03 | 5 | 5.971E-06 | 516595 | 0.47 | 20097.7 | 0.08 |
| STN 2 2A+2B 15-20 cm | 15-20 | 2 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.46 | <5024.43 | <0.019 |
| STN 2 2A+2B 15-20 cm | 15-20 | 2 | In Cap | 4,4′-DDD | 0.07 | 0.03 | 5 | 5.971E-06 | 67258 | 0.61 | 11723.7 | 0.28 |
| STN 2 2A+2B 20-25 cm | 20-25 | 2 | In Cap | 4,4′-DDE | 0.04 | 0.03 | 5 | 5.971E-06 | 526667 | 0.48 | 6699.2 | 0.03 |
| STN 2 2A+2B 20-25 cm | 20-25 | 2 | In Cap | 4,4′-DDT | 0.04 | 0.03 | 5 | 5.971E-06 | 288937 | 0.52 | 6699.2 | 0.04 |
| STN 2 2A+2B 20-25 cm | 20-25 | 2 | In Cap | 2,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 75521 | 0.62 | <5024.43 | <0.107 |
| STN 2 2A+2B 20-25 cm | 20-25 | 2 | In Cap | 2,4′-DDE | 0.05 | 0.03 | 5 | 5.971E-06 | 516595 | 0.48 | 8374.1 | 0.03 |
| STN 2 2A+2B 20-25 cm | 20-25 | 2 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.47 | <5024.43 | <0.019 |
| STN 2 2A+2B 20-25 cm | 20-25 | 2 | In Cap | 4,4′-DDD | 0.10 | 0.03 | 5 | 5.971E-06 | 67258 | 0.63 | 16748.1 | 0.39 |
| STN 2 2A+2B 25-30 cm | 25-30 | 2 | In Cap | 4,4′-DDE | 0.05 | 0.03 | 5 | 5.971E-06 | 526667 | 0.41 | 8374.1 | 0.04 |
| STN 2 2A+2B 25-30 cm | 25-30 | 2 | In Cap | 4,4′-DDT | 0.04 | 0.03 | 5 | 5.971E-06 | 288937 | 0.47 | 6699.2 | 0.05 |
| STN 2 2A+2B 25-30 cm | 25-30 | 2 | In Cap | 2,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 75521 | 0.59 | <5024.43 | <0.113 |
| STN 2 2A+2B 25-30 cm | 25-30 | 2 | In Cap | 2,4′-DDE | 0.14 | 0.03 | 5 | 5.971E-06 | 516595 | 0.41 | 23447.4 | 0.11 |
| STN 2 2A+2B 25-30 cm | 25-30 | 2 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.40 | <5024.43 | <0.022 |
| STN 2 2A+2B 25-30 cm | 25-30 | 2 | In Cap | 4,4′-DDD | 0.08 | 0.03 | 5 | 5.971E-06 | 67258 | 0.60 | 13398.5 | 0.33 |
| STN 2 2A+2B 30-35 cm | 30-35 | 2 | In Cap | 4,4′-DDE | 0.03 | 0.03 | 5 | 5.971E-06 | 526667 | 0.60 | 5024.4 | 0.02 |
| STN 2 2A+2B 30-35 cm | 30-35 | 2 | In Cap | 4,4′-DDT | 0.03 | 0.03 | 5 | 5.971E-06 | 288937 | 0.63 | 5024.4 | 0.03 |
| STN 2 2A+2B 30-35 cm | 30-35 | 2 | In Cap | 2,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 75521 | 0.71 | <5024.43 | <0.094 |
| STN 2 2A+2B 30-35 cm | 30-35 | 2 | In Cap | 2,4′-DDE | 0.13 | 0.03 | 5 | 5.971E-06 | 516595 | 0.60 | 21772.5 | 0.07 |
| STN 2 2A+2B 30-35 cm | 30-35 | 2 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.59 | <5024.43 | <0.015 |
| STN 2 2A+2B 30-35 cm | 30-35 | 2 | In Cap | 4,4′-DDD | 0.09 | 0.03 | 5 | 5.971E-06 | 67258 | 0.71 | 15073.3 | 0.31 |
| STN 2 2A+2B 35-40 cm | 35-40 | 2 | In Cap | 4,4′-DDE | 0.04 | 0.03 | 5 | 5.971E-06 | 526667 | 0.46 | 6699.2 | 0.03 |
| STN 2 2A+2B 35-40 cm | 35-40 | 2 | In Cap | 4,4′-DDT | 0.05 | 0.03 | 5 | 5.971E-06 | 288937 | 0.51 | 8374.1 | 0.06 |
| STN 2 2A+2B 35-40 cm | 35-40 | 2 | In Cap | 2,4′-DDD | 0.03 | 0.03 | 5 | 5.971E-06 | 75521 | 0.62 | 5024.4 | 0.11 |
| STN 2 2A+2B 35-40 cm | 35-40 | 2 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.47 | <5024.43 | <0.021 |
| STN 2 2A+2B 35-40 cm | 35-40 | 2 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.46 | <5024.43 | <0.019 |
| STN 2 2A+2B 35-40 cm | 35-40 | 2 | In Cap | 4,4′-DDD | 0.09 | 0.03 | 5 | 5.971E-06 | 67258 | 0.63 | 15073.3 | 0.35 |
| STN 2 2A+2B 40-45 cm | 40-45 | 2 | In Cap | 4,4′-DDE | 0.03 | 0.03 | 5 | 5.971E-06 | 526667 | 0.69 | 5024.4 | 0.01 |
| STN 2 2A+2B 40-45 cm | 40-45 | 2 | In Cap | 4,4′-DDT | 0.05 | 0.03 | 5 | 5.971E-06 | 288937 | 0.72 | 8374.1 | 0.04 |
| STN 2 2A+2B 40-45 cm | 40-45 | 2 | In Cap | 2,4′-DDD | 0.03 | 0.03 | 5 | 5.971E-06 | 75521 | 0.79 | 5024.4 | 0.08 |
| STN 2 2A+2B 40-45 cm | 40-45 | 2 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.69 | <5024.43 | <0.014 |
| STN 2 2A+2B 40-45 cm | 40-45 | 2 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.68 | <5024.43 | <0.013 |
| STN 2 2A+2B 40-45 cm | 40-45 | 2 | In Cap | 4,4′-DDD | 0.11 | 0.03 | 5 | 5.971E-06 | 67258 | 0.79 | 18422.9 | 0.35 |
| STN 2 2A+2B 45-50 cm | 45-50 | 2 | In Cap | 4,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 526667 | 0.45 | <5024.43 | <0.021 |
| STN 2 2A+2B 45-50 cm | 45-50 | 2 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.49 | <5024.43 | <0.035 |
| STN 2 2A+2B 45-50 cm | 45-50 | 2 | In Cap | 2,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 75521 | 0.60 | <5024.43 | <0.112 |
| STN 2 2A+2B 45-50 cm | 45-50 | 2 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.45 | <5024.43 | <0.022 |

**Table 5: Field, Laboratory Data and Calculations for *in-situ* SPME Study during 25-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | ANALYTE | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| STN 2 2A+2B 45-50 cm | 45-50 | 2 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.44 | <5024.43 | <0.02 |
| STN 2 2A+2B 45-50 cm | 45-50 | 2 | In Cap | 4,4′-DDD | 0.07 | 0.03 | 5 | 5.971E-06 | 67258 | 0.60 | 11723.7 | 0.29 |
| STN 2 2A+2B 50-55 cm | 50-55 | 2 | In Cap | 4,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 526667 | 0.61 | <5024.43 | <0.016 |
| STN 2 2A+2B 50-55 cm | 50-55 | 2 | In Cap | 4,4′-DDT | 0.04 | 0.03 | 5 | 5.971E-06 | 288937 | 0.64 | 6699.2 | 0.04 |
| STN 2 2A+2B 50-55 cm | 50-55 | 2 | In Cap | 2,4′-DDD | 0.03 | 0.03 | 5 | 5.971E-06 | 75521 | 0.71 | 5024.4 | 0.09 |
| STN 2 2A+2B 50-55 cm | 50-55 | 2 | In Cap | 2,4′-DDE | 0.12 | 0.03 | 5 | 5.971E-06 | 516595 | 0.61 | 20097.7 | 0.06 |
| STN 2 2A+2B 50-55 cm | 50-55 | 2 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.61 | <5024.43 | <0.015 |
| STN 2 2A+2B 50-55 cm | 50-55 | 2 | In Cap | 4,4′-DDD | 0.08 | 0.03 | 5 | 5.971E-06 | 67258 | 0.72 | 13398.5 | 0.28 |
| STN 3 3B 0-5 cm | 0-5 | 3 | In Cap | 4,4′-DDE | 0.15 | 0.03 | 5 | 2.985E-06 | 526667 | 0.82 | 50244.3 | 0.12 |
| STN 3 3B 0-5 cm | 0-5 | 3 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 2.985E-06 | 288937 | 0.84 | <10048.87 | <0.021 |
| STN 3 3B 0-5 cm | 0-5 | 3 | In Cap | 2,4′-DDD | 0.05 | 0.03 | 5 | 2.985E-06 | 75521 | 0.88 | 16748.1 | 0.25 |
| STN 3 3B 0-5 cm | 0-5 | 3 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 2.985E-06 | 516595 | 0.82 | <10048.87 | <0.012 |
| STN 3 3B 0-5 cm | 0-5 | 3 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 2.985E-06 | 569687 | 0.82 | <10048.87 | <0.011 |
| STN 3 3B 0-5 cm | 0-5 | 3 | In Cap | 4,4′-DDD | 0.04 | 0.03 | 5 | 2.985E-06 | 67258 | 0.89 | 13398.5 | 0.22 |
| STN 3 3A+3B 5-10 cm | 5-10 | 3 | In Cap | 4,4′-DDE | 0.14 | 0.03 | 5 | 5.971E-06 | 526667 | 0.72 | 23447.4 | 0.06 |
| STN 3 3A+3B 5-10 cm | 5-10 | 3 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.75 | <5024.43 | <0.023 |
| STN 3 3A+3B 5-10 cm | 5-10 | 3 | In Cap | 2,4′-DDD | 0.05 | 0.03 | 5 | 5.971E-06 | 75521 | 0.82 | 8374.1 | 0.14 |
| STN 3 3A+3B 5-10 cm | 5-10 | 3 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.72 | <5024.43 | <0.014 |
| STN 3 3A+3B 5-10 cm | 5-10 | 3 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.72 | <5024.43 | <0.012 |
| STN 3 3A+3B 5-10 cm | 5-10 | 3 | In Cap | 4,4′-DDD | 0.09 | 0.03 | 5 | 5.971E-06 | 67258 | 0.82 | 15073.3 | 0.27 |
| STN 3 3A+3B 10-15 cm | 10-15 | 3 | In Cap | 4,4′-DDE | 0.17 | 0.03 | 5 | 5.971E-06 | 526667 | 0.81 | 28471.8 | 0.07 |
| STN 3 3A+3B 10-15 cm | 10-15 | 3 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.82 | <5024.43 | <0.021 |
| STN 3 3A+3B 10-15 cm | 10-15 | 3 | In Cap | 2,4′-DDD | 0.06 | 0.03 | 5 | 5.971E-06 | 75521 | 0.85 | 10048.9 | 0.16 |
| STN 3 3A+3B 10-15 cm | 10-15 | 3 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.81 | <5024.43 | <0.012 |
| STN 3 3A+3B 10-15 cm | 10-15 | 3 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.81 | <5024.43 | <0.011 |
| STN 3 3A+3B 10-15 cm | 10-15 | 3 | In Cap | 4,4′-DDD | 0.11 | 0.03 | 5 | 5.971E-06 | 67258 | 0.85 | 18422.9 | 0.32 |
| STN 3 3A+3B 15-20 cm | 15-20 | 3 | In Cap | 4,4′-DDE | 0.09 | 0.03 | 5 | 5.971E-06 | 526667 | 0.62 | 15073.3 | 0.05 |
| STN 3 3A+3B 15-20 cm | 15-20 | 3 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.66 | <5024.43 | <0.026 |
| STN 3 3A+3B 15-20 cm | 15-20 | 3 | In Cap | 2,4′-DDD | 0.06 | 0.03 | 5 | 5.971E-06 | 75521 | 0.74 | 10048.9 | 0.18 |
| STN 3 3A+3B 15-20 cm | 15-20 | 3 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.62 | <5024.43 | <0.016 |
| STN 3 3A+3B 15-20 cm | 15-20 | 3 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.61 | <5024.43 | <0.014 |
| STN 3 3A+3B 15-20 cm | 15-20 | 3 | In Cap | 4,4′-DDD | 0.09 | 0.03 | 5 | 5.971E-06 | 67258 | 0.75 | 15073.3 | 0.30 |
| STN 3 3A+3B 20-25 cm | 20-25 | 3 | In Cap | 4,4′-DDE | 0.14 | 0.03 | 5 | 5.971E-06 | 526667 | 0.68 | 23447.4 | 0.07 |
| STN 3 3A+3B 20-25 cm | 20-25 | 3 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.72 | <5024.43 | <0.024 |
| STN 3 3A+3B 20-25 cm | 20-25 | 3 | In Cap | 2,4′-DDD | 0.07 | 0.03 | 5 | 5.971E-06 | 75521 | 0.79 | 11723.7 | 0.20 |
| STN 3 3A+3B 20-25 cm | 20-25 | 3 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.68 | <5024.43 | <0.014 |
| STN 3 3A+3B 20-25 cm | 20-25 | 3 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.68 | <5024.43 | <0.013 |
| STN 3 3A+3B 20-25 cm | 20-25 | 3 | In Cap | 4,4′-DDD | 0.12 | 0.03 | 5 | 5.971E-06 | 67258 | 0.79 | 20097.7 | 0.38 |
| STN 3 3A+3B 25-30 cm | 25-30 | 3 | In Cap | 4,4′-DDE | 0.11 | 0.03 | 5 | 5.971E-06 | 526667 | 0.66 | 18422.9 | 0.05 |
| STN 3 3A+3B 25-30 cm | 25-30 | 3 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.69 | <5024.43 | <0.025 |
| STN 3 3A+3B 25-30 cm | 25-30 | 3 | In Cap | 2,4′-DDD | 0.04 | 0.03 | 5 | 5.971E-06 | 75521 | 0.77 | 6699.2 | 0.12 |

**Table 5: Field, Laboratory Data and Calculations for *in-situ* SPME Study during 25-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | ANALYTE | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| STN 3 3A+3B 25-30 cm | 25-30 | 3 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.66 | <5024.43 | <0.015 |
| STN 3 3A+3B 25-30 cm | 25-30 | 3 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.66 | <5024.43 | <0.013 |
| STN 3 3A+3B 25-30 cm | 25-30 | 3 | In Cap | 4,4′-DDD | 0.12 | 0.03 | 5 | 5.971E-06 | 67258 | 0.78 | 20097.7 | 0.38 |
| STN 3 3A+3B 30-35 cm | 30-35 | 3 | In Cap | 4,4′-DDE | 0.11 | 0.03 | 5 | 5.971E-06 | 526667 | 0.80 | 18422.9 | 0.04 |
| STN 3 3A+3B 30-35 cm | 30-35 | 3 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.82 | <5024.43 | <0.021 |
| STN 3 3A+3B 30-35 cm | 30-35 | 3 | In Cap | 2,4′-DDD | 0.05 | 0.03 | 5 | 5.971E-06 | 75521 | 0.84 | 8374.1 | 0.13 |
| STN 3 3A+3B 30-35 cm | 30-35 | 3 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.81 | <5024.43 | <0.012 |
| STN 3 3A+3B 30-35 cm | 30-35 | 3 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.80 | <5024.43 | <0.011 |
| STN 3 3A+3B 30-35 cm | 30-35 | 3 | In Cap | 4,4′-DDD | 0.11 | 0.03 | 5 | 5.971E-06 | 67258 | 0.85 | 18422.9 | 0.32 |
| STN 3 3A+3B 35-40 cm | 35-40 | 3 | In Cap | 4,4′-DDE | 0.10 | 0.03 | 5 | 5.971E-06 | 526667 | 0.73 | 16748.1 | 0.04 |
| STN 3 3A+3B 35-40 cm | 35-40 | 3 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.76 | <5024.43 | <0.023 |
| STN 3 3A+3B 35-40 cm | 35-40 | 3 | In Cap | 2,4′-DDD | 0.06 | 0.03 | 5 | 5.971E-06 | 75521 | 0.82 | 10048.9 | 0.16 |
| STN 3 3A+3B 35-40 cm | 35-40 | 3 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.73 | <5024.43 | <0.013 |
| STN 3 3A+3B 35-40 cm | 35-40 | 3 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.73 | <5024.43 | <0.012 |
| STN 3 3A+3B 35-40 cm | 35-40 | 3 | In Cap | 4,4′-DDD | 0.10 | 0.03 | 5 | 5.971E-06 | 67258 | 0.82 | 16748.1 | 0.30 |
| STN 3 3A+3B 40-45 cm | 40-45 | 3 | In Cap | 4,4′-DDE | 0.10 | 0.03 | 5 | 5.971E-06 | 526667 | 0.69 | 16748.1 | 0.05 |
| STN 3 3A+3B 40-45 cm | 40-45 | 3 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.72 | <5024.43 | <0.024 |
| STN 3 3A+3B 40-45 cm | 40-45 | 3 | In Cap | 2,4′-DDD | 0.04 | 0.03 | 5 | 5.971E-06 | 75521 | 0.78 | 6699.2 | 0.11 |
| STN 3 3A+3B 40-45 cm | 40-45 | 3 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.69 | <5024.43 | <0.014 |
| STN 3 3A+3B 40-45 cm | 40-45 | 3 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.68 | <5024.43 | <0.013 |
| STN 3 3A+3B 40-45 cm | 40-45 | 3 | In Cap | 4,4′-DDD | 0.11 | 0.03 | 5 | 5.971E-06 | 67258 | 0.78 | 18422.9 | 0.35 |
| STN 3 3A+3B 45-50 cm | 45-50 | 3 | In Cap | 4,4′-DDE | 0.11 | 0.03 | 5 | 5.971E-06 | 526667 | 0.73 | 18422.9 | 0.05 |
| STN 3 3A+3B 45-50 cm | 45-50 | 3 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.76 | <5024.43 | <0.023 |
| STN 3 3A+3B 45-50 cm | 45-50 | 3 | In Cap | 2,4′-DDD | 0.05 | 0.03 | 5 | 5.971E-06 | 75521 | 0.81 | 8374.1 | 0.14 |
| STN 3 3A+3B 45-50 cm | 45-50 | 3 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.73 | <5024.43 | <0.013 |
| STN 3 3A+3B 45-50 cm | 45-50 | 3 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.73 | <5024.43 | <0.012 |
| STN 3 3A+3B 45-50 cm | 45-50 | 3 | In Cap | 4,4′-DDD | 0.12 | 0.03 | 5 | 5.971E-06 | 67258 | 0.82 | 20097.7 | 0.37 |
| STN 3 3A+3B 50-55 cm | 50-55 | 3 | In Cap | 4,4′-DDE | 0.12 | 0.03 | 5 | 5.971E-06 | 526667 | 0.77 | 20097.7 | 0.05 |
| STN 3 3A+3B 50-55 cm | 50-55 | 3 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.79 | <5024.43 | <0.022 |
| STN 3 3A+3B 50-55 cm | 50-55 | 3 | In Cap | 2,4′-DDD | 0.04 | 0.03 | 5 | 5.971E-06 | 75521 | 0.84 | 6699.2 | 0.11 |
| STN 3 3A+3B 50-55 cm | 50-55 | 3 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.77 | <5024.43 | <0.013 |
| STN 3 3A+3B 50-55 cm | 50-55 | 3 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.77 | <5024.43 | <0.011 |
| STN 3 3A+3B 50-55 cm | 50-55 | 3 | In Cap | 4,4′-DDD | 0.09 | 0.03 | 5 | 5.971E-06 | 67258 | 0.84 | 15073.3 | 0.27 |
| STN 4 4A+4B 0-5 cm | 0-5 | 4 | In Cap | 4,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 526667 | 0.57 | <5024.43 | <0.017 |
| STN 4 4A+4B 0-5 cm | 0-5 | 4 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.60 | <5024.43 | <0.029 |
| STN 4 4A+4B 0-5 cm | 0-5 | 4 | In Cap | 2,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 75521 | 0.67 | <5024.43 | <0.1 |
| STN 4 4A+4B 0-5 cm | 0-5 | 4 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.57 | <5024.43 | <0.017 |
| STN 4 4A+4B 0-5 cm | 0-5 | 4 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.57 | <5024.43 | <0.016 |
| STN 4 4A+4B 0-5 cm | 0-5 | 4 | In Cap | 4,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 67258 | 0.67 | <5024.43 | <0.111 |
| STN 4 4A+4B 5-10 cm | 5-10 | 4 | In Cap | 4,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 526667 | 0.43 | <5024.43 | <0.022 |
| STN 4 4A+4B 5-10 cm | 5-10 | 4 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.48 | <5024.43 | <0.036 |

**Table 5: Field, Laboratory Data and Calculations for *in-situ* SPME Study during 25-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | ANALYTE | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| STN 4 4A+4B 5-10 cm | 5-10 | 4 | In Cap | 2,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 75521 | 0.59 | <5024.43 | <0.112 |
| STN 4 4A+4B 5-10 cm | 5-10 | 4 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.43 | <5024.43 | <0.023 |
| STN 4 4A+4B 5-10 cm | 5-10 | 4 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.42 | <5024.43 | <0.021 |
| STN 4 4A+4B 5-10 cm | 5-10 | 4 | In Cap | 4,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 67258 | 0.60 | <5024.43 | <0.124 |
| STN 4 4A+4B 20-25 cm | 20-25 | 4 | In Cap | 4,4′-DDE | 0.04 | 0.03 | 5 | 5.971E-06 | 526667 | 0.58 | 6699.2 | 0.02 |
| STN 4 4A+4B 20-25 cm | 20-25 | 4 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.61 | <5024.43 | <0.028 |
| STN 4 4A+4B 20-25 cm | 20-25 | 4 | In Cap | 2,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 75521 | 0.69 | <5024.43 | <0.097 |
| STN 4 4A+4B 20-25 cm | 20-25 | 4 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.58 | <5024.43 | <0.017 |
| STN 4 4A+4B 20-25 cm | 20-25 | 4 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.57 | <5024.43 | <0.015 |
| STN 4 4A+4B 20-25 cm | 20-25 | 4 | In Cap | 4,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 67258 | 0.69 | <5024.43 | <0.108 |
| STN 4 4A+4B 25-30 cm | 25-30 | 4 | In Cap | 4,4′-DDE | 0.04 | 0.03 | 5 | 5.971E-06 | 526667 | 0.64 | 6699.2 | 0.02 |
| STN 4 4A+4B 25-30 cm | 25-30 | 4 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.67 | <5024.43 | <0.026 |
| STN 4 4A+4B 25-30 cm | 25-30 | 4 | In Cap | 2,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 75521 | 0.73 | <5024.43 | <0.091 |
| STN 4 4A+4B 25-30 cm | 25-30 | 4 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.64 | <5024.43 | <0.015 |
| STN 4 4A+4B 25-30 cm | 25-30 | 4 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.64 | <5024.43 | <0.014 |
| STN 4 4A+4B 25-30 cm | 25-30 | 4 | In Cap | 4,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 67258 | 0.74 | <5024.43 | <0.101 |
| STN 4 4A+4B 30-35 cm | 30-35 | 4 | In Cap | 4,4′-DDE | 0.05 | 0.03 | 5 | 5.971E-06 | 526667 | 0.70 | 8374.1 | 0.02 |
| STN 4 4A+4B 30-35 cm | 30-35 | 4 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.73 | <5024.43 | <0.024 |
| STN 4 4A+4B 30-35 cm | 30-35 | 4 | In Cap | 2,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 75521 | 0.79 | <5024.43 | <0.084 |
| STN 4 4A+4B 30-35 cm | 30-35 | 4 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.70 | <5024.43 | <0.014 |
| STN 4 4A+4B 30-35 cm | 30-35 | 4 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.70 | <5024.43 | <0.013 |
| STN 4 4A+4B 30-35 cm | 30-35 | 4 | In Cap | 4,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 67258 | 0.80 | <5024.43 | <0.094 |
| STN 5 5B 1-4 cm | 1-4 | 5 | In Cap | 4,4′-DDE | ND | 0.03 | 3 | 1.791E-06 | 526667 | 0.75 | <16748.11 | <0.013 |
| STN 5 5B 1-4 cm | 1-4 | 5 | In Cap | 4,4′-DDT | ND | 0.03 | 3 | 1.791E-06 | 288937 | 0.76 | <16748.11 | <0.023 |
| STN 5 5B 1-4 cm | 1-4 | 5 | In Cap | 2,4′-DDD | ND | 0.03 | 3 | 1.791E-06 | 75521 | 0.78 | <16748.11 | <0.085 |
| STN 5 5B 1-4 cm | 1-4 | 5 | In Cap | 2,4′-DDE | ND | 0.03 | 3 | 1.791E-06 | 516595 | 0.75 | <16748.11 | <0.013 |
| STN 5 5B 1-4 cm | 1-4 | 5 | In Cap | 2,4′-DDT | ND | 0.03 | 3 | 1.791E-06 | 569687 | 0.75 | <16748.11 | <0.012 |
| STN 5 5B 1-4 cm | 1-4 | 5 | In Cap | 4,4′-DDD | ND | 0.03 | 3 | 1.791E-06 | 67258 | 0.78 | <16748.11 | <0.096 |
| STN 5 5A+5B 4-9 cm | 4-9 | 5 | In Cap | 4,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 526667 | 0.70 | <5024.43 | <0.014 |
| STN 5 5A+5B 4-9 cm | 4-9 | 5 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.73 | <5024.43 | <0.024 |
| STN 5 5A+5B 4-9 cm | 4-9 | 5 | In Cap | 2,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 75521 | 0.78 | <5024.43 | <0.085 |
| STN 5 5A+5B 4-9 cm | 4-9 | 5 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.70 | <5024.43 | <0.014 |
| STN 5 5A+5B 4-9 cm | 4-9 | 5 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.70 | <5024.43 | <0.013 |
| STN 5 5A+5B 4-9 cm | 4-9 | 5 | In Cap | 4,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 67258 | 0.79 | <5024.43 | <0.095 |
| STN 5 5A+5B 19-24 cm | 19-24 | 5 | In Cap | 4,4′-DDE | 0.03 | 0.03 | 5 | 5.971E-06 | 526667 | 0.51 | 5024.4 | 0.02 |
| STN 5 5A+5B 19-24 cm | 19-24 | 5 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.56 | <5024.43 | <0.031 |
| STN 5 5A+5B 19-24 cm | 19-24 | 5 | In Cap | 2,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 75521 | 0.66 | <5024.43 | <0.101 |
| STN 5 5A+5B 19-24 cm | 19-24 | 5 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.51 | <5024.43 | <0.019 |
| STN 5 5A+5B 19-24 cm | 19-24 | 5 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.50 | <5024.43 | <0.018 |
| STN 5 5A+5B 19-24 cm | 19-24 | 5 | In Cap | 4,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 67258 | 0.67 | <5024.43 | <0.111 |
| STN 5 5A+5B 29-34 cm | 29-34 | 5 | In Cap | 4,4′-DDE | 0.03 | 0.03 | 5 | 5.971E-06 | 526667 | 0.62 | 5024.4 | 0.02 |

**Table 5: Field, Laboratory Data and Calculations for *in-situ* SPME Study during 25-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | ANALYTE | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| STN 5 5A+5B 29-34 cm | 29-34 | 5 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.65 | <5024.43 | <0.027 |
| STN 5 5A+5B 29-34 cm | 29-34 | 5 | In Cap | 2,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 75521 | 0.71 | <5024.43 | <0.093 |
| STN 5 5A+5B 29-34 cm | 29-34 | 5 | In Cap | 2,4′-DDE | 0.03 | 0.03 | 5 | 5.971E-06 | 516595 | 0.62 | 5024.4 | 0.02 |
| STN 5 5A+5B 29-34 cm | 29-34 | 5 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.61 | <5024.43 | <0.014 |
| STN 5 5A+5B 29-34 cm | 29-34 | 5 | In Cap | 4,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 67258 | 0.72 | <5024.43 | <0.104 |
| STN 5 5A+5B 34-39 cm | 34-39 | 5 | In Cap | 4,4′-DDE | 0.03 | 0.03 | 5 | 5.971E-06 | 526667 | 0.57 | 5024.4 | 0.02 |
| STN 5 5A+5B 34-39 cm | 34-39 | 5 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.61 | <5024.43 | <0.028 |
| STN 5 5A+5B 34-39 cm | 34-39 | 5 | In Cap | 2,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 75521 | 0.69 | <5024.43 | <0.096 |
| STN 5 5A+5B 34-39 cm | 34-39 | 5 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.57 | <5024.43 | <0.017 |
| STN 5 5A+5B 34-39 cm | 34-39 | 5 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.57 | <5024.43 | <0.016 |
| STN 5 5A+5B 34-39 cm | 34-39 | 5 | In Cap | 4,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 67258 | 0.70 | <5024.43 | <0.106 |
| STN 5 5A+5B 39-44 cm | 39-44 | 5 | In Cap | 4,4′-DDE | 0.05 | 0.03 | 5 | 5.971E-06 | 526667 | 0.61 | 8374.1 | 0.03 |
| STN 5 5A+5B 39-44 cm | 39-44 | 5 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.65 | <5024.43 | <0.027 |
| STN 5 5A+5B 39-44 cm | 39-44 | 5 | In Cap | 2,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 75521 | 0.73 | <5024.43 | <0.092 |
| STN 5 5A+5B 39-44 cm | 39-44 | 5 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.61 | <5024.43 | <0.016 |
| STN 5 5A+5B 39-44 cm | 39-44 | 5 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.61 | <5024.43 | <0.015 |
| STN 5 5A+5B 39-44 cm | 39-44 | 5 | In Cap | 4,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 67258 | 0.73 | <5024.43 | <0.102 |
| STN 5 5A+5B 44-49 cm | 44-49 | 5 | In Cap | 4,4′-DDE | 0.05 | 0.03 | 5 | 5.971E-06 | 526667 | 0.58 | 8374.1 | 0.03 |
| STN 5 5A+5B 44-49 cm | 44-49 | 5 | In Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.61 | <5024.43 | <0.028 |
| STN 5 5A+5B 44-49 cm | 44-49 | 5 | In Cap | 2,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 75521 | 0.69 | <5024.43 | <0.096 |
| STN 5 5A+5B 44-49 cm | 44-49 | 5 | In Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.58 | <5024.43 | <0.017 |
| STN 5 5A+5B 44-49 cm | 44-49 | 5 | In Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.58 | <5024.43 | <0.015 |
| STN 5 5A+5B 44-49 cm | 44-49 | 5 | In Cap | 4,4′-DDD | 0.04 | 0.03 | 5 | 5.971E-06 | 67258 | 0.70 | 6699.2 | 0.14 |
| STN 6 6A+6B 0-5 cm | 0-5 | 6 | Off Cap | 4,4′-DDE | 0.04 | 0.03 | 5 | 5.971E-06 | 526667 | 0.76 | 6699.2 | 0.02 |
| STN 6 6A+6B 0-5 cm | 0-5 | 6 | Off Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.78 | <5024.43 | <0.022 |
| STN 6 6A+6B 0-5 cm | 0-5 | 6 | Off Cap | 2,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 75521 | 0.84 | <5024.43 | <0.079 |
| STN 6 6A+6B 0-5 cm | 0-5 | 6 | Off Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.76 | <5024.43 | <0.013 |
| STN 6 6A+6B 0-5 cm | 0-5 | 6 | Off Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.76 | <5024.43 | <0.012 |
| STN 6 6A+6B 0-5 cm | 0-5 | 6 | Off Cap | 4,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 67258 | 0.84 | <5024.43 | <0.089 |
| STN 6 6A+6B 5-10 cm | 5-10 | 6 | Off Cap | 4,4′-DDE | 0.04 | 0.03 | 5 | 5.971E-06 | 526667 | 0.76 | 6699.2 | 0.02 |
| STN 6 6A+6B 5-10 cm | 5-10 | 6 | Off Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.78 | <5024.43 | <0.022 |
| STN 6 6A+6B 5-10 cm | 5-10 | 6 | Off Cap | 2,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 75521 | 0.84 | <5024.43 | <0.08 |
| STN 6 6A+6B 5-10 cm | 5-10 | 6 | Off Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.76 | <5024.43 | <0.013 |
| STN 6 6A+6B 5-10 cm | 5-10 | 6 | Off Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.75 | <5024.43 | <0.012 |
| STN 6 6A+6B 5-10 cm | 5-10 | 6 | Off Cap | 4,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 67258 | 0.84 | <5024.43 | <0.089 |
| STN 7 7A+7B 4-9 cm | 4-9 | 7 | Off Cap | 4,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 526667 | 0.80 | <5024.43 | <0.012 |
| STN 7 7A+7B 4-9 cm | 4-9 | 7 | Off Cap | 4,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.82 | <5024.43 | <0.021 |
| STN 7 7A+7B 4-9 cm | 4-9 | 7 | Off Cap | 2,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 75521 | 0.87 | <5024.43 | <0.077 |
| STN 7 7A+7B 4-9 cm | 4-9 | 7 | Off Cap | 2,4′-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.80 | <5024.43 | <0.012 |
| STN 7 7A+7B 4-9 cm | 4-9 | 7 | Off Cap | 2,4′-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.79 | <5024.43 | <0.011 |
| STN 7 7A+7B 4-9 cm | 4-9 | 7 | Off Cap | 4,4′-DDD | ND | 0.03 | 5 | 5.971E-06 | 67258 | 0.87 | <5024.43 | <0.086 |

**Table 5: Field, Laboratory Data and Calculations for *in-situ* SPME Study during 25-Month Event**
SSC Pacific
Quantico, Virginia

| Sample ID[1] | Sample Interval (cm) | Station ID | Within Cap Footprint? | ANALYTE | Analytical Result (ng) | Detection Limit (ng) | Fiber Length (cm) | PDMS Volume per Sample (L)[2] | Fiber:Water Partition Coefficient[3] (Kfs, L/L PDMS) | Fraction to Steady State[4] | [PDMS DDx] (ng/L) | [Freely Dissolved Porewater DDx] (ng/L)[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| STN 7 7A+7B 9-14 cm | 9-14 | 7 | Off Cap | 4,4´-DDE | ND | 0.03 | 5 | 5.971E-06 | 526667 | 0.75 | <5024.43 | <0.013 |
| STN 7 7A+7B 9-14 cm | 9-14 | 7 | Off Cap | 4,4´-DDT | ND | 0.03 | 5 | 5.971E-06 | 288937 | 0.78 | <5024.43 | <0.022 |
| STN 7 7A+7B 9-14 cm | 9-14 | 7 | Off Cap | 2,4´-DDD | ND | 0.03 | 5 | 5.971E-06 | 75521 | 0.83 | <5024.43 | <0.08 |
| STN 7 7A+7B 9-14 cm | 9-14 | 7 | Off Cap | 2,4´-DDE | ND | 0.03 | 5 | 5.971E-06 | 516595 | 0.75 | <5024.43 | <0.013 |
| STN 7 7A+7B 9-14 cm | 9-14 | 7 | Off Cap | 2,4´-DDT | ND | 0.03 | 5 | 5.971E-06 | 569687 | 0.75 | <5024.43 | <0.012 |
| STN 7 7A+7B 9-14 cm | 9-14 | 7 | Off Cap | 4,4´-DDD | ND | 0.03 | 5 | 5.971E-06 | 67258 | 0.84 | <5024.43 | <0.089 |

**Footnotes:**

1.Duplicate samples (A and B) deployed per station and interval. Samples compiled prior to analysis to improve analytical detection limits.
2. 0.597 µL polydimethylsiloxane (PDMS) per cm of this type of SPME fiber.
3. Fiber:Water Partition Coefficient calculated as Log Kfs = LogKow - 0.91 (Mayer et al. 2000). Log Kow referenced from ATDSR (2002).
4. Fraction to steady state (fss) calculated based on performance reference compound (PRC) mass transfer kinetics.
5. Concentration of exposure solution = (Concentration in fiber ÷ fss) ÷ Kfs. If not detected, reported as < detection limit.

**Abbreviations:**

| | |
|---|---|
| cm: centimeter(s) | ng: nanogram(s) |
| L: Liter(s) | PDMS: Polydimethylsiloxane |
| ND: Not detected | SPME: solid phase microextraction |

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**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

10 January 2013

Gunther Rosen
Navy -- SPAWAR
Environmental Science and Applied System Branch, 536
San Diego, CA 92152

RE: Quantico

Enclosed are the results of analyses for samples received by the laboratory on 26-Oct-2012. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Patty Tuminello
Project Coordinator

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| QU-101012-1-1B | 2102603-01 | Passive Sampler | 25-Oct-2012 | 26-Oct-2012 |
| QU-101012-PRC-1-1B | 2102603-02 | Passive Sampler | 25-Oct-2012 | 26-Oct-2012 |
| QU-101012-2-1B | 2102603-03 | Passive Sampler | 25-Oct-2012 | 26-Oct-2012 |
| QU-101012-PRC-2-1B | 2102603-04 | Passive Sampler | 25-Oct-2012 | 26-Oct-2012 |
| QU-101012-3-1B | 2102603-05 | Passive Sampler | 25-Oct-2012 | 26-Oct-2012 |
| QU-101012-PRC-3-1B | 2102603-06 | Passive Sampler | 25-Oct-2012 | 26-Oct-2012 |
| QU-101012-4-1B | 2102603-07 | Passive Sampler | 25-Oct-2012 | 26-Oct-2012 |
| QU-101012-PRC-4-1B | 2102603-08 | Passive Sampler | 25-Oct-2012 | 26-Oct-2012 |
| QU-101012-5-1B | 2102603-09 | Passive Sampler | 25-Oct-2012 | 26-Oct-2012 |
| QU-101012-PRC-5-1B | 2102603-10 | Passive Sampler | 25-Oct-2012 | 26-Oct-2012 |
| QU-101012-6-1B | 2102603-11 | Passive Sampler | 25-Oct-2012 | 26-Oct-2012 |
| QU-101012-PRC-6-1B | 2102603-12 | Passive Sampler | 25-Oct-2012 | 26-Oct-2012 |
| QU-101012-SB | 2102603-13 | Passive Sampler | 25-Oct-2012 | 26-Oct-2012 |

| | | |
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## QU-101012-1-1B

**2102603-01 (Passive Sampler)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **0.05** | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | J |
| **4,4'-DDD [2C]** | **0.06** | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | J |
| 4,4´-DDE | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4'-DDT [2C] | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## QU-101012-PRC-1-1B

**2102603-02 (Passive Sampler)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **0.05** | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | J |
| **4,4'-DDD [2C]** | **0.06** | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | J |
| 4,4´-DDE | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4'-DDT [2C] | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## QU-101012-2-1B

**2102603-03 (Passive Sampler)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4'-DDD [2C] | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4'-DDT [2C] | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |

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## QU-101012-PRC-2-1B

**2102603-04 (Passive Sampler)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **0.04** | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | J |
| **4,4'-DDD [2C]** | **0.06** | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | J |
| 4,4´-DDE | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4'-DDT [2C] | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## QU-101012-3-1B

**2102603-05 (Passive Sampler)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **0.06** | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | J |
| **4,4'-DDD [2C]** | **0.07** | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | J |
| 4,4´-DDE | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| **4,4'-DDE [2C]** | **0.04** | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4'-DDT [2C] | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |

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## QU-101012-PRC-3-1B

**2102603-06 (Passive Sampler)**

### ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| **4,4'-DDD [2C]** | **0.04** | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | J |
| 4,4´-DDE | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| **4,4'-DDE [2C]** | **0.04** | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4'-DDT [2C] | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |

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# QU-101012-4-1B

## 2102603-07 (Passive Sampler)

### ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **0.04** | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | J |
| **4,4'-DDD [2C]** | **0.04** | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | J |
| **4,4´-DDE** | **0.04** | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | J |
| **4,4'-DDE [2C]** | **0.05** | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4'-DDT [2C] | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |

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## QU-101012-PRC-4-1B

### 2102603-08 (Passive Sampler)

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4,4´-DDD | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4'-DDD [2C] | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| **4,4´-DDE** | **0.05** | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | J |
| **4,4'-DDE [2C]** | **0.06** | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4'-DDT [2C] | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |

| | | |
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## QU-101012-5-1B

**2102603-09 (Passive Sampler)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **0.04** | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | J |
| **4,4'-DDD [2C]** | **0.04** | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | J |
| 4,4´-DDE | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| **4,4'-DDE [2C]** | **0.05** | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4'-DDT [2C] | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |

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## QU-101012-PRC-5-1B

**2102603-10 (Passive Sampler)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4,4´-DDD | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4'-DDD [2C] | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| **4,4'-DDE [2C]** | **0.04** | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4'-DDT [2C] | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |

| | | |
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## QU-101012-6-1B

**2102603-11 (Passive Sampler)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4,4´-DDD | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4'-DDD [2C] | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4'-DDT [2C] | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |

**USACE ERDC-EP-C**
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| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## QU-101012-PRC-6-1B

**2102603-12 (Passive Sampler)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 4,4´-DDD | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4'-DDD [2C] | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4'-DDT [2C] | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |

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|---|---|---|---|
| Navy -- SPAWAR | Project: | Quantico | |
| Environmental Science and Applied System Branch, 5360: | | | **Reported:** |
| San Diego CA, 92152 | Project Manager: | Gunther Rosen | 10-Jan-2013 |

## QU-101012-SB

**2102603-13 (Passive Sampler)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 4,4´-DDD | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4'-DDD [2C] | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |
| 4,4'-DDT [2C] | ND | 0.12 | ng | 1 | 26-Oct-2012 | 26-Nov-2012 | EPA 8081A | U |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

**USACE ERDC-EP-C**
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17 March 2015

Gunther Rosen
Navy -- SPAWAR
Environmental Science and Applied System Branch, 536(
San Diego, CA 92152

RE: ETV SEA Ring

Enclosed are the results of analyses for samples received by the laboratory on 02-Oct-2014-02-Oct-2014. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Dale Rosado, Ph. D.
Chemist

# USACE ERDC-EP-C
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| | | |
|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| QT2-6-SPME1-1 | 4100204-01 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-6-SPME1-3 | 4100204-02 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-6-SPME1-4 | 4100204-03 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-6-SPME1-6 | 4100204-04 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-6-SPME1-7 | 4100204-05 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-6-SPME1-8 | 4100204-06 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-6-SPME1-9 | 4100204-07 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-6-SPME1-11 | 4100204-08 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-6-SPME1-12 | 4100204-09 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-6-SPME2-1 | 4100204-10 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-6-SPME2-3 | 4100204-11 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-6-SPME2-4 | 4100204-12 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-6-SPME2-6 | 4100204-13 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-6-SPME2-7 | 4100204-14 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-6-SPME2-8 | 4100204-15 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-6-SPME2-9 | 4100204-16 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-6-SPME2-11 | 4100204-17 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-6-SPME2-12 | 4100204-18 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-3L-SPME1-1 | 4100204-19 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-3L-SPME1-3 | 4100204-20 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-3L-SPME1-4 | 4100204-21 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-3L-SPME1-6 | 4100204-22 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-3L-SPME1-7 | 4100204-23 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-3L-SPME1-8 | 4100204-24 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-3L-SPME1-9 | 4100204-25 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-3L-SPME1-11 | 4100204-26 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-3L-SPME1-12 | 4100204-27 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-3L-SPME2-1 | 4100204-28 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-3L-SPME2-3 | 4100204-29 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-3L-SPME2-4 | 4100204-30 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-3L-SPME2-6 | 4100204-31 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| QT2-3L-SPME2-7 | 4100204-32 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-3L-SPME2-8 | 4100204-33 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-3L-SPME2-9 | 4100204-34 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-3L-SPME2-11 | 4100204-35 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-3L-SPME2-12 | 4100204-36 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-5-SPME1-1 | 4100204-37 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-5-SPME1-3 | 4100204-38 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-5-SPME1-4 | 4100204-39 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-5-SPME1-6 | 4100204-40 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-5-SPME1-7 | 4100204-41 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-5-SPME1-8 | 4100204-42 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-5-SPME1-9 | 4100204-43 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-5-SPME1-11 | 4100204-44 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-5-SPME1-12 | 4100204-45 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-5-SPME2-1 | 4100204-46 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-5-SPME2-3 | 4100204-47 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-5-SPME2-4 | 4100204-48 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-5-SPME2-6 | 4100204-49 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-5-SPME2-7 | 4100204-50 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-5-SPME2-8 | 4100204-51 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-5-SPME2-9 | 4100204-52 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-5-SPME2-11 | 4100204-53 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-5-SPME2-12 | 4100204-54 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-1-SPME1-1 | 4100204-55 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-1-SPME1-3 | 4100204-56 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-1-SPME1-4 | 4100204-57 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-1-SPME1-6 | 4100204-58 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-1-SPME1-7 | 4100204-59 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-1-SPME1-8 | 4100204-60 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-1-SPME1-9 | 4100204-61 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-1-SPME1-11 | 4100204-62 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-1-SPME1-12 | 4100204-63 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| QT2-1-SPME2-1 | 4100206-01 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-1-SPME2-3 | 4100206-02 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-1-SPME2-4 | 4100206-03 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-1-SPME2-6 | 4100206-04 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-1-SPME2-7 | 4100206-05 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-1-SPME2-8 | 4100206-06 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-1-SPME2-9 | 4100206-07 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-1-SPME2-11 | 4100206-08 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-1-SPME2-12 | 4100206-09 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-2-SPME1-1 | 4100206-10 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-2-SPME1-3 | 4100206-11 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-2-SPME1-4 | 4100206-12 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-2-SPME1-6 | 4100206-13 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-2-SPME1-7 | 4100206-14 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-2-SPME1-8 | 4100206-15 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-2-SPME1-9 | 4100206-16 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-2-SPME1-11 | 4100206-17 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-2-SPME1-12 | 4100206-18 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-2-SPME2-1 | 4100206-19 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-2-SPME2-3 | 4100206-20 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-2-SPME2-4 | 4100206-21 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-2-SPME2-6 | 4100206-22 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-2-SPME2-7 | 4100206-23 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-2-SPME2-8 | 4100206-24 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-2-SPME2-9 | 4100206-25 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-2-SPME2-11 | 4100206-26 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-2-SPME2-12 | 4100206-27 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-4-SPME1-1 | 4100206-28 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-4-SPME1-3 | 4100206-29 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-4-SPME1-4 | 4100206-30 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-4-SPME1-6 | 4100206-31 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |

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## WORK ORDER SUMMARY

| **Sample ID** | **Laboratory ID** | **Matrix** | **Date Sampled** | **Date of Work Order** |
|---|---|---|---|---|
| QT2-4-SPME1-7 | 4100206-32 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-4-SPME1-8 | 4100206-33 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-4-SPME1-9 | 4100206-34 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-4-SPME1-11 | 4100206-35 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-4-SPME1-12 | 4100206-36 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-4-SPME2-1 | 4100206-37 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-4-SPME2-3 | 4100206-38 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-4-SPME2-4 | 4100206-39 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-4-SPME2-6 | 4100206-40 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-4-SPME2-7 | 4100206-41 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-4-SPME2-8 | 4100206-42 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-4-SPME2-9 | 4100206-43 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-4-SPME2-11 | 4100206-44 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-4-SPME2-12 | 4100206-45 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-7-SPME1-1 | 4100206-46 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-7-SPME1-3 | 4100206-47 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-7-SPME1-4 | 4100206-48 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-7-SPME1-6 | 4100206-49 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-7-SPME1-7 | 4100206-50 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-7-SPME1-8 | 4100206-51 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-7-SPME1-9 | 4100206-52 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-7-SPME1-11 | 4100206-53 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-7-SPME1-12 | 4100206-54 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-7-SPME2-1 | 4100206-55 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-7-SPME2-3 | 4100206-56 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-7-SPME2-4 | 4100206-57 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-7-SPME2-6 | 4100206-58 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-7-SPME2-7 | 4100206-59 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-7-SPME2-8 | 4100206-60 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-7-SPME2-9 | 4100206-61 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-7-SPME2-11 | 4100206-62 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |
| QT2-7-SPME2-12 | 4100206-63 | Passive Sampler | 25-Sep-2014 | 02-Oct-2014 |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

**Case Narrative**

Analyte spikes for 4,4-DDD, 4,4-DDE, and 4,4-DDT were unintentionally added to samples QT2-6 (1-1, 1-3, 1-8), QT2-3L (1-1, 1-3, 1-8), QT2-3L (2-1, 2-3, 2-8), QT2-5 (1-1, 1-3, 1-8), QT2-5 (1-1, 1-3, 1-8), and QT2-1 (1-1, 1-3, 1-8). The results are estimated based on subtraction of the mean concentration of 6 blank spikes from each sample. The 2,4-DDXs were unaffected in these samples.

**Case Narrative**

Analyte spikes for 4,4-DDD, 4,4-DDE, and 4,4-DDT were unintentionally added to samples QT2-4(1-1, 1-3, 1-8). The results are estimated based on subtraction of the mean concentration of 6 blank spikes from each sample.The 2,4-DDXs were unaffected in this sample.

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
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## Notes and Definitions

| | |
|---|---|
| Z-03 | See case narrative. |
| U | Analyte included in the analysis, but not detected |
| S-GC | Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate. |
| S-08 | The surrogate recovery for this sample is outside of established control limits. There was no remaining sample for a repeat extraction. |
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration. |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

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| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-6-SPME1-1

**4100204-01 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C** | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.09** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| **4,4'-DDE [2C]** | **0.54** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.13** | | *104 %* | *25-140* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.97** | | *99.0 %* | *30-135* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-6-SPME1-3

**4100204-02 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C** | | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.00** | | *99.9 %* | *25-140* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.39** | | *79.6 %* | *30-135* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-6-SPME1-4

### 4100204-03 (Passive Sampler)

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.682** | | *22.7 %* | *25-140* | | *20-Jan-2015* | *20-Feb-2015* | *EPA 8081A* | *S-08* |
| *Surrogate: Decachlorobiphenyl* | **0.418** | | *13.9 %* | *30-135* | | *20-Jan-2015* | *20-Feb-2015* | *EPA 8081A* | *S-08* |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-6-SPME1-6

**4100204-04 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.07** | | *68.9 %* | *25-140* | | *20-Jan-2015* | *20-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.09** | | *69.7 %* | *30-135* | | *20-Jan-2015* | *20-Feb-2015* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## QT2-6-SPME1-7

### 4100204-05 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.72** | | *90.6 %* | *25-140* | | *20-Jan-2015* | *20-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.87** | | *95.5 %* | *30-135* | | *20-Jan-2015* | *20-Feb-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
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## QT2-6-SPME1-8

**4100204-06 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.27** | | *109 %* | *25-140* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.58** | | *86.0 %* | *30-135* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |

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## QT2-6-SPME1-9

**4100204-07 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.82** | | *60.5 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.95** | | *65.0 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
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## QT2-6-SPME1-11

**4100204-08 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.09** | | *69.6 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.14** | | *71.3 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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## QT2-6-SPME1-12

**4100204-09 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.08** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.80** | | *59.9 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.96** | | *65.3 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
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## QT2-6-SPME2-1

**4100204-10 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.94** | | *97.9 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.20** | | *107 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

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## QT2-6-SPME2-3

**4100204-11 (Passive Sampler)**

### ERDC- EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.87** | | *95.8 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.93** | | *97.7 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

## USACE ERDC-EP-C
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## QT2-6-SPME2-4

**4100204-12 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.60** | | *86.8 %* | *25-140* | | *20-Jan-2015* | *03-Mar-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.95** | | *98.4 %* | *30-135* | | *20-Jan-2015* | *03-Mar-2015* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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## QT2-6-SPME2-6

**4100204-13 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.08** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.52** | | *84.1 %* | *25-140* | | *20-Jan-2015* | *03-Mar-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.84** | | *94.7 %* | *30-135* | | *20-Jan-2015* | *03-Mar-2015* | *EPA 8081A* | |

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## QT2-6-SPME2-7

### 4100204-14 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.10** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.48** | | *82.8 %* | *25-140* | | *20-Jan-2015* | *03-Mar-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.85** | | *95.0 %* | *30-135* | | *20-Jan-2015* | *03-Mar-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-6-SPME2-8

### 4100204-15 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C** | | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.31** | | *110 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.49** | | *116 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

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| | | |
|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-6-SPME2-9

**4100204-16 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.74** | | *91.2 %* | *25-140* | | *20-Jan-2015* | *03-Mar-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.73** | | *91.1 %* | *30-135* | | *20-Jan-2015* | *03-Mar-2015* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-6-SPME2-11

**4100204-17 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 03-Mar-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.31** | | *77.1 %* | *25-140* | | *20-Jan-2015* | *03-Mar-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.84** | | *94.7 %* | *30-135* | | *20-Jan-2015* | *03-Mar-2015* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-6-SPME2-12

### 4100204-18 (Passive Sampler)

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.30** | | *76.6 %* | *25-140* | | *20-Jan-2015* | *22-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.09** | | *103 %* | *30-135* | | *20-Jan-2015* | *22-Feb-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-3L-SPME1-1

**4100204-19 (Passive Sampler)**

**ERDC- EL-EP-C**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **2,4´-DDD** | **0.19** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | J |
| **2,4´-DDE** | **0.11** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.61** | | *87.0 %* | *25-140* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.25** | | *74.9 %* | *30-135* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |

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## QT2-3L-SPME1-3

**4100204-20 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.08** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | J |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.33** | | *111 %* | *25-140* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.71** | | *90.3 %* | *30-135* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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# QT2-3L-SPME1-4

**4100204-21 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.13** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.04** | | *68.1 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.26** | | *75.3 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

**USACE ERDC-EP-C**
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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-3L-SPME1-6

**4100204-22 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.09** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.00** | | *66.8 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.18** | | *72.7 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-3L-SPME1-7

### 4100204-23 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.12** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.95** | | *65.1 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.35** | | *78.3 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

**USACE ERDC-EP-C**
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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-3L-SPME1-8

### 4100204-24 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.07** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | J |
| **2,4´-DDE** | **0.11** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.11** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| **4,4'-DDE [2C]** | **0.29** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.65** | | *122 %* | *25-140* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.08** | | *103 %* | *30-135* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |

**USACE ERDC-EP-C**
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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-3L-SPME1-9

**4100204-25 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.10** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.10** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.02** | | *67.4 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.10** | | *70.0 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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## QT2-3L-SPME1-11

### 4100204-26 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

### ERDC- EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.12** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.12** | | *70.6 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.41** | | *80.3 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-3L-SPME1-12

**4100204-27 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.08** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.95** | | *65.0 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.29** | | *76.5 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-3L-SPME2-1

**4100204-28 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.07** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | J |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.20** | | *107 %* | *25-140* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.30** | | *76.7 %* | *30-135* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-3L-SPME2-3

**4100204-29 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.22** | | *107 %* | *25-140* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.32** | | *77.2 %* | *30-135* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |

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## QT2-3L-SPME2-4

**4100204-30 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.22** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.01** | | *66.9 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.10** | | *69.9 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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## QT2-3L-SPME2-6

**4100204-31 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.13** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.29** | | *76.5 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.40** | | *79.9 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | Reported: |
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## QT2-3L-SPME2-7

**4100204-32 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.12** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.14** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4'-DDE [2C]** | **0.08** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.37** | | *78.8 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.44** | | *81.3 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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## QT2-3L-SPME2-8

**4100204-33 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.16** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | J |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.34** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03 |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| **4,4'-DDE [2C]** | **0.22** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.60** | | *120 %* | *25-140* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.69** | | *89.5 %* | *30-135* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |

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## QT2-3L-SPME2-9

**4100204-34 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4'-DDE [2C]** | **0.32** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.18** | | *72.6 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.22** | | *74.0 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
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## QT2-3L-SPME2-11

### 4100204-35 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C** | | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.11** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.08** | | *69.3 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.11** | | *70.4 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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## QT2-3L-SPME2-12

**4100204-36 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.13** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.16** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| **4,4´-DDT** | **0.07** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.34** | | *78.0 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.60** | | *86.6 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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|---|---|---|
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| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
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# QT2-5-SPME1-1

**4100204-37 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.09** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.85** | | *95.1 %* | *25-140* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.31** | | *77.1 %* | *30-135* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## QT2-5-SPME1-3

**4100204-38 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.20** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03 |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| **4,4'-DDE [2C]** | **0.68** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.96** | | *132 %* | *25-140* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.91** | | *97.1 %* | *30-135* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |

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|---|---|---|
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## QT2-5-SPME1-4

**4100204-39 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C** | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.07** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4'-DDE [2C]** | **0.07** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.16** | | *72.2 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.27** | | *75.8 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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## QT2-5-SPME1-6

**4100204-40 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.22** | | *74.0 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.40** | | *80.1 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-5-SPME1-7

### 4100204-41 (Passive Sampler)

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.09** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.13** | | *70.9 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.23** | | *74.4 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-5-SPME1-8

**4100204-42 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C** | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **2,4´-DDD** | **0.11** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | J |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| **4,4'-DDE [2C]** | **0.10** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.51** | | *117 %* | *25-140* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.27** | | *75.7 %* | *30-135* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |

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|---|---|---|
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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## QT2-5-SPME1-9

**4100204-43 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C** | | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.34** | | *77.9 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.19** | | *73.0 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

**USACE ERDC-EP-C**
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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-5-SPME1-11

**4100204-44 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.11** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.06** | | *68.6 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.31** | | *77.0 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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## QT2-5-SPME1-12

**4100204-45 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.08** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.09** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4'-DDE [2C]** | **0.07** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.11** | | *70.4 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.31** | | *77.0 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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## QT2-5-SPME2-1

**4100204-46 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.11** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.06** | | *102 %* | *25-140* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.30** | | *76.8 %* | *30-135* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-5-SPME2-3

### 4100204-47 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C** | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.41** | | *114 %* | *25-140* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.54** | | *84.5 %* | *30-135* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |

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|---|---|---|
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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-5-SPME2-4

### 4100204-48 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.49** | | *82.9 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.69** | | *89.5 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-5-SPME2-6

**4100204-49 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.08** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.58** | | *85.9 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.88** | | *96.0 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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## QT2-5-SPME2-7

**4100204-50 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.54** | | *84.8 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.85** | | *94.9 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## QT2-5-SPME2-8

### 4100204-51 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.31** | | *110 %* | *25-140* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.82** | | *93.9 %* | *30-135* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |

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## QT2-5-SPME2-9

**4100204-52 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.08** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.82** | | *94.0 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.02** | | *101 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

**USACE ERDC-EP-C**
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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-5-SPME2-11

### 4100204-53 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.10** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.65** | | *88.2 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.81** | | *93.6 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-5-SPME2-12

**4100204-54 (Passive Sampler)**

### ERDC- EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.15** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| **2,4´-DDE** | **0.08** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **4.24** | | *141 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **5.27** | | *176 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | *S-GC* |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-1-SPME1-1

### 4100204-55 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C** | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.13** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.16** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| **4,4'-DDE [2C]** | **0.65** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.36** | | *112 %* | *25-140* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.90** | | *96.8 %* | *30-135* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |

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## QT2-1-SPME1-3

### 4100204-56 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.23** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03 |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| **4,4'-DDE [2C]** | **0.63** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.80** | | *127 %* | *25-140* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.68** | | *89.4 %* | *30-135* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |

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## QT2-1-SPME1-4

### 4100204-57 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.07** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.15** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4'-DDE [2C]** | **0.25** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.79** | | *93.1 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.77** | | *92.2 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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# QT2-1-SPME1-6

## 4100204-58 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

### ERDC- EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.14** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.83** | | *94.5 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.79** | | *93.0 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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## QT2-1-SPME1-7
### 4100204-59 (Passive Sampler)

### ERDC- EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.14** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.11** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.63** | | *87.8 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.86** | | *95.3 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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## QT2-1-SPME1-8

**4100204-60 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.19** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.15** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03, U |
| **4,4'-DDE [2C]** | **0.32** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 24-Jan-2015 | EPA 8081A | Z-03 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.24** | | *108 %* | *25-140* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.73** | | *91.0 %* | *30-135* | | *20-Jan-2015* | *24-Jan-2015* | *EPA 8081A* | |

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## QT2-1-SPME1-9

**4100204-61 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.07** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.64** | | *88.0 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.79** | | *93.2 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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## QT2-1-SPME1-11

**4100204-62 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.08** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.73** | | *91.0 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.09** | | *103 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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## QT2-1-SPME1-12

**4100204-63 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.15** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.53** | | *84.4 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.04** | | *101 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

| | | |
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## QT2-1-SPME2-1

**4100206-01 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.83** | | *61.1 %* | *25-140* | | *20-Jan-2015* | *12-Mar-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.87** | | *95.6 %* | *30-135* | | *20-Jan-2015* | *12-Mar-2015* | *EPA 8081A* | |

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## QT2-1-SPME2-3

**4100206-02 (Passive Sampler)**

**ERDC- EL-EP-C**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.22** | | *107 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.40** | | *113 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

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## QT2-1-SPME2-4

**4100206-03 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.28** | | *76.1 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.82** | | *93.9 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## QT2-1-SPME2-6

**4100206-04 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.11** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.77** | | *92.2 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.05** | | *102 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-1-SPME2-7

### 4100206-05 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.15** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.32** | | *77.3 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.73** | | *90.9 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## QT2-1-SPME2-8

**4100206-06 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.41** | | *114 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.49** | | *116 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

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## QT2-1-SPME2-9

### 4100206-07 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.09** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.47** | | *82.2 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.90** | | *96.6 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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## QT2-1-SPME2-11

**4100206-08 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.09** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.46** | | *81.8 %* | *25-140* | | *20-Jan-2015* | *22-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.18** | | *106 %* | *30-135* | | *20-Jan-2015* | *22-Feb-2015* | *EPA 8081A* | |

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## QT2-1-SPME2-12

**4100206-09 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.11** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.09** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.36** | | *78.6 %* | *25-140* | | *20-Jan-2015* | *22-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.94** | | *98.1 %* | *30-135* | | *20-Jan-2015* | *22-Feb-2015* | *EPA 8081A* | |

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## QT2-2-SPME1-1

**4100206-10 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.73** | | *91.0 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.50** | | *117 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

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## QT2-2-SPME1-3

**4100206-11 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.90** | | *96.8 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.00** | | *99.8 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

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|---|---|---|
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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## QT2-2-SPME1-4

**4100206-12 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.13** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.29** | | *76.2 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.80** | | *93.3 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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## QT2-2-SPME1-6

**4100206-13 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.25** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.54** | | *84.8 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.03** | | *101 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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## QT2-2-SPME1-7

### 4100206-14 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.14** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.16** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.30** | | *76.6 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.65** | | *88.2 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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## QT2-2-SPME1-8

### 4100206-15 (Passive Sampler)

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.07** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.09** | | *69.8 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.17** | | *106 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

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## QT2-2-SPME1-9

**4100206-16 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.16** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.66** | | *88.6 %* | *25-140* | | *20-Jan-2015* | *22-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.82** | | *94.0 %* | *30-135* | | *20-Jan-2015* | *22-Feb-2015* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-2-SPME1-11

**4100206-17 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.22** | | *74.0 %* | *25-140* | | *20-Jan-2015* | *22-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.68** | | *89.2 %* | *30-135* | | *20-Jan-2015* | *22-Feb-2015* | *EPA 8081A* | |

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|---|---|---|
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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-2-SPME1-12

**4100206-18 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.11** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.09** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.36** | | *78.6 %* | *25-140* | | *20-Jan-2015* | *12-Mar-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.94** | | *98.1 %* | *30-135* | | *20-Jan-2015* | *12-Mar-2015* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-2-SPME2-1

### 4100206-19 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C** | | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.938** | | *31.2 %* | *25-140* | | *20-Jan-2015* | *12-Mar-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.17** | | *72.3 %* | *30-135* | | *20-Jan-2015* | *12-Mar-2015* | *EPA 8081A* | |

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| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-2-SPME2-3

**4100206-20 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.86** | | *95.2 %* | *25-140* | | *20-Jan-2015* | *12-Mar-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.00** | | *99.9 %* | *30-135* | | *20-Jan-2015* | *12-Mar-2015* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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## QT2-2-SPME2-4

**4100206-21 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.28** | | *76.0 %* | *25-140* | | *20-Jan-2015* | *22-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.88** | | *96.1 %* | *30-135* | | *20-Jan-2015* | *22-Feb-2015* | *EPA 8081A* | |

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## QT2-2-SPME2-6

**4100206-22 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C** | | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.24** | | *74.8 %* | *25-140* | | *20-Jan-2015* | *22-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.74** | | *91.3 %* | *30-135* | | *20-Jan-2015* | *22-Feb-2015* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## QT2-2-SPME2-7

**4100206-23 (Passive Sampler)**

### ERDC- EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.14** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.54** | | *84.6 %* | *25-140* | | *20-Jan-2015* | *12-Mar-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.88** | | *95.8 %* | *30-135* | | *20-Jan-2015* | *12-Mar-2015* | *EPA 8081A* | |

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| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-2-SPME2-8

**4100206-24 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C** | | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.73** | | *91.1 %* | *25-140* | | *20-Jan-2015* | *12-Mar-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.38** | | *113 %* | *30-135* | | *20-Jan-2015* | *12-Mar-2015* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-2-SPME2-9

**4100206-25 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 22-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.46** | | *82.0 %* | *25-140* | | *20-Jan-2015* | *22-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.99** | | *99.7 %* | *30-135* | | *20-Jan-2015* | *22-Feb-2015* | *EPA 8081A* | |

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| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-2-SPME2-11

### 4100206-26 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.22** | | *74.0 %* | *25-140* | | *20-Jan-2015* | *12-Mar-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.68** | | *89.2 %* | *30-135* | | *20-Jan-2015* | *12-Mar-2015* | *EPA 8081A* | |

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## QT2-2-SPME2-12

**4100206-27 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.30** | | *76.6 %* | *25-140* | | *20-Jan-2015* | *12-Mar-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.09** | | *103 %* | *30-135* | | *20-Jan-2015* | *12-Mar-2015* | *EPA 8081A* | |

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## QT2-4-SPME1-1

**4100206-28 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | Z-03, U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | Z-03, U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | Z-03, U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.27** | | *109 %* | *25-140* | | *20-Jan-2015* | *12-Mar-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.58** | | *86.0 %* | *30-135* | | *20-Jan-2015* | *12-Mar-2015* | *EPA 8081A* | |

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## QT2-4-SPME1-3

### 4100206-29 (Passive Sampler)

### ERDC- EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.24** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | Z-03 |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | Z-03, U |
| **4,4'-DDE [2C]** | **1.00** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | Z-03 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.04** | | *102 %* | *25-140* | | *20-Jan-2015* | *12-Mar-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.21** | | *73.6 %* | *30-135* | | *20-Jan-2015* | *12-Mar-2015* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-4-SPME1-4

**4100206-30 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.07** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.92** | | *64.1 %* | *25-140* | | *20-Jan-2015* | *20-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.02** | | *67.3 %* | *30-135* | | *20-Jan-2015* | *20-Feb-2015* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-4-SPME1-6

**4100206-31 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C** | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 20-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.12** | | *70.8 %* | *25-140* | | *20-Jan-2015* | *20-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.12** | | *70.8 %* | *30-135* | | *20-Jan-2015* | *20-Feb-2015* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-4-SPME1-7

**4100206-32 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.18** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.96** | | *65.5 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.24** | | *74.8 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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## QT2-4-SPME1-8

**4100206-33 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.07** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | J |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.33** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | Z-03 |
| **4,4´-DDT** | **0.11** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | Z-03, J |
| **4,4'-DDE [2C]** | **0.39** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | Z-03 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.91** | | *130 %* | *25-140* | | *20-Jan-2015* | *12-Mar-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.96** | | *98.8 %* | *30-135* | | *20-Jan-2015* | *12-Mar-2015* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## QT2-4-SPME1-9

### 4100206-34 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C** | | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.10** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.93** | | *64.4 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.16** | | *71.9 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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## QT2-4-SPME1-11

**4100206-35 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.07** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.69** | | *56.2 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.79** | | *59.6 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
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## QT2-4-SPME1-12

**4100206-36 (Passive Sampler)**

### ERDC- EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.08** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| **2,4´-DDE** | **0.14** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| **2,4´-DDT** | **0.11** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| **4,4´-DDD** | **0.10** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| **4,4´-DDT** | **0.09** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| **4,4'-DDE [2C]** | **0.15** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.62** | | *54.1 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.53** | | *50.9 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

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## QT2-4-SPME2-1

**4100206-37 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.93** | | *97.7 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.01** | | *100 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

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| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-4-SPME2-3

**4100206-38 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| **4,4´-DDD** | **0.08** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.96** | | *98.8 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.42** | | *114 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## QT2-4-SPME2-4

**4100206-39 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.32** | | *77.2 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.00** | | *99.9 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

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## QT2-4-SPME2-6

**4100206-40 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.36** | | *78.8 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.35** | | *78.4 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

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## QT2-4-SPME2-7

**4100206-41 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 12-Mar-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.16** | | *72.2 %* | *25-140* | | *20-Jan-2015* | *12-Mar-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.24** | | *74.6 %* | *30-135* | | *20-Jan-2015* | *12-Mar-2015* | *EPA 8081A* | |

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## QT2-4-SPME2-8

**4100206-42 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.59** | | *120 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.05** | | *102 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

# USACE ERDC-EP-C
# 3909 Halls Ferry Road
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| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-4-SPME2-9

**4100206-43 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.82** | | *60.6 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.26** | | *75.3 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-4-SPME2-11

**4100206-44 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C** | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.18** | | *39.2 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.64** | | *54.5 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-4-SPME2-12

### 4100206-45 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.73** | | *57.8 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.34** | | *78.0 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-7-SPME1-1

### 4100206-46 (Passive Sampler)

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.00** | | *99.9 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.37** | | *112 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

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| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-7-SPME1-3

**4100206-47 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C** | | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.96** | | *98.8 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.06** | | *102 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

**USACE ERDC-EP-C**
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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-7-SPME1-4

**4100206-48 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.18** | | *72.6 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.30** | | *110 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-7-SPME1-6

**4100206-49 (Passive Sampler)**

**ERDC- EL-EP-C**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.15** | | *71.5 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.12** | | *104 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-7-SPME1-7

### 4100206-50 (Passive Sampler)

### ERDC- EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.09** | | *69.7 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.74** | | *91.3 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-7-SPME1-8

### 4100206-51 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C** | | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.28** | | *109 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.45** | | *115 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-7-SPME1-9

### 4100206-52 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C** | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.72** | | *57.3 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.47** | | *82.3 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-7-SPME1-11

**4100206-53 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.40** | | *46.6 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.92** | | *64.0 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-7-SPME1-12

**4100206-54 (Passive Sampler)**

### ERDC- EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.75** | | *58.5 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.45** | | *81.6 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-7-SPME2-1

**4100206-55 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.63** | | *87.7 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.26** | | *109 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-7-SPME2-3

**4100206-56 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.18** | | *106 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.83** | | *94.5 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-7-SPME2-4
### 4100206-57 (Passive Sampler)

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.68** | | *56.0 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.62** | | *87.3 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360 | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-7-SPME2-6

**4100206-58 (Passive Sampler)**

### ERDC- EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.43** | | *47.5 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.02** | | *67.2 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

USACE ERDC-EP-C
3909 Halls Ferry Road
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| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-7-SPME2-7

**4100206-59 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.77** | | *59.0 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.70** | | *90.1 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-7-SPME2-8

**4100206-60 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.21** | | *107 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.40** | | *113 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

**USACE ERDC-EP-C**
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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-7-SPME2-9

**4100206-61 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 29-Jan-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.85** | | *61.6 %* | *25-140* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.49** | | *83.1 %* | *30-135* | | *20-Jan-2015* | *29-Jan-2015* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360! | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-7-SPME2-11

**4100206-62 (Passive Sampler)**

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.46** | | *82.0 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.14** | | *105 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

# USACE ERDC-EP-C
## 3909 Halls Ferry Road
## Vicksburg, MS 39180-6199

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## QT2-7-SPME2-12

**4100206-63 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| **2,4´-DDE** | **0.09** | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | 20-Jan-2015 | 21-Feb-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.04** | | *68.1 %* | *25-140* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.80** | | *93.2 %* | *30-135* | | *20-Jan-2015* | *21-Feb-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B503030 - *** DEFAULT PREP ***** | | | | | | | | | | | |
| **Blank (B503030-BLK1)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *3.75* | | | *ng* | *3.000* | | *125* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.82* | | | *ng* | *3.000* | | *94.0* | *30-135* | | | |
| **Blank (B503030-BLK2)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *3.67* | | | *ng* | *3.000* | | *122* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.01* | | | *ng* | *3.000* | | *100* | *30-135* | | | |
| **Blank (B503030-BLK3)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *3.02* | | | *ng* | *3.000* | | *101* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.14* | | | *ng* | *3.000* | | *105* | *30-135* | | | |

# USACE ERDC-EP-C
# 3909 Halls Ferry Road
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| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B503030 - *** DEFAULT PREP ***** | | | | | | | | | | | |
| **Blank (B503030-BLK4)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *3.62* | | | *ng* | *3.000* | | *121* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.83* | | | *ng* | *3.000* | | *128* | *30-135* | | | |
| **Blank (B503030-BLK5)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4´-DDE | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.82* | | | *ng* | *3.000* | | *60.6* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.46* | | | *ng* | *3.000* | | *82.1* | *30-135* | | | |
| **Blank (B503030-BLK6)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4´-DDD | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 2,4´-DDE | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 2,4´-DDT | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4´-DDD | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4´-DDE | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4´-DDT | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *3.62* | | | *ng* | *3.000* | | *121* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.83* | | | *ng* | *3.000* | | *128* | *30-135* | | | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B503030 - *** DEFAULT PREP ***** | | | | | | | | | | | |
| **Blank (B503030-BLK8)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4′-DDD | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 2,4′-DDE | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 2,4′-DDT | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4′-DDD | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4′-DDE | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4′-DDT | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.82* | | | *ng* | *3.000* | | *60.6* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.73* | | | *ng* | *3.000* | | *91.1* | *30-135* | | | |
| **Blank (B503030-BLK9)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4′-DDD | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 2,4′-DDE | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 2,4′-DDT | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4′-DDD | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4′-DDE | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4′-DDT | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4'-DDE [2C] | ND | 0.06 | 0.19 | ng | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *2.22* | | | *ng* | *3.000* | | *74.0* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.17* | | | *ng* | *3.000* | | *106* | *30-135* | | | |
| **Blank (B503030-BLKA)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4′-DDD | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 2,4′-DDE | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 2,4′-DDT | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4′-DDD | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4′-DDE | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4′-DDT | ND | 0.06 | 0.19 | ng | | | | | | | U |
| 4,4'-DDE [2C] | 0.11 | 0.06 | 0.19 | ng | | | | | | | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *2.22* | | | *ng* | *3.000* | | *74.2* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.31* | | | *ng* | *3.000* | | *110* | *30-135* | | | |

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|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B503030 - *** DEFAULT PREP ***** | | | | | | | | | | | |
| **LCS (B503030-BS1)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4´-DDD | 3.4 | 0.06 | 0.19 | ng | 3.750 | | 90.7 | 50-125 | | | |
| 2,4´-DDE | 3.3 | 0.06 | 0.19 | ng | 3.750 | | 88.8 | 50-125 | | | |
| 2,4´-DDT | 3.5 | 0.06 | 0.19 | ng | 3.750 | | 92.0 | 50-125 | | | |
| 4,4´-DDD | 2.8 | 0.06 | 0.19 | ng | 3.000 | | 91.8 | 25-150 | | | |
| 4,4´-DDT | 2.8 | 0.06 | 0.19 | ng | 3.000 | | 94.4 | 45-140 | | | |
| 4,4'-DDE [2C] | 2.6 | 0.06 | 0.19 | ng | 3.000 | | 87.4 | 35-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *3.70* | | | *ng* | *3.000* | | *123* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.00* | | | *ng* | *3.000* | | *99.9* | *30-135* | | | |
| **LCS (B503030-BS2)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4´-DDD | 3.7 | 0.06 | 0.19 | ng | 3.750 | | 98.1 | 50-125 | | | |
| 2,4´-DDE | 3.6 | 0.06 | 0.19 | ng | 3.750 | | 95.3 | 50-125 | | | |
| 2,4´-DDT | 3.7 | 0.06 | 0.19 | ng | 3.750 | | 99.8 | 50-125 | | | |
| 4,4´-DDD | 2.8 | 0.06 | 0.19 | ng | 3.000 | | 92.9 | 25-150 | | | |
| 4,4´-DDT | 2.8 | 0.06 | 0.19 | ng | 3.000 | | 94.9 | 45-140 | | | |
| 4,4'-DDE [2C] | 2.6 | 0.06 | 0.19 | ng | 3.000 | | 87.6 | 35-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *3.77* | | | *ng* | *3.000* | | *126* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.21* | | | *ng* | *3.000* | | *107* | *30-135* | | | |
| **LCS (B503030-BS3)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4´-DDD | 3.6 | 0.06 | 0.19 | ng | 3.750 | | 96.0 | 50-125 | | | |
| 2,4´-DDE | 3.5 | 0.06 | 0.19 | ng | 3.750 | | 92.8 | 50-125 | | | |
| 2,4´-DDT | 3.6 | 0.06 | 0.19 | ng | 3.750 | | 97.1 | 50-125 | | | |
| 4,4´-DDD | 2.8 | 0.06 | 0.19 | ng | 3.000 | | 94.7 | 25-150 | | | |
| 4,4´-DDT | 2.9 | 0.06 | 0.19 | ng | 3.000 | | 95.7 | 45-140 | | | |
| 4,4'-DDE [2C] | 2.6 | 0.06 | 0.19 | ng | 3.000 | | 87.9 | 35-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *3.55* | | | *ng* | *3.000* | | *118* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.92* | | | *ng* | *3.000* | | *97.3* | *30-135* | | | |

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| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B503030 - *** DEFAULT PREP *** ** | | | | | | | | | | | |
| **LCS (B503030-BS4)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4´-DDD | 3.5 | 0.06 | 0.19 | ng | 3.750 | | 92.7 | 50-125 | | | |
| 2,4´-DDE | 3.6 | 0.06 | 0.19 | ng | 3.750 | | 96.7 | 50-125 | | | |
| 2,4´-DDT | 3.5 | 0.06 | 0.19 | ng | 3.750 | | 93.2 | 50-125 | | | |
| 4,4´-DDD | 2.7 | 0.06 | 0.19 | ng | 3.000 | | 89.1 | 25-150 | | | |
| 4,4´-DDT | 2.8 | 0.06 | 0.19 | ng | 3.000 | | 93.7 | 45-140 | | | |
| 4,4'-DDE [2C] | 2.6 | 0.06 | 0.19 | ng | 3.000 | | 88.0 | 35-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.99* | | | *ng* | *3.000* | | *66.5* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.24* | | | *ng* | *3.000* | | *108* | *30-135* | | | |
| **LCS (B503030-BS5)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4´-DDD | 3.7 | 0.06 | 0.19 | ng | 3.750 | | 99.7 | 50-125 | | | |
| 2,4´-DDE | 3.8 | 0.06 | 0.19 | ng | 3.750 | | 101 | 50-125 | | | |
| 2,4´-DDT | 3.8 | 0.06 | 0.19 | ng | 3.750 | | 101 | 50-125 | | | |
| 4,4´-DDD | 3.1 | 0.06 | 0.19 | ng | 3.000 | | 102 | 25-150 | | | |
| 4,4´-DDT | 3.1 | 0.06 | 0.19 | ng | 3.000 | | 102 | 45-140 | | | |
| 4,4'-DDE [2C] | 2.9 | 0.06 | 0.19 | ng | 3.000 | | 97.5 | 35-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.88* | | | *ng* | *3.000* | | *62.7* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.12* | | | *ng* | *3.000* | | *104* | *30-135* | | | |
| **LCS (B503030-BS6)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4´-DDD | 3.3 | 0.06 | 0.19 | ng | 3.750 | | 86.9 | 50-125 | | | |
| 2,4´-DDE | 3.3 | 0.06 | 0.19 | ng | 3.750 | | 88.7 | 50-125 | | | |
| 2,4´-DDT | 3.3 | 0.06 | 0.19 | ng | 3.750 | | 88.2 | 50-125 | | | |
| 4,4´-DDD | 2.6 | 0.06 | 0.19 | ng | 3.000 | | 87.1 | 25-150 | | | |
| 4,4´-DDT | 2.7 | 0.06 | 0.19 | ng | 3.000 | | 88.8 | 45-140 | | | |
| 4,4'-DDE [2C] | 2.6 | 0.06 | 0.19 | ng | 3.000 | | 85.4 | 35-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.61* | | | *ng* | *3.000* | | *53.6* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.14* | | | *ng* | *3.000* | | *105* | *30-135* | | | |

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| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B503030 - *** DEFAULT PREP ***** | | | | | | | | | | | |
| **LCS (B503030-BS7)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4´-DDD | 3.5 | 0.06 | 0.19 | ng | 3.750 | | 92.7 | 50-125 | | | |
| 2,4´-DDE | 3.6 | 0.06 | 0.19 | ng | 3.750 | | 96.7 | 50-125 | | | |
| 2,4´-DDT | 3.5 | 0.06 | 0.19 | ng | 3.750 | | 93.2 | 50-125 | | | |
| 4,4´-DDD | 2.7 | 0.06 | 0.19 | ng | 3.000 | | 89.1 | 25-150 | | | |
| 4,4´-DDT | 2.8 | 0.06 | 0.19 | ng | 3.000 | | 93.7 | 45-140 | | | |
| 4,4'-DDE [2C] | 2.6 | 0.06 | 0.19 | ng | 3.000 | | 88.0 | 35-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.99* | | | *ng* | *3.000* | | *66.5* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.24* | | | *ng* | *3.000* | | *108* | *30-135* | | | |
| **LCS (B503030-BS8)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4´-DDD | 2.8 | 0.06 | 0.19 | ng | 3.750 | | 74.4 | 50-125 | | | |
| 2,4´-DDE | 3.0 | 0.06 | 0.19 | ng | 3.750 | | 79.6 | 50-125 | | | |
| 2,4´-DDT | 2.8 | 0.06 | 0.19 | ng | 3.750 | | 73.9 | 50-125 | | | |
| 4,4´-DDD | 2.1 | 0.06 | 0.19 | ng | 3.000 | | 71.2 | 25-150 | | | |
| 4,4´-DDT | 2.4 | 0.06 | 0.19 | ng | 3.000 | | 80.4 | 45-140 | | | |
| 4,4'-DDE [2C] | 2.1 | 0.06 | 0.19 | ng | 3.000 | | 71.6 | 35-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.74* | | | *ng* | *3.000* | | *57.8* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.66* | | | *ng* | *3.000* | | *88.6* | *30-135* | | | |
| **LCS (B503030-BS9)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4´-DDD | 3.1 | 0.06 | 0.19 | ng | 3.750 | | 83.4 | 50-125 | | | |
| 2,4´-DDE | 3.3 | 0.06 | 0.19 | ng | 3.750 | | 87.1 | 50-125 | | | |
| 2,4´-DDT | 3.2 | 0.06 | 0.19 | ng | 3.750 | | 84.2 | 50-125 | | | |
| 4,4´-DDD | 2.5 | 0.06 | 0.19 | ng | 3.000 | | 84.0 | 25-150 | | | |
| 4,4´-DDT | 2.5 | 0.06 | 0.19 | ng | 3.000 | | 83.1 | 45-140 | | | |
| 4,4'-DDE [2C] | 2.5 | 0.06 | 0.19 | ng | 3.000 | | 82.7 | 35-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.62* | | | *ng* | *3.000* | | *53.9* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.64* | | | *ng* | *3.000* | | *87.9* | *30-135* | | | |

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| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B503030 - *** DEFAULT PREP ***** | | | | | | | | | | | |
| **LCS (B503030-BSA)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4´-DDD | 3.7 | 0.06 | 0.19 | ng | 3.750 | | 99.7 | 50-125 | | | |
| 2,4´-DDE | 3.8 | 0.06 | 0.19 | ng | 3.750 | | 101 | 50-125 | | | |
| 2,4´-DDT | 3.8 | 0.06 | 0.19 | ng | 3.750 | | 101 | 50-125 | | | |
| 4,4´-DDD | 3.1 | 0.06 | 0.19 | ng | 3.000 | | 102 | 25-150 | | | |
| 4,4´-DDT | 3.1 | 0.06 | 0.19 | ng | 3.000 | | 102 | 45-140 | | | |
| 4,4'-DDE [2C] | 2.9 | 0.06 | 0.19 | ng | 3.000 | | 97.5 | 35-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.88* | | | *ng* | *3.000* | | *62.7* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.12* | | | *ng* | *3.000* | | *104* | *30-135* | | | |
| **LCS Dup (B503030-BSD1)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4´-DDD | 3.7 | 0.06 | 0.19 | ng | 3.750 | | 99.7 | 50-125 | 9.41 | 30 | |
| 2,4´-DDE | 3.6 | 0.06 | 0.19 | ng | 3.750 | | 96.5 | 50-125 | 8.29 | 30 | |
| 2,4´-DDT | 3.8 | 0.06 | 0.19 | ng | 3.750 | | 101 | 50-125 | 9.42 | 30 | |
| 4,4´-DDD | 2.9 | 0.06 | 0.19 | ng | 3.000 | | 95.6 | 25-150 | 4.04 | 30 | |
| 4,4´-DDT | 2.9 | 0.06 | 0.19 | ng | 3.000 | | 97.8 | 45-140 | 3.55 | 30 | |
| 4,4'-DDE [2C] | 2.7 | 0.06 | 0.19 | ng | 3.000 | | 90.3 | 35-140 | 3.16 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *3.31* | | | *ng* | *3.000* | | *110* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.28* | | | *ng* | *3.000* | | *109* | *30-135* | | | |
| **LCS Dup (B503030-BSD2)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4´-DDD | 3.6 | 0.06 | 0.19 | ng | 3.750 | | 95.5 | 50-125 | 2.68 | 30 | |
| 2,4´-DDE | 3.5 | 0.06 | 0.19 | ng | 3.750 | | 93.1 | 50-125 | 2.38 | 30 | |
| 2,4´-DDT | 3.6 | 0.06 | 0.19 | ng | 3.750 | | 96.5 | 50-125 | 3.32 | 30 | |
| 4,4´-DDD | 2.7 | 0.06 | 0.19 | ng | 3.000 | | 90.7 | 25-150 | 2.44 | 30 | |
| 4,4´-DDT | 2.8 | 0.06 | 0.19 | ng | 3.000 | | 93.5 | 45-140 | 1.53 | 30 | |
| 4,4'-DDE [2C] | 2.6 | 0.06 | 0.19 | ng | 3.000 | | 85.8 | 35-140 | 2.11 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *3.74* | | | *ng* | *3.000* | | *125* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.18* | | | *ng* | *3.000* | | *106* | *30-135* | | | |

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| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B503030 - *** DEFAULT PREP ***** | | | | | | | | | | | |
| **LCS Dup (B503030-BSD3)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4′-DDD | 3.6 | 0.06 | 0.19 | ng | 3.750 | | 95.1 | 50-125 | 0.879 | 30 | |
| 2,4′-DDE | 3.5 | 0.06 | 0.19 | ng | 3.750 | | 93.1 | 50-125 | 0.310 | 30 | |
| 2,4′-DDT | 3.6 | 0.06 | 0.19 | ng | 3.750 | | 97.0 | 50-125 | 0.120 | 30 | |
| 4,4′-DDD | 2.7 | 0.06 | 0.19 | ng | 3.000 | | 91.4 | 25-150 | 3.57 | 30 | |
| 4,4′-DDT | 2.8 | 0.06 | 0.19 | ng | 3.000 | | 94.3 | 45-140 | 1.55 | 30 | |
| 4,4'-DDE [2C] | 2.6 | 0.06 | 0.19 | ng | 3.000 | | 87.4 | 35-140 | 0.588 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *3.53* | | | *ng* | *3.000* | | *118* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.17* | | | *ng* | *3.000* | | *106* | *30-135* | | | |
| **LCS Dup (B503030-BSD4)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4′-DDD | 3.7 | 0.06 | 0.19 | ng | 3.750 | | 97.8 | 50-125 | 5.31 | 30 | |
| 2,4′-DDE | 3.8 | 0.06 | 0.19 | ng | 3.750 | | 100 | 50-125 | 3.66 | 30 | |
| 2,4′-DDT | 3.7 | 0.06 | 0.19 | ng | 3.750 | | 99.6 | 50-125 | 6.65 | 30 | |
| 4,4′-DDD | 3.0 | 0.06 | 0.19 | ng | 3.000 | | 99.8 | 25-150 | 11.4 | 30 | |
| 4,4′-DDT | 3.1 | 0.06 | 0.19 | ng | 3.000 | | 102 | 45-140 | 8.81 | 30 | |
| 4,4'-DDE [2C] | 2.9 | 0.06 | 0.19 | ng | 3.000 | | 98.3 | 35-140 | 11.1 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.92* | | | *ng* | *3.000* | | *63.9* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.36* | | | *ng* | *3.000* | | *112* | *30-135* | | | |
| **LCS Dup (B503030-BSD5)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4′-DDD | 3.7 | 0.06 | 0.19 | ng | 3.750 | | 97.6 | 50-125 | 2.13 | 30 | |
| 2,4′-DDE | 3.7 | 0.06 | 0.19 | ng | 3.750 | | 98.1 | 50-125 | 3.32 | 30 | |
| 2,4′-DDT | 3.7 | 0.06 | 0.19 | ng | 3.750 | | 99.0 | 50-125 | 1.73 | 30 | |
| 4,4′-DDD | 3.1 | 0.06 | 0.19 | ng | 3.000 | | 104 | 25-150 | 1.81 | 30 | |
| 4,4′-DDT | 3.1 | 0.06 | 0.19 | ng | 3.000 | | 105 | 45-140 | 2.75 | 30 | |
| 4,4'-DDE [2C] | 2.9 | 0.06 | 0.19 | ng | 3.000 | | 97.2 | 35-140 | 0.334 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.85* | | | *ng* | *3.000* | | *61.8* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.18* | | | *ng* | *3.000* | | *106* | *30-135* | | | |

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| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B503030 - *** DEFAULT PREP ***** | | | | | | | | | | | |
| **LCS Dup (B503030-BSD6)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4´-DDD | 3.7 | 0.06 | 0.19 | ng | 3.750 | | 99.7 | 50-125 | 13.7 | 30 | |
| 2,4´-DDE | 3.8 | 0.06 | 0.19 | ng | 3.750 | | 101 | 50-125 | 12.7 | 30 | |
| 2,4´-DDT | 3.8 | 0.06 | 0.19 | ng | 3.750 | | 101 | 50-125 | 13.2 | 30 | |
| 4,4´-DDD | 3.2 | 0.06 | 0.19 | ng | 3.000 | | 105 | 25-150 | 18.9 | 30 | |
| 4,4´-DDT | 3.2 | 0.06 | 0.19 | ng | 3.000 | | 106 | 45-140 | 17.3 | 30 | |
| 4,4'-DDE [2C] | 3.0 | 0.06 | 0.19 | ng | 3.000 | | 100 | 35-140 | 16.0 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.98* | | | *ng* | *3.000* | | *66.0* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.34* | | | *ng* | *3.000* | | *111* | *30-135* | | | |
| **LCS Dup (B503030-BSD7)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4´-DDD | 3.2 | 0.06 | 0.19 | ng | 3.750 | | 85.4 | 50-125 | 8.21 | 30 | |
| 2,4´-DDE | 3.4 | 0.06 | 0.19 | ng | 3.750 | | 89.6 | 50-125 | 7.62 | 30 | |
| 2,4´-DDT | 3.3 | 0.06 | 0.19 | ng | 3.750 | | 87.1 | 50-125 | 6.70 | 30 | |
| 4,4´-DDD | 2.5 | 0.06 | 0.19 | ng | 3.000 | | 83.9 | 25-150 | 6.02 | 30 | |
| 4,4´-DDT | 2.9 | 0.06 | 0.19 | ng | 3.000 | | 96.8 | 45-140 | 3.26 | 30 | |
| 4,4'-DDE [2C] | 2.5 | 0.06 | 0.19 | ng | 3.000 | | 82.6 | 35-140 | 6.30 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.99* | | | *ng* | *3.000* | | *66.3* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.02* | | | *ng* | *3.000* | | *101* | *30-135* | | | |
| **LCS Dup (B503030-BSD8)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4´-DDD | 3.7 | 0.06 | 0.19 | ng | 3.750 | | 97.8 | 50-125 | 27.1 | 30 | |
| 2,4´-DDE | 3.8 | 0.06 | 0.19 | ng | 3.750 | | 100 | 50-125 | 22.9 | 30 | |
| 2,4´-DDT | 3.7 | 0.06 | 0.19 | ng | 3.750 | | 99.6 | 50-125 | 29.6 | 30 | |
| 4,4´-DDD | 2.7 | 0.06 | 0.19 | ng | 3.000 | | 90.2 | 25-150 | 23.5 | 30 | |
| 4,4´-DDT | 3.1 | 0.06 | 0.19 | ng | 3.000 | | 102 | 45-140 | 24.0 | 30 | |
| 4,4'-DDE [2C] | 2.7 | 0.06 | 0.19 | ng | 3.000 | | 89.9 | 35-140 | 22.6 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *2.06* | | | *ng* | *3.000* | | *68.5* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.36* | | | *ng* | *3.000* | | *112* | *30-135* | | | |

USACE ERDC-EP-C
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: ETV SEA Ring | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 17-Mar-2015 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B503030 - *** DEFAULT PREP ***** | | | | | | | | | | | |
| **LCS Dup (B503030-BSD9)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4´-DDD | 3.7 | 0.06 | 0.19 | ng | 3.750 | | 97.6 | 50-125 | 15.7 | 30 | |
| 2,4´-DDE | 3.7 | 0.06 | 0.19 | ng | 3.750 | | 98.1 | 50-125 | 11.8 | 30 | |
| 2,4´-DDT | 3.7 | 0.06 | 0.19 | ng | 3.750 | | 99.0 | 50-125 | 16.2 | 30 | |
| 4,4´-DDD | 3.1 | 0.06 | 0.19 | ng | 3.000 | | 104 | 25-150 | 21.3 | 30 | |
| 4,4´-DDT | 3.1 | 0.06 | 0.19 | ng | 3.000 | | 105 | 45-140 | 23.3 | 30 | |
| 4,4'-DDE [2C] | 2.9 | 0.06 | 0.19 | ng | 3.000 | | 97.2 | 35-140 | 16.0 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.85* | | | *ng* | *3.000* | | *61.8* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.18* | | | *ng* | *3.000* | | *106* | *30-135* | | | |
| **LCS Dup (B503030-BSDA)** | | | | | Prepared: 20-Jan-2015 Analyzed: 30-Jan-2015 | | | | | | |
| 2,4´-DDD | 3.7 | 0.06 | 0.19 | ng | 3.750 | | 99.7 | 50-125 | 0.00802 | 30 | |
| 2,4´-DDE | 3.8 | 0.06 | 0.19 | ng | 3.750 | | 101 | 50-125 | 0.669 | 30 | |
| 2,4´-DDT | 3.8 | 0.06 | 0.19 | ng | 3.750 | | 101 | 50-125 | 0.0675 | 30 | |
| 4,4´-DDD | 3.2 | 0.06 | 0.19 | ng | 3.000 | | 105 | 25-150 | 3.01 | 30 | |
| 4,4´-DDT | 3.2 | 0.06 | 0.19 | ng | 3.000 | | 106 | 45-140 | 3.31 | 30 | |
| 4,4'-DDE [2C] | 3.0 | 0.06 | 0.19 | ng | 3.000 | | 100 | 35-140 | 2.77 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.98* | | | *ng* | *3.000* | | *66.0* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.34* | | | *ng* | *3.000* | | *111* | *30-135* | | | |

# Chain of Custody Record

| Shipped From | Project Manager: Gunther Rosen | Site Contact: Gunther Rosen | Date: 1-Oct-14 | COC No: |
|---|---|---|---|---|
| Courtney Thomas/Danny D. Reible (Texas Tech University) | Tel/Fax: (619)890-9692 | Lab Contact: Allyson Holman | Carrier: FedEx | 1 of 1 CoCs |
| 911 Boston Ave./Dept of Civil Engineering | Analysis Turnaround Time | | | Job No. |
| Lubbock, Tx 79409 | Calendar ( C ) or Work Days (W) ____ | | | |
| (713)408-6885 Mobile | TAT if different from Below standard | | | |
| Fax | __ 2 weeks | | | SDG No. |
| Project Name: SEA Ring - SPAWAR Systems Center Pacific | __ 1 week | | | |
| Site: | __ 2 days | | | |
| P O # | __ 1 day | | | |

| Task | Sample Identification | Sample Date | Sample Time | Sample Type | Solvent | # of Cont. | Filtered Sample | DDx | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|
| 1 | QT2-6-SPME1-1 | 9/25/2014 | 1325 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (0-5 cm) |
| 2 | QT2-6-SPME1-3 | 9/25/2014 | 1325 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (10-15 cm) |
| 3 | QT2-6-SPME1-4 | 9/25/2014 | 1325 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (15-20 cm) |
| 4 | QT2-6-SPME1-6 | 9/25/2014 | 1325 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (25-30 cm) |
| 5 | QT2-6-SPME1-7 | 9/25/2014 | 1325 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (30-35 cm) |
| 6 | QT2-6-SPME1-8 | 9/25/2014 | 1325 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (35-40 cm) |
| 7 | QT2-6-SPME1-9 | 9/25/2014 | 1325 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (40-45 cm) |
| 8 | QT2-6-SPME1-11 | 9/25/2014 | 1325 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (50-55 cm) |
| 9 | QT2-6-SPME1-12 | 9/25/2014 | 1325 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (55-60 cm) |

**Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= DI H2O/MeOH; 7=ZnAc2,NaOH** HEX

***Possible Hazard Identification***
*Non-Hazard X Flammable Skin Irritant Poison B Unknown*

***Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)***
*Return To Client Disposal By Lab Archive For ____ Months*

**Special Instructions/QC Requirements & Comments:**

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| Courtney Thomas | Texas Tech University | 10/1/2014 12:00 pm | [signature] | | 10/2/14 1600 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

# Chain of Custody Record

| Shipped From | Project Manager: Gunther Rosen | Site Contact: Gunther Rosen | Date: 1-Oct-14 | COC No: 1 of 1 CoCs |
|---|---|---|---|---|
| Courtney Thomas/Danny D. Reible (Texas Tech University) | Tel/Fax: (619)890-9692 | Lab Contact: Allyson Holman | Carrier: FedEx | |
| 911 Boston Ave./Dept of Civil Engineering | Analysis Turnaround Time | | | Job No. |
| Lubbock, Tx 79409 | Calendar ( C ) or Work Days (W) ______ | | | |
| (713)408-6885 Mobile | TAT if different from Below standard | | | |
| Fax | __ 2 weeks | | | SDG No. |
| Project Name: SEA Ring - SPAWAR Systems Center Pacific | __ 1 week | | | |
| Site: | __ 2 days | | | |
| P O # | __ 1 day | | | |

| Task | Sample Identification | Sample Date | Sample Time | Sample Type | Solvent | # of Cont. | Filtered Sample | DDx | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|
| 10 | QT2-6-SPME2-1 | 9/25/2014 | 1340 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (0-5 cm) |
| 11 | QT2-6-SPME2-3 | 9/25/2014 | 1340 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (10-15 cm) |
| 12 | QT2-6-SPME2-4 | 9/25/2014 | 1340 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (15-20 cm) |
| 13 | QT2-6-SPME2-6 | 9/25/2014 | 1340 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (25-30 cm) |
| 14 | QT2-6-SPME2-7 | 9/25/2014 | 1340 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (30-35 cm) |
| 15 | QT2-6-SPME2-8 | 9/25/2014 | 1340 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (35-40 cm) |
| 16 | QT2-6-SPME2-9 | 9/25/2014 | 1340 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (40-45 cm) |
| 17 | QT2-6-SPME2-11 | 9/25/2014 | 1340 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (50-55 cm) |
| 18 | QT2-6-SPME2-12 | 9/25/2014 | 1340 | SPME PDMS Extract | Hexane | 1 | N | X | 2.9 cm fiber segment (55-57.9 cm) |
| Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= DI H2O/MeOH; 7=ZnAc2,NaOH | | | | | | | | HEX | |

*Possible Hazard Identification*
*Non-Hazard* *X Flammable* *Skin Irritant* *Poison B* *Unknown*

***Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)***
*Return To Client* *Disposal By Lab* *Archive For ______ Months*

**Special Instructions/QC Requirements & Comments:**

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| Courtney Thomas | Texas Tech University | 10/1/2014 12:00 pm | Michael Carr | | 10/2/14 1600 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

# Chain of Custody Record

| Shipped From | Project Manager: Gunther Rosen | Site Contact: Gunther Rosen | Date: 1-Oct-14 | COC No: |
|---|---|---|---|---|
| Courtney Thomas/Danny D. Reible (Texas Tech University) | Tel/Fax: (619)890-9692 | Lab Contact: Allyson Holman | Carrier: FedEx | 1 of 1 CoCs |
| 911 Boston Ave./Dept of Civil Engineering | Analysis Turnaround Time | | | Job No. |
| Lubbock, Tx 79409 | Calendar ( C ) or Work Days (W) ____ | | | |
| (713)408-6885 Mobile | TAT if different from Below standard | | | |
| Fax | ___ 2 weeks | | | SDG No. |
| Project Name: SEA Ring - SPAWAR Systems Center Pacific | ___ 1 week | | | |
| Site: | ___ 2 days | | | |
| P O # | ___ 1 day | | | |

| Task | Sample Identification | Sample Date | Sample Time | Sample Type | Solvent | # of Cont. | Filtered Sample | DDx | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|
| 19 | QT2-3L-SPME1-1 | 9/25/2014 | 1420 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (0-5 cm) |
| 20 | QT2-3L-SPME1-3 | 9/25/2014 | 1420 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (10-15 cm) |
| 21 | QT2-3L-SPME1-4 | 9/25/2014 | 1420 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (15-20 cm) |
| 22 | QT2-3L-SPME1-6 | 9/25/2014 | 1420 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (25-30 cm) |
| 23 | QT2-3L-SPME1-7 | 9/25/2014 | 1420 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (30-35 cm) |
| 24 | QT2-3L-SPME1-8 | 9/25/2014 | 1420 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (35-40 cm) |
| 25 | QT2-3L-SPME1-9 | 9/25/2014 | 1420 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (40-45 cm) |
| 26 | QT2-3L-SPME1-11 | 9/25/2014 | 1420 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (50-55 cm) |
| 27 | QT2-3L-SPME1-12 | 9/25/2014 | 1420 | SPME PDMS Extract | Hexane | 1 | N | X | 2.9 cm fiber segment (55-57.9 cm) |

**Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= DI H2O/MeOH; 7=ZnAc2,NaOH** HEX

*Possible Hazard Identification*
*Non-Hazard* *X Flammable* *Skin Irritant* *Poison B* *Unknown*

***Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)***
*Return To Client* *Disposal By Lab* *Archive For ____ Months*

**Special Instructions/QC Requirements & Comments:**

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| Courtney Thomas | Texas Tech University | 10/1/2014 12:00pm | Michael Cast | | 10/2/14 1600 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

# Chain of Custody Record

| Shipped From | Project Manager: Gunther Rosen | Site Contact: Gunther Rosen | Date: 1-Oct-14 | COC No: |
|---|---|---|---|---|
| Courtney Thomas/Danny D. Reible (Texas Tech University) | Tel/Fax: (619)890-9692 | Lab Contact: Allyson Holman | Carrier: FedEx | 1 of 1 CoCs |
| 911 Boston Ave./Dept of Civil Engineering | Analysis Turnaround Time | | | Job No. |
| Lubbock, Tx 79409 | Calendar ( C ) or Work Days (W) ____ | | | |
| (713)408-6885 Mobile | TAT if different from Below standard | | | |
| Fax | __ 2 weeks | | | SDG No. |
| Project Name: SEA Ring - SPAWAR Systems Center Pacific | __ 1 week | | | |
| Site: | __ 2 days | | | |
| P O # | __ 1 day | | | |

| Task | Sample Identification | Sample Date | Sample Time | Sample Type | Solvent | # of Cont. | Filtered Sample | DDx | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|
| 28 | QT2-3L-SPME2-1 | 9/25/2014 | 1431 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (0-5 cm) |
| 29 | QT2-3L-SPME2-3 | 9/25/2014 | 1431 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (10-15 cm) |
| 30 | QT2-3L-SPME2-4 | 9/25/2014 | 1431 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (15-20 cm) |
| 31 | QT2-3L-SPME2-6 | 9/25/2014 | 1431 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (25-30 cm) |
| 32 | QT2-3L-SPME2-7 | 9/25/2014 | 1431 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (30-35 cm) |
| 33 | QT2-3L-SPME2-8 | 9/25/2014 | 1431 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (35-40 cm) |
| 34 | QT2-3L-SPME2-9 | 9/25/2014 | 1431 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (40-45 cm) |
| 35 | QT2-3L-SPME2-11 | 9/25/2014 | 1431 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (50-55 cm) |
| 36 | QT2-3L-SPME2-12 | 9/25/2014 | 1431 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (55-60 cm) |
| | | | | | | | | HEX | |

**Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= DI H2O/MeOH; 7=ZnAc2,NaOH**

***Possible Hazard Identification***
*Non-Hazard* *X Flammable* *Skin Irritant* *Poison B* *Unknown*

***Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)***
*Return To Client* *Disposal By Lab* *Archive For ________ Months*

**Special Instructions/QC Requirements & Comments:**

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| Courtney Thomas | Texas Tech University | 10/1/2014 12:00 pm | Michael Cost | | 10/2/14 1600 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

# Chain of Custody Record

| Shipped From | Project Manager: Gunther Rosen | Site Contact: Gunther Rosen | Date: 1-Oct-14 | COC No: |
|---|---|---|---|---|
| Courtney Thomas/Danny D. Reible (Texas Tech University) | Tel/Fax: (619)890-9692 | Lab Contact: Allyson Holman | Carrier: FedEx | 1 of 1 CoCs |
| 911 Boston Ave./Dept of Civil Engineering | Analysis Turnaround Time | | | Job No. |
| Lubbock, Tx 79409 | Calendar ( C ) or Work Days (W) ____ | | | |
| (713)408-6885 Mobile | TAT if different from Below standard | | | |
| Fax | __ 2 weeks | | | SDG No. |
| Project Name: SEA Ring - SPAWAR Systems Center Pacific | __ 1 week | | | |
| Site: | __ 2 days | | | |
| P O # | __ 1 day | | | |

| Task | Sample Identification | Sample Date | Sample Time | Sample Type | Solvent | # of Cont. | Filtered Sample | DDx | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|
| 37 | QT2-5-SPME1-1 | 9/25/2014 | 1445 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (0-5 cm) |
| 38 | QT2-5-SPME1-3 | 9/25/2014 | 1445 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (10-15 cm) |
| 39 | QT2-5-SPME1-4 | 9/25/2014 | 1445 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (15-20 cm) |
| 40 | QT2-5-SPME1-6 | 9/25/2014 | 1445 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (25-30 cm) |
| 41 | QT2-5-SPME1-7 | 9/25/2014 | 1445 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (30-35 cm) |
| 42 | QT2-5-SPME1-8 | 9/25/2014 | 1445 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (35-40 cm) |
| 43 | QT2-5-SPME1-9 | 9/25/2014 | 1445 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (40-45 cm) |
| 44 | QT2-5-SPME1-11 | 9/25/2014 | 1445 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (50-55 cm) |
| 45 | QT2-5-SPME1-12 | 9/25/2014 | 1445 | SPME PDMS Extract | Hexane | 1 | N | X | 4.3 cm fiber segment (55-59.3 cm) |
| | | | | | | | | HEX | |

**Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= DI H2O/MeOH; 7=ZnAc2,NaOH**

***Possible Hazard Identification***
*Non-Hazard* *X Flammable* *Skin Irritant* *Poison B* *Unknown*

***Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)***
*Return To Client* *Disposal By Lab* *Archive For ______ Months*

**Special Instructions/QC Requirements & Comments:**

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| Courtney Thomas | Texas Tech University | 10/1/2014 12:00 pm | Michael Cast | | 10/2/14 1600 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

# Chain of Custody Record

| Shipped From | Project Manager: Gunther Rosen | Site Contact: Gunther Rosen | Date: 1-Oct-14 | COC No: |
|---|---|---|---|---|
| Courtney Thomas/Danny D. Reible (Texas Tech University) | Tel/Fax: (619)890-9692 | Lab Contact: Allyson Holman | Carrier: FedEx | 1 of 1 CoCs |
| 911 Boston Ave./Dept of Civil Engineering | Analysis Turnaround Time | | | Job No. |
| Lubbock, Tx 79409 | Calendar ( C ) or Work Days (W) ____ | | | |
| (713)408-6885 Mobile | TAT if different from Below standard | | | |
| Fax | ___ 2 weeks | | | SDG No. |
| Project Name: SEA Ring - SPAWAR Systems Center Pacific | ___ 1 week | | | |
| Site: | ___ 2 days | | | |
| P O # | ___ 1 day | | | |

| Task | Sample Identification | Sample Date | Sample Time | Sample Type | Solvent | # of Cont. | Filtered Sample | DDx | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|
| 46 | QT2-5-SPME2-1 | 9/25/2014 | 1456 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (0-5 cm) |
| 47 | QT2-5-SPME2-3 | 9/25/2014 | 1456 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (10-15 cm) |
| 48 | QT2-5-SPME2-4 | 9/25/2014 | 1456 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (15-20 cm) |
| 49 | QT2-5-SPME2-6 | 9/25/2014 | 1456 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (25-30 cm) |
| 50 | QT2-5-SPME2-7 | 9/25/2014 | 1456 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (30-35 cm) |
| 51 | QT2-5-SPME2-8 | 9/25/2014 | 1456 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (35-40 cm) |
| 52 | QT2-5-SPME2-9 | 9/25/2014 | 1456 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (40-45 cm) |
| 53 | QT2-5-SPME2-11 | 9/25/2014 | 1456 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (50-55 cm) |
| 54 | QT2-5-SPME2-12 | 9/25/2014 | 1456 | SPME PDMS Extract | Hexane | 1 | N | X | 4.9 cm fiber segment (55-59.9 cm) |
| | | | | | | | | HEX | |

**Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= DI H2O/MeOH; 7=ZnAc2,NaOH**

*Possible Hazard Identification*
*Non-Hazard* *X Flammable* *Skin Irritant* *Poison B* *Unknown*

***Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)***
*Return To Client* *Disposal By Lab* *Archive For ______ Months*

**Special Instructions/QC Requirements & Comments:**

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| Courtney Thomas | Texas Tech University | 10/1/2014 12:00pm | Michael Curt | | 10/2/14 1600 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

# Chain of Custody Record

| Shipped From | Project Manager: Gunther Rosen | Site Contact: Gunther Rosen | Date: 1-Oct-14 | COC No: |
|---|---|---|---|---|
| Courtney Thomas/Danny D. Reible (Texas Tech University) | Tel/Fax: (619)890-9692 | Lab Contact: Allyson Holman | Carrier: FedEx | 1 of 1 CoCs |
| 911 Boston Ave./Dept of Civil Engineering | Analysis Turnaround Time | | | Job No. |
| Lubbock, Tx 79409 | Calendar ( C ) or Work Days (W) ____ | | | |
| (713)408-6885 Mobile | TAT if different from Below standard | | | |
| Fax | ___ 2 weeks | | | SDG No. |
| Project Name: SEA Ring - SPAWAR Systems Center Pacific | ___ 1 week | | | |
| Site: | ___ 2 days | | | |
| P O # | ___ 1 day | | | |

| Task | Sample Identification | Sample Date | Sample Time | Sample Type | Solvent | # of Cont. | Filtered Sample | DDx | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|
| 55 | QT2-1-SPME1-1 | 9/25/2014 | 1500 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (0-5 cm) |
| 56 | QT2-1-SPME1-3 | 9/25/2014 | 1500 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (10-15 cm) |
| 57 | QT2-1-SPME1-4 | 9/25/2014 | 1500 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (15-20 cm) |
| 58 | QT2-1-SPME1-6 | 9/25/2014 | 1500 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (25-30 cm) |
| 59 | QT2-1-SPME1-7 | 9/25/2014 | 1500 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (30-35 cm) |
| 60 | QT2-1-SPME1-8 | 9/25/2014 | 1500 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (35-40 cm) |
| 61 | QT2-1-SPME1-9 | 9/25/2014 | 1500 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (40-45 cm) |
| 62 | QT2-1-SPME1-11 | 9/25/2014 | 1500 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (50-55 cm) |
| 63 | QT2-1-SPME1-12 | 9/25/2014 | 1500 | SPME PDMS Extract | Hexane | 1 | N | X | 4.9 cm fiber segment (55-59.9 cm) |

**Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= DI H2O/MeOH; 7=ZnAc2,NaOH** HEX

***Possible Hazard Identification***
*Non-Hazard* *X Flammable* *Skin Irritant* *Poison B* *Unknown*

***Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)***
*Return To Client* *Disposal By Lab* *Archive For ______ Months*

**Special Instructions/QC Requirements & Comments:**

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| Courtney Thomas | Texas Tech University | 10/1/2014 12:00pm | Michael Cart | | 10/2/14 1600 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

# Chain of Custody Record

| Shipped From | Project Manager: Gunther Rosen | Site Contact: Gunther Rosen | Date: 1-Oct-14 | COC No: |
|---|---|---|---|---|
| Courtney Thomas/Danny D. Reible (Texas Tech University) | Tel/Fax: (619)890-9692 | Lab Contact: Allyson Holman | Carrier: FedEx | 1 of 1 CoCs |
| 911 Boston Ave./Dept of Civil Engineering | Analysis Turnaround Time | | | Job No. |
| Lubbock, Tx 79409 | Calendar ( C ) or Work Days (W) ____ | | | |
| (713)408-6885 Mobile | TAT if different from Below standard | | | |
| Fax | __ 2 weeks | | | SDG No. |
| Project Name: SEA Ring - SPAWAR Systems Center Pacific | __ 1 week | | | |
| Site: | __ 2 days | | | |
| P O # | __ 1 day | | | |

| Task | Sample Identification | Sample Date | Sample Time | Sample Type | Solvent | # of Cont. | Filtered Sample | DDx | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|
| 64 | QT2-1-SPME2-1 | 9/25/2014 | 1355 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (0-5 cm) |
| 65 | QT2-1-SPME2-3 | 9/25/2014 | 1355 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (10-15 cm) |
| 66 | QT2-1-SPME2-4 | 9/25/2014 | 1355 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (15-20 cm) |
| 67 | QT2-1-SPME2-6 | 9/25/2014 | 1355 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (25-30 cm) |
| 68 | QT2-1-SPME2-7 | 9/25/2014 | 1355 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (30-35 cm) |
| 69 | QT2-1-SPME2-8 | 9/25/2014 | 1355 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (35-40 cm) |
| 70 | QT2-1-SPME2-9 | 9/25/2014 | 1355 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (40-45 cm) |
| 71 | QT2-1-SPME2-11 | 9/25/2014 | 1355 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (50-55 cm) |
| 72 | QT2-1-SPME2-12 | 9/25/2014 | 1355 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (55-60 cm) |
| | | | | | | | | HEX | |

**Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= DI H2O/MeOH; 7=ZnAc2,NaOH**

*Possible Hazard Identification*
*Non-Hazard* *X Flammable* *Skin Irritant* *Poison B* *Unknown*

***Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)***
*Return To Client* *Disposal By Lab* *Archive For ____ Months*

**Special Instructions/QC Requirements & Comments:**

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| Courtney Thomas | Texas Tech University | 10/1/2014 12:00 pm | Michael Cast | | 10/2/14 1600 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

# Chain of Custody Record

| Shipped From | Project Manager: Gunther Rosen | Site Contact: Gunther Rosen | Date: 1-Oct-14 | COC No: |
|---|---|---|---|---|
| Courtney Thomas/Danny D. Reible (Texas Tech University) | Tel/Fax: (619)890-9692 | Lab Contact: Allyson Holman | Carrier: FedEx | 1 of 1 CoCs |
| 911 Boston Ave./Dept of Civil Engineering | Analysis Turnaround Time | | | Job No. |
| Lubbock, Tx 79409 | Calendar ( C ) or Work Days (W) ______ | | | |
| (713)408-6885 Mobile | TAT if different from Below standard | | | |
| Fax | ___ 2 weeks | | | SDG No. |
| Project Name: SEA Ring - SPAWAR Systems Center Pacific | ___ 1 week | | | |
| Site: | ___ 2 days | | | |
| P O # | ___ 1 day | | | |

| Task | Sample Identification | Sample Date | Sample Time | Sample Type | Solvent | # of Cont. | Filtered Sample | DDx | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|
| 73 | QT2-2-SPME1-1 | 9/25/2014 | 1515 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (0-5 cm) |
| 74 | QT2-2-SPME1-3 | 9/25/2014 | 1515 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (10-15 cm) |
| 75 | QT2-2-SPME1-4 | 9/25/2014 | 1515 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (15-20 cm) |
| 76 | QT2-2-SPME1-6 | 9/25/2014 | 1515 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (25-30 cm) |
| 77 | QT2-2-SPME1-7 | 9/25/2014 | 1515 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (30-35 cm) |
| 78 | QT2-2-SPME1-8 | 9/25/2014 | 1515 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (35-40 cm) |
| 79 | QT2-2-SPME1-9 | 9/25/2014 | 1515 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (40-45 cm) |
| 80 | QT2-2-SPME1-11 | 9/25/2014 | 1515 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (50-55 cm) |
| 81 | QT2-2-SPME1-12 | 9/25/2014 | 1515 | SPME PDMS Extract | Hexane | 1 | N | X | 4.4 cm fiber segment (55-59.4 cm) |

**Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= DI H2O/MeOH; 7=ZnAc2,NaOH**

HEX

*Possible Hazard Identification*
*Non-Hazard* *X Flammable* *Skin Irritant* *Poison B* *Unknown*

***Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)***
*Return To Client* *Disposal By Lab* *Archive For ______ Months*

**Special Instructions/QC Requirements & Comments:**

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| Courtney Thomas | Texas Tech University | 10/1/2014 12:00 pm | Michael Cat | | 10/2/14 1600 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

# Chain of Custody Record

| Shipped From | Project Manager: Gunther Rosen | Site Contact: Gunther Rosen | Date: 1-Oct-14 | COC No: |
|---|---|---|---|---|
| Courtney Thomas/Danny D. Reible (Texas Tech University) | Tel/Fax: (619)890-9692 | Lab Contact: Allyson Holman | Carrier: FedEx | 1 of 1 CoCs |
| 911 Boston Ave./Dept of Civil Engineering | Analysis Turnaround Time | | | Job No. |
| Lubbock, Tx 79409 | Calendar ( C ) or Work Days (W) ______ | | | |
| (713)408-6885 Mobile | TAT if different from Below standard | | | |
| Fax | ___ 2 weeks | | | SDG No. |
| Project Name: SEA Ring - SPAWAR Systems Center Pacific | ___ 1 week | | | |
| Site: | ___ 2 days | | | |
| P O # | ___ 1 day | | | |

| Task | Sample Identification | Sample Date | Sample Time | Sample Type | Solvent | # of Cont. | Filtered Sample | DDx | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|
| 82 | QT2-2-SPME2-1 | 9/25/2014 | 1521 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (0-5 cm) |
| 83 | QT2-2-SPME2-3 | 9/25/2014 | 1521 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (10-15 cm) |
| 84 | QT2-2-SPME2-4 | 9/25/2014 | 1521 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (15-20 cm) |
| 85 | QT2-2-SPME2-6 | 9/25/2014 | 1521 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (25-30 cm) |
| 86 | QT2-2-SPME2-7 | 9/25/2014 | 1521 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (30-35 cm) |
| 87 | QT2-2-SPME2-8 | 9/25/2014 | 1521 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (35-40 cm) |
| 88 | QT2-2-SPME2-9 | 9/25/2014 | 1521 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (40-45 cm) |
| 89 | QT2-2-SPME2-11 | 9/25/2014 | 1521 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (50-55 cm) |
| 90 | QT2-2-SPME2-12 | 9/25/2014 | 1521 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (55-60 cm) |
| Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= DI H2O/MeOH; 7=ZnAc2,NaOH | | | | | | | | HEX | |

*Possible Hazard Identification*
*Non-Hazard* *X Flammable* *Skin Irritant* *Poison B* *Unknown*

***Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)***
*Return To Client* *Disposal By Lab* *Archive For ______ Months*

**Special Instructions/QC Requirements & Comments:**

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| Courtney Thomas | Texas Tech University | 10/1/2014 12:00 pm | Michael Cart | | 10/2/14 1600 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

# Chain of Custody Record

| Shipped From | Project Manager: Gunther Rosen | Site Contact: Gunther Rosen | Date: 1-Oct-14 | COC No: 1 of 1 CoCs |
|---|---|---|---|---|
| Courtney Thomas/Danny D. Reible (Texas Tech University) | Tel/Fax: (619)890-9692 | Lab Contact: Allyson Holman | Carrier: FedEx | Job No. |
| 911 Boston Ave./Dept of Civil Engineering | Analysis Turnaround Time | | | SDG No. |
| Lubbock, Tx 79409 | Calendar ( C ) or Work Days (W) ____ | | | |
| (713)408-6885 Mobile | TAT if different from Below standard | | | |
| Fax | ___ 2 weeks | | | |
| Project Name: SEA Ring - SPAWAR Systems Center Pacific | ___ 1 week | | | |
| Site: | ___ 2 days | | | |
| P O # | ___ 1 day | | | |

| Task | Sample Identification | Sample Date | Sample Time | Sample Type | Solvent | # of Cont. | Filtered Sample | DDx | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|
| 91 | QT2-4-SPME1-1 | 9/25/2014 | 1340 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (0-5 cm) |
| 92 | QT2-4-SPME1-3 | 9/25/2014 | 1340 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (10-15 cm) |
| 93 | QT2-4-SPME1-4 | 9/25/2014 | 1340 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (15-20 cm) |
| 94 | QT2-4-SPME1-6 | 9/25/2014 | 1340 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (25-30 cm) |
| 95 | QT2-4-SPME1-7 | 9/25/2014 | 1340 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (30-35 cm) |
| 96 | QT2-4-SPME1-8 | 9/25/2014 | 1340 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (35-40 cm) |
| 97 | QT2-4-SPME1-9 | 9/25/2014 | 1340 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (40-45 cm) |
| 98 | QT2-4-SPME1-11 | 9/25/2014 | 1340 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (50-55 cm) |
| 99 | QT2-4-SPME1-12 | 9/25/2014 | 1340 | SPME PDMS Extract | Hexane | 1 | N | X | 4 cm fiber segment (55-59 cm) |
| | | | | | | | | HEX | |

**Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= DI H2O/MeOH; 7=ZnAc2,NaOH**

*Possible Hazard Identification*
*Non-Hazard* *X Flammable* *Skin Irritant* *Poison B* *Unknown*

***Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)***
*Return To Client* *Disposal By Lab* *Archive For ________ Months*

**Special Instructions/QC Requirements & Comments:**

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| Courtney Thomas | Texas Tech University | 10/1/2014 12:00 pm | Michael Carr | | 10/2/14 1600 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

# Chain of Custody Record

| Shipped From | Project Manager: Gunther Rosen | Site Contact: Gunther Rosen | Date: 1-Oct-14 | COC No: |
|---|---|---|---|---|
| Courtney Thomas/Danny D. Reible (Texas Tech University) | Tel/Fax: (619)890-9692 | Lab Contact: Allyson Holman | Carrier: FedEx | 1 of 1 CoCs |
| 911 Boston Ave./Dept of Civil Engineering | Analysis Turnaround Time | | | Job No. |
| Lubbock, Tx 79409 | Calendar ( C ) or Work Days (W) ____ | | | |
| (713)408-6885 Mobile | TAT if different from Below standard | | | |
| Fax | ___ 2 weeks | | | SDG No. |
| Project Name: SEA Ring - SPAWAR Systems Center Pacific | ___ 1 week | | | |
| Site: | ___ 2 days | | | |
| P O # | ___ 1 day | | | |

| Task | Sample Identification | Sample Date | Sample Time | Sample Type | Solvent | # of Cont. | Filtered Sample | DDx | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|
| 100 | QT2-4-SPME2-1 | 9/25/2014 | 1530 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (0-5 cm) |
| 101 | QT2-4-SPME2-3 | 9/25/2014 | 1530 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (10-15 cm) |
| 102 | QT2-4-SPME2-4 | 9/25/2014 | 1530 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (15-20 cm) |
| 103 | QT2-4-SPME2-6 | 9/25/2014 | 1530 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (25-30 cm) |
| 104 | QT2-4-SPME2-7 | 9/25/2014 | 1530 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (30-35 cm) |
| 105 | QT2-4-SPME2-8 | 9/25/2014 | 1530 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (35-40 cm) |
| 106 | QT2-4-SPME2-9 | 9/25/2014 | 1530 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (40-45 cm) |
| 107 | QT2-4-SPME2-11 | 9/25/2014 | 1530 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (50-55 cm) |
| 108 | QT2-4-SPME2-12 | 9/25/2014 | 1530 | SPME PDMS Extract | Hexane | 1 | N | X | 4 cm fiber segment (55-59 cm) |
| Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= DI H2O/MeOH; 7=ZnAc2,NaOH | | | | | | | | HEX | |

*Possible Hazard Identification*
*Non-Hazard* *X Flammable* *Skin Irritant* *Poison B* *Unknown*

***Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)***
*Return To Client* *Disposal By Lab* *Archive For ____ Months*

**Special Instructions/QC Requirements & Comments:**

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| Courtney Thomas | Texas Tech University | 10/1/2014 12:00 pm | Michael Carr | | 10/2/14 1600 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

# Chain of Custody Record

| Shipped From | Project Manager: Gunther Rosen | Site Contact: Gunther Rosen | Date: 1-Oct-14 | COC No: |
|---|---|---|---|---|
| Courtney Thomas/Danny D. Reible (Texas Tech University) | Tel/Fax: (619)890-9692 | Lab Contact: Allyson Holman | Carrier: FedEx | 1 of 1 CoCs |
| 911 Boston Ave./Dept of Civil Engineering | Analysis Turnaround Time | | | Job No. |
| Lubbock, Tx 79409 | Calendar ( C ) or Work Days (W) ____ | | | |
| (713)408-6885 Mobile | TAT if different from Below standard | | | |
| Fax | ___ 2 weeks | | | SDG No. |
| Project Name: SEA Ring - SPAWAR Systems Center Pacific | ___ 1 week | | | |
| Site: | ___ 2 days | | | |
| P O # | ___ 1 day | | | |

| Task | Sample Identification | Sample Date | Sample Time | Sample Type | Solvent | # of Cont. | Filtered Sample | DDx | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|
| 109 | QT2-7-SPME1-1 | 9/25/2014 | 1544 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (0-5 cm) |
| 110 | QT2-7-SPME1-3 | 9/25/2014 | 1544 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (10-15 cm) |
| 111 | QT2-7-SPME1-4 | 9/25/2014 | 1544 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (15-20 cm) |
| 112 | QT2-7-SPME1-6 | 9/25/2014 | 1544 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (25-30 cm) |
| 113 | QT2-7-SPME1-7 | 9/25/2014 | 1544 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (30-35 cm) |
| 114 | QT2-7-SPME1-8 | 9/25/2014 | 1544 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (35-40 cm) |
| 115 | QT2-7-SPME1-9 | 9/25/2014 | 1544 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (40-45 cm) |
| 116 | QT2-7-SPME1-11 | 9/25/2014 | 1544 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (50-55 cm) |
| 117 | QT2-7-SPME1-12 | 9/25/2014 | 1544 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (55-60 cm) |
| Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= DI H2O/MeOH; 7=ZnAc2,NaOH | | | | | | | | HEX | |

*Possible Hazard Identification*
*Non-Hazard* *X Flammable* *Skin Irritant* *Poison B* *Unknown*

***Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)***
*Return To Client* *Disposal By Lab* *Archive For ____ Months*

**Special Instructions/QC Requirements & Comments:**

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| Courtney Thomas | Texas Tech University | 10/1/2014 12:00 pm | [signature] | | 10/2/14 1600 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

# Chain of Custody Record

| Shipped From | Project Manager: Gunther Rosen | Site Contact: Gunther Rosen | Date: 1-Oct-14 | COC No: |
|---|---|---|---|---|
| Courtney Thomas/Danny D. Reible (Texas Tech University) | Tel/Fax: (619)890-9692 | Lab Contact: Allyson Holman | Carrier: FedEx | 1 of 1 CoCs |
| 911 Boston Ave./Dept of Civil Engineering | Analysis Turnaround Time | | | Job No. |
| Lubbock, Tx 79409 | Calendar ( C ) or Work Days (W) ______ | | | |
| (713)408-6885 Mobile | TAT if different from Below standard | | | |
| Fax | ___ 2 weeks | | | SDG No. |
| Project Name: SEA Ring - SPAWAR Systems Center Pacific | ___ 1 week | | | |
| Site: | ___ 2 days | | | |
| P O # | ___ 1 day | | | |

| Task | Sample Identification | Sample Date | Sample Time | Sample Type | Solvent | # of Cont. | Filtered Sample | DDx | Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|
| 118 | QT2-7-SPME2-1 | 9/25/2014 | 1555 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (0-5 cm) |
| 119 | QT2-7-SPME2-3 | 9/25/2014 | 1555 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (10-15 cm) |
| 120 | QT2-7-SPME2-4 | 9/25/2014 | 1555 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (15-20 cm) |
| 121 | QT2-7-SPME2-6 | 9/25/2014 | 1555 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (25-30 cm) |
| 122 | QT2-7-SPME2-7 | 9/25/2014 | 1555 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (30-35 cm) |
| 123 | QT2-7-SPME2-8 | 9/25/2014 | 1555 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (35-40 cm) |
| 124 | QT2-7-SPME2-9 | 9/25/2014 | 1555 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (40-45 cm) |
| 125 | QT2-7-SPME2-11 | 9/25/2014 | 1555 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (50-55 cm) |
| 126 | QT2-7-SPME2-12 | 9/25/2014 | 1555 | SPME PDMS Extract | Hexane | 1 | N | X | 5 cm fiber segment (55-60 cm) |

**Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= DI H2O/MeOH; 7=ZnAc2,NaOH** HEX

*Possible Hazard Identification*
*Non-Hazard* *X Flammable* *Skin Irritant* *Poison B* *Unknown*

***Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)***
*Return To Client* *Disposal By Lab* *Archive For ______ Months*

**Special Instructions/QC Requirements & Comments:**

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| Courtney Thomas | Texas Tech University | 10/1/2014 12:00 pm | [illegible] | | 10/2/14 1600 |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

## Items for Project Manager Review

| LabNumber | Analysis | Analyte | Exception |
|---|---|---|---|

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

08 January 2016

Gunther Rosen
Navy -- SPAWAR
Environmental Science and Applied System Branch, 536(
San Diego, CA 92152

RE: Quantico

Enclosed are the results of analyses for samples received by the laboratory on 06-Oct-2015. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Dale Rosado, Ph. D.

**USACE ERDC-EP-C**
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| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 08-Jan-2016 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| Site 1 (0-5cm) | 5100601-01 | Passive Sampler | 05-Oct-2015 | 06-Oct-2015 |
| Site 1 (10-15cm) | 5100601-02 | Passive Sampler | 05-Oct-2015 | 06-Oct-2015 |
| Site 1 (15-20cm) | 5100601-03 | Passive Sampler | 05-Oct-2015 | 06-Oct-2015 |
| Site 1 (20-25cm) | 5100601-04 | Passive Sampler | 05-Oct-2015 | 06-Oct-2015 |
| Site 2 (0-5cm) | 5100601-05 | Passive Sampler | 05-Oct-2015 | 06-Oct-2015 |
| Site 2 (10-15cm) | 5100601-06 | Passive Sampler | 05-Oct-2015 | 06-Oct-2015 |
| Site 2 (15-20cm) | 5100601-07 | Passive Sampler | 05-Oct-2015 | 06-Oct-2015 |
| Site 2 (20-25cm) | 5100601-08 | Passive Sampler | 05-Oct-2015 | 06-Oct-2015 |
| Site 3 (0-5cm) | 5100601-09 | Passive Sampler | 05-Oct-2015 | 06-Oct-2015 |
| Site 3 (20-25cm) | 5100601-10 | Passive Sampler | 05-Oct-2015 | 06-Oct-2015 |
| Site 3 (25-30cm) | 5100601-11 | Passive Sampler | 05-Oct-2015 | 06-Oct-2015 |
| Site 3 duo (30-35cm) | 5100601-12 | Passive Sampler | 05-Oct-2015 | 06-Oct-2015 |
| Site 3 duo (0-5cm) | 5100601-13 | Passive Sampler | 05-Oct-2015 | 06-Oct-2015 |
| Site 3 duo (20-25cm) | 5100601-14 | Passive Sampler | 05-Oct-2015 | 06-Oct-2015 |
| Site 3 duo (25-30cm) | 5100601-15 | Passive Sampler | 05-Oct-2015 | 06-Oct-2015 |
| Site 3 duo (31-36cm) | 5100601-16 | Passive Sampler | 05-Oct-2015 | 06-Oct-2015 |
| Site 4 (0-5cm) | 5100601-17 | Passive Sampler | 05-Oct-2015 | 06-Oct-2015 |
| Site 4 (36-41cm) | 5100601-18 | Passive Sampler | 05-Oct-2015 | 06-Oct-2015 |
| Site 4 (41-46cm) | 5100601-19 | Passive Sampler | 05-Oct-2015 | 06-Oct-2015 |
| Site 4 (46-54cm) | 5100601-20 | Passive Sampler | 05-Oct-2015 | 06-Oct-2015 |
| Site 5 (0-5cm) | 5100601-21 | Passive Sampler | 05-Oct-2015 | 06-Oct-2015 |
| Site 5 (37-42cm) | 5100601-22 | Passive Sampler | 05-Oct-2015 | 06-Oct-2015 |
| Site 5 (42-47cm) | 5100601-23 | Passive Sampler | 05-Oct-2015 | 06-Oct-2015 |
| Site 5 (47-52cm)-0.5ml | 5100601-24 | Passive Sampler | 05-Oct-2015 | 06-Oct-2015 |
| Site 6 (0-10cm)-1ml | 5100601-25 | Passive Sampler | 05-Oct-2015 | 06-Oct-2015 |
| Site 7 (0-10cm)-1ml | 5100601-26 | Passive Sampler | 05-Oct-2015 | 06-Oct-2015 |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 08-Jan-2016 |

## Case Narrative

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 08-Jan-2016 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration. |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## Site 1 (0-5cm)

**5100601-01 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.06** | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | J |
| 4,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **14.3** | | *54.9 %* | *25-140* | *06-Jan-2016* | *06-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **17.9** | | *68.9 %* | *45-135* | *06-Jan-2016* | *06-Jan-2016* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## Site 1 (10-15cm)

### 5100601-02 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **16.2** | | *62.4 %* | *25-140* | *06-Jan-2016* | *06-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **19.7** | | *75.6 %* | *45-135* | *06-Jan-2016* | *06-Jan-2016* | *EPA 8081A* | |

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|---|---|---|
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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 08-Jan-2016 |

## Site 1 (15-20cm)

### 5100601-03 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **18.6** | | *71.7 %* | *25-140* | *06-Jan-2016* | *06-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **23.3** | | *89.6 %* | *45-135* | *06-Jan-2016* | *06-Jan-2016* | *EPA 8081A* | |

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## Site 1 (20-25cm)

### 5100601-04 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.08** | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | J |
| 4,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **17.6** | | *67.5 %* | *25-140* | *06-Jan-2016* | *06-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **20.7** | | *79.7 %* | *45-135* | *06-Jan-2016* | *06-Jan-2016* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## Site 2 (0-5cm)

### 5100601-05 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.06** | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | J |
| 4,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **16.9** | | *65.0 %* | *25-140* | *06-Jan-2016* | *06-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **21.0** | | *80.8 %* | *45-135* | *06-Jan-2016* | *06-Jan-2016* | *EPA 8081A* | |

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## Site 2 (10-15cm)

### 5100601-06 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.23** | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.09** | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | J |
| **4,4´-DDT** | **0.15** | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **15.4** | | *59.2 %* | *25-140* | *06-Jan-2016* | *06-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **20.4** | | *78.3 %* | *45-135* | *06-Jan-2016* | *06-Jan-2016* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 08-Jan-2016 |

## Site 2 (15-20cm)

### 5100601-07 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.16** | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | |
| 4,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 06-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **15.9** | | *61.1 %* | *25-140* | *06-Jan-2016* | *06-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **19.8** | | *76.1 %* | *45-135* | *06-Jan-2016* | *06-Jan-2016* | *EPA 8081A* | |

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## Site 2 (20-25cm)

### 5100601-08 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.19** | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.06** | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **18.9** | | *72.6 %* | *25-140* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **25.8** | | *99.0 %* | *45-135* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 08-Jan-2016 |

## Site 3 (0-5cm)

### 5100601-09 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.26** | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.09** | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **19.2** | | *73.8 %* | *25-140* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **23.7** | | *91.3 %* | *45-135* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 08-Jan-2016 |

## Site 3 (20-25cm)

### 5100601-10 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.34** | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | |
| **4,4´-DDE** | **0.09** | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **18.9** | | *72.6 %* | *25-140* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **23.5** | | *90.5 %* | *45-135* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 08-Jan-2016 |

## Site 3 (25-30cm)

### 5100601-11 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.11** | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | J |
| 4,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **19.1** | | *73.5 %* | *25-140* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **21.2** | | *81.5 %* | *45-135* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 08-Jan-2016 |

## Site 3 duo (30-35cm)

### 5100601-12 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.11** | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | J |
| 4,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **19.2** | | *73.8 %* | *25-140* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **22.4** | | *86.3 %* | *45-135* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |

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**3909 Halls Ferry Road**
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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 08-Jan-2016 |

## Site 3 duo (0-5cm)

### 5100601-13 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.16** | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | |
| 4,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **19.1** | | *73.6 %* | *25-140* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **22.6** | | *86.9 %* | *45-135* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 08-Jan-2016 |

## Site 3 duo (20-25cm)

### 5100601-14 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC-EL-EP-C** | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.11** | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | J |
| 4,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **20.4** | | *78.6 %* | *25-140* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **24.7** | | *95.1 %* | *45-135* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |

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|---|---|---|
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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 08-Jan-2016 |

## Site 3 duo (25-30cm)

### 5100601-15 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.10** | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | J |
| 4,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **20.4** | | *78.5 %* | *25-140* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **27.6** | | *106 %* | *45-135* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 08-Jan-2016 |

## Site 3 duo (31-36cm)

### 5100601-16 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.17** | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | |
| 4,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **17.6** | | *67.8 %* | *25-140* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **25.0** | | *96.0 %* | *45-135* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 08-Jan-2016 |

## Site 4 (0-5cm)

### 5100601-17 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.13** | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.11** | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **20.2** | | *77.7 %* | *25-140* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **23.4** | | *90.0 %* | *45-135* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 08-Jan-2016 |

## Site 4 (36-41cm)

### 5100601-18 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.15** | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | J |
| 4,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **25.8** | | *99.2 %* | *25-140* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **31.4** | | *121 %* | *45-135* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 08-Jan-2016 |

## Site 4 (41-46cm)

### 5100601-19 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.11** | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.07** | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **28.2** | | *108 %* | *25-140* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **34.0** | | *131 %* | *45-135* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |

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|---|---|---|
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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 08-Jan-2016 |

## Site 4 (46-54cm)

### 5100601-20 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.09** | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.06** | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **23.4** | | *90.0 %* | *25-140* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **25.8** | | *99.2 %* | *45-135* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 08-Jan-2016 |

## Site 5 (0-5cm)

### 5100601-21 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.09** | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.07** | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **26.9** | | *103 %* | *25-140* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **30.4** | | *117 %* | *45-135* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 08-Jan-2016 |

## Site 5 (37-42cm)

### 5100601-22 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **24.3** | | *93.3 %* | *25-140* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **27.6** | | *106 %* | *45-135* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 08-Jan-2016 |

## Site 5 (42-47cm)

### 5100601-23 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **24.6** | | *94.7 %* | *25-140* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **26.3** | | *101 %* | *45-135* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 08-Jan-2016 |

## Site 5 (47-52cm)-0.5ml

### 5100601-24 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **27.5** | | *106 %* | *25-140* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **31.0** | | *119 %* | *45-135* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 08-Jan-2016 |

## Site 6 (0-10cm)-1ml

### 5100601-25 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.06** | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.07** | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **20.6** | | *79.4 %* | *25-140* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **24.3** | | *93.4 %* | *45-135* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |

# USACE ERDC-EP-C
# 3909 Halls Ferry Road
# Vicksburg, MS 39180-6199

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 08-Jan-2016 |

## Site 7 (0-10cm)-1ml

### 5100601-26 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| **4,4´-DDE** | **0.06** | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | 06-Jan-2016 | 07-Jan-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **20.8** | | *79.9 %* | *25-140* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **24.0** | | *92.5 %* | *45-135* | *06-Jan-2016* | *07-Jan-2016* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**


| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 08-Jan-2016 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC-EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B601017 - *** DEFAULT PREP ***** | | | | | | | | | | | |
| **Blank (B601017-BLK2)** | | | | | Prepared: 06-Jan-2016 Analyzed: 07-Jan-2016 | | | | | | |
| 2,4´-DDD | ND | 0.05 | 0.15 | ng | | | | | | | U |
| 2,4´-DDE | ND | 0.05 | 0.15 | ng | | | | | | | U |
| 2,4´-DDT | ND | 0.05 | 0.15 | ng | | | | | | | U |
| 4,4´-DDD | ND | 0.05 | 0.15 | ng | | | | | | | U |
| 4,4´-DDT | ND | 0.05 | 0.15 | ng | | | | | | | U |
| 4,4'-DDE [2C] | ND | 0.003 | 0.01 | ng | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *17.9* | | | *ng* | *26.00* | | *68.8* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *24.4* | | | *ng* | *26.00* | | *93.8* | *45-135* | | | |
| **LCS (B601017-BS1)** | | | | | Prepared: 06-Jan-2016 Analyzed: 07-Jan-2016 | | | | | | |
| 2,4´-DDD | 4.6 | 0.05 | 0.15 | ng | 5.625 | | 82.1 | 50-125 | | | |
| 2,4´-DDE | 4.6 | 0.05 | 0.15 | ng | 5.625 | | 81.3 | 50-125 | | | |
| 2,4´-DDT | 4.9 | 0.05 | 0.15 | ng | 5.625 | | 86.7 | 50-125 | | | |
| 4,4´-DDD | 4.6 | 0.05 | 0.15 | ng | 4.500 | | 103 | 50-125 | | | |
| 4,4´-DDT | 4.9 | 0.05 | 0.15 | ng | 4.500 | | 108 | 50-125 | | | |
| 4,4'-DDE [2C] | ND | 0.003 | 0.01 | ng | 4.500 | | | 50-125 | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *23.6* | | | *ng* | *26.00* | | *90.8* | *50-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *25.1* | | | *ng* | *26.00* | | *96.5* | *50-125* | | | |

passive samplers
oc pests

1

# Chain of Custody Record

Dr Danny Reible

| Shipped From | |
|---|---|
| Texas Tech University<br>10th and Akron<br>79409, Lubbock, TX | |
| Mobile | 806-451-2921 |
| Fax | |
| Project Name: | Quantico |
| Site: | |
| P O # | |

Project Manager: Dr Gunther Rosen
Tel/Fax:

**Analysis Turnaround Time**

Calendar ( C ) or Work Days (W) ________

TAT if different from Below standard

___ 2 weeks
___ 1 week
___ 2 days
___ 1 day

Site Contact: —
Lab Contact: —
Date: —
Carrier: FedEx —
COC No:
1 of 1 CoCs
Job No.
SDG No.

| Task | Sample Identification | Sample Date | Sample Time | Sample Type | Solvent | # of Cont. | Filtered Sample | DDX | ~~[illegible]~~ | Sample Specific Notes: sample volume |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Site 1 (0-5cm) (STN1) | 10/1/15 | | SPME extract | hexane | 1 | | X | | 1 mL |
| 2 | site 1 (10-15cm) | | | | | 1 | | X | | 1 mL |
| 3 | site 1 (15-20cm) | | | | | 1 | | X | | 1 mL |
| 4 | site 1 (20-25cm) | | | | | 1 | | X | | 1 mL |
| 5 | site 2 (0-5cm) (STN2) | | | | | 1 | | X | | 1 mL |
| 6 | site 2 (10-15cm) | | | | | 1 | | X | | 1 mL |
| 7 | site 2 (15-20cm) | | | | | 1 | | X | | 1 mL |
| 8 | site 2 (20-25cm) | | | | | 1 | | X | | 1 mL |
| 9 | site 3 (0-5cm) (STN3) | | | | | 1 | | X | | 1 mL |
| | | | | | | | | | | 1 mL |

**Preservation Used:** 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= DI H2O/MeOH; 7=ZnAc2,NaOH

*Possible Hazard Identification*
*Non-Hazard* *Flammable* *Skin Irritant* *Poison B* *Unknown*

**Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)**
Return To Client Disposal By Lab Archive For ________ Months

**Special Instructions/QC Requirements & Comments:**

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| Magdalena Rakowska | ~~TTU~~ Texas Tech University | 10/5/15 | [signature] | 10/6/15 | |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

2

# Chain of Custody Record

| Shipped From | Project Manager: | Site Contact: | Date: | COC No: |
|---|---|---|---|---|
| | Tel/Fax: | Lab Contact: | Carrier: FedEx | 1 of 1 CoCs |
| Mobile | Analysis Turnaround Time | | | Job No. |
| Fax | Calendar ( C ) or Work Days (W) | | | |
| Project Name: | TAT if different from Below standard | | | SDG No. |
| Site: | ~~2 weeks~~ / 1 week / 2 days / 1 day | | | |
| P O # | | | | |

| Task | Sample Identification | Sample Date | Sample Time | Sample Type | Solvent | # of Cont. | Filtered Sample | DDX | Sample Specific Notes: sample volume |
|---|---|---|---|---|---|---|---|---|---|
| 10 | site 3 (20-25) | 10/1/15 | | SPME extract | Hexane | 1 | | X | 1 mL |
| 11 | site 3 (25-30 | | | | | 1 | | X | 0,5 mL |
| 12 | site 3 (30-35) | | | | | 1 | | X | 1 mL |
| 13 | site 3 duo (0-5 cm) STN 3duo | | | | | 1 | | X | 0,5 mL * |
| 14 | site 3 duo (20-25 cm) | | | | | 1 | | X | 0,5 mL * |
| 15 | site 3 duo (25-30 cm) | | | | | 1 | | X | 0,5 mL * |
| 16 | site 3 duo (31-36 cm) | | | | | 1 | | X | 0,5 mL * |
| 17 | site 4 (0-5 cm) STN 4 | | | | | 1 | | X | 1 mL |
| 18 | site 4 (36-41 cm) | | | | | 1 | | X | 1 mL |

0,5 mL

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= DI H2O/MeOH; 7=ZnAc2,NaOH

*Possible Hazard Identification*

*Non-Hazard* *Flammable* *Skin Irritant* *Poison B* *Unknown*

*Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)*
*Return To Client* *Disposal By Lab* *Archive For ____ Months*

Special Instructions/QC Requirements & Comments:

| | | | | | |
|---|---|---|---|---|---|
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

# Chain of Custody Record

| Shipped From | | Project Manager: | | Site Contact: | Date: | COC No: |
|---|---|---|---|---|---|---|
| | | Tel/Fax: | | Lab Contact: | Carrier: FedEx | 1 of 1 CoCs |
| Mobile | | | | | | Job No. |
| Fax | | | | | | |
| Project Name: | | | | | | SDG No. |
| Site: | | | | | | |
| P O # | | | | | | |

**Analysis Turnaround Time**

Calendar ( C ) or Work Days (W) ________

TAT if different from Below standard

___ 2 weeks

___ 1 week

___ 2 days

___ 1 day

| Task | Sample Identification | Sample Date | Sample Time | Sample Type | Solvent | # of Cont. | Filtered Sample | DDX | Sample volume Sample Specific Notes: |
|---|---|---|---|---|---|---|---|---|---|
| 19 | site 4 (41-46 cm) | 10/1/15 | | SPME extract | hexane | 1 | | X | 1 mL |
| 20 | site 4 (46-51 cm) | | | | | 1 | | X | 1 mL |
| 21 | site 5 (0-5 cm) STN 5 | | | | | 1 | | X | 1 mL |
| 22 | site 5 (37-42 cm) | | | | | 1 | | X | 1 mL |
| 23 | site 5 (42-47 cm) | | | | | 1 | | X | 1 mL |
| 24 | site 5 (47-52 cm) - 0,5 mL | | | | | 1 | | X | 1 mL |
| 25) Stn 6 | site 6 (0-10 cm) - 1 mL | | | | | 1 | | X | 0,5 mL * |
| 26) Stn 7 | site 7 (0-10 cm) - 1 mL | | | | | 1 | | X | 1 mL (4 to 1) |
| | | | | | | | | | 1 mL (4 to 1) |

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= DI H2O/MeOH; 7=ZnAc2,NaOH

*Possible Hazard Identification*

*Non-Hazard* *Flammable* *Skin Irritant* *Poison B* *Unknown*

*Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)*

*Return To Client* *Disposal By Lab* *Archive For ______ Months*

Special Instructions/QC Requirements & Comments:

| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
|---|---|---|---|---|---|
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |
| Relinquished by: | Company: | Date/Time: | Received by: | Company: | Date/Time: |

## Items for Project Manager Review

| LabNumber | Analysis | Analyte | Exception |
|---|---|---|---|

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

02 December 2016

Bart Chadwick
Navy -- SPAWAR
Environmental Science and Applied System Branch, 536(
San Diego, CA 92152

RE: GEOSYNTEC Quantico

Enclosed are the results of analyses for samples received by the laboratory on 21-Sep-2016. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jenifer Milam For Allyson Holman
Biologist

# USACE ERDC-EP-C
## 3909 Halls Ferry Road
## Vicksburg, MS 39180-6199


| | | |
|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360 | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| STN 1 1A+1B 5.5-10.5 cm | 6092104-01 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 1 1A+1B 10.5-15.5 cm | 6092104-02 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 1 1A+1B 15.5-20.5 cm | 6092104-03 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 1 1A+1B 20.5-25.5 cm | 6092104-04 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 2 2A+2B 0-5 cm | 6092104-05 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 2 2A+2B 5-10 cm | 6092104-06 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 2 2A+2B 10-15 cm | 6092104-07 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 2 2A+2B 15-20 cm | 6092104-08 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 2 2A+2B 20-25 cm | 6092104-09 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 2 2A+2B 25-30 cm | 6092104-10 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 2 2A+2B 30-35 cm | 6092104-11 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 2 2A+2B 35-40 cm | 6092104-12 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 2 2A+2B 40-45 cm | 6092104-13 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 2 2A+2B 45-50 cm | 6092104-14 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 2 2A+2B 50-55 cm | 6092104-15 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 3 3B 0-5 cm | 6092104-16 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 3 3A+3B 5-10 cm | 6092104-17 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 3 3A+3B 10-15 cm | 6092104-18 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 3 3A+3B 15-20 cm | 6092104-19 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 3 3A+3B 20-25 cm | 6092104-20 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 3 3A+3B 25-30 cm | 6092104-21 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 3 3A+3B 30-35 cm | 6092104-22 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 3 3A+3B 35-40 cm | 6092104-23 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 3 3A+3B 40-45 cm | 6092104-24 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 3 3A+3B 45-50 cm | 6092104-25 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 3 3A+3B 50-55 cm | 6092104-26 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 4 4A+4B 0-5 cm | 6092104-27 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 4 4A+4B 5-10 cm | 6092104-28 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 4 4A+4B 20-25 cm | 6092104-29 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 4 4A+4B 25-30 cm | 6092104-30 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 4 4A+4B 30-35 cm | 6092104-31 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| STN 5 5B 1-4 cm | 6092104-32 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 5 5A+5B 4-9 cm | 6092104-33 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 5 5A+5B 19-24 cm | 6092104-34 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 5 5A+5B 29-34 cm | 6092104-35 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 5 5A+5B 34-39 cm | 6092104-36 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 5 5A+5B 39-44 cm | 6092104-37 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 5 5A+5B 44-49 cm | 6092104-38 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 6 6A+6B 0-5 cm | 6092104-39 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 6 6A+6B 5-10 cm | 6092104-40 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 7 7A+7B 4-9 cm | 6092104-41 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |
| STN 7 7A+7B 9-14 cm | 6092104-42 | Passive Sampler | 20-Sep-2016 | 21-Sep-2016 |

## Case Narrative

No issues were experienced during the analysis of Work Order 6082609 unless specified below.

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| S-GC | Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate/s. |
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration. |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 1 1A+1B 5.5-10.5 cm

**6092104-01 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC-EL-EP-C** | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.04** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.10** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.09** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.149** | | *37.3 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.246** | | *82.0 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 1 1A+1B 10.5-15.5 cm

### 6092104-02 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.04** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.10** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.13** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.186** | | *46.5 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.248** | | *82.5 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## STN 1 1A+1B 15.5-20.5 cm

### 6092104-03 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.04** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.08** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.12** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.204** | | *51.0 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.280** | | *93.5 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 1 1A+1B 20.5-25.5 cm

### 6092104-04 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.05** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.12** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.15** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.225** | | *56.2 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.278** | | *92.5 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 2 2A+2B 0-5 cm

### 6092104-05 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4′-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4′-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4′-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4′-DDD** | **0.03** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4′-DDE** | **0.03** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4′-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.234** | | *58.5 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.250** | | *83.5 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## STN 2 2A+2B 5-10 cm

**6092104-06 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.03** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.213** | | *53.2 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.254** | | *84.5 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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|---|---|---|
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## STN 2 2A+2B 10-15 cm

### 6092104-07 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.04** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.204** | | *51.0 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.230** | | *76.5 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## STN 2 2A+2B 15-20 cm

### 6092104-08 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.12** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.07** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.03** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDT** | **0.05** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.0480** | | *12.0 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | *S-GC* |
| *Surrogate: Decachlorobiphenyl* | **0.267** | | *89.0 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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## STN 2 2A+2B 20-25 cm

### 6092104-09 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.05** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.10** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.04** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDT** | **0.04** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.236** | | *58.9 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.278** | | *92.5 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
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## STN 2 2A+2B 25-30 cm

### 6092104-10 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC-EL-EP-C** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.14** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.08** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.05** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDT** | **0.04** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.204** | | *51.0 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.246** | | *82.0 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 2 2A+2B 30-35 cm

### 6092104-11 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | ERDC-EL-EP-C | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.13** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.09** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.03** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDT** | **0.03** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.150** | | *37.5 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.246** | | *82.0 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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## STN 2 2A+2B 35-40 cm

### 6092104-12 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.03** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.09** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.04** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDT** | **0.05** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.238** | | *59.6 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.290** | | *96.5 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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## STN 2 2A+2B 40-45 cm

### 6092104-13 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.03** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.11** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.03** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDT** | **0.05** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.240** | | *60.0 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.296** | | *98.5 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
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## STN 2 2A+2B 45-50 cm

### 6092104-14 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.07** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.201** | | *50.2 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.274** | | *91.5 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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## STN 2 2A+2B 50-55 cm

### 6092104-15 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.03** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.12** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.08** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDT** | **0.04** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.171** | | *42.8 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.266** | | *88.5 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 3 3B 0-5 cm

### 6092104-16 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.05** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.04** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.15** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.220** | | *55.1 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.273** | | *91.0 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

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|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 3 3A+3B 5-10 cm

**6092104-17 (Passive Sampler)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.05** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.09** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.14** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.216** | | *54.0 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.260** | | *86.5 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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## 3909 Halls Ferry Road
## Vicksburg, MS 39180-6199

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|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 3 3A+3B 10-15 cm
### 6092104-18 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.06** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.11** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.17** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.268** | | *67.1 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.322** | | *108 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 3 3A+3B 15-20 cm

### 6092104-19 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.06** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.09** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.09** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.194** | | *48.4 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.266** | | *88.5 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 3 3A+3B 20-25 cm

### 6092104-20 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.07** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.12** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.14** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.225** | | *56.2 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.266** | | *88.5 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 3 3A+3B 25-30 cm

**6092104-21 (Passive Sampler)**

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.04** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.12** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.11** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.246** | | *61.5 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.258** | | *86.0 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 3 3A+3B 30-35 cm

**6092104-22 (Passive Sampler)**

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.05** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.11** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.11** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.236** | | *58.9 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.256** | | *85.5 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 3 3A+3B 35-40 cm

### 6092104-23 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC-EL-EP-C** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.06** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.10** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.10** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.212** | | *52.9 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.252** | | *84.0 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 3 3A+3B 40-45 cm

**6092104-24 (Passive Sampler)**

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.04** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.11** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.10** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.242** | | *60.4 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.267** | | *89.0 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 3 3A+3B 45-50 cm

### 6092104-25 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.05** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.12** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.11** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.218** | | *54.4 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.254** | | *84.5 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 3 3A+3B 50-55 cm

### 6092104-26 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.04** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.09** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.12** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.246** | | *61.5 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.258** | | *86.0 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 4 4A+4B 0-5 cm

### 6092104-27 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.228** | | *57.0 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.270** | | *90.0 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 4 4A+4B 5-10 cm

### 6092104-28 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.231** | | *57.8 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.272** | | *90.5 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 4 4A+4B 20-25 cm

### 6092104-29 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC-EL-EP-C** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDE** | **0.04** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.196** | | *49.1 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.237** | | *79.0 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 4 4A+4B 25-30 cm

### 6092104-30 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDE** | **0.04** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.210** | | *52.5 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.256** | | *85.5 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

**USACE ERDC-EP-C**
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|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 4 4A+4B 30-35 cm

**6092104-31 (Passive Sampler)**

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDE** | **0.05** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.236** | | *58.9 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.262** | | *87.5 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

# USACE ERDC-EP-C
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|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 5 5B 1-4 cm

### 6092104-32 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4′-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4′-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4′-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4′-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4′-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4′-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.278** | | *69.4 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.291** | | *97.0 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

USACE ERDC-EP-C
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| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 5 5A+5B 4-9 cm

### 6092104-33 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC-EL-EP-C** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.234** | | *58.5 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.258** | | *86.0 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

**USACE ERDC-EP-C**
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| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 5 5A+5B 19-24 cm

### 6092104-34 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDE** | **0.03** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.231** | | *57.8 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.260** | | *86.5 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 5 5A+5B 29-34 cm

### 6092104-35 (Passive Sampler)

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.03** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDE** | **0.03** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.226** | | *56.6 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.256** | | *85.5 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

**USACE ERDC-EP-C**
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|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 5 5A+5B 34-39 cm

### 6092104-36 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDE** | **0.03** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.237** | | *59.2 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.310** | | *104 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 5 5A+5B 39-44 cm
### 6092104-37 (Passive Sampler)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDE** | **0.05** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.225** | | *56.2 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.264** | | *88.0 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 5 5A+5B 44-49 cm

### 6092104-38 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.04** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| **4,4´-DDE** | **0.05** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.249** | | *62.2 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.274** | | *91.5 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 6 6A+6B 0-5 cm

### 6092104-39 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC-EL-EP-C** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDE** | **0.04** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.214** | | *53.6 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.267** | | *89.0 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 6 6A+6B 5-10 cm

### 6092104-40 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| **4,4´-DDE** | **0.04** | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.262** | | *65.6 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.291** | | *97.0 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 7 7A+7B 4-9 cm

### 6092104-41 (Passive Sampler)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.200** | | *49.9 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.243** | | *81.0 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## STN 7 7A+7B 9-14 cm

**6092104-42 (Passive Sampler)**

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.03 | 0.15 | ng | 20-Nov-2016 | 20-Nov-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.201** | | *50.2 %* | *25-140* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **0.246** | | *82.0 %* | *30-135* | *20-Nov-2016* | *20-Nov-2016* | *EPA 8081A* | |

# USACE ERDC-EP-C
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control
## ERDC-EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B611202 - *** DEFAULT PREP ***** | | | | | | | | | | | |
| **Blank (B611202-BLK1)** | | | | | Prepared & Analyzed: 20-Nov-2016 | | | | | | |
| 2,4′-DDD | ND | 0.03 | 0.15 | ng | | | | | | | U |
| 2,4′-DDE | ND | 0.03 | 0.15 | ng | | | | | | | U |
| 2,4′-DDT | ND | 0.03 | 0.15 | ng | | | | | | | U |
| 4,4′-DDD | ND | 0.03 | 0.15 | ng | | | | | | | U |
| 4,4′-DDE | ND | 0.03 | 0.15 | ng | | | | | | | U |
| 4,4′-DDT | ND | 0.03 | 0.15 | ng | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *0.230* | | | *ng* | *0.4000* | | *57.4* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *0.268* | | | *ng* | *0.3000* | | *89.5* | *30-135* | | | |
| **Blank (B611202-BLK2)** | | | | | Prepared & Analyzed: 20-Nov-2016 | | | | | | |
| 2,4′-DDD | ND | 0.03 | 0.15 | ng | | | | | | | U |
| 2,4′-DDE | ND | 0.03 | 0.15 | ng | | | | | | | U |
| 2,4′-DDT | ND | 0.03 | 0.15 | ng | | | | | | | U |
| 4,4′-DDD | ND | 0.03 | 0.15 | ng | | | | | | | U |
| 4,4′-DDE | ND | 0.03 | 0.15 | ng | | | | | | | U |
| 4,4′-DDT | ND | 0.03 | 0.15 | ng | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *0.262* | | | *ng* | *0.4000* | | *65.6* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *0.322* | | | *ng* | *0.3000* | | *108* | *30-135* | | | |
| **LCS (B611202-BS1)** | | | | | Prepared & Analyzed: 20-Nov-2016 | | | | | | |
| 2,4′-DDD | 0.2 | 0.03 | 0.15 | ng | 0.4000 | | 62.2 | 50-125 | | | |
| 2,4′-DDE | 0.2 | 0.03 | 0.15 | ng | 0.4000 | | 61.1 | 50-125 | | | |
| 2,4′-DDT | 0.3 | 0.03 | 0.15 | ng | 0.4000 | | 70.5 | 50-125 | | | |
| 4,4′-DDD | 0.3 | 0.03 | 0.15 | ng | 0.4000 | | 64.5 | 25-150 | | | |
| 4,4′-DDE | 0.3 | 0.03 | 0.15 | ng | 0.4000 | | 69.8 | 35-140 | | | |
| 4,4′-DDT | 0.3 | 0.03 | 0.15 | ng | 0.4000 | | 83.6 | 45-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *0.272* | | | *ng* | *0.4000* | | *67.9* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *0.328* | | | *ng* | *0.3000* | | *110* | *30-135* | | | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: GEOSYNTEC Quantico | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Bart Chadwick | 02-Dec-2016 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC-EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B611202 - *** DEFAULT PREP ***** | | | | | | | | | | | |
| **LCS (B611202-BS2)** | | | | | Prepared & Analyzed: 20-Nov-2016 | | | | | | |
| 2,4′-DDD | 0.2 | 0.03 | 0.15 | ng | 0.4000 | | 57.4 | 50-125 | | | |
| 2,4′-DDE | 0.2 | 0.03 | 0.15 | ng | 0.4000 | | 59.2 | 50-125 | | | |
| 2,4′-DDT | 0.3 | 0.03 | 0.15 | ng | 0.4000 | | 72.4 | 50-125 | | | |
| 4,4′-DDD | 0.2 | 0.03 | 0.15 | ng | 0.4000 | | 56.2 | 25-150 | | | |
| 4,4′-DDE | 0.2 | 0.03 | 0.15 | ng | 0.4000 | | 61.9 | 35-140 | | | |
| 4,4′-DDT | 0.3 | 0.03 | 0.15 | ng | 0.4000 | | 80.6 | 45-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *0.256* | | | *ng* | *0.4000* | | *64.1* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *0.282* | | | *ng* | *0.3000* | | *94.0* | *30-135* | | | |
| **LCS (B611202-BS3)** | | | | | Prepared & Analyzed: 20-Nov-2016 | | | | | | |
| 2,4′-DDD | 0.3 | 0.03 | 0.15 | ng | 0.4000 | | 69.8 | 50-125 | | | |
| 2,4′-DDE | 0.3 | 0.03 | 0.15 | ng | 0.4000 | | 71.2 | 50-125 | | | |
| 2,4′-DDT | 0.3 | 0.03 | 0.15 | ng | 0.4000 | | 85.9 | 50-125 | | | |
| 4,4′-DDD | 0.3 | 0.03 | 0.15 | ng | 0.4000 | | 67.9 | 25-150 | | | |
| 4,4′-DDE | 0.3 | 0.03 | 0.15 | ng | 0.4000 | | 84.8 | 35-140 | | | |
| 4,4′-DDT | 0.4 | 0.03 | 0.15 | ng | 0.4000 | | 102 | 45-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *0.280* | | | *ng* | *0.4000* | | *70.1* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *0.363* | | | *ng* | *0.3000* | | *121* | *30-135* | | | |
| **LCS (B611202-BS4)** | | | | | Prepared & Analyzed: 20-Nov-2016 | | | | | | |
| 2,4′-DDD | 0.3 | 0.03 | 0.15 | ng | 0.4000 | | 66.8 | 50-125 | | | |
| 2,4′-DDE | 0.3 | 0.03 | 0.15 | ng | 0.4000 | | 66.8 | 50-125 | | | |
| 2,4′-DDT | 0.3 | 0.03 | 0.15 | ng | 0.4000 | | 75.4 | 50-125 | | | |
| 4,4′-DDD | 0.3 | 0.03 | 0.15 | ng | 0.4000 | | 69.4 | 25-150 | | | |
| 4,4′-DDE | 0.3 | 0.03 | 0.15 | ng | 0.4000 | | 72.8 | 35-140 | | | |
| 4,4′-DDT | 0.4 | 0.03 | 0.15 | ng | 0.4000 | | 90.4 | 45-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *0.252* | | | *ng* | *0.4000* | | *63.0* | *25-140* | | | |
| *Surrogate: Decachlorobiphenyl* | *0.324* | | | *ng* | *0.3000* | | *108* | *30-135* | | | |

# ERDC SAMPLE RECEIPT CHECKLIST

| Client: Sparwar | | | | Work Order: 6092104 |
|---|---|---|---|---|
| Project: | | | | Date/Time Received 9/21/16 12:30 |
| Shipping Company: | | | | |
| Suspected Hazard Information | Yes | No | NA | Comments: |
| Shipped as DOT Hazardous? | | ✓ | | |
| Samples identified as Foreign Material? | | ✓ | | |
| | | | | |
| Sample Receipt Criteria | Yes | No | NA | Comments: |
| 1. Shipping containers received intact and sealed? | ✓ | | | |
| 2. Chain of Custody documents included with shipment? | ✓ | | | |
| 3. COC form is properly signed in relinquished/received sections? | ✓ | | | |
| 4. Samples requiring chemical preservation at proper pH? | ✓ | | | |
| 5. Samples requiring cold preservation within 0-5°C? | | ✓ | | 7.5°C |
| 6. Samples IDs on COC match IDs on containers? | | | ✓ | Did Not open Box |
| 7. Date and time of COC match date and time on containers? | | | ✓ | |
| 8. Number of containers received match number indicated on COC? | ✓ | | | |
| 9. Samples received within holding time? | ✓ | | | |
| 10. Aqueous samples found to have visible solids? | | | ✓ | |

Additional Comments:

Checklist preformed by: NP

Time/Date: 9/21 15:40

# CHAIN OF CUSTODY RECORD

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| | | | | | |
|---|---|---|---|---|---|
| Sampling Company: | SPAWAR / GEOSYNTEC | Client: | | Laboratory: | USACE ERDC-EP-C |
| POC: | | POC: | | POC: | Madeline Tarasar |
| Address: | Gunther Rosen | Address: | | Address: | 3909 Halls Ferry RD Bldg 3299 |
| | | | | | Vicksburg, MS 39180 |
| Email: | rosen@spawar.navy.mil | Email: | | Email: | madeline..k.tarasar@usace.army.mil |
| Phone: | 619 553 0886 | Phone: | | Phone: | 601-634-3966 |

| # of Sampling Sites | Dist | Project | Station (Sample ID) | Date (Sample ID) | Time | Depth | Matrix | # of Containers | DDX (Requested Analyses) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Quantico | STN 1 1A+1B 5.5-10.5cm | 9/20/2016 | | 5.5-10.5cm | SPME | 1 | X | | | | | | | | | | | | | | | |
| 2 | | | STN1 1A+1B 10.5-15.5 | -//- | | 10.5-15.5cm | SPME | 1 | X | | | | | | | | | | | | | | | |
| 3 | | | STN1 1A+1B 15.5-20.5 | -//- | | 15.5-20.5cm | SPME | 1 | X | | | | | | | | | | | | | | | |
| 4 | | | 1A+1B 20.5-25.5 | -//- | | 20.5 25.5cm | SPME | 1 | X | | | | | | | | | | | | | | | |
| 5 | | | STN2 2A+2B 0-5 | -//- | | 0-5 cm | SPME | 1 | X | | | | | | | | | | | | | | | |
| 6 | | | 2A+2B 5-10cm | | | 5-10cm | | 1 | X | | | | | | | | | | | | | | | |
| 7 | | | 2A+2B 10-15 | | | 10-15cm | | 1 | X | | | | | | | | | | | | | | | |
| 8 | | | 2A+2B 15-20 | | | 15-20cm | | 1 | X | | | | | | | | | | | | | | | |
| 9 | | | 2A+2B 20-25 | | | 20-25cm | | 1 | X | | | | | | | | | | | | | | | |
| 10 | | | 2A+2B 25-30 | | | 25-30cm | | 1 | X | | | | | | | | | | | | | | | |
| 11 | | | 2A+2B 30-35 | | | 30-35cm | | 1 | X | | | | | | | | | | | | | | | |
| 12 | | | 2A+2B 35-40 | | | 35-40cm | | 1 | X | | | | | | | | | | | | | | | |
| Total | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

all SPME samples sectioned on August 26th and preserved in Hexane solvent

ORIGINAL SAMPLE volume = 1000 µL
95 µL taken for PRC analysis @ TTL

Please return coolers to :

1. I hereby transfer the sample containers to ERDC. Samples have been properly labeled and kept on ice or refrigerated.
42 Total # of Containers — Name: Magdalena Rakowska — Date: 9/20/16 — Time:
2. I accept these samples for transfer to ERDC:
Total # of Containers — Name: — Date: 9/21 — Time:
3. Condition of samples upon arrival at ERDC:
4 Cooler temperature upon arrival at ERDC:

5. Additional Information:
N.P. = no preserved, HNO3 = preserved with nitric acid, H2SO4 = preserved with sulfuric acid

6. Send Copy of COC USACE-ERDC-EP-C
POC: Amber Russell, Madeline Tarasar and Jenifer Milam
Email: amber.l.russell@usace.army.mil
madeline.k.tarasar@usace.army.mil
jenifer.milam@usace.army.mil
Phone: 601-634-4302 & 601-634-7431

# CHAIN OF CUSTODY RECORD

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| | | | | | |
|---|---|---|---|---|---|
| Sampling Company: | SPAWAR / GEOSYNTEC | Client: | | Laboratory: | USACE ERDC-EP-C |
| POC: | | POC: | | POC: | Madeline Tarasar |
| Address: | Gunther Rosen | Address: | | Address: | 3909 Halls Ferry RD Bldg 3299 |
| | | | | | Vicksburg, MS 39180 |
| Email: | | Email: | | Email: | madeline..k.tarasar@usace.army.mil |
| Phone: | | Phone: | | Phone: | 601-634-3966 |

| # of Sampling Sites | Dist | Project | Station | Date | Time | Depth | Matrix | # of Containers | DDX | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Quantico | 2A + 2B 40-45 | 9/20/2016 | | 40-45cm | SPME | 1 | X | | | | | | | | | | | | | | | |
| 2 | | | 2A + 2B 45-50 | | | 45-50cm | | 1 | X | | | | | | | | | | | | | | | |
| 3 | | | 2A + 2B 50-55 | | | 50-55cm | | 1 | X | | | | | | | | | | | | | | | |
| 4 | * | STN 3 | 3B 0-5 | | | 0-5cm | | 1 | X | | | | | | | | | | | | | | | |
| 5 | | | 3A + 3B 5-10 | | | 5-10cm | | 1 | X | | | | | | | | | | | | | | | |
| 6 | | | 3A + 3B 10-15 | | | 10-15cm | | 1 | X | | | | | | | | | | | | | | | |
| 7 | | | 3A + 3B 15-20 cm | | | 15-20cm | | 1 | X | | | | | | | | | | | | | | | |
| 8 | | | 3A + 3B 20-25 cm | | | 20-25cm | | 1 | X | | | | | | | | | | | | | | | |
| 9 | | | 3A + 3B 25-30 | | | 25-30cm | | 1 | X | | | | | | | | | | | | | | | |
| 10 | | | 3A + 3B 30-35 | | | 30-35cm | | 1 | X | | | | | | | | | | | | | | | |
| 11 | | | 3A + 3B 35-40 cm | | | 35-40cm | | 1 | X | | | | | | | | | | | | | | | |
| 12 | | | 3A + 3B 40-45 | | | 40-45cm | | 1 | X | | | | | | | | | | | | | | | |
| Total | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Requested Analyses

original sample vol = 1000 µL

* 400 µL sample original sample volume was 500 µL but 95 µL taken for PRC analysis @ TTU

Please return coolers to :

1. I hereby transfer the sample containers to ERDC. Samples have been properly labeled and kept on ice or refrigerated.

42
Total # of Containers — Name: [illegible signature] — Date: 9/20/16 — Time:

2. I accept these samples for transfer to ERDC:

Total # of Containers — Name: [illegible signature] — Date: 9/21 — Time:

3. Condition of samples upon arrival at ERDC:

4 Cooler temperature upon arrival at ERDC:

5. Additional Information:

N.P. = no preserved, HNO3 = preserved with nitric acid, H2SO4 = preserved with sulfuric acid

6. Send Copy of COC USACE-ERDC-EP-C
POC: Amber Russell, Madeline Tarasar and Jenifer Milam
Email: amber.l.russell@usace.army.mil
madeline.k.tarasar@usace.army.mil
jenifer.milam@usace.army.mil
Phone: 601-634-4302 & 601-634-7431

# CHAIN OF CUSTODY RECORD



| | | | | | |
|---|---|---|---|---|---|
| Sampling Company: | SPAWAR / GEOSYNTEC | Client: | | Laboratory: | USACE ERDC-EP-C |
| POC: | | POC: | | POC: | Madeline Tarasar |
| Address: | Gunther Rosen | Address: | | Address: | 3909 Halls Ferry RD Bldg 3299 |
| | | | | | Vicksburg, MS 39180 |
| Email: | | Email: | | Email: | madeline..k.tarasar@usace.army.mil |
| Phone: | | Phone: | | Phone: | 601-634-3966 |

| # of Sampling Sites | Dist | Project | Station | Date | Time | Depth | Matrix | # of Containers | DDX | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Quantico | 3A+3B 45-50 | 9/20/16 | | 45-50cm | SPME | 1 | + | | | | | | | | | | | | | | | |
| 2 | | | 3A+3B 50-55 | | | 50-55cm | | | + | | | | | | | | original sample vol =1000µL | | | | | | | |
| 3 | | STN 4 | 4A+4B 0-5 | | | 0-5cm | | | + | | | | | | | | | | | | | | | |
| 4 | | | 4A+4B 5-10 cm | | | 5-10 cm | | | + | | | | | | | | | | | | | | | |
| 5 | | | 4A+4B 20-25 | | | 20-25cm | | | + | | | | | | | | | | | | | | | |
| 6 | | | 4A+4B 25-30 | | | 25-30cm | | | + | | | | | | | | | | | | | | | |
| 7 | | | 4A+4B 30-35 | | | 30-35cm | | | + | | | | | | | | | | | | | | | |
| 8 | | * STN5 | 5B 1-4 cm | | | 1-4 cm | | | + | | | | | | | | | | *400 µL sample | | | | | |
| 9 | | | 5A+5B 4-9 | | | 4-9cm | | | + | | | | | | | | | | original was 500µL as described earlier | | | | | |
| 10 | | | 5A+5B 19-24 | | | 19-24cm | | | + | | | | | | | | | | | | | | | |
| 11 | | | 5A+5B 29-34 | | | 29-34cm | | | + | | | | | | | | | | | | | | | |
| 12 | | | 5A+5B 34-39 | | | 34-39cm | | | + | | | | | | | | | | | | | | | |
| Total | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Please return coolers to :

1. I hereby transfer the sample containers to ERDC. Samples have been properly labeled and kept on ice or refrigerated.

42 Total # of Containers — Name [signature] — Date 9/20/16 — Time

2. I accept these samples for transfer to ERDC:

Total # of Containers — Name [signature] — Date 9/21 — Time

3. Condition of samples upon arrival at ERDC:

4 Cooler temperature upon arrival at ERDC:

5. Additional Information:

N.P. = no preserved, HNO3 = preserved with nitric acid, H2SO4 = preserved with sulfuric acid

6. Send Copy of COC USACE-ERDC-EP-C
POC: Amber Russell, Madeline Tarasar and Jenifer Milam
Email: amber.l.russell@usace.army.mil
madeline.k.tarasar@usace.army.mil
jenifer.milam@usace.army.mil
Phone: 601-634-4302 & 601-634-7431

# CHAIN OF CUSTODY RECORD

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| | | | | | |
|---|---|---|---|---|---|
| Sampling Company: | SPAWAR / GEOSYNTEC | Client: | | Laboratory: | USACE ERDC-EP-C |
| POC: | | POC: | | POC: | Madeline Tarasar |
| Address: | Gunther Rosen | Address: | | Address: | 3909 Halls Ferry RD Bldg 3299 |
| | | | | | Vicksburg, MS 39180 |
| Email: | | Email: | | Email: | madeline..k.tarasar@usace.army.mil |
| Phone: | | Phone: | | Phone: | 601-634-3966 |

| # of Sampling Sites | Sample ID: Dist | Sample ID: Project | Sample ID: Station | Sample ID: Date | Time | Depth | Matrix | # of Containers | Requested Analyses: DDX | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | 5A+5B 39-44 | 9/20/16 | | 39-44cm | SPME | 1 | X | | | | | | | | | | | | | | | |
| 2 | | | 5A+5B 44-49 | | | 44-49cm | | 1 | X | | | | | | | | | | | | | | | |
| 3 | | STN 6 | 6A+6B 0-5 | | | 0-5cm | | 1 | X | | | | | | | | | | | | | | | |
| 4 | | | 6A+6B 5-10 | | | 5-10cm | | 1 | X | | | | | | | | | | | | | | | |
| 5 | | STN 7 | 7A+7B 4-9 | | | 4-9cm | | 1 | X | | | | | | | | | | | | | | | |
| 6 | | | 7A+7B 9-14 cm | | | 9-14cm | | 1 | X | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

original sample volume was = 1000µL

Please return coolers to :

1. I hereby transfer the sample containers to ERDC. Samples have been properly labeled and kept on ice or refrigerated.
   Total # of Containers: 42
   Name: MAGDALENA RAKOWSKA Date: 9/20/16 Time: 11:00
2. I accept these samples for transfer to ERDC:
   Total # of Containers:
   Name: KG Date: 9/21 Time:
3. Condition of samples upon arrival at ERDC:
4. Cooler temperature upon arrival at ERDC:

5. Additional Information:

N.P. = no preserved, HNO3 = preserved with nitric acid, H2SO4 = preserved with sulfuric acid

6. Send Copy of COC: USACE-ERDC-EP-C
POC: Amber Russell, Madeline Tarasar and Jenifer Milam
Email: amber.l.russell@usace.army.mil
madeline.k.tarasar@usace.army.mil
jenifer.milam@usace.army.mil
Phone: 601-634-4302 & 601-634-7431

## Items for Project Manager Review

| LabNumber | Analysis | Analyte | Exception |
|---|---|---|---|

# Appendix E-7

## *In Situ* Tissue Chemistry

## Data Compilation and Laboratory Reports

**Table 1. Compilation of Organism Tissue DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | On Cap Footprint? | Sample ID[3] | Sample Type | Sample Description[4] | Species[5] | Analyte[6] | Result (µg/kg ww) | Detection Limit (µg/kg ww) | Result (µg/kg Lw)[7] | Lipids (% by weight) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BASELINE 2 | CAP3 | 2 | On Cap | B2-CAP3-LUMB | Sample | Composite | LV | 2,4´-DDD | 9.8 | | 1048 | 0.93 |
| BASELINE 2 | CAP3 | 2 | On Cap | B2-CAP3-LUMB | Sample | Composite | LV | 2,4´-DDE | 0.6 | | 60 | 0.93 |
| BASELINE 2 | CAP3 | 2 | On Cap | B2-CAP3-LUMB | Sample | Composite | LV | 2,4´-DDT | ND | 0.09 | <9.68 | 0.93 |
| BASELINE 2 | CAP3 | 2 | On Cap | B2-CAP3-LUMB | Sample | Composite | LV | 4,4´-DDD | 30.9 | | 3322 | 0.93 |
| BASELINE 2 | CAP3 | 2 | On Cap | B2-CAP3-LUMB | Sample | Composite | LV | 4,4´-DDE | 18.3 | | 1970 | 0.93 |
| BASELINE 2 | CAP3 | 2 | On Cap | B2-CAP3-LUMB | Sample | Composite | LV | 4,4´-DDT | 1.3 | | 134 | 0.93 |
| BASELINE 2 | CAP3 | 2 | On Cap | B2-CAP3-LUMB | Sample | Composite | LV | Total DDX | 60.8 | | 6534 | 0.93 |
| BASELINE 2 | CAP3 | 2 | On Cap | B2-CAP3-PLGC | Sample | Composite | PELAGIC | 2,4´-DDD | ND | 0.05 | <4.17 | 1.2 |
| BASELINE 2 | CAP3 | 2 | On Cap | B2-CAP3-PLGC | Sample | Composite | PELAGIC | 2,4´-DDE | ND | 0.08 | <6.67 | 1.2 |
| BASELINE 2 | CAP3 | 2 | On Cap | B2-CAP3-PLGC | Sample | Composite | PELAGIC | 2,4´-DDT | ND | 0.09 | <7.5 | 1.2 |
| BASELINE 2 | CAP3 | 2 | On Cap | B2-CAP3-PLGC | Sample | Composite | PELAGIC | 4,4´-DDD | 4.4 | | 364 | 1.2 |
| BASELINE 2 | CAP3 | 2 | On Cap | B2-CAP3-PLGC | Sample | Composite | PELAGIC | 4,4´-DDE | 4.6 | | 381 | 1.2 |
| BASELINE 2 | CAP3 | 2 | On Cap | B2-CAP3-PLGC | Sample | Composite | PELAGIC | 4,4´-DDT | ND | 0.04 | <3.33 | 1.2 |
| BASELINE 2 | CAP3 | 2 | On Cap | B2-CAP3-PLGC | Sample | Composite | PELAGIC | Total DDX | 8.9 | | 745 | 1.2 |
| BASELINE 2 | CAP2 | 3 | On Cap | B2-CAP2-LUMB | Sample | Composite | LV | 2,4´-DDD | 28.3 | | 1379 | 2.05 |
| BASELINE 2 | CAP2 | 3 | On Cap | B2-CAP2-LUMB | Sample | Composite | LV | 2,4´-DDE | ND | 0.08 | <3.9 | 2.05 |
| BASELINE 2 | CAP2 | 3 | On Cap | B2-CAP2-LUMB | Sample | Composite | LV | 2,4´-DDT | ND | 0.09 | <4.39 | 2.05 |
| BASELINE 2 | CAP2 | 3 | On Cap | B2-CAP2-LUMB | Sample | Composite | LV | 4,4´-DDD | 93.6 | | 4566 | 2.05 |
| BASELINE 2 | CAP2 | 3 | On Cap | B2-CAP2-LUMB | Sample | Composite | LV | 4,4´-DDE | 64.2 | | 3131 | 2.05 |
| BASELINE 2 | CAP2 | 3 | On Cap | B2-CAP2-LUMB | Sample | Composite | LV | 4,4´-DDT | ND | 0.04 | <1.95 | 2.05 |
| BASELINE 2 | CAP2 | 3 | On Cap | B2-CAP2-LUMB | Sample | Composite | LV | Total DDX | 186.1 | | 9076 | 2.05 |
| BASELINE 2 | CAP2 | 3 | On Cap | B2-CAP2-PLGC | Sample | Composite | PELAGIC | 2,4´-DDD | 0.4 | | 33 | 1.12 |
| BASELINE 2 | CAP2 | 3 | On Cap | B2-CAP2-PLGC | Sample | Composite | PELAGIC | 2,4´-DDE | ND | 0.08 | <7.14 | 1.12 |
| BASELINE 2 | CAP2 | 3 | On Cap | B2-CAP2-PLGC | Sample | Composite | PELAGIC | 2,4´-DDT | ND | 0.09 | <8.04 | 1.12 |
| BASELINE 2 | CAP2 | 3 | On Cap | B2-CAP2-PLGC | Sample | Composite | PELAGIC | 4,4´-DDD | 4.4 | | 395 | 1.12 |
| BASELINE 2 | CAP2 | 3 | On Cap | B2-CAP2-PLGC | Sample | Composite | PELAGIC | 4,4´-DDE | 6.3 | | 560 | 1.12 |
| BASELINE 2 | CAP2 | 3 | On Cap | B2-CAP2-PLGC | Sample | Composite | PELAGIC | 4,4´-DDT | ND | 0.04 | <3.57 | 1.12 |
| BASELINE 2 | CAP2 | 3 | On Cap | B2-CAP2-PLGC | Sample | Composite | PELAGIC | Total DDX | 11.1 | | 988 | 1.12 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-LUMB | Primary | Composite | LV | 2,4´-DDD | 10.2 | | 726 | 1.41 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-LUMB | Primary | Composite | LV | 2,4´-DDE | 1.0 | | 69 | 1.41 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-LUMB | Primary | Composite | LV | 2,4´-DDT | ND | 0.09 | <6.38 | 1.41 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-LUMB | Primary | Composite | LV | 4,4´-DDD | 29.5 | | 2089 | 1.41 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-LUMB | Primary | Composite | LV | 4,4´-DDE | 29.2 | | 2071 | 1.41 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-LUMB | Primary | Composite | LV | 4,4´-DDT | ND | 0.04 | <2.84 | 1.41 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-LUMB | Primary | Composite | LV | Total DDX | 69.9 | | 4955 | 1.41 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-LUMB-Avg | Sample | Composite | LV | 2,4´-DDD | 11.9 | | 732 | 1.62 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-LUMB-Avg | Sample | Composite | LV | 2,4´-DDE | 0.9 | | 58 | 1.62 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-LUMB-Avg | Sample | Composite | LV | 2,4´-DDT | ND | 0.09 | <6.38 | 1.62 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-LUMB-Avg | Sample | Composite | LV | 4,4´-DDD | 34.3 | | 2116 | 1.62 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-LUMB-Avg | Sample | Composite | LV | 4,4´-DDE | 33.3 | | 2059 | 1.62 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-LUMB-Avg | Sample | Composite | LV | 4,4´-DDT | ND | 0.04 | <2.84 | 1.62 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-LUMB-Avg | Sample | Composite | LV | Total DDX | 80.5 | | 4965 | 1.62 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-PLGC | Primary | Composite | PELAGIC | 2,4´-DDD | 2.0 | | 212 | 0.94 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-PLGC | Primary | Composite | PELAGIC | 2,4´-DDE | ND | 0.08 | <8.51 | 0.94 |

**Table 1. Compilation of Organism Tissue DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | On Cap Footprint? | Sample ID[3] | Sample Type | Sample Description[4] | Species[5] | Analyte[6] | Result (µg/kg ww) | Detection Limit (µg/kg ww) | Result (µg/kg Lw)[7] | Lipids (% by weight) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-PLGC | Primary | Composite | PELAGIC | 2,4´-DDT | ND | 0.09 | <9.57 | 0.94 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-PLGC | Primary | Composite | PELAGIC | 4,4´-DDD | 10.0 | | 1059 | 0.94 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-PLGC | Primary | Composite | PELAGIC | 4,4´-DDE | 14.1 | | 1500 | 0.94 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-PLGC | Primary | Composite | PELAGIC | 4,4´-DDT | ND | 0.04 | <4.26 | 0.94 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-PLGC | Primary | Composite | PELAGIC | Total DDX | 26.0 | | 2770 | 0.94 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-PLGC-Avg | Sample | Composite | PELAGIC | 2,4´-DDD | 1.4 | | 149 | 1.07 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-PLGC-Avg | Sample | Composite | PELAGIC | 2,4´-DDE | ND | 0.08 | <8.99 | 1.07 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-PLGC-Avg | Sample | Composite | PELAGIC | 2,4´-DDT | ND | 0.09 | <10.11 | 1.07 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-PLGC-Avg | Sample | Composite | PELAGIC | 4,4´-DDD | 10.0 | | 1095 | 1.07 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-PLGC-Avg | Sample | Composite | PELAGIC | 4,4´-DDE | 13.5 | | 1470 | 1.07 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-PLGC-Avg | Sample | Composite | PELAGIC | 4,4´-DDT | ND | 0.04 | <4.49 | 1.07 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAP1-PLGC-Avg | Sample | Composite | PELAGIC | Total DDX | 24.9 | | 2714 | 1.07 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAPX-LUMB | Duplicate | Composite | LV | 2,4´-DDD | 13.5 | | 739 | 1.83 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAPX-LUMB | Duplicate | Composite | LV | 2,4´-DDE | 0.9 | | 47 | 1.83 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAPX-LUMB | Duplicate | Composite | LV | 2,4´-DDT | ND | 0.09 | <4.92 | 1.83 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAPX-LUMB | Duplicate | Composite | LV | 4,4´-DDD | 39.2 | | 2143 | 1.83 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAPX-LUMB | Duplicate | Composite | LV | 4,4´-DDE | 37.5 | | 2046 | 1.83 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAPX-LUMB | Duplicate | Composite | LV | 4,4´-DDT | ND | 0.04 | <2.19 | 1.83 |
| BASELINE 2 | CAP1 | 5 | On Cap | B2-CAPX-LUMB | Duplicate | Composite | LV | Total DDX | 91.0 | | 4975 | 1.83 |
| BASELINE 2 | CAPX | 5 | On Cap | B2-CAPX-PLGC | Duplicate | Composite | PELAGIC | 2,4´-DDD | 0.8 | | 87 | 0.89 |
| BASELINE 2 | CAPX | 5 | On Cap | B2-CAPX-PLGC | Duplicate | Composite | PELAGIC | 2,4´-DDE | ND | 0.08 | <8.99 | 0.89 |
| BASELINE 2 | CAPX | 5 | On Cap | B2-CAPX-PLGC | Duplicate | Composite | PELAGIC | 2,4´-DDT | ND | 0.09 | <10.11 | 0.89 |
| BASELINE 2 | CAPX | 5 | On Cap | B2-CAPX-PLGC | Duplicate | Composite | PELAGIC | 4,4´-DDD | 10.1 | | 1131 | 0.89 |
| BASELINE 2 | CAPX | 5 | On Cap | B2-CAPX-PLGC | Duplicate | Composite | PELAGIC | 4,4´-DDE | 12.8 | | 1440 | 0.89 |
| BASELINE 2 | CAPX | 5 | On Cap | B2-CAPX-PLGC | Duplicate | Composite | PELAGIC | 4,4´-DDT | ND | 0.04 | <4.49 | 0.89 |
| BASELINE 2 | CAPX | 5 | On Cap | B2-CAPX-PLGC | Duplicate | Composite | PELAGIC | Total DDX | 23.7 | | 2658 | 0.89 |
| BASELINE 2 | OFF2 | 6 | Off Cap | B2-OFF2-LUMB | Sample | Composite | LV | 2,4´-DDD | 1.0 | | 88 | 1.1 |
| BASELINE 2 | OFF2 | 6 | Off Cap | B2-OFF2-LUMB | Sample | Composite | LV | 2,4´-DDE | ND | 0.08 | <7.27 | 1.1 |
| BASELINE 2 | OFF2 | 6 | Off Cap | B2-OFF2-LUMB | Sample | Composite | LV | 2,4´-DDT | ND | 0.09 | <8.18 | 1.1 |
| BASELINE 2 | OFF2 | 6 | Off Cap | B2-OFF2-LUMB | Sample | Composite | LV | 4,4´-DDD | 6.7 | | 613 | 1.1 |
| BASELINE 2 | OFF2 | 6 | Off Cap | B2-OFF2-LUMB | Sample | Composite | LV | 4,4´-DDE | 7.5 | | 684 | 1.1 |
| BASELINE 2 | OFF2 | 6 | Off Cap | B2-OFF2-LUMB | Sample | Composite | LV | 4,4´-DDT | ND | 0.04 | <3.64 | 1.1 |
| BASELINE 2 | OFF2 | 6 | Off Cap | B2-OFF2-LUMB | Sample | Composite | LV | Total DDX | 15.2 | | 1385 | 1.1 |
| BASELINE 2 | OFF2 | 6 | Off Cap | B2-OFF2-PLGC | Sample | Composite | PELAGIC | 2,4´-DDD | ND | 0.05 | <4.95 | 1.01 |
| BASELINE 2 | OFF2 | 6 | Off Cap | B2-OFF2-PLGC | Sample | Composite | PELAGIC | 2,4´-DDE | ND | 0.08 | <7.92 | 1.01 |
| BASELINE 2 | OFF2 | 6 | Off Cap | B2-OFF2-PLGC | Sample | Composite | PELAGIC | 2,4´-DDT | ND | 0.09 | <8.91 | 1.01 |
| BASELINE 2 | OFF2 | 6 | Off Cap | B2-OFF2-PLGC | Sample | Composite | PELAGIC | 4,4´-DDD | 1.2 | | 120 | 1.01 |
| BASELINE 2 | OFF2 | 6 | Off Cap | B2-OFF2-PLGC | Sample | Composite | PELAGIC | 4,4´-DDE | 3.7 | | 370 | 1.01 |
| BASELINE 2 | OFF2 | 6 | Off Cap | B2-OFF2-PLGC | Sample | Composite | PELAGIC | 4,4´-DDT | ND | 0.04 | <3.96 | 1.01 |
| BASELINE 2 | OFF2 | 6 | Off Cap | B2-OFF2-PLGC | Sample | Composite | PELAGIC | Total DDX | 5.0 | | 490 | 1.01 |
| BASELINE 2 | OFF1 | 7 | Off Cap | B2-OFF1-PLGC | Sample | Composite | PELAGIC | 2,4´-DDD | ND | 0.05 | <5.15 | 0.97 |
| BASELINE 2 | OFF1 | 7 | Off Cap | B2-OFF1-PLGC | Sample | Composite | PELAGIC | 2,4´-DDE | ND | 0.08 | <8.25 | 0.97 |
| BASELINE 2 | OFF1 | 7 | Off Cap | B2-OFF1-PLGC | Sample | Composite | PELAGIC | 2,4´-DDT | ND | 0.09 | <9.28 | 0.97 |
| BASELINE 2 | OFF1 | 7 | Off Cap | B2-OFF1-PLGC | Sample | Composite | PELAGIC | 4,4´-DDD | 1.8 | | 187 | 0.97 |

**Table 1. Compilation of Organism Tissue DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | On Cap Footprint? | Sample ID[3] | Sample Type | Sample Description[4] | Species[5] | Analyte[6] | Result (µg/kg ww) | Detection Limit (µg/kg ww) | Result (µg/kg Lw)[7] | Lipids (% by weight) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BASELINE 2 | OFF1 | 7 | Off Cap | B2-OFF1-PLGC | Sample | Composite | PELAGIC | 4,4′-DDE | 3.6 | | 369 | 0.97 |
| BASELINE 2 | OFF1 | 7 | Off Cap | B2-OFF1-PLGC | Sample | Composite | PELAGIC | 4,4′-DDT | ND | 0.04 | <4.12 | 0.97 |
| BASELINE 2 | OFF1 | 7 | Off Cap | B2-OFF1-PLGC | Sample | Composite | PELAGIC | Total DDX | 5.4 | | 556 | 0.97 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Cf-R10 | Sample | Replicate | CF | 4,4′-DDD | 12.5 | | 1389 | 0.9 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Cf-R10 | Sample | Replicate | CF | 4,4′-DDE | 6.7 | | 739 | 0.9 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Cf-R10 | Sample | Replicate | CF | 4,4′-DDT | 1.1 | | 120 | 0.9 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Cf-R10 | Sample | Replicate | CF | Total DDX | 20.2 | | 2248 | 0.9 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Cf-R8 | Sample | Replicate | CF | 4,4′-DDD | 14.6 | | 2086 | 0.7 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Cf-R8 | Sample | Replicate | CF | 4,4′-DDE | 7.3 | | 1043 | 0.7 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Cf-R8 | Sample | Replicate | CF | 4,4′-DDT | 1.6 | | 224 | 0.7 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Cf-R8 | Sample | Replicate | CF | Total DDX | 23.5 | | 3353 | 0.7 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Cf-R9 | Sample | Replicate | CF | 4,4′-DDD | 11.4 | | 1140 | 1.0 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Cf-R9 | Sample | Replicate | CF | 4,4′-DDE | 5.9 | | 590 | 1.0 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Cf-R9 | Sample | Replicate | CF | 4,4′-DDT | 0.9 | | 87 | 1.0 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Cf-R9 | Sample | Replicate | CF | Total DDX | 18.2 | | 1817 | 1.0 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Lv-R2-4 | Sample | Replicate | LV | 4,4′-DDD | 42.7 | | 8540 | 0.5 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Lv-R2-4 | Sample | Replicate | LV | 4,4′-DDE | 15.6 | | 3120 | 0.5 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Lv-R2-4 | Sample | Replicate | LV | 4,4′-DDT | 0.4 | | 75 | 0.5 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Lv-R2-4 | Sample | Replicate | LV | Total DDX | 58.7 | | 11735 | 0.5 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Lv-R4-4 | Sample | Replicate | LV | 4,4′-DDD | 76.8 | | 25600 | 0.3 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Lv-R4-4 | Sample | Replicate | LV | 4,4′-DDE | 19.6 | | 6533 | 0.3 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Lv-R4-4 | Sample | Replicate | LV | 4,4′-DDT | 1.4 | | 467 | 0.3 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Lv-R4-4 | Sample | Replicate | LV | Total DDX | 97.8 | | 32600 | 0.3 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Lv-R2-4_R4-4-Avg | Sample | Composite | LV | 4,4′-DDD | 59.8 | | 17070 | 0.4 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Lv-R2-4_R4-4-Avg | Sample | Composite | LV | 4,4′-DDE | 17.6 | | 4827 | 0.4 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Lv-R2-4_R4-4-Avg | Sample | Composite | LV | 4,4′-DDT | 0.9 | | 271 | 0.4 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Lv-R2-4_R4-4-Avg | Sample | Composite | LV | Total DDX | 78.2 | | 22168 | 0.4 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Cf-R8_R9_R10-Avg | Sample | Composite | CF | 4,4′-DDD | 12.8 | | 1538 | 0.9 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Cf-R8_R9_R10-Avg | Sample | Composite | CF | 4,4′-DDE | 6.6 | | 791 | 0.9 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Cf-R8_R9_R10-Avg | Sample | Composite | CF | 4,4′-DDT | 1.2 | | 144 | 0.9 |
| BASELINE 3 | 1 | 1 | On Cap | QB1-Cf-R8_R9_R10-Avg | Sample | Composite | CF | Total DDX | 20.6 | | 2473 | 0.9 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Cf-C | Sample | Composite | CF | 4,4′-DDD | 16.5 | | 1650 | 1.0 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Cf-C | Sample | Composite | CF | 4,4′-DDE | 11.6 | | 1160 | 1.0 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Cf-C | Sample | Composite | CF | 4,4′-DDT | 2.3 | | 225 | 1.0 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Cf-C | Sample | Composite | CF | Total DDX | 30.4 | | 3035 | 1.0 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Cf-R10 | Sample | Replicate | CF | 4,4′-DDD | 14.1 | | 1763 | 0.8 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Cf-R10 | Sample | Replicate | CF | 4,4′-DDE | 10.4 | | 1300 | 0.8 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Cf-R10 | Sample | Replicate | CF | 4,4′-DDT | 1.6 | | 196 | 0.8 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Cf-R10 | Sample | Replicate | CF | Total DDX | 26.1 | | 3259 | 0.8 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Cf-R6 | Sample | Replicate | CF | 4,4′-DDD | 14.3 | | 1430 | 1.0 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Cf-R6 | Sample | Replicate | CF | 4,4′-DDE | 10.3 | | 1030 | 1.0 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Cf-R6 | Sample | Replicate | CF | 4,4′-DDT | 2.4 | | 243 | 1.0 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Cf-R6 | Sample | Replicate | CF | Total DDX | 27.0 | | 2703 | 1.0 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Cf-R9 | Sample | Replicate | CF | 4,4′-DDD | 18.3 | | 2614 | 0.7 |

**Table 1. Compilation of Organism Tissue DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | On Cap Footprint? | Sample ID[3] | Sample Type | Sample Description[4] | Species[5] | Analyte[6] | Result (µg/kg ww) | Detection Limit (µg/kg ww) | Result (µg/kg Lw)[7] | Lipids (% by weight) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BASELINE 3 | 2 | 2 | On Cap | QB2-Cf-R9 | Sample | Replicate | CF | 4,4´-DDE | 13.3 | | 1900 | 0.7 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Cf-R9 | Sample | Replicate | CF | 4,4´-DDT | 2.1 | | 303 | 0.7 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Cf-R9 | Sample | Replicate | CF | Total DDX | 33.7 | | 4817 | 0.7 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Lv-C | Sample | Composite | LV | 4,4´-DDD | 20.0 | | 2000 | 1.0 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Lv-C | Sample | Composite | LV | 4,4´-DDE | 10.5 | | 1050 | 1.0 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Lv-C | Sample | Composite | LV | 4,4´-DDT | ND | 0.052 | < 5.2 | 1.0 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Lv-C | Sample | Composite | LV | Total DDX | 30.5 | | 3050 | 1.0 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Lv-R1 | Sample | Replicate | LV | 4,4´-DDD | 16.8 | | 2400 | 0.7 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Lv-R1 | Sample | Replicate | LV | 4,4´-DDE | 10.2 | | 1457 | 0.7 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Lv-R1 | Sample | Replicate | LV | 4,4´-DDT | 0.9 | | 129 | 0.7 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Lv-R1 | Sample | Replicate | LV | Total DDX | 27.9 | | 3986 | 0.7 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Lv-R2 | Sample | Replicate | LV | 4,4´-DDD | 29.5 | | 4917 | 0.6 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Lv-R2 | Sample | Replicate | LV | 4,4´-DDE | 11.5 | | 1917 | 0.6 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Lv-R2 | Sample | Replicate | LV | 4,4´-DDT | 1.0 | | 167 | 0.6 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Lv-R2 | Sample | Replicate | LV | Total DDX | 42.0 | | 7000 | 0.6 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Lv-R4-5 | Sample | Replicate | LV | 4,4´-DDD | 12.6 | | 1260 | 1.0 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Lv-R4-5 | Sample | Replicate | LV | 4,4´-DDE | 8.9 | | 892 | 1.0 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Lv-R4-5 | Sample | Replicate | LV | 4,4´-DDT | ND | 0.15 | < 15 | 1.0 |
| BASELINE 3 | 2 | 2 | On Cap | QB2-Lv-R4-5 | Sample | Replicate | LV | Total DDX | 21.5 | | 2152 | 1.0 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Cf-C3 | Sample | Composite | CF | 4,4´-DDD | 7.6 | | 761 | 1.0 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Cf-C3 | Sample | Composite | CF | 4,4´-DDE | 5.0 | | 498 | 1.0 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Cf-C3 | Sample | Composite | CF | 4,4´-DDT | 0.7 | | 73 | 1.0 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Cf-C3 | Sample | Composite | CF | Total DDX | 13.3 | | 1332 | 1.0 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Cf-R10-3 | Sample | Replicate | CF | 4,4´-DDD | 14.3 | | 2043 | 0.7 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Cf-R10-3 | Sample | Replicate | CF | 4,4´-DDE | 8.7 | | 1239 | 0.7 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Cf-R10-3 | Sample | Replicate | CF | 4,4´-DDT | 1.8 | | 256 | 0.7 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Cf-R10-3 | Sample | Replicate | CF | Total DDX | 24.8 | | 3537 | 0.7 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Cf-R1-3 | Sample | Replicate | CF | 4,4´-DDD | 12.6 | | 1400 | 0.9 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Cf-R1-3 | Sample | Replicate | CF | 4,4´-DDE | 9.2 | | 1017 | 0.9 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Cf-R1-3 | Sample | Replicate | CF | 4,4´-DDT | 1.1 | | 126 | 0.9 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Cf-R1-3 | Sample | Replicate | CF | Total DDX | 22.9 | | 2542 | 0.9 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Cf-R5-3 | Sample | Replicate | CF | 4,4´-DDD | 12.6 | | 1575 | 0.8 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Cf-R5-3 | Sample | Replicate | CF | 4,4´-DDE | 9.2 | | 1153 | 0.8 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Cf-R5-3 | Sample | Replicate | CF | 4,4´-DDT | 1.2 | | 149 | 0.8 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Cf-R5-3 | Sample | Replicate | CF | Total DDX | 23.0 | | 2876 | 0.8 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Lv-C3 | Sample | Composite | LV | 4,4´-DDD | 45.3 | | 5033 | 0.9 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Lv-C3 | Sample | Composite | LV | 4,4´-DDE | 24.5 | | 2722 | 0.9 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Lv-C3 | Sample | Composite | LV | 4,4´-DDT | 0.9 | | 103 | 0.9 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Lv-C3 | Sample | Composite | LV | Total DDX | 70.7 | | 7858 | 0.9 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Lv-R2-3 | Sample | Replicate | LV | 4,4´-DDD | 29.7 | | 9900 | 0.3 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Lv-R2-3 | Sample | Replicate | LV | 4,4´-DDE | 12.9 | | 4300 | 0.3 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Lv-R2-3 | Sample | Replicate | LV | 4,4´-DDT | 0.4 | | 131 | 0.3 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Lv-R2-3 | Sample | Replicate | LV | Total DDX | 43.0 | | 14331 | 0.3 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Lv-R3/4-3 | Sample | Replicate | LV | 4,4´-DDD | 28.5 | | 2850 | 1.0 |

**Table 1. Compilation of Organism Tissue DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | On Cap Footprint? | Sample ID[3] | Sample Type | Sample Description[4] | Species[5] | Analyte[6] | Result (µg/kg ww) | Detection Limit (µg/kg ww) | Result (µg/kg Lw)[7] | Lipids (% by weight) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BASELINE 3 | 3 | 3 | On Cap | QB3-Lv-R3/4-3 | Sample | Replicate | LV | 4,4´-DDE | 19.6 | | 1960 | 1.0 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Lv-R3/4-3 | Sample | Replicate | LV | 4,4´-DDT | 0.7 | | 74 | 1.0 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Lv-R3/4-3 | Sample | Replicate | LV | Total DDX | 48.8 | | 4884 | 1.0 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Lv-R8/9-3 | Sample | Replicate | LV | 4,4´-DDD | 52.6 | | 8767 | 0.6 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Lv-R8/9-3 | Sample | Replicate | LV | 4,4´-DDE | 38.6 | | 6433 | 0.6 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Lv-R8/9-3 | Sample | Replicate | LV | 4,4´-DDT | 1.1 | | 187 | 0.6 |
| BASELINE 3 | 3 | 3 | On Cap | QB3-Lv-R8/9-3 | Sample | Replicate | LV | Total DDX | 92.3 | | 15387 | 0.6 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Cf-1 | Sample | Replicate | CF | 4,4´-DDD | 7.2 | | 802 | 0.9 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Cf-1 | Sample | Replicate | CF | 4,4´-DDE | 7.0 | | 773 | 0.9 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Cf-1 | Sample | Replicate | CF | 4,4´-DDT | 1.0 | | 106 | 0.9 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Cf-1 | Sample | Replicate | CF | Total DDX | 15.1 | | 1682 | 0.9 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Cf-10 | Sample | Replicate | CF | 4,4´-DDD | 8.6 | | 1440 | 0.6 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Cf-10 | Sample | Replicate | CF | 4,4´-DDE | 7.1 | | 1187 | 0.6 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Cf-10 | Sample | Replicate | CF | 4,4´-DDT | 1.2 | | 207 | 0.6 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Cf-10 | Sample | Replicate | CF | Total DDX | 17.0 | | 2833 | 0.6 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Cf-3 | Sample | Replicate | CF | 4,4´-DDD | 4.7 | | 581 | 0.8 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Cf-3 | Sample | Replicate | CF | 4,4´-DDE | 4.3 | | 534 | 0.8 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Cf-3 | Sample | Replicate | CF | 4,4´-DDT | 3.5 | | 435 | 0.8 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Cf-3 | Sample | Replicate | CF | Total DDX | 12.4 | | 1550 | 0.8 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Cf-C | Sample | Composite | CF | 4,4´-DDD | 10.2 | | 1133 | 0.9 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Cf-C | Sample | Composite | CF | 4,4´-DDE | 8.4 | | 937 | 0.9 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Cf-C | Sample | Composite | CF | 4,4´-DDT | 1.2 | | 137 | 0.9 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Cf-C | Sample | Composite | CF | Total DDX | 19.9 | | 2207 | 0.9 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Lv-C | Sample | Composite | LV | 4,4´-DDD | 13.9 | | 1738 | 0.8 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Lv-C | Sample | Composite | LV | 4,4´-DDE | 16.8 | | 2100 | 0.8 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Lv-C | Sample | Composite | LV | 4,4´-DDT | 0.4 | | 55 | 0.8 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Lv-C | Sample | Composite | LV | Total DDX | 31.1 | | 3893 | 0.8 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Lv-R2 | Sample | Replicate | LV | 4,4´-DDD | 14.2 | | 1291 | 1.1 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Lv-R2 | Sample | Replicate | LV | 4,4´-DDE | 17.5 | | 1591 | 1.1 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Lv-R2 | Sample | Replicate | LV | 4,4´-DDT | 0.6 | | 57 | 1.1 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Lv-R2 | Sample | Replicate | LV | Total DDX | 32.3 | | 2938 | 1.1 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Lv-R4 | Sample | Replicate | LV | 4,4´-DDD | 9.7 | | 974 | 1.0 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Lv-R4 | Sample | Replicate | LV | 4,4´-DDE | 12.8 | | 1280 | 1.0 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Lv-R4 | Sample | Replicate | LV | 4,4´-DDT | 0.4 | | 38 | 1.0 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Lv-R4 | Sample | Replicate | LV | Total DDX | 22.9 | | 2292 | 1.0 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Lv-R5 | Sample | Replicate | LV | 4,4´-DDD | 9.4 | | 1175 | 0.8 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Lv-R5 | Sample | Replicate | LV | 4,4´-DDE | 13.1 | | 1638 | 0.8 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Lv-R5 | Sample | Replicate | LV | 4,4´-DDT | 0.4 | | 52 | 0.8 |
| BASELINE 3 | 4 | 4 | On Cap | QB4-Lv-R5 | Sample | Replicate | LV | Total DDX | 22.9 | | 2864 | 0.8 |
| BASELINE 3 | 5 | 5 | On Cap | QB5-Cf-C2 | Sample | Composite | CF | 4,4´-DDD | 17.9 | | 1989 | 0.9 |
| BASELINE 3 | 5 | 5 | On Cap | QB5-Cf-C2 | Sample | Composite | CF | 4,4´-DDE | 11.5 | | 1278 | 0.9 |
| BASELINE 3 | 5 | 5 | On Cap | QB5-Cf-C2 | Sample | Composite | CF | 4,4´-DDT | 1.9 | | 213 | 0.9 |
| BASELINE 3 | 5 | 5 | On Cap | QB5-Cf-C2 | Sample | Composite | CF | Total DDX | 31.3 | | 3480 | 0.9 |
| BASELINE 3 | 5 | 5 | On Cap | QB5-Cf-R1-2 | Sample | Replicate | CF | 4,4´-DDD | 10.4 | | 1040 | 1.0 |

**Table 1. Compilation of Organism Tissue DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | On Cap Footprint? | Sample ID[3] | Sample Type | Sample Description[4] | Species[5] | Analyte[6] | Result (µg/kg ww) | Detection Limit (µg/kg ww) | Result (µg/kg Lw)[7] | Lipids (% by weight) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BASELINE 3 | 5 | 5 | On Cap | QB5-Cf-R1-2 | Sample | Replicate | CF | 4,4´-DDE | 8.0 | | 795 | 1.0 |
| BASELINE 3 | 5 | 5 | On Cap | QB5-Cf-R1-2 | Sample | Replicate | CF | 4,4´-DDT | 1.7 | | 169 | 1.0 |
| BASELINE 3 | 5 | 5 | On Cap | QB5-Cf-R1-2 | Sample | Replicate | CF | Total DDX | 20.0 | | 2004 | 1.0 |
| BASELINE 3 | 5 | 5 | On Cap | QB5-Cf-R2-2 | Sample | Replicate | CF | 4,4´-DDD | 6.9 | | 576 | 1.2 |
| BASELINE 3 | 5 | 5 | On Cap | QB5-Cf-R2-2 | Sample | Replicate | CF | 4,4´-DDE | 5.3 | | 442 | 1.2 |
| BASELINE 3 | 5 | 5 | On Cap | QB5-Cf-R2-2 | Sample | Replicate | CF | 4,4´-DDT | 0.8 | | 66 | 1.2 |
| BASELINE 3 | 5 | 5 | On Cap | QB5-Cf-R2-2 | Sample | Replicate | CF | Total DDX | 13.0 | | 1083 | 1.2 |
| BASELINE 3 | 5 | 5 | On Cap | QB5-Cf-R3-2 | Sample | Replicate | CF | 4,4´-DDD | 14.7 | | 1633 | 0.9 |
| BASELINE 3 | 5 | 5 | On Cap | QB5-Cf-R3-2 | Sample | Replicate | CF | 4,4´-DDE | 11.1 | | 1233 | 0.9 |
| BASELINE 3 | 5 | 5 | On Cap | QB5-Cf-R3-2 | Sample | Replicate | CF | 4,4´-DDT | 2.1 | | 229 | 0.9 |
| BASELINE 3 | 5 | 5 | On Cap | QB5-Cf-R3-2 | Sample | Replicate | CF | Total DDX | 27.9 | | 3096 | 0.9 |
| BASELINE 3 | 5 | 5 | On Cap | QB5-Lv-C2 | Sample | Composite | LV | 4,4´-DDD | 16.7 | | 3340 | 0.5 |
| BASELINE 3 | 5 | 5 | On Cap | QB5-Lv-C2 | Sample | Composite | LV | 4,4´-DDE | 14.9 | | 2980 | 0.5 |
| BASELINE 3 | 5 | 5 | On Cap | QB5-Lv-C2 | Sample | Composite | LV | 4,4´-DDT | 0.5 | | 93 | 0.5 |
| BASELINE 3 | 5 | 5 | On Cap | QB5-Lv-C2 | Sample | Composite | LV | Total DDX | 32.1 | | 6413 | 0.5 |
| BASELINE 3 | 5 | 5 | On Cap | QB5-Lv-R8-2 | Sample | Replicate | LV | 4,4´-DDD | 23.2 | | 2578 | 0.9 |
| BASELINE 3 | 5 | 5 | On Cap | QB5-Lv-R8-2 | Sample | Replicate | LV | 4,4´-DDE | 20.1 | | 2233 | 0.9 |
| BASELINE 3 | 5 | 5 | On Cap | QB5-Lv-R8-2 | Sample | Replicate | LV | 4,4´-DDT | 0.9 | | 99 | 0.9 |
| BASELINE 3 | 5 | 5 | On Cap | QB5-Lv-R8-2 | Sample | Replicate | LV | Total DDX | 44.2 | | 4910 | 0.9 |
| BASELINE 3 | 5 | 5 | On Cap | QB5-Lv-R9-2 | Sample | Replicate | LV | 4,4´-DDD | 10.1 | | 2020 | 0.5 |
| BASELINE 3 | 5 | 5 | On Cap | QB5-Lv-R9-2 | Sample | Replicate | LV | 4,4´-DDE | 9.2 | | 1844 | 0.5 |
| BASELINE 3 | 5 | 5 | On Cap | QB5-Lv-R9-2 | Sample | Replicate | LV | 4,4´-DDT | 0.3 | | 60 | 0.5 |
| BASELINE 3 | 5 | 5 | On Cap | QB5-Lv-R9-2 | Sample | Replicate | LV | Total DDX | 19.6 | | 3924 | 0.5 |
| BASELINE 3 | 6 | 6 | Off Cap | QB6-Cf-C | Sample | Composite | CF | 4,4´-DDD | 5.4 | | 487 | 1.1 |
| BASELINE 3 | 6 | 6 | Off Cap | QB6-Cf-C | Sample | Composite | CF | 4,4´-DDE | 7.0 | | 635 | 1.1 |
| BASELINE 3 | 6 | 6 | Off Cap | QB6-Cf-C | Sample | Composite | CF | 4,4´-DDT | 1.5 | | 137 | 1.1 |
| BASELINE 3 | 6 | 6 | Off Cap | QB6-Cf-C | Sample | Composite | CF | Total DDX | 13.9 | | 1260 | 1.1 |
| BASELINE 3 | 6 | 6 | Off Cap | QB6-Cf-R10 | Sample | Replicate | CF | 4,4´-DDD | 3.0 | | 164 | 1.8 |
| BASELINE 3 | 6 | 6 | Off Cap | QB6-Cf-R10 | Sample | Replicate | CF | 4,4´-DDE | 3.3 | | 186 | 1.8 |
| BASELINE 3 | 6 | 6 | Off Cap | QB6-Cf-R10 | Sample | Replicate | CF | 4,4´-DDT | 0.6 | | 34 | 1.8 |
| BASELINE 3 | 6 | 6 | Off Cap | QB6-Cf-R10 | Sample | Replicate | CF | Total DDX | 6.9 | | 384 | 1.8 |
| BASELINE 3 | 6 | 6 | Off Cap | QB6-Cf-R3 | Sample | Replicate | CF | 4,4´-DDD | 5.5 | | 609 | 0.9 |
| BASELINE 3 | 6 | 6 | Off Cap | QB6-Cf-R3 | Sample | Replicate | CF | 4,4´-DDE | 7.2 | | 798 | 0.9 |
| BASELINE 3 | 6 | 6 | Off Cap | QB6-Cf-R3 | Sample | Replicate | CF | 4,4´-DDT | 1.5 | | 162 | 0.9 |
| BASELINE 3 | 6 | 6 | Off Cap | QB6-Cf-R3 | Sample | Replicate | CF | Total DDX | 14.1 | | 1569 | 0.9 |
| BASELINE 3 | 6 | 6 | Off Cap | QB6-Cf-R5 | Sample | Replicate | CF | 4,4´-DDD | 3.7 | | 372 | 1.0 |
| BASELINE 3 | 6 | 6 | Off Cap | QB6-Cf-R5 | Sample | Replicate | CF | 4,4´-DDE | 4.9 | | 491 | 1.0 |
| BASELINE 3 | 6 | 6 | Off Cap | QB6-Cf-R5 | Sample | Replicate | CF | 4,4´-DDT | 1.1 | | 109 | 1.0 |
| BASELINE 3 | 6 | 6 | Off Cap | QB6-Cf-R5 | Sample | Replicate | CF | Total DDX | 9.7 | | 972 | 1.0 |
| BASELINE 3 | 6 | 6 | Off Cap | QB6-Lv-C | Sample | Composite | LV | 4,4´-DDD | 2.7 | | 336 | 0.8 |
| BASELINE 3 | 6 | 6 | Off Cap | QB6-Lv-C | Sample | Composite | LV | 4,4´-DDE | 8.5 | | 1068 | 0.8 |
| BASELINE 3 | 6 | 6 | Off Cap | QB6-Lv-C | Sample | Composite | LV | 4,4´-DDT | 0.5 | | 56 | 0.8 |
| BASELINE 3 | 6 | 6 | Off Cap | QB6-Lv-C | Sample | Composite | LV | Total DDX | 11.7 | | 1460 | 0.8 |
| BASELINE 3 | T-0-1 | T-0-1 | NA | QB0-Cf-1 | Sample | Time 0 | CF | 4,4´-DDD | 22.3 | | 4460 | 0.5 |

**Table 1. Compilation of Organism Tissue DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | On Cap Footprint? | Sample ID[3] | Sample Type | Sample Description[4] | Species[5] | Analyte[6] | Result (µg/kg ww) | Detection Limit (µg/kg ww) | Result (µg/kg Lw)[7] | Lipids (% by weight) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BASELINE 3 | T-0-1 | T-0-1 | NA | QB0-Cf-1 | Sample | Time 0 | CF | 4,4´-DDE | 7.7 | | 1544 | 0.5 |
| BASELINE 3 | T-0-1 | T-0-1 | NA | QB0-Cf-1 | Sample | Time 0 | CF | 4,4´-DDT | 0.7 | | 141 | 0.5 |
| BASELINE 3 | T-0-1 | T-0-1 | NA | QB0-Cf-1 | Sample | Time 0 | CF | Total DDX | 30.7 | | 6145 | 0.5 |
| BASELINE 3 | T-0-1 | T-0-1 | NA | QB0-Lv-1 | Sample | Time 0 | LV | 4,4´-DDD | 35.0 | | 2692 | 1.3 |
| BASELINE 3 | T-0-1 | T-0-1 | NA | QB0-Lv-1 | Sample | Time 0 | LV | 4,4´-DDE | 13.9 | | 1069 | 1.3 |
| BASELINE 3 | T-0-1 | T-0-1 | NA | QB0-Lv-1 | Sample | Time 0 | LV | 4,4´-DDT | 1.7 | | 128 | 1.3 |
| BASELINE 3 | T-0-1 | T-0-1 | NA | QB0-Lv-1 | Sample | Time 0 | LV | Total DDX | 50.6 | | 3889 | 1.3 |
| BASELINE 3 | T-0-2 | T-0-2 | NA | QB0-Cf-2 | Sample | Time 0 | CF | 4,4´-DDD | 9.5 | | 2365 | 0.4 |
| BASELINE 3 | T-0-2 | T-0-2 | NA | QB0-Cf-2 | Sample | Time 0 | CF | 4,4´-DDE | 4.2 | | 1050 | 0.4 |
| BASELINE 3 | T-0-2 | T-0-2 | NA | QB0-Cf-2 | Sample | Time 0 | CF | 4,4´-DDT | 0.7 | | 174 | 0.4 |
| BASELINE 3 | T-0-2 | T-0-2 | NA | QB0-Cf-2 | Sample | Time 0 | CF | Total DDX | 14.4 | | 3589 | 0.4 |
| BASELINE 3 | T-0-2 | T-0-2 | NA | QB0-Lv-2 | Sample | Time 0 | LV | 4,4´-DDD | 8.0 | | 443 | 1.8 |
| BASELINE 3 | T-0-2 | T-0-2 | NA | QB0-Lv-2 | Sample | Time 0 | LV | 4,4´-DDE | 5.1 | | 284 | 1.8 |
| BASELINE 3 | T-0-2 | T-0-2 | NA | QB0-Lv-2 | Sample | Time 0 | LV | 4,4´-DDT | 0.2 | | 10 | 1.8 |
| BASELINE 3 | T-0-2 | T-0-2 | NA | QB0-Lv-2 | Sample | Time 0 | LV | Total DDX | 13.3 | | 737 | 1.8 |
| BASELINE 3 | T-0-3 | T-0-3 | NA | QB0-Cf-3 | Sample | Time 0 | CF | 4,4´-DDD | 1.1 | | 163 | 0.7 |
| BASELINE 3 | T-0-3 | T-0-3 | NA | QB0-Cf-3 | Sample | Time 0 | CF | 4,4´-DDE | 1.0 | | 149 | 0.7 |
| BASELINE 3 | T-0-3 | T-0-3 | NA | QB0-Cf-3 | Sample | Time 0 | CF | 4,4´-DDT | 0.1 | | 15 | 0.7 |
| BASELINE 3 | T-0-3 | T-0-3 | NA | QB0-Cf-3 | Sample | Time 0 | CF | Total DDX | 2.3 | | 326 | 0.7 |
| BASELINE 3 | T-0-3 | T-0-3 | NA | QB0-Lv-3 | Sample | Time 0 | LV | 4,4´-DDD | 13.1 | | 1092 | 1.2 |
| BASELINE 3 | T-0-3 | T-0-3 | NA | QB0-Lv-3 | Sample | Time 0 | LV | 4,4´-DDE | 5.1 | | 423 | 1.2 |
| BASELINE 3 | T-0-3 | T-0-3 | NA | QB0-Lv-3 | Sample | Time 0 | LV | 4,4´-DDT | 2.3 | | 191 | 1.2 |
| BASELINE 3 | T-0-3 | T-0-3 | NA | QB0-Lv-3 | Sample | Time 0 | LV | Total DDX | 20.5 | | 1705 | 1.2 |
| 2-MONTH | 1 | 1 | On Cap | QT2-1-Cf-Cl | Sample | Composite | CF | 2,4´-DDD | 0.7 | 0.094 | 44 | 1.5 |
| 2-MONTH | 1 | 1 | On Cap | QT2-1-Cf-Cl | Sample | Composite | CF | 2,4´-DDE | 1.2 | 0.094 | 79 | 1.5 |
| 2-MONTH | 1 | 1 | On Cap | QT2-1-Cf-Cl | Sample | Composite | CF | 2,4´-DDT | 0.2 | 0.094 | 12 | 1.5 |
| 2-MONTH | 1 | 1 | On Cap | QT2-1-Cf-Cl | Sample | Composite | CF | 4,4´-DDD | 9.4 | 0.094 | 610 | 1.5 |
| 2-MONTH | 1 | 1 | On Cap | QT2-1-Cf-Cl | Sample | Composite | CF | 4,4´-DDE | 7.0 | 0.094 | 455 | 1.5 |
| 2-MONTH | 1 | 1 | On Cap | QT2-1-Cf-Cl | Sample | Composite | CF | 4,4´-DDT | 0.6 | 0.094 | 42 | 1.5 |
| 2-MONTH | 1 | 1 | On Cap | QT2-1-Cf-Cl | Sample | Composite | CF | Total DDX | 19.1 | | 1241 | 1.5 |
| 2-MONTH | 1 | 1 | On Cap | QT2-1-LV-Cl | Sample | Composite | LV | 2,4´-DDD | 1.6 | 0.094 | 53 | 2.9 |
| 2-MONTH | 1 | 1 | On Cap | QT2-1-LV-Cl | Sample | Composite | LV | 2,4´-DDE | 1.6 | 0.094 | 55 | 2.9 |
| 2-MONTH | 1 | 1 | On Cap | QT2-1-LV-Cl | Sample | Composite | LV | 2,4´-DDT | 0.3 | 0.094 | 11 | 2.9 |
| 2-MONTH | 1 | 1 | On Cap | QT2-1-LV-Cl | Sample | Composite | LV | 4,4´-DDD | 11.1 | 0.094 | 378 | 2.9 |
| 2-MONTH | 1 | 1 | On Cap | QT2-1-LV-Cl | Sample | Composite | LV | 4,4´-DDE | 8.0 | 0.094 | 272 | 2.9 |
| 2-MONTH | 1 | 1 | On Cap | QT2-1-LV-Cl | Sample | Composite | LV | 4,4´-DDT | 0.6 | 0.094 | 22 | 2.9 |
| 2-MONTH | 1 | 1 | On Cap | QT2-1-LV-Cl | Sample | Composite | LV | Total DDX | 23.2 | | 791 | 2.9 |
| 2-MONTH | 2 | 2 | On Cap | QT2-2-Cf-Cl | Sample | Composite | CF | 2,4´-DDD | 1.5 | 0.094 | 103 | 1.5 |
| 2-MONTH | 2 | 2 | On Cap | QT2-2-Cf-Cl | Sample | Composite | CF | 2,4´-DDE | 0.9 | 0.094 | 59 | 1.5 |
| 2-MONTH | 2 | 2 | On Cap | QT2-2-Cf-Cl | Sample | Composite | CF | 2,4´-DDT | 0.8 | 0.094 | 54 | 1.5 |
| 2-MONTH | 2 | 2 | On Cap | QT2-2-Cf-Cl | Sample | Composite | CF | 4,4´-DDD | 8.5 | 0.094 | 583 | 1.5 |
| 2-MONTH | 2 | 2 | On Cap | QT2-2-Cf-Cl | Sample | Composite | CF | 4,4´-DDE | 6.7 | 0.094 | 458 | 1.5 |
| 2-MONTH | 2 | 2 | On Cap | QT2-2-Cf-Cl | Sample | Composite | CF | 4,4´-DDT | 0.6 | 0.094 | 40 | 1.5 |
| 2-MONTH | 2 | 2 | On Cap | QT2-2-Cf-Cl | Sample | Composite | CF | Total DDX | 18.9 | | 1296 | 1.5 |

**Table 1. Compilation of Organism Tissue DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | On Cap Footprint? | Sample ID[3] | Sample Type | Sample Description[4] | Species[5] | Analyte[6] | Result (µg/kg ww) | Detection Limit (µg/kg ww) | Result (µg/kg Lw)[7] | Lipids (% by weight) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-MONTH | 2 | 2 | On Cap | QT2-2-LV-Cl | Sample | Composite | LV | 2,4′-DDD | 1.6 | 0.094 | 59 | 2.7 |
| 2-MONTH | 2 | 2 | On Cap | QT2-2-LV-Cl | Sample | Composite | LV | 2,4′-DDE | 1.4 | 0.094 | 50 | 2.7 |
| 2-MONTH | 2 | 2 | On Cap | QT2-2-LV-Cl | Sample | Composite | LV | 2,4′-DDT | ND | 0.099 | < 3.61 | 2.7 |
| 2-MONTH | 2 | 2 | On Cap | QT2-2-LV-Cl | Sample | Composite | LV | 4,4′-DDD | 13.7 | 0.094 | 500 | 2.7 |
| 2-MONTH | 2 | 2 | On Cap | QT2-2-LV-Cl | Sample | Composite | LV | 4,4′-DDE | 9.0 | 0.094 | 327 | 2.7 |
| 2-MONTH | 2 | 2 | On Cap | QT2-2-LV-Cl | Sample | Composite | LV | 4,4′-DDT | 1.1 | 0.094 | 41 | 2.7 |
| 2-MONTH | 2 | 2 | On Cap | QT2-2-LV-Cl | Sample | Composite | LV | Total DDX | 26.8 | | 978 | 2.7 |
| 2-MONTH | 3 | 3 | On Cap | QT2-3F-Cf-Cl | Sample | Composite | CF | 2,4′-DDD | 1.3 | 0.094 | 88 | 1.5 |
| 2-MONTH | 3 | 3 | On Cap | QT2-3F-Cf-Cl | Sample | Composite | CF | 2,4′-DDE | ND | 0.1 | < 6.62 | 1.5 |
| 2-MONTH | 3 | 3 | On Cap | QT2-3F-Cf-Cl | Sample | Composite | CF | 2,4′-DDT | 0.7 | 0.094 | 43 | 1.5 |
| 2-MONTH | 3 | 3 | On Cap | QT2-3F-Cf-Cl | Sample | Composite | CF | 4,4′-DDD | 7.3 | 0.094 | 483 | 1.5 |
| 2-MONTH | 3 | 3 | On Cap | QT2-3F-Cf-Cl | Sample | Composite | CF | 4,4′-DDE | 5.2 | 0.094 | 344 | 1.5 |
| 2-MONTH | 3 | 3 | On Cap | QT2-3F-Cf-Cl | Sample | Composite | CF | 4,4′-DDT | 0.5 | 0.094 | 34 | 1.5 |
| 2-MONTH | 3 | 3 | On Cap | QT2-3F-Cf-Cl | Sample | Composite | CF | Total DDX | 15.0 | | 993 | 1.5 |
| 2-MONTH | 4 | 4 | On Cap | QT2-4-Cf-Cl | Sample | Composite | CF | 2,4′-DDD | 0.5 | 0.094 | 22 | 2.4 |
| 2-MONTH | 4 | 4 | On Cap | QT2-4-Cf-Cl | Sample | Composite | CF | 2,4′-DDE | 0.8 | 0.094 | 31 | 2.4 |
| 2-MONTH | 4 | 4 | On Cap | QT2-4-Cf-Cl | Sample | Composite | CF | 2,4′-DDT | ND | 0.096 | < 3.95 | 2.4 |
| 2-MONTH | 4 | 4 | On Cap | QT2-4-Cf-Cl | Sample | Composite | CF | 4,4′-DDD | 6.7 | 0.094 | 277 | 2.4 |
| 2-MONTH | 4 | 4 | On Cap | QT2-4-Cf-Cl | Sample | Composite | CF | 4,4′-DDE | 6.1 | 0.094 | 252 | 2.4 |
| 2-MONTH | 4 | 4 | On Cap | QT2-4-Cf-Cl | Sample | Composite | CF | 4,4′-DDT | 0.4 | 0.094 | 18 | 2.4 |
| 2-MONTH | 4 | 4 | On Cap | QT2-4-Cf-Cl | Sample | Composite | CF | Total DDX | 14.6 | | 600 | 2.4 |
| 2-MONTH | 4 | 4 | On Cap | QT2-4-LV-Cl | Sample | Composite | LV | 2,4′-DDD | 1.3 | 0.094 | 55 | 2.4 |
| 2-MONTH | 4 | 4 | On Cap | QT2-4-LV-Cl | Sample | Composite | LV | 2,4′-DDE | ND | 0.097 | < 4.13 | 2.4 |
| 2-MONTH | 4 | 4 | On Cap | QT2-4-LV-Cl | Sample | Composite | LV | 2,4′-DDT | 0.3 | 0.094 | 14 | 2.4 |
| 2-MONTH | 4 | 4 | On Cap | QT2-4-LV-Cl | Sample | Composite | LV | 4,4′-DDD | 8.9 | 0.094 | 377 | 2.4 |
| 2-MONTH | 4 | 4 | On Cap | QT2-4-LV-Cl | Sample | Composite | LV | 4,4′-DDE | 9.5 | 0.094 | 404 | 2.4 |
| 2-MONTH | 4 | 4 | On Cap | QT2-4-LV-Cl | Sample | Composite | LV | 4,4′-DDT | 0.5 | 0.094 | 21 | 2.4 |
| 2-MONTH | 4 | 4 | On Cap | QT2-4-LV-Cl | Sample | Composite | LV | Total DDX | 20.5 | | 871 | 2.4 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-Cf-Cl | Primary | Composite | CF | 2,4′-DDD | 0.6 | 0.094 | 42 | 1.4 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-Cf-Cl | Primary | Composite | CF | 2,4′-DDE | 0.3 | 0.094 | 19 | 1.4 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-Cf-Cl | Primary | Composite | CF | 2,4′-DDT | ND | 0.094 | < 6.96 | 1.4 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-Cf-Cl | Primary | Composite | CF | 4,4′-DDD | 7.4 | 0.094 | 550 | 1.4 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-Cf-Cl | Primary | Composite | CF | 4,4′-DDE | 6.7 | 0.094 | 499 | 1.4 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-Cf-Cl | Primary | Composite | CF | 4,4′-DDT | ND | 0.094 | < 6.96 | 1.4 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-Cf-Cl | Primary | Composite | CF | Total DDX | 15.0 | | 1110 | 1.4 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-Cf-Cl-Avg | Sample | Composite | CF | 2,4′-DDD | 0.6 | | 36 | 1.6 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-Cf-Cl-Avg | Sample | Composite | CF | 2,4′-DDE | 0.4 | | 23 | 1.6 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-Cf-Cl-Avg | Sample | Composite | CF | 2,4′-DDT | ND | 0.097 | <6.96 | 1.6 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-Cf-Cl-Avg | Sample | Composite | CF | 4,4′-DDD | 7.9 | | 496 | 1.6 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-Cf-Cl-Avg | Sample | Composite | CF | 4,4′-DDE | 6.8 | | 433 | 1.6 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-Cf-Cl-Avg | Sample | Composite | CF | 4,4′-DDT | 0.3 | | 14 | 1.6 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-Cf-Cl-Avg | Sample | Composite | CF | Total DDX | 15.9 | | 1002 | 1.6 |
| 2-MONTH | 5DUP | 5 | On Cap | QT2-5dup-Cf-Cl | Duplicate | Composite | CF | 2,4′-DDD | 0.5 | 0.094 | 29 | 1.9 |
| 2-MONTH | 5DUP | 5 | On Cap | QT2-5dup-Cf-Cl | Duplicate | Composite | CF | 2,4′-DDE | 0.5 | 0.094 | 28 | 1.9 |

**Table 1. Compilation of Organism Tissue DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | On Cap Footprint? | Sample ID[3] | Sample Type | Sample Description[4] | Species[5] | Analyte[6] | Result (µg/kg ww) | Detection Limit (µg/kg ww) | Result (µg/kg Lw)[7] | Lipids (% by weight) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-MONTH | 5DUP | 5 | On Cap | QT2-5dup-Cf-Cl | Duplicate | Composite | CF | 2,4´-DDT | ND | 0.097 | < 5.16 | 1.9 |
| 2-MONTH | 5DUP | 5 | On Cap | QT2-5dup-Cf-Cl | Duplicate | Composite | CF | 4,4´-DDD | 8.3 | 0.094 | 443 | 1.9 |
| 2-MONTH | 5DUP | 5 | On Cap | QT2-5dup-Cf-Cl | Duplicate | Composite | CF | 4,4´-DDE | 6.9 | 0.094 | 366 | 1.9 |
| 2-MONTH | 5DUP | 5 | On Cap | QT2-5dup-Cf-Cl | Duplicate | Composite | CF | 4,4´-DDT | 0.5 | 0.094 | 24 | 1.9 |
| 2-MONTH | 5DUP | 5 | On Cap | QT2-5dup-Cf-Cl | Duplicate | Composite | CF | Total DDX | 16.7 | | 890 | 1.9 |
| 2-MONTH | 5DUP | 5 | On Cap | QT2-5dup-LV-Cl | Duplicate | Composite | LV | 2,4´-DDD | 7.5 | 0.094 | 227 | 3.3 |
| 2-MONTH | 5DUP | 5 | On Cap | QT2-5dup-LV-Cl | Duplicate | Composite | LV | 2,4´-DDE | 7.9 | 0.094 | 240 | 3.3 |
| 2-MONTH | 5DUP | 5 | On Cap | QT2-5dup-LV-Cl | Duplicate | Composite | LV | 2,4´-DDT | 1.3 | 0.094 | 40 | 3.3 |
| 2-MONTH | 5DUP | 5 | On Cap | QT2-5dup-LV-Cl | Duplicate | Composite | LV | 4,4´-DDD | 54.6 | 0.094 | 1660 | 3.3 |
| 2-MONTH | 5DUP | 5 | On Cap | QT2-5dup-LV-Cl | Duplicate | Composite | LV | 4,4´-DDE | 40.0 | 0.094 | 1216 | 3.3 |
| 2-MONTH | 5DUP | 5 | On Cap | QT2-5dup-LV-Cl | Duplicate | Composite | LV | 4,4´-DDT | 3.3 | 0.094 | 101 | 3.3 |
| 2-MONTH | 5DUP | 5 | On Cap | QT2-5dup-LV-Cl | Duplicate | Composite | LV | Total DDX | 114.6 | | 3483 | 3.3 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-LV-Cl | Primary | Composite | LV | 2,4´-DDD | 8.8 | 0.094 | 249 | 3.5 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-LV-Cl | Primary | Composite | LV | 2,4´-DDE | 18.5 | 0.094 | 526 | 3.5 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-LV-Cl | Primary | Composite | LV | 2,4´-DDT | 3.8 | 0.094 | 109 | 3.5 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-LV-Cl | Primary | Composite | LV | 4,4´-DDD | 51.2 | 0.094 | 1455 | 3.5 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-LV-Cl | Primary | Composite | LV | 4,4´-DDE | 40.8 | 0.094 | 1159 | 3.5 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-LV-Cl | Primary | Composite | LV | 4,4´-DDT | 4.5 | 0.094 | 127 | 3.5 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-LV-Cl | Primary | Composite | LV | Total DDX | 127.6 | | 3624 | 3.5 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-LV-Cl-Avg | Sample | Composite | LV | 2,4´-DDD | 8.1 | | 238 | 3.4 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-LV-Cl-Avg | Sample | Composite | LV | 2,4´-DDE | 13.2 | | 383 | 3.4 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-LV-Cl-Avg | Sample | Composite | LV | 2,4´-DDT | 2.6 | | 74 | 3.4 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-LV-Cl-Avg | Sample | Composite | LV | 4,4´-DDD | 52.9 | | 1557 | 3.4 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-LV-Cl-Avg | Sample | Composite | LV | 4,4´-DDE | 40.4 | | 1187 | 3.4 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-LV-Cl-Avg | Sample | Composite | LV | 4,4´-DDT | 3.9 | | 114 | 3.4 |
| 2-MONTH | 5 | 5 | On Cap | QT2-5-LV-Cl-Avg | Sample | Composite | LV | Total DDX | 121.1 | | 3553 | 3.4 |
| 2-MONTH | 6 | 6 | Off Cap | QT2-6-Cf-Cl | Sample | Composite | CF | 2,4´-DDD | ND | 0.145 | < 9.24 | 1.6 |
| 2-MONTH | 6 | 6 | Off Cap | QT2-6-Cf-Cl | Sample | Composite | CF | 2,4´-DDE | 0.3 | 0.094 | 22 | 1.6 |
| 2-MONTH | 6 | 6 | Off Cap | QT2-6-Cf-Cl | Sample | Composite | CF | 2,4´-DDT | ND | 0.145 | < 9.24 | 1.6 |
| 2-MONTH | 6 | 6 | Off Cap | QT2-6-Cf-Cl | Sample | Composite | CF | 4,4´-DDD | 1.4 | 0.094 | 90 | 1.6 |
| 2-MONTH | 6 | 6 | Off Cap | QT2-6-Cf-Cl | Sample | Composite | CF | 4,4´-DDE | 1.5 | 0.094 | 92 | 1.6 |
| 2-MONTH | 6 | 6 | Off Cap | QT2-6-Cf-Cl | Sample | Composite | CF | 4,4´-DDT | 0.2 | 0.094 | 11 | 1.6 |
| 2-MONTH | 6 | 6 | Off Cap | QT2-6-Cf-Cl | Sample | Composite | CF | Total DDX | 3.4 | | 215 | 1.6 |
| 2-MONTH | 6 | 6 | Off Cap | QT2-6-LV-Cl | Sample | Composite | LV | 2,4´-DDD | 1.6 | 0.094 | 63 | 2.6 |
| 2-MONTH | 6 | 6 | Off Cap | QT2-6-LV-Cl | Sample | Composite | LV | 2,4´-DDE | 2.7 | 0.094 | 102 | 2.6 |
| 2-MONTH | 6 | 6 | Off Cap | QT2-6-LV-Cl | Sample | Composite | LV | 2,4´-DDT | 0.8 | 0.094 | 30 | 2.6 |
| 2-MONTH | 6 | 6 | Off Cap | QT2-6-LV-Cl | Sample | Composite | LV | 4,4´-DDD | 8.8 | 0.094 | 337 | 2.6 |
| 2-MONTH | 6 | 6 | Off Cap | QT2-6-LV-Cl | Sample | Composite | LV | 4,4´-DDE | 10.4 | 0.094 | 397 | 2.6 |
| 2-MONTH | 6 | 6 | Off Cap | QT2-6-LV-Cl | Sample | Composite | LV | 4,4´-DDT | 1.8 | 0.094 | 68 | 2.6 |
| 2-MONTH | 6 | 6 | Off Cap | QT2-6-LV-Cl | Sample | Composite | LV | Total DDX | 26.1 | | 996 | 2.6 |
| 2-MONTH | 7 | 7 | Off Cap | QT2-7-Cf-Cl | Sample | Composite | CF | 2,4´-DDD | ND | 0.1 | < 6.94 | 1.4 |
| 2-MONTH | 7 | 7 | Off Cap | QT2-7-Cf-Cl | Sample | Composite | CF | 2,4´-DDE | 0.6 | 0.094 | 38 | 1.4 |
| 2-MONTH | 7 | 7 | Off Cap | QT2-7-Cf-Cl | Sample | Composite | CF | 2,4´-DDT | ND | 0.1 | < 6.94 | 1.4 |
| 2-MONTH | 7 | 7 | Off Cap | QT2-7-Cf-Cl | Sample | Composite | CF | 4,4´-DDD | 2.6 | 0.094 | 181 | 1.4 |

**Table 1. Compilation of Organism Tissue DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | On Cap Footprint? | Sample ID[3] | Sample Type | Sample Description[4] | Species[5] | Analyte[6] | Result (µg/kg ww) | Detection Limit (µg/kg ww) | Result (µg/kg Lw)[7] | Lipids (% by weight) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-MONTH | 7 | 7 | Off Cap | QT2-7-Cf-Cl | Sample | Composite | CF | 4,4´-DDE | 3.2 | 0.094 | 219 | 1.4 |
| 2-MONTH | 7 | 7 | Off Cap | QT2-7-Cf-Cl | Sample | Composite | CF | 4,4´-DDT | ND | 0.1 | < 6.94 | 1.4 |
| 2-MONTH | 7 | 7 | Off Cap | QT2-7-Cf-Cl | Sample | Composite | CF | Total DDX | 6.3 | | 439 | 1.4 |
| 2-MONTH | 7 | 7 | Off Cap | QT2-7-LV-Cl | Sample | Composite | LV | 2,4´-DDD | 1.0 | 0.094 | 42 | 2.3 |
| 2-MONTH | 7 | 7 | Off Cap | QT2-7-LV-Cl | Sample | Composite | LV | 2,4´-DDE | 1.8 | 0.094 | 75 | 2.3 |
| 2-MONTH | 7 | 7 | Off Cap | QT2-7-LV-Cl | Sample | Composite | LV | 2,4´-DDT | 0.4 | 0.094 | 18 | 2.3 |
| 2-MONTH | 7 | 7 | Off Cap | QT2-7-LV-Cl | Sample | Composite | LV | 4,4´-DDD | 6.5 | 0.094 | 278 | 2.3 |
| 2-MONTH | 7 | 7 | Off Cap | QT2-7-LV-Cl | Sample | Composite | LV | 4,4´-DDE | 8.9 | 0.094 | 382 | 2.3 |
| 2-MONTH | 7 | 7 | Off Cap | QT2-7-LV-Cl | Sample | Composite | LV | 4,4´-DDT | 0.6 | 0.094 | 24 | 2.3 |
| 2-MONTH | 7 | 7 | Off Cap | QT2-7-LV-Cl | Sample | Composite | LV | Total DDX | 19.2 | | 819 | 2.3 |
| 2-MONTH | T0-A-1 | T0-A-1 | NA | Corbicula Batch 1 T0 A | Sample | Time 0 | CF | 2,4´-DDD | 0.3 | 0.095 | 14 | 2.1 |
| 2-MONTH | T0-A-1 | T0-A-1 | NA | Corbicula Batch 1 T0 A | Sample | Time 0 | CF | 2,4´-DDE | 0.3 | 0.095 | 15 | 2.1 |
| 2-MONTH | T0-A-1 | T0-A-1 | NA | Corbicula Batch 1 T0 A | Sample | Time 0 | CF | 2,4´-DDT | ND | 0.148 | < 7.22 | 2.1 |
| 2-MONTH | T0-A-1 | T0-A-1 | NA | Corbicula Batch 1 T0 A | Sample | Time 0 | CF | 4,4´-DDD | 0.3 | 0.095 | 16 | 2.1 |
| 2-MONTH | T0-A-1 | T0-A-1 | NA | Corbicula Batch 1 T0 A | Sample | Time 0 | CF | 4,4´-DDE | 0.2 | 0.095 | 11 | 2.1 |
| 2-MONTH | T0-A-1 | T0-A-1 | NA | Corbicula Batch 1 T0 A | Sample | Time 0 | CF | 4,4´-DDT | 0.4 | 0.095 | 18 | 2.1 |
| 2-MONTH | T0-A-1 | T0-A-1 | NA | Corbicula Batch 1 T0 A | Sample | Time 0 | CF | Total DDX | 1.5 | | 74 | 2.1 |
| 2-MONTH | T0-A-1 | T0-A-1 | NA | Lumbriculus Batch 1 T0 A | Sample | Time 0 | LV | 2,4´-DDD | ND | 0.096 | < 1.78 | 5.4 |
| 2-MONTH | T0-A-1 | T0-A-1 | NA | Lumbriculus Batch 1 T0 A | Sample | Time 0 | LV | 2,4´-DDE | 0.4 | 0.094 | 8 | 5.4 |
| 2-MONTH | T0-A-1 | T0-A-1 | NA | Lumbriculus Batch 1 T0 A | Sample | Time 0 | LV | 2,4´-DDT | ND | 0.096 | < 1.78 | 5.4 |
| 2-MONTH | T0-A-1 | T0-A-1 | NA | Lumbriculus Batch 1 T0 A | Sample | Time 0 | LV | 4,4´-DDD | 0.2 | 0.094 | 3 | 5.4 |
| 2-MONTH | T0-A-1 | T0-A-1 | NA | Lumbriculus Batch 1 T0 A | Sample | Time 0 | LV | 4,4´-DDE | 0.5 | 0.094 | 9 | 5.4 |
| 2-MONTH | T0-A-1 | T0-A-1 | NA | Lumbriculus Batch 1 T0 A | Sample | Time 0 | LV | 4,4´-DDT | ND | 0.096 | < 1.78 | 5.4 |
| 2-MONTH | T0-A-1 | T0-A-1 | NA | Lumbriculus Batch 1 T0 A | Sample | Time 0 | LV | Total DDX | 1.1 | | 20 | 5.4 |
| 2-MONTH | T0-A-2 | T0-A-2 | NA | Corbicula Batch 2 T0 A | Sample | Time 0 | CF | 2,4´-DDD | 0.2 | 0.095 | 11 | 1.5 |
| 2-MONTH | T0-A-2 | T0-A-2 | NA | Corbicula Batch 2 T0 A | Sample | Time 0 | CF | 2,4´-DDE | 0.3 | 0.095 | 23 | 1.5 |
| 2-MONTH | T0-A-2 | T0-A-2 | NA | Corbicula Batch 2 T0 A | Sample | Time 0 | CF | 2,4´-DDT | ND | 0.157 | < 10.83 | 1.5 |
| 2-MONTH | T0-A-2 | T0-A-2 | NA | Corbicula Batch 2 T0 A | Sample | Time 0 | CF | 4,4´-DDD | 0.2 | 0.095 | 11 | 1.5 |
| 2-MONTH | T0-A-2 | T0-A-2 | NA | Corbicula Batch 2 T0 A | Sample | Time 0 | CF | 4,4´-DDE | 0.4 | 0.095 | 27 | 1.5 |
| 2-MONTH | T0-A-2 | T0-A-2 | NA | Corbicula Batch 2 T0 A | Sample | Time 0 | CF | 4,4´-DDT | 0.2 | 0.095 | 13 | 1.5 |
| 2-MONTH | T0-A-2 | T0-A-2 | NA | Corbicula Batch 2 T0 A | Sample | Time 0 | CF | Total DDX | 1.2 | | 86 | 1.5 |
| 2-MONTH | T0-A-2 | T0-A-2 | NA | Lumbriculus Batch 2 T0 A | Sample | Time 0 | LV | 2,4´-DDD | 0.1 | 0.094 | 1 | 7.2 |
| 2-MONTH | T0-A-2 | T0-A-2 | NA | Lumbriculus Batch 2 T0 A | Sample | Time 0 | LV | 2,4´-DDE | 0.2 | 0.094 | 2 | 7.2 |
| 2-MONTH | T0-A-2 | T0-A-2 | NA | Lumbriculus Batch 2 T0 A | Sample | Time 0 | LV | 2,4´-DDT | ND | 0.095 | < 1.32 | 7.2 |
| 2-MONTH | T0-A-2 | T0-A-2 | NA | Lumbriculus Batch 2 T0 A | Sample | Time 0 | LV | 4,4´-DDD | 0.2 | 0.094 | 3 | 7.2 |
| 2-MONTH | T0-A-2 | T0-A-2 | NA | Lumbriculus Batch 2 T0 A | Sample | Time 0 | LV | 4,4´-DDE | 1.2 | 0.094 | 17 | 7.2 |
| 2-MONTH | T0-A-2 | T0-A-2 | NA | Lumbriculus Batch 2 T0 A | Sample | Time 0 | LV | 4,4´-DDT | ND | 0.095 | < 1.32 | 7.2 |
| 2-MONTH | T0-A-2 | T0-A-2 | NA | Lumbriculus Batch 2 T0 A | Sample | Time 0 | LV | Total DDX | 1.7 | | 24 | 7.2 |
| 2-MONTH | T0-B-1 | T0-B-1 | NA | Corbicula Batch 1 T0 B | Sample | Time 0 | CF | 2,4´-DDD | 0.3 | 0.095 | 14 | 2.1 |
| 2-MONTH | T0-B-1 | T0-B-1 | NA | Corbicula Batch 1 T0 B | Sample | Time 0 | CF | 2,4´-DDE | 0.7 | 0.095 | 34 | 2.1 |
| 2-MONTH | T0-B-1 | T0-B-1 | NA | Corbicula Batch 1 T0 B | Sample | Time 0 | CF | 2,4´-DDT | ND | 0.16 | < 7.73 | 2.1 |
| 2-MONTH | T0-B-1 | T0-B-1 | NA | Corbicula Batch 1 T0 B | Sample | Time 0 | CF | 4,4´-DDD | 0.3 | 0.095 | 16 | 2.1 |
| 2-MONTH | T0-B-1 | T0-B-1 | NA | Corbicula Batch 1 T0 B | Sample | Time 0 | CF | 4,4´-DDE | 0.3 | 0.095 | 13 | 2.1 |
| 2-MONTH | T0-B-1 | T0-B-1 | NA | Corbicula Batch 1 T0 B | Sample | Time 0 | CF | 4,4´-DDT | 0.2 | 0.095 | 9 | 2.1 |

**Table 1. Compilation of Organism Tissue DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | On Cap Footprint? | Sample ID[3] | Sample Type | Sample Description[4] | Species[5] | Analyte[6] | Result (µg/kg ww) | Detection Limit (µg/kg ww) | Result (µg/kg Lw)[7] | Lipids (% by weight) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-MONTH | T0-B-1 | T0-B-1 | NA | Corbicula Batch 1 T0 B | Sample | Time 0 | CF | Total DDX | 1.8 | | 87 | 2.1 |
| 2-MONTH | T0-B-1 | T0-B-1 | NA | Lumbriculus Batch 1 T0 B | Sample | Time 0 | LV | 2,4′-DDD | 0.1 | 0.094 | 4 | 3.8 |
| 2-MONTH | T0-B-1 | T0-B-1 | NA | Lumbriculus Batch 1 T0 B | Sample | Time 0 | LV | 2,4′-DDE | 0.4 | 0.094 | 10 | 3.8 |
| 2-MONTH | T0-B-1 | T0-B-1 | NA | Lumbriculus Batch 1 T0 B | Sample | Time 0 | LV | 2,4′-DDT | 0.1 | 0.094 | 3 | 3.8 |
| 2-MONTH | T0-B-1 | T0-B-1 | NA | Lumbriculus Batch 1 T0 B | Sample | Time 0 | LV | 4,4′-DDD | 0.1 | 0.094 | 4 | 3.8 |
| 2-MONTH | T0-B-1 | T0-B-1 | NA | Lumbriculus Batch 1 T0 B | Sample | Time 0 | LV | 4,4′-DDE | 0.6 | 0.094 | 15 | 3.8 |
| 2-MONTH | T0-B-1 | T0-B-1 | NA | Lumbriculus Batch 1 T0 B | Sample | Time 0 | LV | 4,4′-DDT | 0.3 | 0.094 | 7 | 3.8 |
| 2-MONTH | T0-B-1 | T0-B-1 | NA | Lumbriculus Batch 1 T0 B | Sample | Time 0 | LV | Total DDX | 1.6 | | 42 | 3.8 |
| 2-MONTH | T0-B-2 | T0-B-2 | NA | Corbicula Batch 2 T0 B | Sample | Time 0 | CF | 2,4′-DDD | ND | 0.145 | < 9.93 | 1.5 |
| 2-MONTH | T0-B-2 | T0-B-2 | NA | Corbicula Batch 2 T0 B | Sample | Time 0 | CF | 2,4′-DDE | 0.3 | 0.095 | 21 | 1.5 |
| 2-MONTH | T0-B-2 | T0-B-2 | NA | Corbicula Batch 2 T0 B | Sample | Time 0 | CF | 2,4′-DDT | ND | 0.145 | < 9.93 | 1.5 |
| 2-MONTH | T0-B-2 | T0-B-2 | NA | Corbicula Batch 2 T0 B | Sample | Time 0 | CF | 4,4′-DDD | 0.2 | 0.095 | 14 | 1.5 |
| 2-MONTH | T0-B-2 | T0-B-2 | NA | Corbicula Batch 2 T0 B | Sample | Time 0 | CF | 4,4′-DDE | 0.3 | 0.095 | 23 | 1.5 |
| 2-MONTH | T0-B-2 | T0-B-2 | NA | Corbicula Batch 2 T0 B | Sample | Time 0 | CF | 4,4′-DDT | 0.2 | 0.095 | 15 | 1.5 |
| 2-MONTH | T0-B-2 | T0-B-2 | NA | Corbicula Batch 2 T0 B | Sample | Time 0 | CF | Total DDX | 1.1 | | 74 | 1.5 |
| 2-MONTH | T0-B-2 | T0-B-2 | NA | Lumbriculus Batch 2 T0 B | Sample | Time 0 | LV | 2,4′-DDD | ND | 0.098 | < 1.7 | 5.8 |
| 2-MONTH | T0-B-2 | T0-B-2 | NA | Lumbriculus Batch 2 T0 B | Sample | Time 0 | LV | 2,4′-DDE | 0.1 | 0.094 | 2 | 5.8 |
| 2-MONTH | T0-B-2 | T0-B-2 | NA | Lumbriculus Batch 2 T0 B | Sample | Time 0 | LV | 2,4′-DDT | ND | 0.098 | < 1.7 | 5.8 |
| 2-MONTH | T0-B-2 | T0-B-2 | NA | Lumbriculus Batch 2 T0 B | Sample | Time 0 | LV | 4,4′-DDD | 0.2 | 0.094 | 3 | 5.8 |
| 2-MONTH | T0-B-2 | T0-B-2 | NA | Lumbriculus Batch 2 T0 B | Sample | Time 0 | LV | 4,4′-DDE | 0.9 | 0.094 | 16 | 5.8 |
| 2-MONTH | T0-B-2 | T0-B-2 | NA | Lumbriculus Batch 2 T0 B | Sample | Time 0 | LV | 4,4′-DDT | ND | 0.098 | < 1.7 | 5.8 |
| 2-MONTH | T0-B-2 | T0-B-2 | NA | Lumbriculus Batch 2 T0 B | Sample | Time 0 | LV | Total DDX | 1.2 | | 21 | 5.8 |
| 2-MONTH | T0-C-1 | T0-C-1 | NA | Corbicula Batch 1 T0 C | Sample | Time 0 | CF | 2,4′-DDD | ND | 0.151 | < 8.12 | 1.9 |
| 2-MONTH | T0-C-1 | T0-C-1 | NA | Corbicula Batch 1 T0 C | Sample | Time 0 | CF | 2,4′-DDE | 0.4 | 0.095 | 20 | 1.9 |
| 2-MONTH | T0-C-1 | T0-C-1 | NA | Corbicula Batch 1 T0 C | Sample | Time 0 | CF | 2,4′-DDT | ND | 0.151 | < 8.12 | 1.9 |
| 2-MONTH | T0-C-1 | T0-C-1 | NA | Corbicula Batch 1 T0 C | Sample | Time 0 | CF | 4,4′-DDD | 0.2 | 0.095 | 10 | 1.9 |
| 2-MONTH | T0-C-1 | T0-C-1 | NA | Corbicula Batch 1 T0 C | Sample | Time 0 | CF | 4,4′-DDE | 0.3 | 0.095 | 18 | 1.9 |
| 2-MONTH | T0-C-1 | T0-C-1 | NA | Corbicula Batch 1 T0 C | Sample | Time 0 | CF | 4,4′-DDT | 0.4 | 0.095 | 21 | 1.9 |
| 2-MONTH | T0-C-1 | T0-C-1 | NA | Corbicula Batch 1 T0 C | Sample | Time 0 | CF | Total DDX | 1.3 | | 69 | 1.9 |
| 2-MONTH | T0-C-1 | T0-C-1 | NA | Lumbriculus Batch 1 T0 C | Sample | Time 0 | LV | 2,4′-DDD | ND | 0.098 | < 3.48 | 2.8 |
| 2-MONTH | T0-C-1 | T0-C-1 | NA | Lumbriculus Batch 1 T0 C | Sample | Time 0 | LV | 2,4′-DDE | 0.1 | 0.094 | 5 | 2.8 |
| 2-MONTH | T0-C-1 | T0-C-1 | NA | Lumbriculus Batch 1 T0 C | Sample | Time 0 | LV | 2,4′-DDT | 0.2 | 0.094 | 7 | 2.8 |
| 2-MONTH | T0-C-1 | T0-C-1 | NA | Lumbriculus Batch 1 T0 C | Sample | Time 0 | LV | 4,4′-DDD | 0.2 | 0.094 | 8 | 2.8 |
| 2-MONTH | T0-C-1 | T0-C-1 | NA | Lumbriculus Batch 1 T0 C | Sample | Time 0 | LV | 4,4′-DDE | 0.9 | 0.094 | 30 | 2.8 |
| 2-MONTH | T0-C-1 | T0-C-1 | NA | Lumbriculus Batch 1 T0 C | Sample | Time 0 | LV | 4,4′-DDT | ND | 0.098 | < 3.48 | 2.8 |
| 2-MONTH | T0-C-1 | T0-C-1 | NA | Lumbriculus Batch 1 T0 C | Sample | Time 0 | LV | Total DDX | 1.4 | | 50 | 2.8 |
| 2-MONTH | T0-C-2 | T0-C-2 | NA | Corbicula Batch 2 T0 C | Sample | Time 0 | CF | 2,4′-DDD | 0.2 | 0.095 | 13 | 1.8 |
| 2-MONTH | T0-C-2 | T0-C-2 | NA | Corbicula Batch 2 T0 C | Sample | Time 0 | CF | 2,4′-DDE | 0.4 | 0.095 | 23 | 1.8 |
| 2-MONTH | T0-C-2 | T0-C-2 | NA | Corbicula Batch 2 T0 C | Sample | Time 0 | CF | 2,4′-DDT | ND | 0.157 | < 8.82 | 1.8 |
| 2-MONTH | T0-C-2 | T0-C-2 | NA | Corbicula Batch 2 T0 C | Sample | Time 0 | CF | 4,4′-DDD | 0.2 | 0.095 | 10 | 1.8 |
| 2-MONTH | T0-C-2 | T0-C-2 | NA | Corbicula Batch 2 T0 C | Sample | Time 0 | CF | 4,4′-DDE | 0.3 | 0.095 | 17 | 1.8 |
| 2-MONTH | T0-C-2 | T0-C-2 | NA | Corbicula Batch 2 T0 C | Sample | Time 0 | CF | 4,4′-DDT | ND | 0.157 | < 8.82 | 1.8 |
| 2-MONTH | T0-C-2 | T0-C-2 | NA | Corbicula Batch 2 T0 C | Sample | Time 0 | CF | Total DDX | 1.1 | | 63 | 1.8 |
| 2-MONTH | T0-C-2 | T0-C-2 | NA | Lumbriculus Batch 2 T0 C | Sample | Time 0 | LV | 2,4′-DDD | ND | 0.1 | < 1.73 | 5.8 |

**Table 1. Compilation of Organism Tissue DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | On Cap Footprint? | Sample ID[3] | Sample Type | Sample Description[4] | Species[5] | Analyte[6] | Result (µg/kg ww) | Detection Limit (µg/kg ww) | Result (µg/kg Lw)[7] | Lipids (% by weight) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-MONTH | T0-C-2 | T0-C-2 | NA | Lumbriculus Batch 2 T0 C | Sample | Time 0 | LV | 2,4′-DDE | 0.1 | 0.094 | 3 | 5.8 |
| 2-MONTH | T0-C-2 | T0-C-2 | NA | Lumbriculus Batch 2 T0 C | Sample | Time 0 | LV | 2,4′-DDT | ND | 0.1 | < 1.73 | 5.8 |
| 2-MONTH | T0-C-2 | T0-C-2 | NA | Lumbriculus Batch 2 T0 C | Sample | Time 0 | LV | 4,4′-DDD | ND | 0.1 | < 1.73 | 5.8 |
| 2-MONTH | T0-C-2 | T0-C-2 | NA | Lumbriculus Batch 2 T0 C | Sample | Time 0 | LV | 4,4′-DDE | 0.2 | 0.094 | 3 | 5.8 |
| 2-MONTH | T0-C-2 | T0-C-2 | NA | Lumbriculus Batch 2 T0 C | Sample | Time 0 | LV | 4,4′-DDT | 0.1 | 0.094 | 2 | 5.8 |
| 2-MONTH | T0-C-2 | T0-C-2 | NA | Lumbriculus Batch 2 T0 C | Sample | Time 0 | LV | Total DDX | 0.5 | | 8 | 5.8 |
| 14-MONTH | 1 | 1 | On Cap | QT12-1-CF | Sample | Composite | CF | 2,4′-DDD | ND | 0.213 | < 8.42 | 2.5 |
| 14-MONTH | 1 | 1 | On Cap | QT12-1-CF | Sample | Composite | CF | 2,4′-DDE | ND | 0.213 | < 8.42 | 2.5 |
| 14-MONTH | 1 | 1 | On Cap | QT12-1-CF | Sample | Composite | CF | 2,4′-DDT | ND | 0.213 | < 8.42 | 2.5 |
| 14-MONTH | 1 | 1 | On Cap | QT12-1-CF | Sample | Composite | CF | 4,4′-DDD | 29.3 | 0.213 | 1158 | 2.5 |
| 14-MONTH | 1 | 1 | On Cap | QT12-1-CF | Sample | Composite | CF | 4,4′-DDE | 23.1 | 0.213 | 913 | 2.5 |
| 14-MONTH | 1 | 1 | On Cap | QT12-1-CF | Sample | Composite | CF | 4,4′-DDT | 7.5 | 0.213 | 295 | 2.5 |
| 14-MONTH | 1 | 1 | On Cap | QT12-1-CF | Sample | Composite | CF | Total DDX | 59.9 | | 2366 | 2.5 |
| 14-MONTH | 1 | 1 | On Cap | QT12-1-LV | Sample | Composite | LV | 2,4′-DDD | ND | 0.341 | < 19.6 | 1.7 |
| 14-MONTH | 1 | 1 | On Cap | QT12-1-LV | Sample | Composite | LV | 2,4′-DDE | ND | 0.341 | < 19.6 | 1.7 |
| 14-MONTH | 1 | 1 | On Cap | QT12-1-LV | Sample | Composite | LV | 2,4′-DDT | ND | 0.341 | < 19.6 | 1.7 |
| 14-MONTH | 1 | 1 | On Cap | QT12-1-LV | Sample | Composite | LV | 4,4′-DDD | 10.3 | 0.341 | 592 | 1.7 |
| 14-MONTH | 1 | 1 | On Cap | QT12-1-LV | Sample | Composite | LV | 4,4′-DDE | 19.1 | 0.341 | 1098 | 1.7 |
| 14-MONTH | 1 | 1 | On Cap | QT12-1-LV | Sample | Composite | LV | 4,4′-DDT | ND | 0.341 | < 19.6 | 1.7 |
| 14-MONTH | 1 | 1 | On Cap | QT12-1-LV | Sample | Composite | LV | Total DDX | 29.4 | | 1690 | 1.7 |
| 14-MONTH | 2 | 2 | On Cap | QT12-2-CF | Sample | Composite | CF | 2,4′-DDD | ND | 0.195 | < 5.91 | 3.3 |
| 14-MONTH | 2 | 2 | On Cap | QT12-2-CF | Sample | Composite | CF | 2,4′-DDE | ND | 0.195 | < 5.91 | 3.3 |
| 14-MONTH | 2 | 2 | On Cap | QT12-2-CF | Sample | Composite | CF | 2,4′-DDT | ND | 0.195 | < 5.91 | 3.3 |
| 14-MONTH | 2 | 2 | On Cap | QT12-2-CF | Sample | Composite | CF | 4,4′-DDD | 6.3 | 0.195 | 190 | 3.3 |
| 14-MONTH | 2 | 2 | On Cap | QT12-2-CF | Sample | Composite | CF | 4,4′-DDE | 7.8 | 0.195 | 235 | 3.3 |
| 14-MONTH | 2 | 2 | On Cap | QT12-2-CF | Sample | Composite | CF | 4,4′-DDT | 1.8 | 0.195 | 55 | 3.3 |
| 14-MONTH | 2 | 2 | On Cap | QT12-2-CF | Sample | Composite | CF | Total DDX | 15.8 | | 480 | 3.3 |
| 14-MONTH | 2 | 2 | On Cap | QT12-2-LV | Sample | Composite | LV | 2,4′-DDD | ND | 0.374 | < 26.15 | 1.4 |
| 14-MONTH | 2 | 2 | On Cap | QT12-2-LV | Sample | Composite | LV | 2,4′-DDE | ND | 0.374 | < 26.15 | 1.4 |
| 14-MONTH | 2 | 2 | On Cap | QT12-2-LV | Sample | Composite | LV | 2,4′-DDT | ND | 0.374 | < 26.15 | 1.4 |
| 14-MONTH | 2 | 2 | On Cap | QT12-2-LV | Sample | Composite | LV | 4,4′-DDD | 10.2 | 0.374 | 713 | 1.4 |
| 14-MONTH | 2 | 2 | On Cap | QT12-2-LV | Sample | Composite | LV | 4,4′-DDE | 9.2 | 0.374 | 643 | 1.4 |
| 14-MONTH | 2 | 2 | On Cap | QT12-2-LV | Sample | Composite | LV | 4,4′-DDT | ND | 0.374 | < 26.15 | 1.4 |
| 14-MONTH | 2 | 2 | On Cap | QT12-2-LV | Sample | Composite | LV | Total DDX | 19.4 | | 1357 | 1.4 |
| 14-MONTH | 3 | 3 | On Cap | QT12-3-CF | Primary | Composite | CF | 2,4′-DDD | ND | 0.208 | < 7.07 | 2.9 |
| 14-MONTH | 3 | 3 | On Cap | QT12-3-CF | Primary | Composite | CF | 2,4′-DDE | ND | 0.208 | < 7.07 | 2.9 |
| 14-MONTH | 3 | 3 | On Cap | QT12-3-CF | Primary | Composite | CF | 2,4′-DDT | ND | 0.208 | < 7.07 | 2.9 |
| 14-MONTH | 3 | 3 | On Cap | QT12-3-CF | Primary | Composite | CF | 4,4′-DDD | 38.4 | 0.208 | 1306 | 2.9 |
| 14-MONTH | 3 | 3 | On Cap | QT12-3-CF | Primary | Composite | CF | 4,4′-DDE | 18.9 | 0.208 | 643 | 2.9 |
| 14-MONTH | 3 | 3 | On Cap | QT12-3-CF | Primary | Composite | CF | 4,4′-DDT | 9.6 | 0.208 | 326 | 2.9 |
| 14-MONTH | 3 | 3 | On Cap | QT12-3-CF | Primary | Composite | CF | Total DDX | 66.9 | | 2274 | 2.9 |
| 14-MONTH | 3 | 3 | On Cap | QT12-3-CF-Avg | Sample | Composite | CF | 2,4′-DDD | ND | 0.208 | <7.41 | 2.9 |
| 14-MONTH | 3 | 3 | On Cap | QT12-3-CF-Avg | Sample | Composite | CF | 2,4′-DDE | ND | 0.208 | <7.41 | 2.9 |
| 14-MONTH | 3 | 3 | On Cap | QT12-3-CF-Avg | Sample | Composite | CF | 2,4′-DDT | ND | 0.208 | <7.41 | 2.9 |

**Table 1. Compilation of Organism Tissue DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | On Cap Footprint? | Sample ID[3] | Sample Type | Sample Description[4] | Species[5] | Analyte[6] | Result (µg/kg ww) | Detection Limit (µg/kg ww) | Result (µg/kg Lw)[7] | Lipids (% by weight) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14-MONTH | 3 | 3 | On Cap | QT12-3-CF-Avg | Sample | Composite | CF | 4,4´-DDD | 36.4 | | 1270 | 2.9 |
| 14-MONTH | 3 | 3 | On Cap | QT12-3-CF-Avg | Sample | Composite | CF | 4,4´-DDE | 20.7 | | 724 | 2.9 |
| 14-MONTH | 3 | 3 | On Cap | QT12-3-CF-Avg | Sample | Composite | CF | 4,4´-DDT | 9.1 | | 319 | 2.9 |
| 14-MONTH | 3 | 3 | On Cap | QT12-3-CF-Avg | Sample | Composite | CF | Total DDX | 66.1 | | 2313 | 2.9 |
| 14-MONTH | 3DUP | 3 | On Cap | QT12-3DUP-CF | Duplicate | Composite | CF | 2,4´-DDD | ND | 0.206 | < 7.41 | 2.8 |
| 14-MONTH | 3DUP | 3 | On Cap | QT12-3DUP-CF | Duplicate | Composite | CF | 2,4´-DDE | ND | 0.206 | < 7.41 | 2.8 |
| 14-MONTH | 3DUP | 3 | On Cap | QT12-3DUP-CF | Duplicate | Composite | CF | 2,4´-DDT | ND | 0.206 | < 7.41 | 2.8 |
| 14-MONTH | 3DUP | 3 | On Cap | QT12-3DUP-CF | Duplicate | Composite | CF | 4,4´-DDD | 34.3 | 0.206 | 1234 | 2.8 |
| 14-MONTH | 3DUP | 3 | On Cap | QT12-3DUP-CF | Duplicate | Composite | CF | 4,4´-DDE | 22.4 | 0.206 | 806 | 2.8 |
| 14-MONTH | 3DUP | 3 | On Cap | QT12-3DUP-CF | Duplicate | Composite | CF | 4,4´-DDT | 8.7 | 0.206 | 312 | 2.8 |
| 14-MONTH | 3DUP | 3 | On Cap | QT12-3DUP-CF | Duplicate | Composite | CF | Total DDX | 65.4 | | 2352 | 2.8 |
| 14-MONTH | 3DUP | 3 | On Cap | QT12-3DUP-LV | Duplicate | Composite | LV | 2,4´-DDD | ND | 0.226 | < 20.36 | 1.1 |
| 14-MONTH | 3DUP | 3 | On Cap | QT12-3DUP-LV | Duplicate | Composite | LV | 2,4´-DDE | ND | 0.226 | < 20.36 | 1.1 |
| 14-MONTH | 3DUP | 3 | On Cap | QT12-3DUP-LV | Duplicate | Composite | LV | 2,4´-DDT | ND | 0.226 | < 20.36 | 1.1 |
| 14-MONTH | 3DUP | 3 | On Cap | QT12-3DUP-LV | Duplicate | Composite | LV | 4,4´-DDD | 38.1 | 0.226 | 3432 | 1.1 |
| 14-MONTH | 3DUP | 3 | On Cap | QT12-3DUP-LV | Duplicate | Composite | LV | 4,4´-DDE | 17.1 | 0.226 | 1541 | 1.1 |
| 14-MONTH | 3DUP | 3 | On Cap | QT12-3DUP-LV | Duplicate | Composite | LV | 4,4´-DDT | ND | 0.226 | < 20.36 | 1.1 |
| 14-MONTH | 3DUP | 3 | On Cap | QT12-3DUP-LV | Duplicate | Composite | LV | Total DDX | 55.2 | | 4973 | 1.1 |
| 14-MONTH | 3 | 3 | On Cap | QT12-3-LV | Primary | Composite | LV | 2,4´-DDD | ND | 0.224 | < 8.55 | 2.6 |
| 14-MONTH | 3 | 3 | On Cap | QT12-3-LV | Primary | Composite | LV | 2,4´-DDE | ND | 0.224 | < 8.55 | 2.6 |
| 14-MONTH | 3 | 3 | On Cap | QT12-3-LV | Primary | Composite | LV | 2,4´-DDT | ND | 0.224 | < 8.55 | 2.6 |
| 14-MONTH | 3 | 3 | On Cap | QT12-3-LV | Primary | Composite | LV | 4,4´-DDD | 24.6 | 0.224 | 939 | 2.6 |
| 14-MONTH | 3 | 3 | On Cap | QT12-3-LV | Primary | Composite | LV | 4,4´-DDE | 14.1 | 0.224 | 538 | 2.6 |
| 14-MONTH | 3 | 3 | On Cap | QT12-3-LV | Primary | Composite | LV | 4,4´-DDT | ND | 0.224 | < 8.55 | 2.6 |
| 14-MONTH | 3 | 3 | On Cap | QT12-3-LV | Primary | Composite | LV | Total DDX | 38.7 | | 1477 | 2.6 |
| 14-MONTH | 3 | 3 | On Cap | QT12-3-LV-Avg | Sample | Composite | LV | 2,4´-DDD | ND | 0.226 | <20.36 | 1.9 |
| 14-MONTH | 3 | 3 | On Cap | QT12-3-LV-Avg | Sample | Composite | LV | 4,4´-DDE | 15.6 | | 1039 | 1.9 |
| 14-MONTH | 3 | 3 | On Cap | QT12-3-LV-Avg | Sample | Composite | LV | 4,4´-DDT | ND | 0.226 | <20.36 | 1.9 |
| 14-MONTH | 3 | 3 | On Cap | QT12-3-LV-Avg | Sample | Composite | LV | Total DDX | 47.0 | | 3225 | 1.9 |
| 14-MONTH | 4 | 4 | On Cap | QT12-4-CF | Sample | Composite | CF | 2,4´-DDD | ND | 0.215 | < 8.17 | 2.6 |
| 14-MONTH | 4 | 4 | On Cap | QT12-4-CF | Sample | Composite | CF | 2,4´-DDE | ND | 0.215 | < 8.17 | 2.6 |
| 14-MONTH | 4 | 4 | On Cap | QT12-4-CF | Sample | Composite | CF | 2,4´-DDT | ND | 0.215 | < 8.17 | 2.6 |
| 14-MONTH | 4 | 4 | On Cap | QT12-4-CF | Sample | Composite | CF | 4,4´-DDD | 11.3 | 0.215 | 430 | 2.6 |
| 14-MONTH | 4 | 4 | On Cap | QT12-4-CF | Sample | Composite | CF | 4,4´-DDE | 8.7 | 0.215 | 331 | 2.6 |
| 14-MONTH | 4 | 4 | On Cap | QT12-4-CF | Sample | Composite | CF | 4,4´-DDT | ND | 0.215 | < 8.17 | 2.6 |
| 14-MONTH | 4 | 4 | On Cap | QT12-4-CF | Sample | Composite | CF | Total DDX | 20.0 | | 761 | 2.6 |
| 14-MONTH | 4 | 4 | On Cap | QT12-4-LV | Sample | Composite | LV | 2,4´-DDD | ND | 0.221 | < 10.73 | 2.1 |
| 14-MONTH | 4 | 4 | On Cap | QT12-4-LV | Sample | Composite | LV | 2,4´-DDE | ND | 0.221 | < 10.73 | 2.1 |
| 14-MONTH | 4 | 4 | On Cap | QT12-4-LV | Sample | Composite | LV | 2,4´-DDT | ND | 0.221 | < 10.73 | 2.1 |
| 14-MONTH | 4 | 4 | On Cap | QT12-4-LV | Sample | Composite | LV | 4,4´-DDD | 21.3 | 0.221 | 1034 | 2.1 |
| 14-MONTH | 4 | 4 | On Cap | QT12-4-LV | Sample | Composite | LV | 4,4´-DDE | 12.6 | 0.221 | 612 | 2.1 |
| 14-MONTH | 4 | 4 | On Cap | QT12-4-LV | Sample | Composite | LV | 4,4´-DDT | ND | 0.221 | < 10.73 | 2.1 |
| 14-MONTH | 4 | 4 | On Cap | QT12-4-LV | Sample | Composite | LV | Total DDX | 33.9 | | 1646 | 2.1 |
| 14-MONTH | 5 | 5 | On Cap | QT12-5-CF | Sample | Composite | CF | 2,4´-DDD | ND | 0.21 | < 7.17 | 2.9 |

**Table 1. Compilation of Organism Tissue DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | On Cap Footprint? | Sample ID[3] | Sample Type | Sample Description[4] | Species[5] | Analyte[6] | Result (µg/kg ww) | Detection Limit (µg/kg ww) | Result (µg/kg Lw)[7] | Lipids (% by weight) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14-MONTH | 5 | 5 | On Cap | QT12-5-CF | Sample | Composite | CF | 2,4′-DDE | ND | 0.21 | < 7.17 | 2.9 |
| 14-MONTH | 5 | 5 | On Cap | QT12-5-CF | Sample | Composite | CF | 2,4′-DDT | ND | 0.21 | < 7.17 | 2.9 |
| 14-MONTH | 5 | 5 | On Cap | QT12-5-CF | Sample | Composite | CF | 4,4′-DDD | 29.8 | 0.21 | 1017 | 2.9 |
| 14-MONTH | 5 | 5 | On Cap | QT12-5-CF | Sample | Composite | CF | 4,4′-DDE | 24.1 | 0.21 | 823 | 2.9 |
| 14-MONTH | 5 | 5 | On Cap | QT12-5-CF | Sample | Composite | CF | 4,4′-DDT | 5.0 | 0.21 | 171 | 2.9 |
| 14-MONTH | 5 | 5 | On Cap | QT12-5-CF | Sample | Composite | CF | Total DDX | 58.9 | | 2010 | 2.9 |
| 14-MONTH | 5 | 5 | On Cap | QT12-5-LV | Sample | Composite | LV | 2,4′-DDD | ND | 0.225 | < 11.42 | 2.0 |
| 14-MONTH | 5 | 5 | On Cap | QT12-5-LV | Sample | Composite | LV | 2,4′-DDE | ND | 0.225 | < 11.42 | 2.0 |
| 14-MONTH | 5 | 5 | On Cap | QT12-5-LV | Sample | Composite | LV | 2,4′-DDT | ND | 0.225 | < 11.42 | 2.0 |
| 14-MONTH | 5 | 5 | On Cap | QT12-5-LV | Sample | Composite | LV | 4,4′-DDD | 23.0 | 0.225 | 1168 | 2.0 |
| 14-MONTH | 5 | 5 | On Cap | QT12-5-LV | Sample | Composite | LV | 4,4′-DDE | 14.5 | 0.225 | 736 | 2.0 |
| 14-MONTH | 5 | 5 | On Cap | QT12-5-LV | Sample | Composite | LV | 4,4′-DDT | ND | 0.225 | < 11.42 | 2.0 |
| 14-MONTH | 5 | 5 | On Cap | QT12-5-LV | Sample | Composite | LV | Total DDX | 37.5 | | 1904 | 2.0 |
| 14-MONTH | 6 | 6 | Off Cap | QT12-6-CF | Sample | Composite | CF | 2,4′-DDD | ND | 0.214 | < 8.99 | 2.4 |
| 14-MONTH | 6 | 6 | Off Cap | QT12-6-CF | Sample | Composite | CF | 2,4′-DDE | ND | 0.214 | < 8.99 | 2.4 |
| 14-MONTH | 6 | 6 | Off Cap | QT12-6-CF | Sample | Composite | CF | 2,4′-DDT | ND | 0.214 | < 8.99 | 2.4 |
| 14-MONTH | 6 | 6 | Off Cap | QT12-6-CF | Sample | Composite | CF | 4,4′-DDD | 12.1 | 0.214 | 508 | 2.4 |
| 14-MONTH | 6 | 6 | Off Cap | QT12-6-CF | Sample | Composite | CF | 4,4′-DDE | 20.2 | 0.214 | 849 | 2.4 |
| 14-MONTH | 6 | 6 | Off Cap | QT12-6-CF | Sample | Composite | CF | 4,4′-DDT | ND | 0.214 | < 8.99 | 2.4 |
| 14-MONTH | 6 | 6 | Off Cap | QT12-6-CF | Sample | Composite | CF | Total DDX | 32.3 | | 1357 | 2.4 |
| 14-MONTH | 6 | 6 | Off Cap | QT12-6-LV | Sample | Composite | LV | 2,4′-DDD | ND | 0.192 | < 10.27 | 1.9 |
| 14-MONTH | 6 | 6 | Off Cap | QT12-6-LV | Sample | Composite | LV | 2,4′-DDE | ND | 0.192 | < 10.27 | 1.9 |
| 14-MONTH | 6 | 6 | Off Cap | QT12-6-LV | Sample | Composite | LV | 2,4′-DDT | ND | 0.192 | < 10.27 | 1.9 |
| 14-MONTH | 6 | 6 | Off Cap | QT12-6-LV | Sample | Composite | LV | 4,4′-DDD | 6.6 | 0.192 | 350 | 1.9 |
| 14-MONTH | 6 | 6 | Off Cap | QT12-6-LV | Sample | Composite | LV | 4,4′-DDE | 9.6 | 0.192 | 514 | 1.9 |
| 14-MONTH | 6 | 6 | Off Cap | QT12-6-LV | Sample | Composite | LV | 4,4′-DDT | ND | 0.192 | < 10.27 | 1.9 |
| 14-MONTH | 6 | 6 | Off Cap | QT12-6-LV | Sample | Composite | LV | Total DDX | 16.2 | | 865 | 1.9 |
| 14-MONTH | 7 | 7 | Off Cap | QT12-7-CF | Sample | Composite | CF | 2,4′-DDD | ND | 0.206 | < 7.63 | 2.7 |
| 14-MONTH | 7 | 7 | Off Cap | QT12-7-CF | Sample | Composite | CF | 2,4′-DDE | ND | 0.206 | < 7.63 | 2.7 |
| 14-MONTH | 7 | 7 | Off Cap | QT12-7-CF | Sample | Composite | CF | 2,4′-DDT | ND | 0.206 | < 7.63 | 2.7 |
| 14-MONTH | 7 | 7 | Off Cap | QT12-7-CF | Sample | Composite | CF | 4,4′-DDD | 12.7 | 0.206 | 470 | 2.7 |
| 14-MONTH | 7 | 7 | Off Cap | QT12-7-CF | Sample | Composite | CF | 4,4′-DDE | 13.5 | 0.206 | 500 | 2.7 |
| 14-MONTH | 7 | 7 | Off Cap | QT12-7-CF | Sample | Composite | CF | 4,4′-DDT | ND | 0.206 | < 7.63 | 2.7 |
| 14-MONTH | 7 | 7 | Off Cap | QT12-7-CF | Sample | Composite | CF | Total DDX | 26.2 | | 970 | 2.7 |
| 14-MONTH | 7 | 7 | Off Cap | QT12-7-LV | Sample | Composite | LV | 2,4′-DDD | ND | 0.221 | < 22.32 | 1.0 |
| 14-MONTH | 7 | 7 | Off Cap | QT12-7-LV | Sample | Composite | LV | 2,4′-DDE | ND | 0.221 | < 22.32 | 1.0 |
| 14-MONTH | 7 | 7 | Off Cap | QT12-7-LV | Sample | Composite | LV | 2,4′-DDT | ND | 0.221 | < 22.32 | 1.0 |
| 14-MONTH | 7 | 7 | Off Cap | QT12-7-LV | Sample | Composite | LV | 4,4′-DDD | 2.6 | 0.221 | 262 | 1.0 |
| 14-MONTH | 7 | 7 | Off Cap | QT12-7-LV | Sample | Composite | LV | 4,4′-DDE | 6.9 | 0.221 | 693 | 1.0 |
| 14-MONTH | 7 | 7 | Off Cap | QT12-7-LV | Sample | Composite | LV | 4,4′-DDT | ND | 0.221 | < 22.32 | 1.0 |
| 14-MONTH | 7 | 7 | Off Cap | QT12-7-LV | Sample | Composite | LV | Total DDX | 9.5 | | 955 | 1.0 |
| 14-MONTH | T0-A | T0-A | NA | QT12-T0-A-CF | Sample | Time 0 | CF | 2,4′-DDD | ND | 0.221 | < 23.02 | 1.0 |
| 14-MONTH | T0-A | T0-A | NA | QT12-T0-A-CF | Sample | Time 0 | CF | 2,4′-DDE | ND | 0.221 | < 23.02 | 1.0 |
| 14-MONTH | T0-A | T0-A | NA | QT12-T0-A-CF | Sample | Time 0 | CF | 2,4′-DDT | ND | 0.221 | < 23.02 | 1.0 |

**Table 1. Compilation of Organism Tissue DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | On Cap Footprint? | Sample ID[3] | Sample Type | Sample Description[4] | Species[5] | Analyte[6] | Result (µg/kg ww) | Detection Limit (µg/kg ww) | Result (µg/kg Lw)[7] | Lipids (% by weight) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14-MONTH | T0-A | T0-A | NA | QT12-T0-A-CF | Sample | Time 0 | CF | 4,4′-DDD | ND | 0.221 | < 23.02 | 1.0 |
| 14-MONTH | T0-A | T0-A | NA | QT12-T0-A-CF | Sample | Time 0 | CF | 4,4′-DDE | 5.3 | 0.221 | 553 | 1.0 |
| 14-MONTH | T0-A | T0-A | NA | QT12-T0-A-CF | Sample | Time 0 | CF | 4,4′-DDT | ND | 0.221 | < 23.02 | 1.0 |
| 14-MONTH | T0-A | T0-A | NA | QT12-T0-A-CF | Sample | Time 0 | CF | Total DDX | 5.3 | 0.221 | 553 | 1.0 |
| 14-MONTH | T0-A | T0-A | NA | QT12-T0-A-LV | Sample | Time 0 | LV | 2,4′-DDD | ND | 0.225 | < 5.42 | 4.2 |
| 14-MONTH | T0-A | T0-A | NA | QT12-T0-A-LV | Sample | Time 0 | LV | 2,4′-DDE | ND | 0.225 | < 5.42 | 4.2 |
| 14-MONTH | T0-A | T0-A | NA | QT12-T0-A-LV | Sample | Time 0 | LV | 2,4′-DDT | ND | 0.225 | < 5.42 | 4.2 |
| 14-MONTH | T0-A | T0-A | NA | QT12-T0-A-LV | Sample | Time 0 | LV | 4,4′-DDD | ND | 0.225 | < 5.42 | 4.2 |
| 14-MONTH | T0-A | T0-A | NA | QT12-T0-A-LV | Sample | Time 0 | LV | 4,4′-DDE | ND | 0.225 | < 5.42 | 4.2 |
| 14-MONTH | T0-A | T0-A | NA | QT12-T0-A-LV | Sample | Time 0 | LV | 4,4′-DDT | ND | 0.225 | < 5.42 | 4.2 |
| 14-MONTH | T0-A | T0-A | NA | QT12-T0-A-LV | Sample | Time 0 | LV | Total DDX | ND | 0.225 | < 5.42 | 4.2 |
| 14-MONTH | T0-B | T0-B | NA | QT12-T0-B-CF | Sample | Time 0 | CF | 2,4′-DDD | ND | 0.184 | < 19.17 | 1.0 |
| 14-MONTH | T0-B | T0-B | NA | QT12-T0-B-CF | Sample | Time 0 | CF | 2,4′-DDE | ND | 0.184 | < 19.17 | 1.0 |
| 14-MONTH | T0-B | T0-B | NA | QT12-T0-B-CF | Sample | Time 0 | CF | 2,4′-DDT | ND | 0.184 | < 19.17 | 1.0 |
| 14-MONTH | T0-B | T0-B | NA | QT12-T0-B-CF | Sample | Time 0 | CF | 4,4′-DDD | ND | 0.184 | < 19.17 | 1.0 |
| 14-MONTH | T0-B | T0-B | NA | QT12-T0-B-CF | Sample | Time 0 | CF | 4,4′-DDE | ND | 0.184 | < 19.17 | 1.0 |
| 14-MONTH | T0-B | T0-B | NA | QT12-T0-B-CF | Sample | Time 0 | CF | 4,4′-DDT | ND | 0.184 | < 19.17 | 1.0 |
| 14-MONTH | T0-B | T0-B | NA | QT12-T0-B-CF | Sample | Time 0 | CF | Total DDX | ND | 0.184 | < 19.17 | 1.0 |
| 14-MONTH | T0-B | T0-B | NA | QT12-T0-B-LV | Sample | Time 0 | LV | 2,4′-DDD | ND | 0.213 | < 5.18 | 4.1 |
| 14-MONTH | T0-B | T0-B | NA | QT12-T0-B-LV | Sample | Time 0 | LV | 2,4′-DDE | ND | 0.213 | < 5.18 | 4.1 |
| 14-MONTH | T0-B | T0-B | NA | QT12-T0-B-LV | Sample | Time 0 | LV | 2,4′-DDT | ND | 0.213 | < 5.18 | 4.1 |
| 14-MONTH | T0-B | T0-B | NA | QT12-T0-B-LV | Sample | Time 0 | LV | 4,4′-DDD | ND | 0.213 | < 5.18 | 4.1 |
| 14-MONTH | T0-B | T0-B | NA | QT12-T0-B-LV | Sample | Time 0 | LV | 4,4′-DDE | ND | 0.213 | < 5.18 | 4.1 |
| 14-MONTH | T0-B | T0-B | NA | QT12-T0-B-LV | Sample | Time 0 | LV | 4,4′-DDT | ND | 0.213 | < 5.18 | 4.1 |
| 14-MONTH | T0-B | T0-B | NA | QT12-T0-B-LV | Sample | Time 0 | LV | Total DDX | ND | 0.213 | < 5.18 | 4.1 |
| 14-MONTH | T0-C | T0-C | NA | QT12-T0-C-CF | Sample | Time 0 | CF | 2,4′-DDD | ND | 0.188 | < 19.58 | 1.0 |
| 14-MONTH | T0-C | T0-C | NA | QT12-T0-C-CF | Sample | Time 0 | CF | 2,4′-DDE | ND | 0.188 | < 19.58 | 1.0 |
| 14-MONTH | T0-C | T0-C | NA | QT12-T0-C-CF | Sample | Time 0 | CF | 2,4′-DDT | ND | 0.188 | < 19.58 | 1.0 |
| 14-MONTH | T0-C | T0-C | NA | QT12-T0-C-CF | Sample | Time 0 | CF | 4,4′-DDD | ND | 0.188 | < 19.58 | 1.0 |
| 14-MONTH | T0-C | T0-C | NA | QT12-T0-C-CF | Sample | Time 0 | CF | 4,4′-DDE | ND | 0.188 | < 19.58 | 1.0 |
| 14-MONTH | T0-C | T0-C | NA | QT12-T0-C-CF | Sample | Time 0 | CF | 4,4′-DDT | ND | 0.188 | < 19.58 | 1.0 |
| 14-MONTH | T0-C | T0-C | NA | QT12-T0-C-CF | Sample | Time 0 | CF | Total DDX | ND | 0.188 | < 19.58 | 1.0 |
| 14-MONTH | T0-C | T0-C | NA | QT12-T0-C-LV | Sample | Time 0 | LV | 2,4′-DDD | ND | 0.22 | < 5.61 | 3.9 |
| 14-MONTH | T0-C | T0-C | NA | QT12-T0-C-LV | Sample | Time 0 | LV | 2,4′-DDE | ND | 0.22 | < 5.61 | 3.9 |
| 14-MONTH | T0-C | T0-C | NA | QT12-T0-C-LV | Sample | Time 0 | LV | 2,4′-DDT | ND | 0.22 | < 5.61 | 3.9 |
| 14-MONTH | T0-C | T0-C | NA | QT12-T0-C-LV | Sample | Time 0 | LV | 4,4′-DDD | ND | 0.22 | < 5.61 | 3.9 |
| 14-MONTH | T0-C | T0-C | NA | QT12-T0-C-LV | Sample | Time 0 | LV | 4,4′-DDE | ND | 0.22 | < 5.61 | 3.9 |
| 14-MONTH | T0-C | T0-C | NA | QT12-T0-C-LV | Sample | Time 0 | LV | 4,4′-DDT | ND | 0.22 | < 5.61 | 3.9 |
| 14-MONTH | T0-C | T0-C | NA | QT12-T0-C-LV | Sample | Time 0 | LV | Total DDX | ND | 0.22 | < 5.61 | 3.9 |
| 25-MONTH | 1 | 1 | On Cap | QT24-1-C-CF | Sample | Composite | CF | 2,4′-DDD | 3.1 | 0.15 | 136 | 2.3 |
| 25-MONTH | 1 | 1 | On Cap | QT24-1-C-CF | Sample | Composite | CF | 2,4′-DDE | 1.9 | 0.15 | 82 | 2.3 |
| 25-MONTH | 1 | 1 | On Cap | QT24-1-C-CF | Sample | Composite | CF | 2,4′-DDT | ND | 0.15 | < 6.58 | 2.3 |
| 25-MONTH | 1 | 1 | On Cap | QT24-1-C-CF | Sample | Composite | CF | 4,4′-DDD | 16.3 | 0.15 | 715 | 2.3 |
| 25-MONTH | 1 | 1 | On Cap | QT24-1-C-CF | Sample | Composite | CF | 4,4′-DDE | 12.8 | 0.15 | 561 | 2.3 |

**Table 1. Compilation of Organism Tissue DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | On Cap Footprint? | Sample ID[3] | Sample Type | Sample Description[4] | Species[5] | Analyte[6] | Result (µg/kg ww) | Detection Limit (µg/kg ww) | Result (µg/kg Lw)[7] | Lipids (% by weight) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25-MONTH | 1 | 1 | On Cap | QT24-1-C-CF | Sample | Composite | CF | 4,4´-DDT | 6.9 | 0.15 | 301 | 2.3 |
| 25-MONTH | 1 | 1 | On Cap | QT24-1-C-CF | Sample | Composite | CF | Total DDX | 40.9 | 0.15 | 1795 | 2.3 |
| 25-MONTH | 1 | 1 | On Cap | QT24-1-C-LV | Sample | Composite | LV | 2,4´-DDD | 3.4 | 0.149 | 161 | 2.1 |
| 25-MONTH | 1 | 1 | On Cap | QT24-1-C-LV | Sample | Composite | LV | 2,4´-DDE | 2.5 | 0.149 | 118 | 2.1 |
| 25-MONTH | 1 | 1 | On Cap | QT24-1-C-LV | Sample | Composite | LV | 2,4´-DDT | ND | 0.149 | < 7 | 2.1 |
| 25-MONTH | 1 | 1 | On Cap | QT24-1-C-LV | Sample | Composite | LV | 4,4´-DDD | 24.4 | 0.149 | 1146 | 2.1 |
| 25-MONTH | 1 | 1 | On Cap | QT24-1-C-LV | Sample | Composite | LV | 4,4´-DDE | 21.0 | 0.149 | 986 | 2.1 |
| 25-MONTH | 1 | 1 | On Cap | QT24-1-C-LV | Sample | Composite | LV | 4,4´-DDT | 2.8 | 0.149 | 131 | 2.1 |
| 25-MONTH | 1 | 1 | On Cap | QT24-1-C-LV | Sample | Composite | LV | Total DDX | 54.1 | 0.149 | 2541 | 2.1 |
| 25-MONTH | 2 | 2 | On Cap | QT24-2-C-CF | Sample | Composite | CF | 2,4´-DDD | 1.9 | 0.149 | 91 | 2.1 |
| 25-MONTH | 2 | 2 | On Cap | QT24-2-C-CF | Sample | Composite | CF | 2,4´-DDE | 1.3 | 0.149 | 60 | 2.1 |
| 25-MONTH | 2 | 2 | On Cap | QT24-2-C-CF | Sample | Composite | CF | 2,4´-DDT | ND | 0.149 | < 7 | 2.1 |
| 25-MONTH | 2 | 2 | On Cap | QT24-2-C-CF | Sample | Composite | CF | 4,4´-DDD | 10.0 | 0.149 | 469 | 2.1 |
| 25-MONTH | 2 | 2 | On Cap | QT24-2-C-CF | Sample | Composite | CF | 4,4´-DDE | 1.2 | 0.149 | 58 | 2.1 |
| 25-MONTH | 2 | 2 | On Cap | QT24-2-C-CF | Sample | Composite | CF | 4,4´-DDT | 5.3 | 0.149 | 246 | 2.1 |
| 25-MONTH | 2 | 2 | On Cap | QT24-2-C-CF | Sample | Composite | CF | Total DDX | 19.7 | 0.149 | 924 | 2.1 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-CF | Primary | Composite | CF | 2,4´-DDD | 2.2 | 0.153 | 119 | 1.8 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-CF | Primary | Composite | CF | 2,4´-DDE | 1.5 | 0.153 | 83 | 1.8 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-CF | Primary | Composite | CF | 2,4´-DDT | ND | 0.153 | < 8.45 | 1.8 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-CF | Primary | Composite | CF | 4,4´-DDD | 12.0 | 0.153 | 663 | 1.8 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-CF | Primary | Composite | CF | 4,4´-DDE | 11.9 | 0.153 | 657 | 1.8 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-CF | Primary | Composite | CF | 4,4´-DDT | 8.5 | 0.153 | 471 | 1.8 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-CF | Primary | Composite | CF | Total DDX | 36.1 | 0.153 | 1994 | 1.8 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-CF-Avg | Sample | Composite | CF | 2,4´-DDD | 2.2 | 0.153 | 127 | 1.7 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-CF-Avg | Sample | Composite | CF | 2,4´-DDE | 1.6 | 0.153 | 95 | 1.7 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-CF-Avg | Sample | Composite | CF | 2,4´-DDT | ND | 0.153 | <9.43 | 1.7 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-CF-Avg | Sample | Composite | CF | 4,4´-DDD | 11.9 | 0.153 | 699 | 1.7 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-CF-Avg | Sample | Composite | CF | 4,4´-DDE | 12.2 | 0.153 | 719 | 1.7 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-CF-Avg | Sample | Composite | CF | 4,4´-DDT | 7.6 | 0.153 | 444 | 1.7 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-CF-Avg | Sample | Composite | CF | Total DDX | 35.3 | 0.153 | 2085 | 1.7 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-LV | Primary | Composite | LV | 2,4´-DDD | 2.4 | 0.15 | 79 | 3.0 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-LV | Primary | Composite | LV | 2,4´-DDE | 1.6 | 0.15 | 52 | 3.0 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-LV | Primary | Composite | LV | 2,4´-DDT | ND | 0.15 | < 4.98 | 3.0 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-LV | Primary | Composite | LV | 4,4´-DDD | 13.9 | 0.15 | 462 | 3.0 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-LV | Primary | Composite | LV | 4,4´-DDE | 13.1 | 0.15 | 435 | 3.0 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-LV | Primary | Composite | LV | 4,4´-DDT | 2.0 | 0.15 | 66 | 3.0 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-LV | Primary | Composite | LV | Total DDX | 32.9 | 0.15 | 1094 | 3.0 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-LV-Avg | Sample | Composite | LV | 2,4´-DDD | 2.7 | 0.152 | 103 | 2.7 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-LV-Avg | Sample | Composite | LV | 2,4´-DDE | 1.8 | 0.152 | 68 | 2.7 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-LV-Avg | Sample | Composite | LV | 2,4´-DDT | ND | 0.152 | <6.41 | 2.7 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-LV-Avg | Sample | Composite | LV | 4,4´-DDD | 15.0 | 0.152 | 568 | 2.7 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-LV-Avg | Sample | Composite | LV | 4,4´-DDE | 15.2 | 0.152 | 583 | 2.7 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-LV-Avg | Sample | Composite | LV | 4,4´-DDT | 2.1 | 0.152 | 78 | 2.7 |
| 25-MONTH | 3 | 3 | On Cap | QT24-3-C-LV-Avg | Sample | Composite | LV | Total DDX | 36.7 | 0.152 | 1399 | 2.7 |

**Table 1. Compilation of Organism Tissue DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | On Cap Footprint? | Sample ID[3] | Sample Type | Sample Description[4] | Species[5] | Analyte[6] | Result (µg/kg ww) | Detection Limit (µg/kg ww) | Result (µg/kg Lw)[7] | Lipids (% by weight) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25-MONTH | 3DUP | 3 | On Cap | QT24-3DUP-C-CF | Duplicate | Composite | CF | 2,4´-DDD | 2.2 | 0.15 | 136 | 1.6 |
| 25-MONTH | 3DUP | 3 | On Cap | QT24-3DUP-C-CF | Duplicate | Composite | CF | 2,4´-DDE | 1.7 | 0.15 | 107 | 1.6 |
| 25-MONTH | 3DUP | 3 | On Cap | QT24-3DUP-C-CF | Duplicate | Composite | CF | 2,4´-DDT | ND | 0.15 | < 9.43 | 1.6 |
| 25-MONTH | 3DUP | 3 | On Cap | QT24-3DUP-C-CF | Duplicate | Composite | CF | 4,4´-DDD | 11.7 | 0.15 | 736 | 1.6 |
| 25-MONTH | 3DUP | 3 | On Cap | QT24-3DUP-C-CF | Duplicate | Composite | CF | 4,4´-DDE | 12.4 | 0.15 | 780 | 1.6 |
| 25-MONTH | 3DUP | 3 | On Cap | QT24-3DUP-C-CF | Duplicate | Composite | CF | 4,4´-DDT | 6.6 | 0.15 | 418 | 1.6 |
| 25-MONTH | 3DUP | 3 | On Cap | QT24-3DUP-C-CF | Duplicate | Composite | CF | Total DDX | 34.6 | 0.15 | 2176 | 1.6 |
| 25-MONTH | 3DUP | 3 | On Cap | QT24-3DUP-C-LV | Duplicate | Composite | LV | 2,4´-DDD | 3.0 | 0.152 | 126 | 2.4 |
| 25-MONTH | 3DUP | 3 | On Cap | QT24-3DUP-C-LV | Duplicate | Composite | LV | 2,4´-DDE | 2.0 | 0.152 | 84 | 2.4 |
| 25-MONTH | 3DUP | 3 | On Cap | QT24-3DUP-C-LV | Duplicate | Composite | LV | 2,4´-DDT | ND | 0.152 | < 6.41 | 2.4 |
| 25-MONTH | 3DUP | 3 | On Cap | QT24-3DUP-C-LV | Duplicate | Composite | LV | 4,4´-DDD | 16.0 | 0.152 | 675 | 2.4 |
| 25-MONTH | 3DUP | 3 | On Cap | QT24-3DUP-C-LV | Duplicate | Composite | LV | 4,4´-DDE | 17.3 | 0.152 | 730 | 2.4 |
| 25-MONTH | 3DUP | 3 | On Cap | QT24-3DUP-C-LV | Duplicate | Composite | LV | 4,4´-DDT | 2.1 | 0.152 | 89 | 2.4 |
| 25-MONTH | 3DUP | 3 | On Cap | QT24-3DUP-C-LV | Duplicate | Composite | LV | Total DDX | 40.4 | 0.152 | 1704 | 2.4 |
| 25-MONTH | 4 | 4 | On Cap | QT24-4-C-CF | Sample | Composite | CF | 2,4´-DDD | 1.2 | 0.153 | 54 | 2.1 |
| 25-MONTH | 4 | 4 | On Cap | QT24-4-C-CF | Sample | Composite | CF | 2,4´-DDE | 1.2 | 0.153 | 55 | 2.1 |
| 25-MONTH | 4 | 4 | On Cap | QT24-4-C-CF | Sample | Composite | CF | 2,4´-DDT | ND | 0.153 | < 7.22 | 2.1 |
| 25-MONTH | 4 | 4 | On Cap | QT24-4-C-CF | Sample | Composite | CF | 4,4´-DDD | 6.5 | 0.153 | 308 | 2.1 |
| 25-MONTH | 4 | 4 | On Cap | QT24-4-C-CF | Sample | Composite | CF | 4,4´-DDE | 6.7 | 0.153 | 316 | 2.1 |
| 25-MONTH | 4 | 4 | On Cap | QT24-4-C-CF | Sample | Composite | CF | 4,4´-DDT | 3.5 | 0.153 | 163 | 2.1 |
| 25-MONTH | 4 | 4 | On Cap | QT24-4-C-CF | Sample | Composite | CF | Total DDX | 19.0 | 0.153 | 895 | 2.1 |
| 25-MONTH | 4 | 4 | On Cap | QT24-4-C-LV | Sample | Composite | LV | 2,4´-DDD | 0.8 | 0.15 | 26 | 3.1 |
| 25-MONTH | 4 | 4 | On Cap | QT24-4-C-LV | Sample | Composite | LV | 2,4´-DDE | 1.3 | 0.15 | 41 | 3.1 |
| 25-MONTH | 4 | 4 | On Cap | QT24-4-C-LV | Sample | Composite | LV | 2,4´-DDT | ND | 0.15 | < 4.82 | 3.1 |
| 25-MONTH | 4 | 4 | On Cap | QT24-4-C-LV | Sample | Composite | LV | 4,4´-DDD | 5.0 | 0.15 | 162 | 3.1 |
| 25-MONTH | 4 | 4 | On Cap | QT24-4-C-LV | Sample | Composite | LV | 4,4´-DDE | 6.2 | 0.15 | 199 | 3.1 |
| 25-MONTH | 4 | 4 | On Cap | QT24-4-C-LV | Sample | Composite | LV | 4,4´-DDT | 0.7 | 0.15 | 22 | 3.1 |
| 25-MONTH | 4 | 4 | On Cap | QT24-4-C-LV | Sample | Composite | LV | Total DDX | 14.0 | 0.15 | 450 | 3.1 |
| 25-MONTH | 5 | 5 | On Cap | QT24-5-C-CF | Sample | Composite | CF | 2,4´-DDD | 1.9 | 0.147 | 86 | 2.2 |
| 25-MONTH | 5 | 5 | On Cap | QT24-5-C-CF | Sample | Composite | CF | 2,4´-DDE | 1.5 | 0.147 | 68 | 2.2 |
| 25-MONTH | 5 | 5 | On Cap | QT24-5-C-CF | Sample | Composite | CF | 2,4´-DDT | ND | 0.147 | < 6.62 | 2.2 |
| 25-MONTH | 5 | 5 | On Cap | QT24-5-C-CF | Sample | Composite | CF | 4,4´-DDD | 9.5 | 0.147 | 428 | 2.2 |
| 25-MONTH | 5 | 5 | On Cap | QT24-5-C-CF | Sample | Composite | CF | 4,4´-DDE | 8.9 | 0.147 | 402 | 2.2 |
| 25-MONTH | 5 | 5 | On Cap | QT24-5-C-CF | Sample | Composite | CF | 4,4´-DDT | 3.8 | 0.147 | 173 | 2.2 |
| 25-MONTH | 5 | 5 | On Cap | QT24-5-C-CF | Sample | Composite | CF | Total DDX | 25.7 | 0.147 | 1156 | 2.2 |
| 25-MONTH | 6 | 6 | Off Cap | QT24-6-C-CF | Sample | Composite | CF | 2,4´-DDD | 0.4 | 0.153 | 24 | 1.7 |
| 25-MONTH | 6 | 6 | Off Cap | QT24-6-C-CF | Sample | Composite | CF | 2,4´-DDE | 0.9 | 0.153 | 51 | 1.7 |
| 25-MONTH | 6 | 6 | Off Cap | QT24-6-C-CF | Sample | Composite | CF | 2,4´-DDT | ND | 0.153 | < 9 | 1.7 |
| 25-MONTH | 6 | 6 | Off Cap | QT24-6-C-CF | Sample | Composite | CF | 4,4´-DDD | 2.8 | 0.153 | 166 | 1.7 |
| 25-MONTH | 6 | 6 | Off Cap | QT24-6-C-CF | Sample | Composite | CF | 4,4´-DDE | 3.8 | 0.153 | 222 | 1.7 |
| 25-MONTH | 6 | 6 | Off Cap | QT24-6-C-CF | Sample | Composite | CF | 4,4´-DDT | 1.1 | 0.153 | 65 | 1.7 |
| 25-MONTH | 6 | 6 | Off Cap | QT24-6-C-CF | Sample | Composite | CF | Total DDX | 9.0 | 0.153 | 529 | 1.7 |
| 25-MONTH | 6 | 6 | Off Cap | QT24-6-C-LV | Sample | Composite | LV | 2,4´-DDD | 0.3 | 0.149 | 14 | 2.3 |
| 25-MONTH | 6 | 6 | Off Cap | QT24-6-C-LV | Sample | Composite | LV | 2,4´-DDE | 0.8 | 0.149 | 35 | 2.3 |

**Table 1. Compilation of Organism Tissue DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | On Cap Footprint? | Sample ID[3] | Sample Type | Sample Description[4] | Species[5] | Analyte[6] | Result (µg/kg ww) | Detection Limit (µg/kg ww) | Result (µg/kg Lw)[7] | Lipids (% by weight) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25-MONTH | 6 | 6 | Off Cap | QT24-6-C-LV | Sample | Composite | LV | 2,4′-DDT | ND | 0.149 | < 6.54 | 2.3 |
| 25-MONTH | 6 | 6 | Off Cap | QT24-6-C-LV | Sample | Composite | LV | 4,4′-DDD | 3.0 | 0.149 | 132 | 2.3 |
| 25-MONTH | 6 | 6 | Off Cap | QT24-6-C-LV | Sample | Composite | LV | 4,4′-DDE | 4.9 | 0.149 | 215 | 2.3 |
| 25-MONTH | 6 | 6 | Off Cap | QT24-6-C-LV | Sample | Composite | LV | 4,4′-DDT | 0.8 | 0.149 | 33 | 2.3 |
| 25-MONTH | 6 | 6 | Off Cap | QT24-6-C-LV | Sample | Composite | LV | Total DDX | 9.8 | 0.149 | 429 | 2.3 |
| 25-MONTH | 7 | 7 | Off Cap | QT24-7-C-CF | Sample | Composite | CF | 2,4′-DDD | 0.5 | 0.152 | 29 | 1.7 |
| 25-MONTH | 7 | 7 | Off Cap | QT24-7-C-CF | Sample | Composite | CF | 2,4′-DDE | 1.0 | 0.152 | 59 | 1.7 |
| 25-MONTH | 7 | 7 | Off Cap | QT24-7-C-CF | Sample | Composite | CF | 2,4′-DDT | ND | 0.152 | < 8.89 | 1.7 |
| 25-MONTH | 7 | 7 | Off Cap | QT24-7-C-CF | Sample | Composite | CF | 4,4′-DDD | 3.5 | 0.152 | 202 | 1.7 |
| 25-MONTH | 7 | 7 | Off Cap | QT24-7-C-CF | Sample | Composite | CF | 4,4′-DDE | 5.5 | 0.152 | 323 | 1.7 |
| 25-MONTH | 7 | 7 | Off Cap | QT24-7-C-CF | Sample | Composite | CF | 4,4′-DDT | 1.5 | 0.152 | 87 | 1.7 |
| 25-MONTH | 7 | 7 | Off Cap | QT24-7-C-CF | Sample | Composite | CF | Total DDX | 12.0 | 0.152 | 701 | 1.7 |
| 25-MONTH | 7 | 7 | Off Cap | QT24-7-C-LV | Sample | Composite | LV | 2,4′-DDD | ND | 0.152 | < 7.72 | 2.0 |
| 25-MONTH | 7 | 7 | Off Cap | QT24-7-C-LV | Sample | Composite | LV | 2,4′-DDE | 0.8 | 0.152 | 43 | 2.0 |
| 25-MONTH | 7 | 7 | Off Cap | QT24-7-C-LV | Sample | Composite | LV | 2,4′-DDT | ND | 0.152 | < 7.72 | 2.0 |
| 25-MONTH | 7 | 7 | Off Cap | QT24-7-C-LV | Sample | Composite | LV | 4,4′-DDD | 2.3 | 0.152 | 116 | 2.0 |
| 25-MONTH | 7 | 7 | Off Cap | QT24-7-C-LV | Sample | Composite | LV | 4,4′-DDE | 5.0 | 0.152 | 252 | 2.0 |
| 25-MONTH | 7 | 7 | Off Cap | QT24-7-C-LV | Sample | Composite | LV | 4,4′-DDT | 0.7 | 0.152 | 38 | 2.0 |
| 25-MONTH | 7 | 7 | Off Cap | QT24-7-C-LV | Sample | Composite | LV | Total DDX | 8.8 | 0.152 | 449 | 2.0 |
| 25-MONTH | T0-A | T0-A | NA | QT24-T0-CF-A Rep | Sample | Time 0 | CF | 2,4′-DDD | ND | 0.152 | < 19 | 0.8 |
| 25-MONTH | T0-A | T0-A | NA | QT24-T0-CF-A Rep | Sample | Time 0 | CF | 2,4′-DDE | ND | 0.152 | < 19 | 0.8 |
| 25-MONTH | T0-A | T0-A | NA | QT24-T0-CF-A Rep | Sample | Time 0 | CF | 2,4′-DDT | ND | 0.152 | < 19 | 0.8 |
| 25-MONTH | T0-A | T0-A | NA | QT24-T0-CF-A Rep | Sample | Time 0 | CF | 4,4′-DDD | ND | 0.152 | < 19 | 0.8 |
| 25-MONTH | T0-A | T0-A | NA | QT24-T0-CF-A Rep | Sample | Time 0 | CF | 4,4′-DDE | ND | 0.152 | < 19 | 0.8 |
| 25-MONTH | T0-A | T0-A | NA | QT24-T0-CF-A Rep | Sample | Time 0 | CF | 4,4′-DDT | ND | 0.152 | < 19 | 0.8 |
| 25-MONTH | T0-A | T0-A | NA | QT24-T0-CF-A Rep | Sample | Time 0 | CF | Total DDX | ND | 0.152 | < 19 | 0.8 |
| 25-MONTH | T0-A | T0-A | NA | QT24-T0-LV-A Rep | Sample | Time 0 | LV | 2,4′-DDD | ND | 0.153 | < 4.31 | 3.6 |
| 25-MONTH | T0-A | T0-A | NA | QT24-T0-LV-A Rep | Sample | Time 0 | LV | 2,4′-DDE | 0.6 | 0.153 | 18 | 3.6 |
| 25-MONTH | T0-A | T0-A | NA | QT24-T0-LV-A Rep | Sample | Time 0 | LV | 2,4′-DDT | ND | 0.153 | < 4.31 | 3.6 |
| 25-MONTH | T0-A | T0-A | NA | QT24-T0-LV-A Rep | Sample | Time 0 | LV | 4,4′-DDD | 0.7 | 0.153 | 19 | 3.6 |
| 25-MONTH | T0-A | T0-A | NA | QT24-T0-LV-A Rep | Sample | Time 0 | LV | 4,4′-DDE | 3.3 | 0.153 | 92 | 3.6 |
| 25-MONTH | T0-A | T0-A | NA | QT24-T0-LV-A Rep | Sample | Time 0 | LV | 4,4′-DDT | ND | 0.153 | < 4.31 | 3.6 |
| 25-MONTH | T0-A | T0-A | NA | QT24-T0-LV-A Rep | Sample | Time 0 | LV | Total DDX | 4.5 | 0.153 | 128 | 3.6 |
| 25-MONTH | T0-B | T0-B | NA | QT24-T0-CF-B Rep | Sample | Time 0 | CF | 2,4′-DDD | ND | 0.156 | < 20 | 0.8 |
| 25-MONTH | T0-B | T0-B | NA | QT24-T0-CF-B Rep | Sample | Time 0 | CF | 2,4′-DDE | ND | 0.156 | < 20 | 0.8 |
| 25-MONTH | T0-B | T0-B | NA | QT24-T0-CF-B Rep | Sample | Time 0 | CF | 2,4′-DDT | ND | 0.156 | < 20 | 0.8 |
| 25-MONTH | T0-B | T0-B | NA | QT24-T0-CF-B Rep | Sample | Time 0 | CF | 4,4′-DDD | ND | 0.156 | < 20 | 0.8 |
| 25-MONTH | T0-B | T0-B | NA | QT24-T0-CF-B Rep | Sample | Time 0 | CF | 4,4′-DDE | ND | 0.156 | < 20 | 0.8 |
| 25-MONTH | T0-B | T0-B | NA | QT24-T0-CF-B Rep | Sample | Time 0 | CF | 4,4′-DDT | ND | 0.156 | < 20 | 0.8 |
| 25-MONTH | T0-B | T0-B | NA | QT24-T0-CF-B Rep | Sample | Time 0 | CF | Total DDX | ND | 0.156 | < 20 | 0.8 |
| 25-MONTH | T0-B | T0-B | NA | QT24-T0-LV-B Rep | Sample | Time 0 | LV | 2,4′-DDD | ND | 0.153 | < 4.1 | 3.7 |
| 25-MONTH | T0-B | T0-B | NA | QT24-T0-LV-B Rep | Sample | Time 0 | LV | 2,4′-DDE | 0.8 | 0.153 | 20 | 3.7 |
| 25-MONTH | T0-B | T0-B | NA | QT24-T0-LV-B Rep | Sample | Time 0 | LV | 2,4′-DDT | ND | 0.153 | < 4.1 | 3.7 |
| 25-MONTH | T0-B | T0-B | NA | QT24-T0-LV-B Rep | Sample | Time 0 | LV | 4,4′-DDD | 0.6 | 0.153 | 16 | 3.7 |

**Table 1. Compilation of Organism Tissue DDX Results for all Monitoring Events**
SSC Pacific
Quantico, Virginia

| Event[1] | Station ID | Comparison Station ID[2] | On Cap Footprint? | Sample ID[3] | Sample Type | Sample Description[4] | Species[5] | Analyte[6] | Result (µg/kg ww) | Detection Limit (µg/kg ww) | Result (µg/kg Lw)[7] | Lipids (% by weight) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25-MONTH | T0-B | T0-B | NA | QT24-T0-LV-B Rep | Sample | Time 0 | LV | 4,4´-DDE | 3.4 | 0.153 | 91 | 3.7 |
| 25-MONTH | T0-B | T0-B | NA | QT24-T0-LV-B Rep | Sample | Time 0 | LV | 4,4´-DDT | ND | 0.153 | < 4.1 | 3.7 |
| 25-MONTH | T0-B | T0-B | NA | QT24-T0-LV-B Rep | Sample | Time 0 | LV | Total DDX | 4.7 | 0.153 | 127 | 3.7 |
| 25-MONTH | T0-C | T0-C | NA | QT24-T0-CF-C Rep | Sample | Time 0 | CF | 2,4´-DDD | ND | 0.153 | < 18.89 | 0.8 |
| 25-MONTH | T0-C | T0-C | NA | QT24-T0-CF-C Rep | Sample | Time 0 | CF | 2,4´-DDE | ND | 0.153 | < 18.89 | 0.8 |
| 25-MONTH | T0-C | T0-C | NA | QT24-T0-CF-C Rep | Sample | Time 0 | CF | 2,4´-DDT | ND | 0.153 | < 18.89 | 0.8 |
| 25-MONTH | T0-C | T0-C | NA | QT24-T0-CF-C Rep | Sample | Time 0 | CF | 4,4´-DDD | ND | 0.153 | < 18.89 | 0.8 |
| 25-MONTH | T0-C | T0-C | NA | QT24-T0-CF-C Rep | Sample | Time 0 | CF | 4,4´-DDE | ND | 0.153 | < 18.89 | 0.8 |
| 25-MONTH | T0-C | T0-C | NA | QT24-T0-CF-C Rep | Sample | Time 0 | CF | 4,4´-DDT | ND | 0.153 | < 18.89 | 0.8 |
| 25-MONTH | T0-C | T0-C | NA | QT24-T0-CF-C Rep | Sample | Time 0 | CF | Total DDX | ND | 0.153 | < 18.89 | 0.8 |
| 25-MONTH | T0-C | T0-C | NA | QT24-T0-LV-C Rep | Sample | Time 0 | LV | 2,4´-DDD | ND | 0.153 | < 3.06 | 5.0 |
| 25-MONTH | T0-C | T0-C | NA | QT24-T0-LV-C Rep | Sample | Time 0 | LV | 2,4´-DDE | ND | 0.153 | < 3.06 | 5.0 |
| 25-MONTH | T0-C | T0-C | NA | QT24-T0-LV-C Rep | Sample | Time 0 | LV | 2,4´-DDT | ND | 0.153 | < 3.06 | 5.0 |
| 25-MONTH | T0-C | T0-C | NA | QT24-T0-LV-C Rep | Sample | Time 0 | LV | 4,4´-DDD | 0.6 | 0.153 | 12 | 5.0 |
| 25-MONTH | T0-C | T0-C | NA | QT24-T0-LV-C Rep | Sample | Time 0 | LV | 4,4´-DDE | 3.6 | 0.153 | 72 | 5.0 |
| 25-MONTH | T0-C | T0-C | NA | QT24-T0-LV-C Rep | Sample | Time 0 | LV | 4,4´-DDT | ND | 0.153 | < 3.06 | 5.0 |
| 25-MONTH | T0-C | T0-C | NA | QT24-T0-LV-C Rep | Sample | Time 0 | LV | Total DDX | 4.2 | 0.153 | 84 | 5.0 |

**Footnotes:**

1. Sample collections dates: Baseline 2 (May, 2009), Baseline 3 (October, 2012), 2-Month (September, 2014), 14-Month (September, 2015) and 25-Month (August, 2016).
2. Comparison Station IDs align Baseline 2 IDs with subsequent events for analysis purposes. Samples identified as T0 are composites of non-field deployed organisms.
3. Sample ID's with -Avg suffix represented an average of primary and duplicate samples, or average of individual replicate chambers (QB1-Lv-R2-4_R4-4-Avg and QB1-Cf-R8_R9_R10-Avg). No Sample recovery for LV at Station 3 (2-Month) and Stations 2 and 5 (25 Month).
4. During baseline 3 event, replicate organisms from individual SEARing chambers as well as a composite of all chambers were analyzed for DDX. Composite samples used for data analysis.
5. *Lumbriculus variegatus* (LV) and *Corbicula fluminea* deployed *in situ* via SEA Ring technology. Samples identified as pelagic were native organisms collected during baseline 2.
6. Total DDX represents the sum of detected congeners. During Baseline 3 event, only 4,4´-substituted congeners analyzed.
7. If DDX is ND, lipid weight basis is reported as < DL divided by fraction of lipids.

**Abbreviations:**

CF: *Corbicula fluminea*
DL: detection limit
LV: *Lumbriculus variegatus*
Lw: lipid weight
NA: not applicable
ND: not detected
µg/kg: microgram(s) per kilogram
ww: wet weight

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*The Business of Innovation*

**Project Client:** NAVY SPACE + NAVAL WARFARE SYSTS COMMAND
**Project Name:** SPAWAR Quantico Embayment EMNR - Pelagic Invertebrate and Lumbriculus Samples
**Project Number:** CG898574-0001

| | |
|---|---|
| **Client ID** | Procedural Blank |
| **Battelle ID** | BN373PB-P |
| **Sample Type** | PB |
| **Collection Date** | 10/09/2009 |
| **Extraction Date** | 10/09/2009 |
| **Analysis Date** | 10/19/2009 |
| **Analytical Instrument** | MS |
| **% Moisture** | 0.00 |
| **% Lipid** | NA |
| **Matrix** | TISSUE |
| **Sample Size** | 10.19 |
| **Size Unit-Basis** | G_WET |
| **Units** | NG/G_WET |

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| | |
|---|---|
| 2,4'-DDE | 0.08 U |
| 4,4'-DDE | 0.09 U |
| 2,4'-DDD | 0.05 U |
| 4,4'-DDD | 0.06 U |
| 2,4'-DDT | 0.09 U |
| 4,4'-DDT | 0.04 U |

***Surrogate Recoveries (%)***

| | |
|---|---|
| Cl3(34) | 59 |
| Cl6(152) | 78 |

Not Surrogate Corrected

Analyzed By Thorn, Jonathan
11/9/2009

T09-0129MS-Master_315:DRAFT

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**Project Client:** NAVY SPACE + NAVAL WARFARE SYSTS COMMAND
**Project Name:** SPAWAR Quantico Embayment EMNR - Pelagic Invertebrate and Lumbriculus Samples
**Project Number:** CG898574-0001

| | | | | |
|---|---|---|---|---|
| **Client ID** | Laboratory Control Sample | | | |
| **Battelle ID** | BN374LCS-P | | | |
| **Sample Type** | LCS | | | |
| **Collection Date** | 10/09/2009 | | | |
| **Extraction Date** | 10/09/2009 | | | |
| **Analysis Date** | 10/19/2009 | | | |
| **Analytical Instrument** | MS | | | |
| **% Moisture** | 0.00 | | | |
| **% Lipid** | NA | | | |
| **Matrix** | TISSUE | | | |
| **Sample Size** | 10.01 | | | |
| **Size Unit-Basis** | G_WET | | | |
| **Units** | NG/G_WET | **Target** | **% REC** | **Qual** |
| 2,4'-DDE | 2.35 | 2.51 | 94 | |
| 4,4'-DDE | 2.24 | 2.50 | 90 | |
| 2,4'-DDD | 2.25 | 2.50 | 90 | |
| 4,4'-DDD | 2.48 | 2.50 | 99 | |
| 2,4'-DDT | 2.39 | 2.51 | 95 | |
| 4,4'-DDT | 2.43 | 2.50 | 97 | |

***Surrogate Recoveries (%)***

| | |
|---|---|
| Cl3(34) | 76 |
| Cl6(152) | 82 |

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Not Surrogate Corrected

Analyzed By Thorn, Jonathan
11/9/2009

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**Project Client:** NAVY SPACE + NAVAL WARFARE SYSTS COMMAND
**Project Name:** SPAWAR Quantico Embayment EMNR - Pelagic Invertebrate and Lumbriculus Samples
**Project Number:** CG898574-0001

| **Client ID** | B2-CAP3-LUMB | B2-CAP3-LUMB | | |
|---|---|---|---|---|
| **Battelle ID** | Q8210-P | Q8210DUP-P | | |
| **Sample Type** | SA | QADU | | |
| **Collection Date** | 09/25/2009 | 09/25/2009 | | |
| **Extraction Date** | 10/09/2009 | 10/09/2009 | | |
| **Analysis Date** | 10/20/2009 | 10/20/2009 | | |
| **Analytical Instrument** | MS | MS | | |
| **% Moisture** | 0.00 | 0.00 | | |
| **% Lipid** | 0.93 | 0.85 | | |
| **Matrix** | LUMBRICULUS | LUMBRICULUS | | |
| **Sample Size** | 10.08 | 10.17 | | |
| **Size Unit-Basis** | G_WET | G_WET | | |
| **Units** | NG/G_WET | NG/G_WET | **RPD** | **Qual** |
| 2,4'-DDE | 0.56 | 2.44 | 125.3 | N |
| 4,4'-DDE | 18.32 D | 22.67 | 21.2 | |
| 2,4'-DDD | 9.75 | 12.37 | 23.7 | |
| 4,4'-DDD | 30.89 D | 32.87 D | 6.2 | |
| 2,4'-DDT | 0.09 U | 0.09 U | | |
| 4,4'-DDT | 1.25 | 18.19 | 174.3 | N |
| ***Surrogate Recoveries (%)*** | | | | |
| Cl3(34) | 94 | 84 | | |
| Cl6(152) | 108 | 100 | | |

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Not Surrogate Corrected

Analyzed By Thorn, Jonathan
11/9/2009

Battelle
The Business of Innovation

**Project Client:** NAVY SPACE + NAVAL WARFARE SYSTS COMMAND
**Project Name:** SPAWAR Quantico Embayment EMNR - Pelagic Invertebrate and Lumbriculus Samples
**Project Number:** CG898574-0001

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| **Client ID** | B2-OFF2-LUMB | B2-OFF2-LUMB | | | |
|---|---|---|---|---|---|
| **Battelle ID** | Q8206-P | Q8206MS-P | | | |
| **Sample Type** | SA | MS | | | |
| **Collection Date** | 09/25/2009 | 09/25/2009 | | | |
| **Extraction Date** | 10/09/2009 | 10/09/2009 | | | |
| **Analysis Date** | 10/19/2009 | 10/19/2009 | | | |
| **Analytical Instrument** | MS | MS | | | |
| **% Moisture** | 0.00 | 0.00 | | | |
| **% Lipid** | 1.10 | 1.19 | | | |
| **Matrix** | LUMBRICULUS | LUMBRICULUS | | | |
| **Sample Size** | 5.68 | 2.03 | | | |
| **Size Unit-Basis** | G_WET | G_WET | | | |
| **Units** | NG/G_WET | NG/G_WET | **Target** | **% REC** | **Qual** |
| 2,4'-DDE | 0.08 U | 13.53 | 12.37 | 109 | |
| 4,4'-DDE | 7.52 | 20.10 | 12.32 | 102 | |
| 2,4'-DDD | 0.97 | 13.56 | 12.34 | 102 | |
| 4,4'-DDD | 6.74 | 20.29 | 12.33 | 110 | |
| 2,4'-DDT | 0.09 U | 13.31 | 12.37 | 108 | |
| 4,4'-DDT | 0.04 U | 13.61 | 12.32 | 110 | |
| ***Surrogate Recoveries (%)*** | | | | | |
| Cl3(34) | 103 | 102 | | | |
| Cl6(152) | 100 | 96 | | | |

Not Surrogate Corrected

Analyzed By Thorn, Jonathan
11/9/2009

T09-0129MS-Master_315:DRAFT

Battelle
The Business of Innovation

DRAFT

**Project Client:** NAVY SPACE + NAVAL WARFARE SYSTS COMMAND
**Project Name:** SPAWAR Quantico Embayment EMNR - Pelagic Invertebrate and Lumbriculus Samples
**Project Number:** CG898574-0001

| **Client ID** | B2-CAP1-PLGC | | B2-CAP2-PLGC | | B2-CAP3-PLGC | | B2-OFF1-PLGC | |
|---|---|---|---|---|---|---|---|---|
| **Battelle ID** | Q8005-P | | Q8006-P | | Q8007-P | | Q8008-P | |
| **Sample Type** | SA | | SA | | SA | | SA | |
| **Collection Date** | 09/10/2009 | | 09/10/2009 | | 09/10/2009 | | 09/10/2009 | |
| **Extraction Date** | 10/09/2009 | | 10/09/2009 | | 10/09/2009 | | 10/09/2009 | |
| **Analysis Date** | 10/19/2009 | | 10/19/2009 | | 10/19/2009 | | 10/19/2009 | |
| **Analytical Instrument** | MS | | MS | | MS | | MS | |
| **% Moisture** | 0.00 | | 0.00 | | 0.00 | | 0.00 | |
| **% Lipid** | 0.94 | | 1.12 | | 1.20 | | 0.97 | |
| **Matrix** | TISSUE | | TISSUE | | TISSUE | | TISSUE | |
| **Sample Size** | 1.51 | | 3.54 | | 1.50 | | 2.44 | |
| **Size Unit-Basis** | G_WET | | G_WET | | G_WET | | G_WET | |
| **Units** | NG/G_WET | | NG/G_WET | | NG/G_WET | | NG/G_WET | |
| 2,4'-DDE | 0.08 | U | 0.08 | U | 0.08 | U | 0.08 | U |
| 4,4'-DDE | 14.10 | | 6.27 | | 4.57 | | 3.58 | |
| 2,4'-DDD | 1.99 | | 0.37 | | 0.05 | U | 0.05 | U |
| 4,4'-DDD | 9.95 | | 4.42 | | 4.37 | | 1.81 | |
| 2,4'-DDT | 0.09 | U | 0.09 | U | 0.09 | U | 0.09 | U |
| 4,4'-DDT | 0.04 | U | 0.04 | U | 0.04 | U | 0.04 | U |
| ***Surrogate Recoveries (%)*** | | | | | | | | |
| Cl3(34) | 99 | | 94 | | 89 | | 89 | |
| Cl6(152) | 95 | | 92 | | 91 | | 92 | |

Battelle
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**Project Client:** NAVY SPACE + NAVAL WARFARE SYSTS COMMAND
**Project Name:** SPAWAR Quantico Embayment EMNR - Pelagic Invertebrate and Lumbriculus Samples
**Project Number:** CG898574-0001

| **Client ID** | B2-OFF2-PLGC | | B2-GAPX-PLGC | | B2-OFF2-LUMB | | B2-CAP1-LUMB | |
|---|---|---|---|---|---|---|---|---|
| **Battelle ID** | Q8009-P | | Q8010-P | | Q8206-P | | Q8207-P | |
| **Sample Type** | SA | | SA | | SA | | SA | |
| **Collection Date** | 09/10/2009 | | 09/10/2009 | | 09/25/2009 | | 09/25/2009 | |
| **Extraction Date** | 10/09/2009 | | 10/09/2009 | | 10/09/2009 | | 10/09/2009 | |
| **Analysis Date** | 10/19/2009 | | 10/19/2009 | | 10/19/2009 | | 10/20/2009 | |
| **Analytical Instrument** | MS | | MS | | MS | | MS | |
| **% Moisture** | 0.00 | | 0.00 | | 0.00 | | 0.00 | |
| **% Lipid** | 1.01 | | 0.89 | | 1.10 | | 1.41 | |
| **Matrix** | TISSUE | | TISSUE | | LUMBRICULUS | | LUMBRICULUS | |
| **Sample Size** | 2.89 | | 1.51 | | 5.68 | | 1.62 | |
| **Size Unit-Basis** | G_WET | | G_WET | | G_WET | | G_WET | |
| **Units** | NG/G_WET | | NG/G_WET | | NG/G_WET | | NG/G_WET | |
| 2,4'-DDE | 0.08 | U | 0.08 | U | 0.08 | U | 0.97 | |
| 4,4'-DDE | 3.74 | | 12.82 | | 7.52 | | 29.20 | |
| 2,4'-DDD | 0.05 | U | 0.77 | J | 0.97 | | 10.23 | |
| 4,4'-DDD | 1.21 | | 10.07 | | 6.74 | | 29.46 | |
| 2,4'-DDT | 0.09 | U | 0.09 | U | 0.09 | U | 0.09 | U |
| 4,4'-DDT | 0.04 | U | 0.04 | U | 0.04 | U | 0.04 | U |
| ***Surrogate Recoveries (%)*** | | | | | | | | |
| Cl3(34) | 98 | | 94 | | 103 | | 98 | |
| Cl6(152) | 96 | | 88 | | 100 | | 98 | |

Battelle

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**Project Client:** NAVY SPACE + NAVAL WARFARE SYSTS COMMAND
**Project Name:** SPAWAR Quantico Embayment EMNR - Pelagic Invertebrate and Lumbriculus Samples
**Project Number:** CG898574-0001

| **Client ID** | B2-CAPX-LUMB | | B2-CAP2-LUMB | | B2-CAP3-LUMB | |
|---|---|---|---|---|---|---|
| **Battelle ID** | Q8208-P | | Q8209-P | | Q8210-P | |
| **Sample Type** | SA | | SA | | SA | |
| **Collection Date** | 09/25/2009 | | 09/25/2009 | | 09/25/2009 | |
| **Extraction Date** | 10/09/2009 | | 10/09/2009 | | 10/09/2009 | |
| **Analysis Date** | 10/20/2009 | | 10/20/2009 | | 10/20/2009 | |
| **Analytical Instrument** | MS | | MS | | MS | |
| **% Moisture** | 0.00 | | 0.00 | | 0.00 | |
| **% Lipid** | 1.83 | | 2.05 | | 0.93 | |
| **Matrix** | LUMBRICULUS | | LUMBRICULUS | | LUMBRICULUS | |
| **Sample Size** | 1.15 | | 0.40 | | 10.08 | |
| **Size Unit-Basis** | G_WET | | G_WET | | G_WET | |
| **Units** | NG/G_WET | | NG/G_WET | | NG/G_WET | |
| 2,4'-DDE | 0.86 | J | 0.08 | U | 0.56 | |
| 4,4'-DDE | 37.45 | | 64.19 | | 18.32 | D |
| 2,4'-DDD | 13.52 | | 28.26 | | 9.75 | |
| 4,4'-DDD | 39.21 | | 93.61 | | 30.89 | D |
| 2,4'-DDT | 0.09 | U | 0.09 | U | 0.09 | U |
| 4,4'-DDT | 0.04 | U | 0.04 | U | 1.25 | |
| ***Surrogate Recoveries (%)*** | | | | | | |
| Cl3(34) | 101 | | 89 | | 94 | |
| Cl6(152) | 103 | | 90 | | 108 | |

Not Surrogate Corrected

Analyzed By Thorn, Jonathan
11/9/2009

T09-0129MS-Master_315:DRAFT

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## ossary of Data Qualifiers

| Flag: | Application: |
|---|---|
| B | Analyte concentration found in the sample at a concentration <5x the level found in the procedural blank. |
| D | Dilution Run. Initial run outside linear range of instrument. |
| E | Estimate, result is greater than the highest concentration level in the calibration. |
| H | Surrogate diluted out. Used when surrogate recovery is affected by excessive dilution of the sample extract. |
| J | Analyte detected below the sample-specific Reporting Limit (RL). |
| m | Confirmation column manually over-ridden by analyst, dual column quantitative analysis only. |
| ME | Significant Matrix Interference - Estimated value. |
| MI | Significant Matrix Interference - value could not be determined or estimated. |
| n | Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO), but meets the contingency criteria. |
| N | Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO) |
| NA | Not applicable |
| p | Dual column value exceeds RPD criteria, dual column quantitative analysis only. |
| T | Holding Time (HT) exceeded. |
| U | Analyte not detected at 3:1 signal:noise ratio. |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

10 January 2013

Gunther Rosen
Navy -- SPAWAR
Environmental Science and Applied System Branch, 536(
San Diego, CA 92152

RE: Quantico

Enclosed are the results of analyses for samples received by the laboratory on 12-Oct-2012. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Patty Tuminello
Project Coordinator

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| QB1 | 2101204-01 | Soil/Sediment | 10-Oct-2012 | 12-Oct-2012 |
| QB2 | 2101204-02 | Soil/Sediment | 11-Oct-2012 | 12-Oct-2012 |
| QB3 | 2101204-03 | Soil/Sediment | 10-Oct-2012 | 12-Oct-2012 |
| QB4 | 2101204-04 | Soil/Sediment | 10-Oct-2012 | 12-Oct-2012 |
| QB5 | 2101204-05 | Soil/Sediment | 10-Oct-2012 | 12-Oct-2012 |
| QB6 | 2101204-06 | Soil/Sediment | 11-Oct-2012 | 12-Oct-2012 |
| QB0-Lv-1 | 2101204-07 | Tissue | 11-Oct-2012 | 12-Oct-2012 |
| QB0-Lv-2 | 2101204-08 | Tissue | 11-Oct-2012 | 12-Oct-2012 |
| QB0-Lv-3 | 2101204-09 | Tissue | 11-Oct-2012 | 12-Oct-2012 |
| QB0-Cf-1 | 2101204-10 | Tissue | 11-Oct-2012 | 12-Oct-2012 |
| QB0-Cf-2 | 2101204-11 | Tissue | 11-Oct-2012 | 12-Oct-2012 |
| QB0-Cf-3 | 2101204-12 | Tissue | 11-Oct-2012 | 12-Oct-2012 |

| | | |
|---|---|---|
| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | **Reported:**<br>10-Jan-2013 |

## QB1

### 2101204-01 (Soil/Sediment)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **527** | 0.22 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **487** | 0.22 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4´-DDE** | **27.0** | 0.22 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **30.6** | 0.22 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4´-DDT** | **9.44** | 0.22 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4'-DDT [2C]** | **27.8** | 0.22 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *67.5 %* | *40-125* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *55.5 %* | *40-125* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *86.0 %* | *40-130* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *95.0 %* | *40-130* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |

**Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **10.2** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **2-Methylnaphthalene** | **11.9** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **1-Methylnaphthalene** | **8.52** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Acenaphthylene** | **1.70** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Acenaphthene** | **3.41** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Fluorene** | **5.11** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Phenanthrene** | **15.3** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Anthracene** | **3.41** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Fluoranthene** | **56.2** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Pyrene** | **47.7** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (a) anthracene** | **32.4** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |

| | | |
|---|---|---|
| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | **Reported:**<br>10-Jan-2013 |

## QB1

### 2101204-01 (Soil/Sediment)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

### ERDC- EL-EP-C (Environmental Chemistry Branch)

**Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Chrysene** | **42.6** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **20.4** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **30.7** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (a) pyrene** | **27.3** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Indeno (1,2,3-cd) pyrene** | **18.7** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **3.41** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Benzo (g,h,i) perylene** | **17.0** | 4.34 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| *Surrogate: 2-Fluorobiphenyl* | | *55.0 %* | *45-105* | | *19-Nov-2012* | *04-Dec-2012* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *81.0 %* | *30-145* | | *19-Nov-2012* | *04-Dec-2012* | *EPA 8270C* | |

**Classical Chemistry Parameters**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Solids** | **75.7** | 0.100 | % Solids | 1 | 27-Nov-2012 | 27-Nov-2012 | % Calculation | |

| | | |
|---|---|---|
| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | Reported:<br>10-Jan-2013 |

# QB2

## 2101204-02 (Soil/Sediment)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

### ERDC- EL-EP-C (Environmental Chemistry Branch)

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **122** | 0.22 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **114** | 0.22 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4´-DDE** | **22.9** | 0.22 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **25.0** | 0.22 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4´-DDT** | **8.40** | 0.22 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **23.8** | 0.22 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *65.5 %* | *40-125* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *62.0 %* | *40-125* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *94.5 %* | *40-130* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *95.5 %* | *40-130* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |

**Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **10.5** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **2-Methylnaphthalene** | **12.3** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **1-Methylnaphthalene** | **8.78** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Acenaphthylene** | **1.76** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Acenaphthene** | **3.51** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Fluorene** | **5.27** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Phenanthrene** | **19.3** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Anthracene** | **3.51** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Fluoranthene** | **49.2** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Pyrene** | **35.1** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (a) anthracene** | **24.6** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**


| | | |
|---|---|---|
| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br>Project Manager: Gunther Rosen | **Reported:**<br>10-Jan-2013 |

## QB2

### 2101204-02 (Soil/Sediment)

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring** | | | | | | | | |
| **Chrysene** | **33.4** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **17.6** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **24.6** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (a) pyrene** | **17.6** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Indeno (1,2,3-cd) pyrene** | **14.0** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **1.76** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Benzo (g,h,i) perylene** | **14.0** | 4.48 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| *Surrogate: 2-Fluorobiphenyl* | | *54.0 %* | *45-105* | | *19-Nov-2012* | *04-Dec-2012* | *EPA 8270C* | |
| *Surrogate: Terphenyl-dl4* | | *71.5 %* | *30-145* | | *19-Nov-2012* | *04-Dec-2012* | *EPA 8270C* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **74.1** | 0.100 | % Solids | 1 | 27-Nov-2012 | 27-Nov-2012 | % Calculation | |

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| | | |
|---|---|---|
| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | **Reported:**<br>10-Jan-2013 |

## QB3

**2101204-03 (Soil/Sediment)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **216** | 0.24 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **212** | 0.24 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4´-DDE** | **48.3** | 0.24 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **58.4** | 0.24 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4´-DDT** | **6.45** | 0.24 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **22.8** | 0.24 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *105 %* | *40-125* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *62.5 %* | *40-125* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *93.0 %* | *40-130* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *99.0 %* | *40-130* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| **Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring** | | | | | | | | |
| **Naphthalene** | **16.3** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **2-Methylnaphthalene** | **25.3** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **1-Methylnaphthalene** | **12.6** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Acenaphthylene** | **1.81** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Acenaphthene** | **5.42** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Fluorene** | **10.8** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Phenanthrene** | **56.0** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Anthracene** | **16.3** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Fluoranthene** | **444** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Pyrene** | **247** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (a) anthracene** | **199** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |

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## QB3

**2101204-03 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring** | | | | | | | | |
| **Chrysene** | **191** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **99.4** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **139** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (a) pyrene** | **123** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Indeno (1,2,3-cd) pyrene** | **81.3** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **10.8** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (g,h,i) perylene** | **56.0** | 4.61 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| *Surrogate: 2-Fluorobiphenyl* | | *41.0 %* | *45-105* | | *19-Nov-2012* | *04-Dec-2012* | *EPA 8270C* | *S-GC* |
| *Surrogate: Terphenyl-dl4* | | *90.0 %* | *30-145* | | *19-Nov-2012* | *04-Dec-2012* | *EPA 8270C* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Solids** | **69.5** | 0.100 | % Solids | 1 | 27-Nov-2012 | 27-Nov-2012 | % Calculation | |

| | | |
|---|---|---|
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# QB4

## 2101204-04 (Soil/Sediment)

### ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **134** | 0.41 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **131** | 0.41 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4´-DDE** | **30.1** | 0.41 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **35.4** | 0.41 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4´-DDT** | **3.57** | 0.41 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **12.9** | 0.41 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *48.4 %* | *40-125* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *47.6 %* | *40-125* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *86.0 %* | *40-130* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *92.5 %* | *40-130* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| **Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring** | | | | | | | | |
| **Naphthalene** | **9.48** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **2-Methylnaphthalene** | **12.6** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **1-Methylnaphthalene** | **6.32** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| Acenaphthylene | ND | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | U |
| **Acenaphthene** | **3.16** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Fluorene** | **9.48** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Phenanthrene** | **28.4** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Anthracene** | **6.32** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Fluoranthene** | **123** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Pyrene** | **85.3** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (a) anthracene** | **34.7** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |

| | | |
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## QB4

**2101204-04 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

### Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Chrysene** | **44.2** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **25.3** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **31.6** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (a) pyrene** | **19.0** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Indeno (1,2,3-cd) pyrene** | **19.0** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **3.16** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Benzo (g,h,i) perylene** | **15.8** | 8.05 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| *Surrogate: 2-Fluorobiphenyl* | | *35.5 %* | *45-105* | | *19-Nov-2012* | *04-Dec-2012* | *EPA 8270C* | *S-GC* |
| *Surrogate: Terphenyl-dl4* | | *67.5 %* | *30-145* | | *19-Nov-2012* | *04-Dec-2012* | *EPA 8270C* | |

### Classical Chemistry Parameters

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Solids** | **41.0** | 0.100 | % Solids | 1 | 27-Nov-2012 | 27-Nov-2012 | % Calculation | |

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# QB5

## 2101204-05 (Soil/Sediment)

### ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **124** | 0.43 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **122** | 0.43 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4´-DDE** | **37.3** | 0.43 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **43.4** | 0.43 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4´-DDT** | **4.38** | 0.43 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **19.1** | 0.43 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *46.0 %* | *40-125* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *48.3 %* | *40-125* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *91.0 %* | *40-130* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *117 %* | *40-130* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| **Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring** | | | | | | | | |
| **Naphthalene** | **17.3** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **2-Methylnaphthalene** | **24.2** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **1-Methylnaphthalene** | **13.9** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| Acenaphthylene | ND | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | U |
| **Acenaphthene** | **20.8** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Fluorene** | **27.7** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Phenanthrene** | **249** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Anthracene** | **86.6** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Fluoranthene** | **596** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Pyrene** | **409** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (a) anthracene** | **242** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |

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## QB5

### 2101204-05 (Soil/Sediment)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Chrysene** | **253** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **83.1** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **135** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (a) pyrene** | **100** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Indeno (1,2,3-cd) pyrene** | **48.5** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **6.93** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Benzo (g,h,i) perylene** | **38.1** | 8.83 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| *Surrogate: 2-Fluorobiphenyl* | | *42.0 %* | *45-105* | | *19-Nov-2012* | *04-Dec-2012* | *EPA 8270C* | *S-GC* |
| *Surrogate: Terphenyl-dl4* | | *86.0 %* | *30-145* | | *19-Nov-2012* | *04-Dec-2012* | *EPA 8270C* | |

**Classical Chemistry Parameters**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Solids** | **38.4** | 0.100 | % Solids | 1 | 27-Nov-2012 | 27-Nov-2012 | % Calculation | |

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## QB6

**2101204-06 (Soil/Sediment)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **9.81** | 0.33 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **9.81** | 0.33 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4´-DDE** | **3.09** | 0.33 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **3.83** | 0.33 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.90** | 0.33 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **1.85** | 0.33 | ug/kg dry | 1 | 24-Oct-2012 | 29-Oct-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *60.0 %* | *40-125* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *53.5 %* | *40-125* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *77.0 %* | *40-130* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *86.0 %* | *40-130* | | *24-Oct-2012* | *29-Oct-2012* | *EPA 8081A* | |
| **Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring** | | | | | | | | |
| **Naphthalene** | **2.57** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **2-Methylnaphthalene** | **5.14** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **1-Methylnaphthalene** | **2.57** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| Acenaphthylene | ND | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | U |
| **Acenaphthene** | **2.57** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Fluorene** | **5.14** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Phenanthrene** | **12.9** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Anthracene** | **5.14** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Fluoranthene** | **79.7** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Pyrene** | **56.6** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (a) anthracene** | **18.0** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
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# QB6

## 2101204-06 (Soil/Sediment)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

### ERDC- EL-EP-C (Environmental Chemistry Branch)

**Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Chrysene** | **28.3** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (b) fluoranthene** | **18.0** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (k) fluoranthene** | **20.6** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Benzo (a) pyrene** | **20.6** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Indeno (1,2,3-cd) pyrene** | **12.9** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| **Dibenz (a,h) anthracene** | **2.57** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | J |
| **Benzo (g,h,i) perylene** | **10.3** | 6.56 | ug/kg dry | 1 | 19-Nov-2012 | 04-Dec-2012 | EPA 8270C | |
| *Surrogate: 2-Fluorobiphenyl* | | *43.5 %* | *45-105* | | *19-Nov-2012* | *04-Dec-2012* | *EPA 8270C* | *S-GC* |
| *Surrogate: Terphenyl-dl4* | | *108 %* | *30-145* | | *19-Nov-2012* | *04-Dec-2012* | *EPA 8270C* | |

**Classical Chemistry Parameters**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Solids** | **50.4** | 0.100 | % Solids | 1 | 27-Nov-2012 | 27-Nov-2012 | % Calculation | |

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## QB0-Lv-1

**2101204-07 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **35.0** | 0.274 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **33.1** | 0.274 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **13.9** | 0.274 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **15.0** | 0.274 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **1.66** | 0.274 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **5.35** | 0.274 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *50.2 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *77.5 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *102 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *104 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **1.30** | | % by Weight | 1 | 17-Dec-2012 | 19-Dec-2012 | Gravimetric Determinatio n | |

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## QB0-Lv-2

### 2101204-08 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **7.98** | 0.255 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **7.51** | 0.255 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **5.12** | 0.255 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **4.29** | 0.255 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.174** | 0.255 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | J |
| **4,4'-DDT [2C]** | **0.822** | 0.255 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *45.3 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *46.0 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *84.2 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *78.5 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |

**Classical Chemistry Parameters**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **1.80** | | % by Weight | 1 | 17-Dec-2012 | 19-Dec-2012 | Gravimetric Determination | |

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## QB0-Lv-3

**2101204-09 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **13.1** | 0.229 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **11.3** | 0.229 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **5.07** | 0.229 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **5.18** | 0.229 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **2.29** | 0.229 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDT [2C]** | **2.89** | 0.229 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *57.2 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *80.2 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *105 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *96.0 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **1.20** | | % by Weight | 1 | 17-Dec-2012 | 19-Dec-2012 | Gravimetric Determination | |

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| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## QB0-Cf-1

### 2101204-10 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **22.3** | 0.201 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **19.9** | 0.201 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **7.72** | 0.201 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **7.50** | 0.201 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.705** | 0.201 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDT [2C]** | **2.23** | 0.201 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *46.8 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *60.3 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *90.5 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *93.5 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.500** | | % by Weight | 1 | 17-Dec-2012 | 19-Dec-2012 | Gravimetric Determination | |

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## QB0-Cf-2

**2101204-11 (Tissue)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **9.46** | 0.214 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **8.76** | 0.214 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **4.20** | 0.214 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **3.72** | 0.214 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.694** | 0.214 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDT [2C]** | **1.35** | 0.214 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *30.5 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *41.8 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *43.2 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *47.3 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.400** | | % by Weight | 1 | 17-Dec-2012 | 19-Dec-2012 | Gravimetric Determination | |

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## QB0-Cf-3

### 2101204-12 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **1.14** | 0.233 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **0.973** | 0.233 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **1.04** | 0.233 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **0.973** | 0.233 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.103** | 0.233 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | J |
| **4,4'-DDT [2C]** | **0.290** | 0.233 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *5.75 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *10.5 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *12.3 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *13.4 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.700** | | % by Weight | 1 | 17-Dec-2012 | 19-Dec-2012 | Gravimetric Determinatio n | |

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## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B210094 - EPA 3545** | | | | | | | | | | |
| **Blank (B210094-BLK1)** | | | | Prepared: 24-Oct-2012 Analyzed: 29-Oct-2012 | | | | | | |
| 4,4´-DDD | ND | 0.17 | ug/kg wet | | | | | | | U |
| 4,4'-DDD [2C] | ND | 0.17 | ug/kg wet | | | | | | | U |
| 4,4´-DDE | ND | 0.17 | ug/kg wet | | | | | | | U |
| 4,4'-DDE [2C] | ND | 0.17 | ug/kg wet | | | | | | | U |
| 4,4´-DDT | ND | 0.17 | ug/kg wet | | | | | | | QR-05, U |
| 4,4'-DDT [2C] | ND | 0.17 | ug/kg wet | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *2.23* | | *ug/kg wet* | *2.667* | | *83.5* | *40-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *2.27* | | *ug/kg wet* | *2.667* | | *85.0* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.08* | | *ug/kg wet* | *2.667* | | *116* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *3.24* | | *ug/kg wet* | *2.667* | | *122* | *40-130* | | | |
| **LCS (B210094-BS1)** | | | | Prepared: 24-Oct-2012 Analyzed: 29-Oct-2012 | | | | | | |
| 4,4´-DDD | 1.6 | 0.17 | ug/kg wet | 2.667 | | 61.5 | 30-135 | | | |
| 4,4'-DDD [2C] | 1.7 | 0.17 | ug/kg wet | 2.667 | | 65.0 | 30-135 | | | |
| 4,4´-DDE | 2.2 | 0.17 | ug/kg wet | 2.667 | | 81.0 | 70-125 | | | |
| 4,4'-DDE [2C] | 2.3 | 0.17 | ug/kg wet | 2.667 | | 84.5 | 70-125 | | | |
| 4,4´-DDT | 1.5 | 0.17 | ug/kg wet | 2.667 | | 54.5 | 45-140 | | | QR-05 |
| 4,4'-DDT [2C] | 1.8 | 0.17 | ug/kg wet | 2.667 | | 67.0 | 45-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.85* | | *ug/kg wet* | *2.667* | | *69.5* | *40-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *1.96* | | *ug/kg wet* | *2.667* | | *73.5* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.80* | | *ug/kg wet* | *2.667* | | *105* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *2.81* | | *ug/kg wet* | *2.667* | | *106* | *40-130* | | | |
| **Duplicate (B210094-DUP1)** | **Source: 2101204-03** | | | Prepared: 24-Oct-2012 Analyzed: 29-Oct-2012 | | | | | | |
| 4,4´-DDD | 274 | 0.24 | ug/kg dry | | 216 | | | 23.8 | 30 | |
| 4,4'-DDD [2C] | 261 | 0.24 | ug/kg dry | | 212 | | | 20.7 | 30 | |
| 4,4´-DDE | 55.6 | 0.24 | ug/kg dry | | 48.3 | | | 14.0 | 30 | |
| 4,4'-DDE [2C] | 70.1 | 0.24 | ug/kg dry | | 58.4 | | | 18.2 | 30 | |
| 4,4´-DDT | 3.48 | 0.24 | ug/kg dry | | 6.45 | | | 59.8 | 30 | QR-05 |
| 4,4'-DDT [2C] | 16.6 | 0.24 | ug/kg dry | | 22.8 | | | 31.2 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *2.07* | | *ug/kg dry* | *3.760* | | *55.0* | *40-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *2.12* | | *ug/kg dry* | *3.760* | | *56.5* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *3.33* | | *ug/kg dry* | *3.760* | | *88.5* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *3.18* | | *ug/kg dry* | *3.760* | | *84.5* | *40-130* | | | |

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## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B210094 - EPA 3545** | | | | | | | | | | |
| **Matrix Spike (B210094-MS1)** | **Source: 2101204-02** | | | Prepared: 24-Oct-2012 Analyzed: 29-Oct-2012 | | | | | | |
| 4,4´-DDD | ND | 0.22 | ug/kg dry | 3.488 | 122 | NR | 30-135 | | | QM-02, U |
| 4,4'-DDD [2C] | ND | 0.22 | ug/kg dry | 3.488 | 114 | NR | 30-135 | | | QM-02, U |
| 4,4´-DDE | ND | 0.22 | ug/kg dry | 3.488 | 22.9 | NR | 70-125 | | | QM-02, U |
| 4,4'-DDE [2C] | ND | 0.22 | ug/kg dry | 3.488 | 25.0 | NR | 70-125 | | | QM-02, U |
| 4,4´-DDT | ND | 0.22 | ug/kg dry | 3.488 | 8.4 | NR | 45-140 | | | QM-02, U |
| 4,4'-DDT [2C] | ND | 0.22 | ug/kg dry | 3.488 | 23.8 | NR | 45-140 | | | QM-02, U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.90* | | *ug/kg dry* | *3.488* | | *54.5* | *40-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *1.88* | | *ug/kg dry* | *3.488* | | *54.0* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *1.90* | | *ug/kg dry* | *3.488* | | *54.5* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *1.88* | | *ug/kg dry* | *3.488* | | *54.0* | *40-130* | | | |
| **Matrix Spike Dup (B210094-MSD1)** | **Source: 2101204-02** | | | Prepared: 24-Oct-2012 Analyzed: 29-Oct-2012 | | | | | | |
| 4,4´-DDD | ND | 0.23 | ug/kg dry | 3.575 | 122 | NR | 30-135 | | 30 | QM-02, U |
| 4,4'-DDD [2C] | ND | 0.23 | ug/kg dry | 3.575 | 114 | NR | 30-135 | | 30 | QM-02, U |
| 4,4´-DDE | ND | 0.23 | ug/kg dry | 3.575 | 22.9 | NR | 70-125 | | 30 | QM-02, U |
| 4,4'-DDE [2C] | ND | 0.23 | ug/kg dry | 3.575 | 25.0 | NR | 70-125 | | 30 | QM-02, U |
| 4,4´-DDT | ND | 0.23 | ug/kg dry | 3.575 | 8.4 | NR | 45-140 | | 30 | QM-02, U |
| 4,4'-DDT [2C] | ND | 0.23 | ug/kg dry | 3.575 | 23.8 | NR | 45-140 | | 30 | QM-02, U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *2.11* | | *ug/kg dry* | *3.575* | | *59.0* | *40-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *2.11* | | *ug/kg dry* | *3.575* | | *59.0* | *40-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *2.57* | | *ug/kg dry* | *3.575* | | *72.0* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *2.75* | | *ug/kg dry* | *3.575* | | *77.0* | *40-130* | | | |
| **Batch B211024 - Sonication (probe or bath)** | | | | | | | | | | |
| **Blank (B211024-BLK1)** | | | | Prepared: 02-Nov-2012 Analyzed: 14-Nov-2012 | | | | | | |
| 4,4´-DDD | ND | 0.250 | ug/kg | | | | | | | U |
| 4,4'-DDD [2C] | ND | 0.250 | ug/kg | | | | | | | U |
| 4,4´-DDE | ND | 0.250 | ug/kg | | | | | | | U |
| 4,4'-DDE [2C] | ND | 0.250 | ug/kg | | | | | | | U |
| 4,4´-DDT | ND | 0.250 | ug/kg | | | | | | | U |
| 4,4'-DDT [2C] | ND | 0.250 | ug/kg | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *3.70* | | *ug/kg* | *8.000* | | *46.2* | *35-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *3.92* | | *ug/kg* | *8.000* | | *49.0* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *6.18* | | *ug/kg* | *8.000* | | *77.2* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *6.02* | | *ug/kg* | *8.000* | | *75.2* | *40-130* | | | |

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|---|---|---|
| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | Reported:<br>10-Jan-2013 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B211024 - Sonication (probe or bath)** | | | | | | | | | | |
| **LCS (B211024-BS1)** | | | | Prepared: 02-Nov-2012 Analyzed: 14-Nov-2012 | | | | | | |
| 4,4´-DDD | 4.42 | 0.250 | ug/kg | 8.000 | | 55.2 | 30-135 | | | |
| 4,4'-DDD [2C] | 4.24 | 0.250 | ug/kg | 8.000 | | 53.0 | 30-135 | | | |
| 4,4´-DDE | 5.64 | 0.250 | ug/kg | 8.000 | | 70.5 | 50-125 | | | |
| 4,4'-DDE [2C] | 5.56 | 0.250 | ug/kg | 8.000 | | 69.5 | 50-125 | | | |
| 4,4´-DDT | 4.02 | 0.250 | ug/kg | 8.000 | | 50.2 | 40-140 | | | |
| 4,4'-DDT [2C] | 3.34 | 0.250 | ug/kg | 8.000 | | 41.8 | 40-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *3.54* | | *ug/kg* | *8.000* | | *44.2* | *35-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *3.70* | | *ug/kg* | *8.000* | | *46.2* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *5.64* | | *ug/kg* | *8.000* | | *70.5* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *5.60* | | *ug/kg* | *8.000* | | *70.0* | *40-130* | | | |
| **LCS Dup (B211024-BSD1)** | | | | Prepared: 02-Nov-2012 Analyzed: 14-Nov-2012 | | | | | | |
| 4,4´-DDD | 4.36 | 0.250 | ug/kg | 8.000 | | 54.5 | 30-135 | 1.37 | 30 | |
| 4,4'-DDD [2C] | 3.56 | 0.250 | ug/kg | 8.000 | | 44.5 | 30-135 | 17.4 | 30 | |
| 4,4´-DDE | 5.38 | 0.250 | ug/kg | 8.000 | | 67.2 | 50-125 | 4.72 | 30 | |
| 4,4'-DDE [2C] | 5.02 | 0.250 | ug/kg | 8.000 | | 62.8 | 50-125 | 10.2 | 30 | |
| 4,4´-DDT | 3.98 | 0.250 | ug/kg | 8.000 | | 49.8 | 40-140 | 1.00 | 30 | |
| 4,4'-DDT [2C] | 3.58 | 0.250 | ug/kg | 8.000 | | 44.8 | 40-140 | 6.94 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *3.20* | | *ug/kg* | *8.000* | | *40.0* | *35-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *5.70* | | *ug/kg* | *8.000* | | *71.2* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *5.70* | | *ug/kg* | *8.000* | | *71.2* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *5.42* | | *ug/kg* | *8.000* | | *67.8* | *40-130* | | | |
| **Matrix Spike (B211024-MS1)** | **Source: 2102602-04** | | | Prepared: 02-Nov-2012 Analyzed: 14-Nov-2012 | | | | | | |
| 4,4´-DDD | 27.5 | 0.543 | ug/kg | 17.39 | | 158 | 30-135 | | | |
| 4,4'-DDD [2C] | 25.5 | 0.543 | ug/kg | 17.39 | | 146 | 30-135 | | | |
| 4,4´-DDE | 24.0 | 0.543 | ug/kg | 17.39 | | 138 | 60-125 | | | |
| 4,4'-DDE [2C] | 25.3 | 0.543 | ug/kg | 17.39 | | 146 | 60-125 | | | |
| 4,4´-DDT | 11.5 | 0.543 | ug/kg | 17.39 | | 66.0 | 40-140 | | | |
| 4,4'-DDT [2C] | 12.6 | 0.543 | ug/kg | 17.39 | | 72.3 | 40-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *9.57* | | *ug/kg* | *17.39* | | *55.0* | *35-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *11.0* | | *ug/kg* | *17.39* | | *63.5* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *17.1* | | *ug/kg* | *17.39* | | *98.5* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *16.8* | | *ug/kg* | *17.39* | | *96.8* | *40-130* | | | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | **Reported:**<br>10-Jan-2013 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B211024 - Sonication (probe or bath)** | | | | | | | | | | |
| **Matrix Spike Dup (B211024-MSD1)** | **Source: 2102602-04** | | Prepared: 02-Nov-2012 Analyzed: 14-Nov-2012 | | | | | | | |
| 4,4´-DDD | 31.8 | 0.594 | ug/kg | 19.02 | | 167 | 30-135 | 14.5 | 30 | |
| 4,4'-DDD [2C] | 27.7 | 0.594 | ug/kg | 19.02 | | 146 | 30-135 | 8.26 | 30 | |
| 4,4´-DDE | 26.6 | 0.594 | ug/kg | 19.02 | | 140 | 60-125 | 10.2 | 30 | |
| 4,4'-DDE [2C] | 28.6 | 0.594 | ug/kg | 19.02 | | 150 | 60-125 | 12.3 | 30 | |
| 4,4´-DDT | 11.9 | 0.594 | ug/kg | 19.02 | | 62.5 | 40-140 | 3.51 | 30 | |
| 4,4'-DDT [2C] | 12.3 | 0.594 | ug/kg | 19.02 | | 64.7 | 40-140 | 2.01 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *9.42* | | *ug/kg* | *19.02* | | *49.5* | *35-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *11.2* | | *ug/kg* | *19.02* | | *59.0* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *16.5* | | *ug/kg* | *19.02* | | *86.8* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *17.0* | | *ug/kg* | *19.02* | | *89.5* | *40-130* | | | |

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|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B211083 - EPA 3545** | | | | | | | | | | |
| **Blank (B211083-BLK1)** | | | | Prepared: 19-Nov-2012 Analyzed: 04-Dec-2012 | | | | | | |
| Naphthalene | ND | 3.40 | ug/kg wet | | | | | | | U |
| 2-Methylnaphthalene | ND | 3.40 | ug/kg wet | | | | | | | U |
| 1-Methylnaphthalene | ND | 3.40 | ug/kg wet | | | | | | | U |
| Acenaphthylene | ND | 3.40 | ug/kg wet | | | | | | | U |
| Acenaphthene | ND | 3.40 | ug/kg wet | | | | | | | U |
| Fluorene | ND | 3.40 | ug/kg wet | | | | | | | U |
| Phenanthrene | ND | 3.40 | ug/kg wet | | | | | | | U |
| Anthracene | ND | 3.40 | ug/kg wet | | | | | | | U |
| Fluoranthene | ND | 3.40 | ug/kg wet | | | | | | | U |
| Pyrene | 1.33 | 3.40 | ug/kg wet | | | | | | | J |
| Benzo (a) anthracene | 1.33 | 3.40 | ug/kg wet | | | | | | | J |
| Chrysene | 1.33 | 3.40 | ug/kg wet | | | | | | | J |
| Benzo (b) fluoranthene | ND | 3.40 | ug/kg wet | | | | | | | U |
| Benzo (k) fluoranthene | ND | 3.40 | ug/kg wet | | | | | | | U |
| Benzo (a) pyrene | ND | 3.40 | ug/kg wet | | | | | | | U |
| Indeno (1,2,3-cd) pyrene | ND | 3.40 | ug/kg wet | | | | | | | U |
| Dibenz (a,h) anthracene | ND | 3.40 | ug/kg wet | | | | | | | U |
| Benzo (g,h,i) perylene | ND | 3.40 | ug/kg wet | | | | | | | U |
| *Surrogate: 2-Fluorobiphenyl* | *200* | | *ug/kg wet* | *266.7* | | *75.0* | *45-105* | | | |
| *Surrogate: Terphenyl-dl4* | *260* | | *ug/kg wet* | *266.7* | | *96.5* | *30-145* | | | |
| **LCS (B211083-BS1)** | | | | Prepared: 19-Nov-2012 Analyzed: 04-Dec-2012 | | | | | | |
| Naphthalene | 212 | 3.40 | ug/kg wet | 266.7 | | 79.5 | 40-105 | | | |
| 2-Methylnaphthalene | 219 | 3.40 | ug/kg wet | 266.7 | | 82.0 | 0-200 | | | |
| 1-Methylnaphthalene | 219 | 3.40 | ug/kg wet | 266.7 | | 82.0 | 0-200 | | | |
| Acenaphthylene | 212 | 3.40 | ug/kg wet | 266.7 | | 79.5 | 45-105 | | | |
| Acenaphthene | 231 | 3.40 | ug/kg wet | 266.7 | | 86.5 | 45-110 | | | |
| Fluorene | 261 | 3.40 | ug/kg wet | 266.7 | | 98.0 | 50-110 | | | |
| Phenanthrene | 248 | 3.40 | ug/kg wet | 266.7 | | 93.0 | 50-110 | | | |
| Anthracene | 268 | 3.40 | ug/kg wet | 266.7 | | 100 | 55-105 | | | |
| Fluoranthene | 172 | 3.40 | ug/kg wet | 266.7 | | 64.5 | 55-120 | | | |
| Pyrene | 164 | 3.40 | ug/kg wet | 266.7 | | 61.5 | 45-125 | | | |
| Benzo (a) anthracene | 240 | 3.40 | ug/kg wet | 266.7 | | 90.0 | 50-120 | | | |
| Chrysene | 324 | 3.40 | ug/kg wet | 266.7 | | 122 | 55-120 | | | |
| Benzo (b) fluoranthene | 279 | 3.40 | ug/kg wet | 266.7 | | 104 | 45-115 | | | |
| Benzo (k) fluoranthene | 409 | 3.40 | ug/kg wet | 266.7 | | 154 | 45-125 | | | |
| Benzo (a) pyrene | 288 | 3.40 | ug/kg wet | 266.7 | | 108 | 50-110 | | | |
| Indeno (1,2,3-cd) pyrene | 287 | 3.40 | ug/kg wet | 266.7 | | 108 | 40-120 | | | |
| Dibenz (a,h) anthracene | 323 | 3.40 | ug/kg wet | 266.7 | | 121 | 40-125 | | | |
| Benzo (g,h,i) perylene | 289 | 3.40 | ug/kg wet | 266.7 | | 108 | 40-125 | | | |

| | | |
|---|---|---|
| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | **Reported:**<br>10-Jan-2013 |

## Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B211083 - EPA 3545** | | | | | | | | | | |
| **LCS (B211083-BS1)** | | | | Prepared: 19-Nov-2012 Analyzed: 04-Dec-2012 | | | | | | |
| *Surrogate: 2-Fluorobiphenyl* | *220* | | *ug/kg wet* | *266.7* | | *82.5* | *45-105* | | | |
| *Surrogate: Terphenyl-dl4* | *190* | | *ug/kg wet* | *266.7* | | *72.5* | *30-145* | | | |
| **Duplicate (B211083-DUP1)** | **Source: 2101204-03** | | | Prepared: 19-Nov-2012 Analyzed: 04-Dec-2012 | | | | | | |
| Naphthalene | 17.0 | 4.82 | ug/kg dry | | 16.3 | | | 4.63 | 40 | |
| 2-Methylnaphthalene | 20.8 | 4.82 | ug/kg dry | | 25.3 | | | 19.4 | 40 | |
| 1-Methylnaphthalene | 13.2 | 4.82 | ug/kg dry | | 12.6 | | | 4.63 | 40 | |
| Acenaphthylene | 1.89 | 4.82 | ug/kg dry | | 1.81 | | | 4.63 | 40 | J |
| Acenaphthene | 7.57 | 4.82 | ug/kg dry | | 5.42 | | | 33.1 | 40 | |
| Fluorene | 13.2 | 4.82 | ug/kg dry | | 10.8 | | | 20.0 | 40 | |
| Phenanthrene | 39.7 | 4.82 | ug/kg dry | | 56.0 | | | 34.0 | 40 | |
| Anthracene | 9.46 | 4.82 | ug/kg dry | | 16.3 | | | 52.9 | 40 | |
| Fluoranthene | 191 | 4.82 | ug/kg dry | | 444 | | | 79.7 | 40 | |
| Pyrene | 127 | 4.82 | ug/kg dry | | 247 | | | 64.5 | 40 | |
| Benzo (a) anthracene | 54.9 | 4.82 | ug/kg dry | | 199 | | | 113 | 40 | |
| Chrysene | 66.2 | 4.82 | ug/kg dry | | 191 | | | 97.2 | 40 | |
| Benzo (b) fluoranthene | 32.2 | 4.82 | ug/kg dry | | 99.4 | | | 102 | 40 | |
| Benzo (k) fluoranthene | 49.2 | 4.82 | ug/kg dry | | 139 | | | 95.5 | 40 | |
| Benzo (a) pyrene | 37.8 | 4.82 | ug/kg dry | | 123 | | | 106 | 40 | |
| Indeno (1,2,3-cd) pyrene | 32.2 | 4.82 | ug/kg dry | | 81.3 | | | 86.6 | 40 | |
| Dibenz (a,h) anthracene | 3.78 | 4.82 | ug/kg dry | | 10.8 | | | 96.5 | 40 | J |
| Benzo (g,h,i) perylene | 26.5 | 4.82 | ug/kg dry | | 56.0 | | | 71.6 | 40 | |
| *Surrogate: 2-Fluorobiphenyl* | *180* | | *ug/kg dry* | *378.4* | | *48.0* | *45-105* | | | |
| *Surrogate: Terphenyl-dl4* | *290* | | *ug/kg dry* | *378.4* | | *77.0* | *30-145* | | | |
| **Matrix Spike (B211083-MS1)** | **Source: 2101204-02** | | | Prepared: 19-Nov-2012 Analyzed: 04-Dec-2012 | | | | | | |
| Naphthalene | 194 | 4.46 | ug/kg dry | 349.4 | 10.5 | 52.5 | 40-105 | | | |
| 2-Methylnaphthalene | 259 | 4.46 | ug/kg dry | 349.4 | 12.3 | 70.5 | 0-200 | | | |
| 1-Methylnaphthalene | 266 | 4.46 | ug/kg dry | 349.4 | 8.78 | 73.5 | 0-200 | | | |
| Acenaphthylene | 171 | 4.46 | ug/kg dry | 349.4 | 1.76 | 48.5 | 45-105 | | | |
| Acenaphthene | 222 | 4.46 | ug/kg dry | 349.4 | 3.51 | 62.5 | 45-110 | | | |
| Fluorene | 278 | 4.46 | ug/kg dry | 349.4 | 5.27 | 78.0 | 50-110 | | | |
| Phenanthrene | 267 | 4.46 | ug/kg dry | 349.4 | 19.3 | 71.0 | 50-110 | | | |
| Anthracene | 262 | 4.46 | ug/kg dry | 349.4 | 3.51 | 74.0 | 55-105 | | | |
| Fluoranthene | 639 | 4.46 | ug/kg dry | 349.4 | 49.2 | 169 | 55-120 | | | QM-07 |
| Pyrene | 423 | 4.46 | ug/kg dry | 349.4 | 35.1 | 111 | 45-125 | | | |
| Benzo (a) anthracene | 274 | 4.46 | ug/kg dry | 349.4 | 24.6 | 71.5 | 50-120 | | | |
| Chrysene | 267 | 4.46 | ug/kg dry | 349.4 | 33.4 | 67.0 | 55-120 | | | |
| Benzo (b) fluoranthene | 185 | 4.46 | ug/kg dry | 349.4 | 17.6 | 48.0 | 45-115 | | | |
| Benzo (k) fluoranthene | 257 | 4.46 | ug/kg dry | 349.4 | 24.6 | 66.5 | 45-125 | | | |
| Benzo (a) pyrene | 192 | 4.46 | ug/kg dry | 349.4 | 17.6 | 50.0 | 50-110 | | | |

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|---|---|---|
| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | **Reported:**<br>10-Jan-2013 |

## Polynuclear Aromatic Compounds by GC/MS with Selected Ion Monitoring - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B211083 - EPA 3545** | | | | | | | | | | |
| **Matrix Spike (B211083-MS1)** | **Source: 2101204-02** | | Prepared: 19-Nov-2012 Analyzed: 04-Dec-2012 | | | | | | | |
| Indeno (1,2,3-cd) pyrene | 133 | 4.46 | ug/kg dry | 349.4 | 14.0 | 34.0 | 40-120 | | | QM-07 |
| Dibenz (a,h) anthracene | 114 | 4.46 | ug/kg dry | 349.4 | 1.76 | 32.0 | 40-125 | | | QM-07 |
| Benzo (g,h,i) perylene | 180 | 4.46 | ug/kg dry | 349.4 | 14.0 | 47.5 | 40-125 | | | |
| *Surrogate: 2-Fluorobiphenyl* | *200* | | *ug/kg dry* | *349.4* | | *58.0* | *45-105* | | | |
| *Surrogate: Terphenyl-dl4* | *320* | | *ug/kg dry* | *349.4* | | *91.0* | *30-145* | | | |
| **Matrix Spike Dup (B211083-MSD1)** | **Source: 2101204-02** | | Prepared: 19-Nov-2012 Analyzed: 04-Dec-2012 | | | | | | | |
| Naphthalene | 152 | 4.52 | ug/kg dry | 354.2 | 10.5 | 40.0 | 40-105 | 24.0 | 30 | |
| 2-Methylnaphthalene | 181 | 4.52 | ug/kg dry | 354.2 | 12.3 | 47.5 | 0-200 | 35.5 | 200 | |
| 1-Methylnaphthalene | 168 | 4.52 | ug/kg dry | 354.2 | 8.78 | 45.0 | 0-200 | 44.9 | 200 | |
| Acenaphthylene | 147 | 4.52 | ug/kg dry | 354.2 | 1.76 | 41.0 | 45-105 | 15.2 | 30 | QM-07 |
| Acenaphthene | 182 | 4.52 | ug/kg dry | 354.2 | 3.51 | 50.5 | 45-110 | 19.5 | 30 | |
| Fluorene | 255 | 4.52 | ug/kg dry | 354.2 | 5.27 | 70.5 | 50-110 | 8.53 | 30 | |
| Phenanthrene | 237 | 4.52 | ug/kg dry | 354.2 | 19.3 | 61.5 | 50-110 | 11.9 | 30 | |
| Anthracene | 239 | 4.52 | ug/kg dry | 354.2 | 3.51 | 66.5 | 55-105 | 9.16 | 30 | |
| Fluoranthene | 475 | 4.52 | ug/kg dry | 354.2 | 49.2 | 120 | 55-120 | 29.6 | 30 | |
| Pyrene | 344 | 4.52 | ug/kg dry | 354.2 | 35.1 | 87.1 | 45-125 | 20.7 | 30 | |
| Benzo (a) anthracene | 264 | 4.52 | ug/kg dry | 354.2 | 24.6 | 67.6 | 50-120 | 3.86 | 30 | |
| Chrysene | 223 | 4.52 | ug/kg dry | 354.2 | 33.4 | 53.6 | 55-120 | 18.0 | 30 | QM-07 |
| Benzo (b) fluoranthene | 151 | 4.52 | ug/kg dry | 354.2 | 17.6 | 37.5 | 45-115 | 20.6 | 30 | QM-07 |
| Benzo (k) fluoranthene | 174 | 4.52 | ug/kg dry | 354.2 | 24.6 | 42.1 | 45-125 | 38.7 | 30 | QM-07 |
| Benzo (a) pyrene | 142 | 4.52 | ug/kg dry | 354.2 | 17.6 | 35.0 | 50-110 | 30.2 | 30 | QM-07 |
| Indeno (1,2,3-cd) pyrene | 86.8 | 4.52 | ug/kg dry | 354.2 | 14.0 | 20.5 | 40-120 | 41.9 | 30 | QM-07 |
| Dibenz (a,h) anthracene | 72.6 | 4.52 | ug/kg dry | 354.2 | 1.76 | 20.0 | 40-125 | 44.0 | 30 | QM-07 |
| Benzo (g,h,i) perylene | 122 | 4.52 | ug/kg dry | 354.2 | 14.0 | 30.5 | 40-125 | 38.2 | 30 | QM-07 |
| *Surrogate: 2-Fluorobiphenyl* | *340* | | *ug/kg dry* | *354.2* | | *95.5* | *45-105* | | | |
| *Surrogate: Terphenyl-dl4* | *500* | | *ug/kg dry* | *354.2* | | *141* | *30-145* | | | |

| | | |
|---|---|---|
| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | **Reported:**<br>10-Jan-2013 |

## Classical Chemistry Parameters - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B211105 - % Solids** | | | | | | | | | | |
| **Duplicate (B211105-DUP1)** | | **Source: 2102604-06** | | Prepared & Analyzed: 27-Nov-2012 | | | | | | |
| % Solids | 37.4 | 0.100 | % Solids | | 39.2 | | | 4.86 | 20 | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| S-GC | Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate. |
| QR-05 | RPD between primary and confirmation column values >40%. |
| QM-07 | The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery. |
| QM-02 | The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte inherent in the sample. |
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

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**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

10 January 2013

Gunther Rosen
Navy -- SPAWAR
Environmental Science and Applied System Branch, 536
San Diego, CA 92152

RE: Quantico

Enclosed are the results of analyses for samples received by the laboratory on 26-Oct-2012. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Patty Tuminello
Project Coordinator

# USACE ERDC-EP-C
# 3909 Halls Ferry Road
# Vicksburg, MS 39180-6199

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| QB1-Cf-R8 | 2102602-01 | Tissue | 25-Oct-2012 | 26-Oct-2012 |
| QB1-Cf-R9 | 2102602-02 | Tissue | 25-Oct-2012 | 26-Oct-2012 |
| QB1-Cf-R10 | 2102602-03 | Tissue | 25-Oct-2012 | 26-Oct-2012 |
| QB1-Cf-C | 2102602-04 | Tissue | 25-Oct-2012 | 26-Oct-2012 |
| QB1-Lv-R2-4 | 2102602-05 | Tissue | 25-Oct-2012 | 26-Oct-2012 |
| QB1-Lv-R4-4 | 2102602-06 | Tissue | 25-Oct-2012 | 26-Oct-2012 |
| QB1-Lv-C-4 | 2102602-07 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB1-Lv-R5-7 | 2102602-08 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB1-Lv-R8-7 | 2102602-09 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB1-Lv-R9-7 | 2102602-10 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB1-Lv-C-7 | 2102602-11 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB4-Cf-1 | 2102602-12 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB4-Cf-3 | 2102602-13 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB4-Cf-10 | 2102602-14 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB4-Cf-C | 2102602-15 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB3-Cf-R1-3 | 2102602-16 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB3-Cf-R5-3 | 2102602-17 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB3-Cf-R10-3 | 2102602-18 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB4-Lv-R2 | 2102602-19 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB4-Lv-R4 | 2102602-20 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB4-Lv-R5 | 2102602-21 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB4-Lv-C | 2102602-22 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB3-Cf-C3 | 2102602-23 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB5-Lv-C2 | 2102602-24 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB5-Lv-R8-2 | 2102602-25 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB5-Lv-R9-2 | 2102602-26 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB5-Cf-R1-2 | 2102602-27 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB5-Cf-R2-2 | 2102602-28 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB5-Cf-R3-2 | 2102602-29 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB5-Cf-C2 | 2102602-30 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB2-Lv-R1 | 2102602-31 | Tissue | 25-Oct-2010 | 26-Oct-2012 |

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|---|---|---|
| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | **Reported:**<br>10-Jan-2013 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| QB2-Lv-R2 | 2102602-32 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB2-Lv-R4-5 | 2102602-33 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB2-Lv-C | 2102602-34 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB2-Cf-R6 | 2102602-35 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB2-Cf-R9 | 2102602-36 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB2-Cf-R10 | 2102602-37 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB2-Cf-C | 2102602-38 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB6-Lv-C | 2102602-39 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB3-Lv-R2-3 | 2102602-40 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB3-Lv-R3/4-3 | 2102602-41 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB3-Lv-R8/9-3 | 2102602-42 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB3-Lv-C3 | 2102602-43 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB6-Cf-R3 | 2102602-44 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB6-Cf-R5 | 2102602-45 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB6-Cf-R10 | 2102602-46 | Tissue | 25-Oct-2010 | 26-Oct-2012 |
| QB6-Cf-C | 2102602-47 | Tissue | 25-Oct-2010 | 26-Oct-2012 |

**USACE ERDC-EP-C**
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|---|---|---|
| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | **Reported:**<br>10-Jan-2013 |

## QB1-Cf-R8

**2102602-01 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **14.6** | 0.237 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **13.3** | 0.237 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **7.30** | 0.237 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **7.25** | 0.237 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **1.57** | 0.237 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDT [2C]** | **2.96** | 0.237 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *44.5 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *61.0 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *87.0 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *82.5 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.700** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

**USACE ERDC-EP-C**
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|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## QB1-Cf-R9

**2102602-02 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **11.4** | 0.229 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **10.9** | 0.229 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **5.90** | 0.229 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **5.71** | 0.229 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.872** | 0.229 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDT [2C]** | **2.01** | 0.229 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *43.5 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *56.8 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *85.0 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *75.8 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **1.00** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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## QB1-Cf-R10

**2102602-03 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **12.5** | 0.246 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **11.2** | 0.246 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **6.65** | 0.246 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **6.59** | 0.246 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **1.08** | 0.246 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDT [2C]** | **2.30** | 0.246 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *44.0 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *59.8 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *93.8 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *85.5 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.900** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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|---|---|---|
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## QB1-Cf-C

**2102602-04 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.700** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## QB1-Lv-R2-4

### 2102602-05 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **42.7** | 0.842 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **37.8** | 0.842 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **15.6** | 0.842 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **14.4** | 0.842 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.375** | 0.842 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | J |
| **4,4'-DDT [2C]** | **4.58** | 0.842 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *49.7 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *70.2 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *91.5 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *87.7 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.500** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## QB1-Lv-R4-4

### 2102602-06 (Tissue)

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **76.8** | 1.03 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **70.9** | 1.03 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **19.6** | 1.03 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **18.4** | 1.03 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **1.40** | 1.03 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDT [2C]** | **5.09** | 1.03 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *51.5 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *81.2 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *96.2 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *93.3 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.300** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## QB1-Lv-C-4

### 2102602-07 (Tissue)

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **0.584** | 0.437 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **0.531** | 0.437 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **2.25** | 0.437 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **1.93** | 0.437 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| 4,4´-DDT | ND | 0.437 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | U |
| 4,4'-DDT [2C] | ND | 0.437 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *49.7 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *48.0 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *81.5 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *80.7 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.600** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

Navy -- SPAWAR
Environmental Science and Applied System Branch, 5360:
San Diego CA, 92152

Project: Quantico

Project Manager: Gunther Rosen

**Reported:**
10-Jan-2013

# QB1-Lv-R5-7

## 2102602-08 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

### ERDC- EL-EP-C (Environmental Chemistry Branch)

### Organochlorine Pesticides by EPA Method 8081A

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **0.509** | 0.648 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | J |
| **4,4'-DDD [2C]** | **0.213** | 0.648 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | J |
| **4,4´-DDE** | **2.69** | 0.648 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **2.56** | 0.648 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| 4,4´-DDT | ND | 0.648 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | U |
| 4,4'-DDT [2C] | ND | 0.648 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *45.2 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *44.8 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *79.7 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *78.0 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |

### Classical Chemistry Parameters

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **1.00** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | **Reported:**<br>10-Jan-2013 |

## QB1-Lv-R8-7

**2102602-09 (Tissue)**

### ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **0.752** | 1.18 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | J |
| **4,4'-DDD [2C]** | **0.339** | 1.18 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | J |
| **4,4´-DDE** | **3.80** | 1.18 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **3.33** | 1.18 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| 4,4´-DDT | ND | 1.18 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | U |
| 4,4'-DDT [2C] | ND | 1.18 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *37.7 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *39.7 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *60.0 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *61.5 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.400** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determinatio n | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## QB1-Lv-R9-7

### 2102602-10 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **0.541** | 0.564 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | QR-05, J |
| **4,4'-DDD [2C]** | **0.281** | 0.564 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | J |
| **4,4´-DDE** | **1.10** | 0.564 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **0.920** | 0.564 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.382** | 0.564 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | QR-05, J |
| **4,4'-DDT [2C]** | **0.857** | 0.564 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *51.5 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *57.5 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *84.0 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *81.7 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.600** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## QB1-Lv-C-7

### 2102602-11 (Tissue)

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **0.243** | 0.298 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | QR-05, J |
| **4,4'-DDD [2C]** | **0.142** | 0.298 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | J |
| **4,4´-DDE** | **0.868** | 0.298 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **0.911** | 0.298 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.198** | 0.298 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | QR-05, J |
| **4,4'-DDT [2C]** | **0.606** | 0.298 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *52.0 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *62.8 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *87.5 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *83.5 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.700** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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## QB4-Cf-1

### 2102602-12 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **7.22** | 0.211 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **6.28** | 0.211 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **6.96** | 0.211 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **6.53** | 0.211 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.955** | 0.211 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **2.00** | 0.211 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *46.2 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *71.8 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *81.0 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *73.5 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.900** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

# USACE ERDC-EP-C
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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## QB4-Cf-3

### 2102602-13 (Tissue)

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **4.65** | 0.200 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDD [2C]** | **8.02** | 0.200 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **4.27** | 0.200 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **4.01** | 0.200 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **3.48** | 0.200 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **1.90** | 0.200 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *56.5 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *39.0 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *63.5 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *68.8 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.800** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

**USACE ERDC-EP-C**
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# QB4-Cf-10

## 2102602-14 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **8.64** | 0.234 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **7.69** | 0.234 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **7.12** | 0.234 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **7.26** | 0.234 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **1.24** | 0.234 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **3.45** | 0.234 | ug/kg | 1 | 02-Nov-2012 | 14-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *55.0 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *68.2 %* | *35-125* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *97.2 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *93.2 %* | *40-130* | | *02-Nov-2012* | *14-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.600** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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## QB4-Cf-C

**2102602-15 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **10.2** | 0.234 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **9.97** | 0.234 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **8.43** | 0.234 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **9.79** | 0.234 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **1.23** | 0.234 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **2.73** | 0.234 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *48.4 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *57.0 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *81.1 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *84.9 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.900** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determinatio n | |

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## QB3-Cf-R1-3

### 2102602-16 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **12.6** | 0.211 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **12.2** | 0.211 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **9.15** | 0.211 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **10.4** | 0.211 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **1.13** | 0.211 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **2.74** | 0.211 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *46.9 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *52.5 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *76.4 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *81.0 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |

**Classical Chemistry Parameters**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **0.900** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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## QB3-Cf-R5-3

### 2102602-17 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **12.6** | 0.234 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **12.4** | 0.234 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **9.22** | 0.234 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **10.7** | 0.234 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **1.19** | 0.234 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **2.77** | 0.234 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *42.2 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *49.3 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *76.2 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *81.0 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.800** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determinatio n | |

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## QB3-Cf-R10-3

### 2102602-18 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **14.3** | 0.246 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **14.1** | 0.246 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **8.67** | 0.246 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **9.75** | 0.246 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **1.79** | 0.246 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **3.44** | 0.246 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *47.5 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *52.2 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *75.5 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *78.7 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.700** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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## QB4-Lv-R2

### 2102602-19 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **14.2** | 0.602 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **15.5** | 0.602 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **17.5** | 0.602 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **17.6** | 0.602 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.623** | 0.602 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **2.14** | 0.602 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *41.4 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *49.2 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *73.6 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *71.5 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |

**Classical Chemistry Parameters**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **1.10** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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# QB4-Lv-R4

**2102602-20 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **9.74** | 0.594 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **9.98** | 0.594 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **12.8** | 0.594 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **13.0** | 0.594 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.380** | 0.594 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | QR-05, J |
| **4,4'-DDT [2C]** | **1.45** | 0.594 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *42.8 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *47.1 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *69.3 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *72.8 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |

**Classical Chemistry Parameters**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **1.00** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determinatio n | |

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## QB4-Lv-R5

### 2102602-21 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **9.40** | 0.618 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **10.1** | 0.618 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **13.1** | 0.618 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **13.7** | 0.618 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.415** | 0.618 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | QR-05, J |
| **4,4'-DDT [2C]** | **1.34** | 0.618 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *42.5 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *47.1 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *78.3 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *83.4 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |

**Classical Chemistry Parameters**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **0.800** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determinatio n | |

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## QB4-Lv-C

### 2102602-22 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **13.9** | 0.248 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **14.2** | 0.248 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **16.8** | 0.248 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **18.5** | 0.248 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.440** | 0.248 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **1.68** | 0.248 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *45.3 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *45.0 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *79.5 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *84.6 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.800** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determinatio n | |

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## QB3-Cf-C3

**2102602-23 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **7.61** | 0.249 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **7.29** | 0.249 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **4.98** | 0.249 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **5.40** | 0.249 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.731** | 0.249 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **1.63** | 0.249 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *38.5 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *48.9 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *89.8 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *77.3 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **1.00** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determinatio n | |

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## QB5-Lv-C2

### 2102602-24 (Tissue)

#### ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **16.7** | 0.380 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **16.6** | 0.380 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **14.9** | 0.380 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **15.8** | 0.380 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.466** | 0.380 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **1.87** | 0.380 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *37.9 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *45.3 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *67.8 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *71.3 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.500** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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## QB5-Lv-R8-2

### 2102602-25 (Tissue)

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **23.2** | 0.882 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **23.4** | 0.882 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **20.1** | 0.882 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **21.4** | 0.882 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.893** | 0.882 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **3.07** | 0.882 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *48.3 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *51.0 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *76.2 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *79.6 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.900** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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## QB5-Lv-R9-2

### 2102602-26 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **10.1** | 1.02 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **10.6** | 1.02 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **9.22** | 1.02 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **9.86** | 1.02 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.301** | 1.02 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | QR-05, J |
| **4,4'-DDT [2C]** | **1.37** | 1.02 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *41.8 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *48.6 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *72.8 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *77.3 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.500** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determinatio n | |

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# QB5-Cf-R1-2

## 2102602-27 (Tissue)

### ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **10.4** | 0.364 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **10.1** | 0.364 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **7.95** | 0.364 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **10.0** | 0.364 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **1.69** | 0.364 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **6.56** | 0.364 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *36.8 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *45.7 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *76.9 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *71.4 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **1.00** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| | | |
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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## QB5-Cf-R2-2

### 2102602-28 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **6.91** | 0.217 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **6.75** | 0.217 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **5.30** | 0.217 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **6.02** | 0.217 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.786** | 0.217 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **1.61** | 0.217 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *22.4 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | *S-GC* |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *28.4 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *40.2 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *39.6 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **1.20** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | **Reported:**<br>10-Jan-2013 |

## QB5-Cf-R3-2

### 2102602-29 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **14.7** | 0.233 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **14.6** | 0.233 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **11.1** | 0.233 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **11.8** | 0.233 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **2.06** | 0.233 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **3.69** | 0.233 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *56.4 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *56.9 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *109 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *96.1 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.900** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | **Reported:**<br>10-Jan-2013 |

## QB5-Cf-C2

### 2102602-30 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **17.9** | 0.220 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **17.0** | 0.220 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **11.5** | 0.220 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **11.9** | 0.220 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **1.92** | 0.220 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **3.69** | 0.220 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *65.1 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *54.8 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *116 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *104 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.900** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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## QB2-Lv-R1

### 2102602-31 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **16.8** | 0.802 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **17.1** | 0.802 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **10.2** | 0.802 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **10.7** | 0.802 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.905** | 0.802 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **2.83** | 0.802 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *39.1 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *38.5 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *76.4 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *68.9 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.700** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determinatio n | |

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## QB2-Lv-R2

**2102602-32 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **29.5** | 1.26 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **29.4** | 1.26 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **11.5** | 1.26 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **13.0** | 1.26 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.999** | 1.26 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | QR-05, J |
| **4,4'-DDT [2C]** | **5.01** | 1.26 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *35.4 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *40.2 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *80.6 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *75.0 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.600** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determinatio n | |

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# QB2-Lv-R4-5

## 2102602-33 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

### ERDC- EL-EP-C (Environmental Chemistry Branch)

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **12.6** | 1.64 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **13.4** | 1.64 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **8.92** | 1.64 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **9.69** | 1.64 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| 4,4´-DDT | ND | 1.64 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | U |
| 4,4'-DDT [2C] | ND | 1.64 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *34.6 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *40.6 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *66.1 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *71.5 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |

**Classical Chemistry Parameters**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **1.00** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determinatio n | |

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## QB2-Lv-C

### 2102602-34 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **20.0** | 0.569 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **20.7** | 0.569 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **10.5** | 0.569 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **11.4** | 0.569 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | |
| 4,4´-DDT | ND | 0.569 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | U |
| 4,4'-DDT [2C] | ND | 0.569 | ug/kg | 1 | 02-Nov-2012 | 19-Nov-2012 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *42.6 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *43.1 %* | *35-125* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *71.7 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *77.8 %* | *40-130* | | *02-Nov-2012* | *19-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **1.00** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## QB2-Cf-R6

### 2102602-35 (Tissue)

### ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **14.3** | 0.246 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **11.8** | 0.246 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **10.3** | 0.246 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **10.1** | 0.246 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **2.43** | 0.246 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **4.75** | 0.246 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *51.6 %* | *35-125* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *58.5 %* | *35-125* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *73.4 %* | *40-130* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *74.0 %* | *40-130* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **1.00** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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Navy -- SPAWAR
Environmental Science and Applied System Branch, 5360:
San Diego CA, 92152

Project: Quantico
Project Manager: Gunther Rosen

**Reported:** 10-Jan-2013

# QB2-Cf-R9

## 2102602-36 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **18.3** | 0.233 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **16.1** | 0.233 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **13.3** | 0.233 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **13.2** | 0.233 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **2.12** | 0.233 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **4.34** | 0.233 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *64.0 %* | *35-125* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *80.2 %* | *35-125* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *100 %* | *40-130* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *87.2 %* | *40-130* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.700** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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# USACE ERDC-EP-C
## 3909 Halls Ferry Road
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| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## QB2-Cf-R10
### 2102602-37 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **14.1** | 0.224 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **12.4** | 0.224 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **10.4** | 0.224 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **10.3** | 0.224 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **1.57** | 0.224 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **3.67** | 0.224 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *57.2 %* | *35-125* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *64.8 %* | *35-125* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *104 %* | *40-130* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *87.0 %* | *40-130* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.800** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 53605 | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

# QB2-Cf-C

## 2102602-38 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **16.5** | 0.213 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **14.6** | 0.213 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **11.6** | 0.213 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **11.9** | 0.213 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **2.25** | 0.213 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **4.44** | 0.213 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *63.4 %* | *35-125* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *62.0 %* | *35-125* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *118 %* | *40-130* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *104 %* | *40-130* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |

**Classical Chemistry Parameters**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **1.00** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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| Navy -- SPAWAR<br>Environmental Science and Applied System Branch, 5360:<br>San Diego CA, 92152 | Project: Quantico<br><br>Project Manager: Gunther Rosen | **Reported:**<br>10-Jan-2013 |

## QB6-Lv-C

**2102602-39 (Tissue)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **2.69** | 0.596 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **2.49** | 0.596 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **8.54** | 0.596 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **7.69** | 0.596 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.450** | 0.596 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | QR-05, J |
| **4,4'-DDT [2C]** | **0.852** | 0.596 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *56.2 %* | *35-125* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *57.5 %* | *35-125* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *89.6 %* | *40-130* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *101 %* | *40-130* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.800** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## QB3-Lv-R2-3

### 2102602-40 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **29.7** | 0.566 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **26.2** | 0.566 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **12.9** | 0.566 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **13.7** | 0.566 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.394** | 0.566 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | QR-05, J |
| **4,4'-DDT [2C]** | **2.12** | 0.566 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *47.2 %* | *35-125* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *51.8 %* | *35-125* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *102 %* | *40-130* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *86.5 %* | *40-130* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |

**Classical Chemistry Parameters**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **0.300** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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## QB3-Lv-R3/4-3

**2102602-41 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **28.5** | 1.00 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **25.5** | 1.00 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **19.6** | 1.00 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **19.2** | 1.00 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.735** | 1.00 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | QR-05, J |
| **4,4'-DDT [2C]** | **2.89** | 1.00 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *42.7 %* | *35-125* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *49.2 %* | *35-125* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *80.3 %* | *40-130* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *89.2 %* | *40-130* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |

**Classical Chemistry Parameters**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **1.00** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## QB3-Lv-R8/9-3

### 2102602-42 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **52.6** | 0.833 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **48.1** | 0.833 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **38.6** | 0.833 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **40.2** | 0.833 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **1.12** | 0.833 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **5.69** | 0.833 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *55.7 %* | *35-125* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *66.7 %* | *35-125* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *97.2 %* | *40-130* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *105 %* | *40-130* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.600** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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## QB3-Lv-C3

### 2102602-43 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **45.3** | 0.245 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **42.1** | 0.245 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **24.5** | 0.245 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **26.1** | 0.245 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.923** | 0.245 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **3.52** | 0.245 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *39.7 %* | *35-125* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *44.5 %* | *35-125* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *96.8 %* | *40-130* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *87.5 %* | *40-130* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |

**Classical Chemistry Parameters**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **0.900** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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## QB6-Cf-R3

**2102602-44 (Tissue)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| **ERDC- EL-EP-C (Environmental Chemistry Branch)** | | | | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **5.48** | 0.198 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **5.20** | 0.198 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **7.18** | 0.198 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **7.47** | 0.198 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **1.46** | 0.198 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **2.89** | 0.198 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *58.2 %* | *35-125* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *64.0 %* | *35-125* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *97.6 %* | *40-130* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *95.5 %* | *40-130* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.900** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determinatio n | |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## QB6-Cf-R5

### 2102602-45 (Tissue)

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **3.72** | 0.219 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **4.00** | 0.219 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **4.91** | 0.219 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **5.20** | 0.219 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **1.09** | 0.219 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **2.11** | 0.219 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *42.9 %* | *35-125* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *52.3 %* | *35-125* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *60.8 %* | *40-130* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *92.7 %* | *40-130* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |

**Classical Chemistry Parameters**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **1.00** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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## QB6-Cf-R10

**2102602-46 (Tissue)**

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **2.95** | 0.217 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **2.63** | 0.217 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **3.34** | 0.217 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **3.55** | 0.217 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **0.613** | 0.217 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | QR-05 |
| **4,4'-DDT [2C]** | **1.32** | 0.217 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *38.8 %* | *35-125* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *49.5 %* | *35-125* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *95.3 %* | *40-130* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *71.0 %* | *40-130* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **1.80** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

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|---|---|---|
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## QB6-Cf-C

### 2102602-47 (Tissue)

**ERDC- EL-EP-C (Environmental Chemistry Branch)**

| Analyte | Result | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **4,4´-DDD** | **5.36** | 0.224 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4'-DDD [2C]** | **4.91** | 0.224 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4´-DDE** | **6.99** | 0.224 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4'-DDE [2C]** | **5.96** | 0.224 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4´-DDT** | **1.51** | 0.224 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| **4,4'-DDT [2C]** | **2.34** | 0.224 | ug/kg | 1 | 06-Nov-2012 | 21-Nov-2012 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | | *%* | *35-125* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | *S-02, U* |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | | *47.5 %* | *35-125* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | | *94.6 %* | *40-130* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| *Surrogate: Decachorobiphenyl [2C]* | | *91.7 %* | *40-130* | | *06-Nov-2012* | *21-Nov-2012* | *EPA 8081A* | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **1.10** | | % by Weight | 1 | 17-Dec-2012 | 10-Jan-2013 | Gravimetric Determination | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B211024 - Sonication (probe or bath)** | | | | | | | | | | |
| **Blank (B211024-BLK1)** | | | | Prepared: 02-Nov-2012 Analyzed: 14-Nov-2012 | | | | | | |
| 4,4´-DDD | ND | 0.250 | ug/kg | | | | | | | U |
| 4,4'-DDD [2C] | ND | 0.250 | ug/kg | | | | | | | U |
| 4,4´-DDE | ND | 0.250 | ug/kg | | | | | | | U |
| 4,4'-DDE [2C] | ND | 0.250 | ug/kg | | | | | | | U |
| 4,4´-DDT | ND | 0.250 | ug/kg | | | | | | | U |
| 4,4'-DDT [2C] | ND | 0.250 | ug/kg | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *3.70* | | *ug/kg* | *8.000* | | *46.2* | *35-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *3.92* | | *ug/kg* | *8.000* | | *49.0* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *6.18* | | *ug/kg* | *8.000* | | *77.2* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *6.02* | | *ug/kg* | *8.000* | | *75.2* | *40-130* | | | |
| **LCS (B211024-BS1)** | | | | Prepared: 02-Nov-2012 Analyzed: 14-Nov-2012 | | | | | | |
| 4,4´-DDD | 4.42 | 0.250 | ug/kg | 8.000 | | 55.2 | 30-135 | | | |
| 4,4'-DDD [2C] | 4.24 | 0.250 | ug/kg | 8.000 | | 53.0 | 30-135 | | | |
| 4,4´-DDE | 5.64 | 0.250 | ug/kg | 8.000 | | 70.5 | 50-125 | | | |
| 4,4'-DDE [2C] | 5.56 | 0.250 | ug/kg | 8.000 | | 69.5 | 50-125 | | | |
| 4,4´-DDT | 4.02 | 0.250 | ug/kg | 8.000 | | 50.2 | 40-140 | | | |
| 4,4'-DDT [2C] | 3.34 | 0.250 | ug/kg | 8.000 | | 41.8 | 40-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *3.54* | | *ug/kg* | *8.000* | | *44.2* | *35-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *3.70* | | *ug/kg* | *8.000* | | *46.2* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *5.64* | | *ug/kg* | *8.000* | | *70.5* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *5.60* | | *ug/kg* | *8.000* | | *70.0* | *40-130* | | | |
| **LCS Dup (B211024-BSD1)** | | | | Prepared: 02-Nov-2012 Analyzed: 14-Nov-2012 | | | | | | |
| 4,4´-DDD | 4.36 | 0.250 | ug/kg | 8.000 | | 54.5 | 30-135 | 1.37 | 30 | |
| 4,4'-DDD [2C] | 3.56 | 0.250 | ug/kg | 8.000 | | 44.5 | 30-135 | 17.4 | 30 | |
| 4,4´-DDE | 5.38 | 0.250 | ug/kg | 8.000 | | 67.2 | 50-125 | 4.72 | 30 | |
| 4,4'-DDE [2C] | 5.02 | 0.250 | ug/kg | 8.000 | | 62.8 | 50-125 | 10.2 | 30 | |
| 4,4´-DDT | 3.98 | 0.250 | ug/kg | 8.000 | | 49.8 | 40-140 | 1.00 | 30 | |
| 4,4'-DDT [2C] | 3.58 | 0.250 | ug/kg | 8.000 | | 44.8 | 40-140 | 6.94 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *3.20* | | *ug/kg* | *8.000* | | *40.0* | *35-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *5.70* | | *ug/kg* | *8.000* | | *71.2* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *5.70* | | *ug/kg* | *8.000* | | *71.2* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *5.42* | | *ug/kg* | *8.000* | | *67.8* | *40-130* | | | |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B211024 - Sonication (probe or bath)** | | | | | | | | | | |
| **Matrix Spike (B211024-MS1)** | | **Source: 2102602-04** | | Prepared: 02-Nov-2012 Analyzed: 14-Nov-2012 | | | | | | |
| 4,4´-DDD | 27.5 | 0.543 | ug/kg | 17.39 | | 158 | 30-135 | | | |
| 4,4'-DDD [2C] | 25.5 | 0.543 | ug/kg | 17.39 | | 146 | 30-135 | | | |
| 4,4´-DDE | 24.0 | 0.543 | ug/kg | 17.39 | | 138 | 60-125 | | | |
| 4,4'-DDE [2C] | 25.3 | 0.543 | ug/kg | 17.39 | | 146 | 60-125 | | | |
| 4,4´-DDT | 11.5 | 0.543 | ug/kg | 17.39 | | 66.0 | 40-140 | | | |
| 4,4'-DDT [2C] | 12.6 | 0.543 | ug/kg | 17.39 | | 72.3 | 40-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *9.57* | | *ug/kg* | *17.39* | | *55.0* | *35-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *11.0* | | *ug/kg* | *17.39* | | *63.5* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *17.1* | | *ug/kg* | *17.39* | | *98.5* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *16.8* | | *ug/kg* | *17.39* | | *96.8* | *40-130* | | | |
| **Matrix Spike Dup (B211024-MSD1)** | | **Source: 2102602-04** | | Prepared: 02-Nov-2012 Analyzed: 14-Nov-2012 | | | | | | |
| 4,4´-DDD | 31.8 | 0.594 | ug/kg | 19.02 | | 167 | 30-135 | 14.5 | 30 | |
| 4,4'-DDD [2C] | 27.7 | 0.594 | ug/kg | 19.02 | | 146 | 30-135 | 8.26 | 30 | |
| 4,4´-DDE | 26.6 | 0.594 | ug/kg | 19.02 | | 140 | 60-125 | 10.2 | 30 | |
| 4,4'-DDE [2C] | 28.6 | 0.594 | ug/kg | 19.02 | | 150 | 60-125 | 12.3 | 30 | |
| 4,4´-DDT | 11.9 | 0.594 | ug/kg | 19.02 | | 62.5 | 40-140 | 3.51 | 30 | |
| 4,4'-DDT [2C] | 12.3 | 0.594 | ug/kg | 19.02 | | 64.7 | 40-140 | 2.01 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *9.42* | | *ug/kg* | *19.02* | | *49.5* | *35-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *11.2* | | *ug/kg* | *19.02* | | *59.0* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *16.5* | | *ug/kg* | *19.02* | | *86.8* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *17.0* | | *ug/kg* | *19.02* | | *89.5* | *40-130* | | | |
| **Batch B211031 - Sonication (probe or bath)** | | | | | | | | | | |
| **Blank (B211031-BLK1)** | | | | Prepared: 02-Nov-2012 Analyzed: 19-Nov-2012 | | | | | | |
| 4,4´-DDD | ND | 0.250 | ug/kg | | | | | | | U |
| 4,4'-DDD [2C] | ND | 0.250 | ug/kg | | | | | | | U |
| 4,4´-DDE | ND | 0.250 | ug/kg | | | | | | | U |
| 4,4'-DDE [2C] | ND | 0.250 | ug/kg | | | | | | | U |
| 4,4´-DDT | ND | 0.250 | ug/kg | | | | | | | U |
| 4,4'-DDT [2C] | ND | 0.250 | ug/kg | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *2.95* | | *ug/kg* | *8.000* | | *36.8* | *35-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *3.29* | | *ug/kg* | *8.000* | | *41.1* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *6.71* | | *ug/kg* | *8.000* | | *83.9* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *6.23* | | *ug/kg* | *8.000* | | *77.9* | *40-130* | | | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B211031 - Sonication (probe or bath)** | | | | | | | | | | |
| **LCS (B211031-BS1)** | | | | Prepared: 02-Nov-2012 Analyzed: 19-Nov-2012 | | | | | | |
| 4,4´-DDD | 3.95 | 0.250 | ug/kg | 8.000 | | 49.4 | 30-135 | | | |
| 4,4'-DDD [2C] | 3.98 | 0.250 | ug/kg | 8.000 | | 49.8 | 30-135 | | | |
| 4,4´-DDE | 5.16 | 0.250 | ug/kg | 8.000 | | 64.5 | 50-125 | | | |
| 4,4'-DDE [2C] | 5.80 | 0.250 | ug/kg | 8.000 | | 72.6 | 50-125 | | | |
| 4,4´-DDT | 3.59 | 0.250 | ug/kg | 8.000 | | 44.9 | 40-140 | | | |
| 4,4'-DDT [2C] | 3.44 | 0.250 | ug/kg | 8.000 | | 43.0 | 40-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *2.88* | | *ug/kg* | *8.000* | | *36.1* | *35-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *3.33* | | *ug/kg* | *8.000* | | *41.7* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *6.27* | | *ug/kg* | *8.000* | | *78.4* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *6.54* | | *ug/kg* | *8.000* | | *81.8* | *40-130* | | | |
| **LCS Dup (B211031-BSD1)** | | | | Prepared: 02-Nov-2012 Analyzed: 19-Nov-2012 | | | | | | |
| 4,4´-DDD | 3.89 | 0.250 | ug/kg | 8.000 | | 48.6 | 30-135 | 1.61 | 30 | |
| 4,4'-DDD [2C] | 4.02 | 0.250 | ug/kg | 8.000 | | 50.2 | 30-135 | 0.880 | 30 | |
| 4,4´-DDE | 5.09 | 0.250 | ug/kg | 8.000 | | 63.7 | 50-125 | 1.25 | 30 | |
| 4,4'-DDE [2C] | 5.77 | 0.250 | ug/kg | 8.000 | | 72.2 | 50-125 | 0.532 | 30 | |
| 4,4´-DDT | 3.49 | 0.250 | ug/kg | 8.000 | | 43.6 | 40-140 | 2.91 | 30 | |
| 4,4'-DDT [2C] | 3.41 | 0.250 | ug/kg | 8.000 | | 42.6 | 40-140 | 0.748 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *3.19* | | *ug/kg* | *8.000* | | *39.8* | *35-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *3.66* | | *ug/kg* | *8.000* | | *45.7* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *5.79* | | *ug/kg* | *8.000* | | *72.4* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *5.99* | | *ug/kg* | *8.000* | | *74.8* | *40-130* | | | |
| **Batch B211032 - Sonication (probe or bath)** | | | | | | | | | | |
| **Blank (B211032-BLK1)** | | | | Prepared: 06-Nov-2012 Analyzed: 21-Nov-2012 | | | | | | |
| 4,4´-DDD | ND | 0.250 | ug/kg | | | | | | | U |
| 4,4'-DDD [2C] | ND | 0.250 | ug/kg | | | | | | | U |
| 4,4´-DDE | ND | 0.250 | ug/kg | | | | | | | U |
| 4,4'-DDE [2C] | ND | 0.250 | ug/kg | | | | | | | U |
| 4,4´-DDT | ND | 0.250 | ug/kg | | | | | | | U |
| 4,4'-DDT [2C] | ND | 0.250 | ug/kg | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *1.51* | | *ug/kg* | *8.000* | | *18.9* | *35-125* | | | *S-GC* |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *1.61* | | *ug/kg* | *8.000* | | *20.1* | *35-125* | | | *S-GC* |
| *Surrogate: Decachlorobiphenyl* | *6.68* | | *ug/kg* | *8.000* | | *83.5* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *5.47* | | *ug/kg* | *8.000* | | *68.4* | *40-130* | | | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C (Environmental Chemistry Branch)

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B211032 - Sonication (probe or bath)** | | | | | | | | | | |
| **LCS (B211032-BS1)** | | | | Prepared: 06-Nov-2012 Analyzed: 21-Nov-2012 | | | | | | |
| 4,4´-DDD | 4.57 | 0.250 | ug/kg | 8.000 | | 57.1 | 30-135 | | | |
| 4,4'-DDD [2C] | 4.55 | 0.250 | ug/kg | 8.000 | | 56.8 | 30-135 | | | |
| 4,4´-DDE | 4.39 | 0.250 | ug/kg | 8.000 | | 54.8 | 50-125 | | | |
| 4,4'-DDE [2C] | 4.46 | 0.250 | ug/kg | 8.000 | | 55.8 | 50-125 | | | |
| 4,4´-DDT | 4.20 | 0.250 | ug/kg | 8.000 | | 52.5 | 45-140 | | | |
| 4,4'-DDT [2C] | 4.50 | 0.250 | ug/kg | 8.000 | | 56.3 | 45-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *4.02* | | *ug/kg* | *8.000* | | *50.2* | *35-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *4.24* | | *ug/kg* | *8.000* | | *53.0* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *5.87* | | *ug/kg* | *8.000* | | *73.3* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *5.85* | | *ug/kg* | *8.000* | | *73.1* | *40-130* | | | |
| **LCS Dup (B211032-BSD1)** | | | | Prepared: 06-Nov-2012 Analyzed: 21-Nov-2012 | | | | | | |
| 4,4´-DDD | 4.80 | 0.250 | ug/kg | 8.000 | | 60.0 | 30-135 | 4.93 | 30 | |
| 4,4'-DDD [2C] | 3.79 | 0.250 | ug/kg | 8.000 | | 47.4 | 30-135 | 18.1 | 30 | |
| 4,4´-DDE | 4.44 | 0.250 | ug/kg | 8.000 | | 55.4 | 50-125 | 1.12 | 30 | |
| 4,4'-DDE [2C] | 4.18 | 0.250 | ug/kg | 8.000 | | 52.3 | 50-125 | 6.50 | 30 | |
| 4,4´-DDT | 4.97 | 0.250 | ug/kg | 8.000 | | 62.1 | 45-140 | 16.7 | 30 | |
| 4,4'-DDT [2C] | 4.62 | 0.250 | ug/kg | 8.000 | | 57.7 | 45-140 | 2.54 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *3.60* | | *ug/kg* | *8.000* | | *45.0* | *35-125* | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene [2C]* | *3.83* | | *ug/kg* | *8.000* | | *47.9* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *5.91* | | *ug/kg* | *8.000* | | *73.9* | *40-130* | | | |
| *Surrogate: Decachorobiphenyl [2C]* | *5.85* | | *ug/kg* | *8.000* | | *73.2* | *40-130* | | | |

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|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 10-Jan-2013 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| S-GC | Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate. |
| S-02 | The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract. |
| QR-05 | RPD between primary and confirmation column values >40%. |
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

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**Vicksburg, MS 39180-6199**

16 December 2014

Gunther Rosen
Navy -- SPAWAR
Environmental Science and Applied System Branch, 536(
San Diego, CA 92152

RE: Quantico

Enclosed are the results of analyses for samples received by the laboratory on 11-Sep-2014. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Michael Catt For Allyson Holman
Biologist

## USACE ERDC-EP-C
## 3909 Halls Ferry Road
## Vicksburg, MS 39180-6199

Navy -- SPAWAR
Environmental Science and Applied System Branch, 5360:
San Diego CA, 92152

Project: Quantico

Project Manager: Gunther Rosen

**Reported:**
16-Dec-2014

### WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| Corbicula Batch 1 T0 A | 4091101-01 | Tissue | 09-Sep-2014 | 11-Sep-2014 |
| Corbicula Batch 1 T0 B | 4091101-02 | Tissue | 09-Sep-2014 | 11-Sep-2014 |
| Corbicula Batch 1 T0 C | 4091101-03 | Tissue | 09-Sep-2014 | 11-Sep-2014 |
| Corbicula Batch 2 T0 A | 4091101-04 | Tissue | 09-Sep-2014 | 11-Sep-2014 |
| Corbicula Batch 2 T0 B | 4091101-05 | Tissue | 09-Sep-2014 | 11-Sep-2014 |
| Corbicula Batch 2 T0 C | 4091101-06 | Tissue | 09-Sep-2014 | 11-Sep-2014 |
| Lumbriculus Batch 1 T0 A | 4091101-07 | Tissue | 09-Sep-2014 | 11-Sep-2014 |
| Lumbriculus Batch 1 T0 B | 4091101-08 | Tissue | 09-Sep-2014 | 11-Sep-2014 |
| Lumbriculus Batch 1 T0 C | 4091101-09 | Tissue | 09-Sep-2014 | 11-Sep-2014 |
| Lumbriculus Batch 2 T0 A | 4091101-10 | Tissue | 09-Sep-2014 | 11-Sep-2014 |
| Lumbriculus Batch 2 T0 B | 4091101-11 | Tissue | 09-Sep-2014 | 11-Sep-2014 |
| Lumbriculus Batch 2 T0 C | 4091101-12 | Tissue | 09-Sep-2014 | 11-Sep-2014 |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 16-Dec-2014 |

**Case Narrative**

No issues were experienced during the analysis of Work Order 4091101 unless specified below.

| | | |
|---|---|---|
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| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
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## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| S-GC | Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate. |
| RPD-04 | RPD between primary and confirmation column values >40%. Per SW846 8000C, the lower result has been reported. |
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration. |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

| | | |
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## Corbicula Batch 1 T0 A

### 4091101-01 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C** | | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Lipids** | **2.05** | | | % by Weight | | 12-Dec-2014 | 12-Dec-2014 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDD** | **0.337** | 0.148 | 0.463 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| **4,4´-DDE** | **0.227** | 0.148 | 0.463 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| **4,4´-DDT** | **0.374** | 0.148 | 0.463 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.148 | 0.463 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | U |
| **2,4´-DDE** | **0.298** | 0.148 | 0.463 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| **2,4´-DDD** | **0.291** | 0.148 | 0.463 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **9.59** | | *64.8 %* | *35-125* | | *09-Oct-2014* | *18-Nov-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **13.9** | | *93.8 %* | *40-130* | | *09-Oct-2014* | *18-Nov-2014* | *EPA 8081A* | |

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## Corbicula Batch 1 T0 B

**4091101-02 (Tissue)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Lipids** | **2.07** | | | % by Weight | | 12-Dec-2014 | 12-Dec-2014 | Lipid Content by Gravimetric Determinatio n | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDD** | **0.335** | 0.160 | 0.500 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| **4,4´-DDE** | **0.278** | 0.160 | 0.500 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| **4,4´-DDT** | **0.176** | 0.160 | 0.500 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.160 | 0.500 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | U |
| **2,4´-DDE** | **0.712** | 0.160 | 0.500 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | |
| **2,4´-DDD** | **0.297** | 0.160 | 0.500 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **5.68** | | *71.0 %* | *35-125* | | *09-Oct-2014* | *18-Nov-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **8.76** | | *110 %* | *40-130* | | *09-Oct-2014* | *18-Nov-2014* | *EPA 8081A* | |

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## Corbicula Batch 1 T0 C

### 4091101-03 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Lipids** | **1.86** | | | % by Weight | | 12-Dec-2014 | 12-Dec-2014 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDD** | **0.182** | 0.151 | 0.472 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| **4,4´-DDE** | **0.338** | 0.151 | 0.472 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| **4,4´-DDT** | **0.385** | 0.151 | 0.472 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.151 | 0.472 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | U |
| **2,4´-DDE** | **0.381** | 0.151 | 0.472 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| 2,4´-DDD | ND | 0.151 | 0.472 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | RPD-04, U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **5.62** | | *74.5 %* | *35-125* | | *09-Oct-2014* | *18-Nov-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **8.26** | | *110 %* | *40-130* | | *09-Oct-2014* | *18-Nov-2014* | *EPA 8081A* | |

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# Corbicula Batch 2 T0 A

**4091101-04 (Tissue)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Classical Chemistry Parameters**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **1.45** | | | % by Weight | | 12-Dec-2014 | 12-Dec-2014 | Lipid Content by Gravimetric Determinatio n | |

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **0.165** | 0.157 | 0.490 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| **4,4´-DDE** | **0.390** | 0.157 | 0.490 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| **4,4´-DDT** | **0.195** | 0.157 | 0.490 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.157 | 0.490 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | U |
| **2,4´-DDE** | **0.330** | 0.157 | 0.490 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| **2,4´-DDD** | **0.160** | 0.157 | 0.490 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **6.31** | | *80.5 %* | *35-125* | | *09-Oct-2014* | *18-Nov-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **9.25** | | *118 %* | *40-130* | | *09-Oct-2014* | *18-Nov-2014* | *EPA 8081A* | |

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# Corbicula Batch 2 T0 B

## 4091101-05 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C** | | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Lipids** | **1.46** | | | % by Weight | | 12-Dec-2014 | 12-Dec-2014 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDD** | **0.202** | 0.145 | 0.455 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| **4,4´-DDE** | **0.340** | 0.145 | 0.455 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| **4,4´-DDT** | **0.220** | 0.145 | 0.455 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.145 | 0.455 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | U |
| **2,4´-DDE** | **0.313** | 0.145 | 0.455 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| 2,4´-DDD | ND | 0.145 | 0.455 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **5.78** | | *79.5 %* | *35-125* | | *09-Oct-2014* | *18-Nov-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **8.73** | | *120 %* | *40-130* | | *09-Oct-2014* | *18-Nov-2014* | *EPA 8081A* | |

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## Corbicula Batch 2 T0 C

### 4091101-06 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Lipids** | **1.78** | | | % by Weight | | 12-Dec-2014 | 12-Dec-2014 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDD** | **0.170** | 0.157 | 0.490 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| **4,4´-DDE** | **0.307** | 0.157 | 0.490 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| 4,4´-DDT | ND | 0.157 | 0.490 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.157 | 0.490 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | U |
| **2,4´-DDE** | **0.415** | 0.157 | 0.490 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| **2,4´-DDD** | **0.224** | 0.157 | 0.490 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **6.43** | | *82.0 %* | *35-125* | | *09-Oct-2014* | *18-Nov-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **9.22** | | *118 %* | *40-130* | | *09-Oct-2014* | *18-Nov-2014* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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## Lumbriculus Batch 1 T0 A

### 4091101-07 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Classical Chemistry Parameters**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **5.38** | | | % by Weight | | 12-Dec-2014 | 12-Dec-2014 | Lipid Content by Gravimetric Determinatio n | |

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **0.172** | 0.096 | 0.300 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| **4,4´-DDE** | **0.466** | 0.096 | 0.300 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | |
| 4,4´-DDT | ND | 0.096 | 0.300 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | RPD-04, U |
| 2,4´-DDT | ND | 0.096 | 0.300 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | U |
| **2,4´-DDE** | **0.438** | 0.096 | 0.300 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | |
| 2,4´-DDD | ND | 0.096 | 0.300 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.618** | | *32.1 %* | *35-125* | | *09-Oct-2014* | *18-Nov-2014* | *EPA 8081A* | *S-GC* |
| *Surrogate: Decachlorobiphenyl* | **0.853** | | *44.4 %* | *40-130* | | *09-Oct-2014* | *18-Nov-2014* | *EPA 8081A* | |

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## Lumbriculus Batch 1 T0 B

**4091101-08 (Tissue)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Classical Chemistry Parameters**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **37900** | | | % by Weight | | 12-Dec-2014 | 12-Dec-2014 | Lipid Content by Gravimetric Determination | |

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **0.136** | 0.100 | 0.311 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| **4,4´-DDE** | **0.580** | 0.100 | 0.311 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | |
| **4,4´-DDT** | **0.259** | 0.100 | 0.311 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| **2,4´-DDT** | **0.128** | 0.100 | 0.311 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| **2,4´-DDE** | **0.363** | 0.100 | 0.311 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | |
| **2,4´-DDD** | **0.139** | 0.100 | 0.311 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.617** | | *31.0 %* | *35-125* | | *09-Oct-2014* | *18-Nov-2014* | *EPA 8081A* | *S-GC* |
| *Surrogate: Decachlorobiphenyl* | **1.08** | | *54.1 %* | *40-130* | | *09-Oct-2014* | *18-Nov-2014* | *EPA 8081A* | |

| | | |
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| Navy -- SPAWAR | Project: Quantico | |
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## Lumbriculus Batch 1 T0 C

**4091101-09 (Tissue)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Classical Chemistry Parameters**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **2.82** | | | % by Weight | | 12-Dec-2014 | 12-Dec-2014 | Lipid Content by Gravimetric Determination | |

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **0.217** | 0.098 | 0.306 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| **4,4´-DDE** | **0.860** | 0.098 | 0.306 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | |
| 4,4´-DDT | ND | 0.098 | 0.306 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | U |
| **2,4´-DDT** | **0.184** | 0.098 | 0.306 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| **2,4´-DDE** | **0.145** | 0.098 | 0.306 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| 2,4´-DDD | ND | 0.098 | 0.306 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **0.934** | | *47.6 %* | *35-125* | | *09-Oct-2014* | *18-Nov-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.29** | | *65.9 %* | *40-130* | | *09-Oct-2014* | *18-Nov-2014* | *EPA 8081A* | |

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# Lumbriculus Batch 2 T0 A

## 4091101-10 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Lipids** | **7.18** | | | % by Weight | | 12-Dec-2014 | 12-Dec-2014 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDD** | **0.239** | 0.095 | 0.296 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| **4,4´-DDE** | **1.20** | 0.095 | 0.296 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | |
| 4,4´-DDT | ND | 0.095 | 0.296 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.095 | 0.296 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | U |
| **2,4´-DDE** | **0.150** | 0.095 | 0.296 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| **2,4´-DDD** | **0.103** | 0.095 | 0.296 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.36** | | *71.9 %* | *35-125* | | *09-Oct-2014* | *18-Nov-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.66** | | *87.5 %* | *40-130* | | *09-Oct-2014* | *18-Nov-2014* | *EPA 8081A* | |

| | | |
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| San Diego CA, 92152 | Project Manager: Gunther Rosen | 16-Dec-2014 |

## Lumbriculus Batch 2 T0 B

**4091101-11 (Tissue)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Lipids** | **5.78** | | | % by Weight | | 12-Dec-2014 | 12-Dec-2014 | Lipid Content by Gravimetric Determinatio n | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDD** | **0.165** | 0.098 | 0.306 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| **4,4´-DDE** | **0.904** | 0.098 | 0.306 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | |
| 4,4´-DDT | ND | 0.098 | 0.306 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.098 | 0.306 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | U |
| **2,4´-DDE** | **0.142** | 0.098 | 0.306 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| 2,4´-DDD | ND | 0.098 | 0.306 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.07** | | *54.6 %* | *35-125* | | *09-Oct-2014* | *18-Nov-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.52** | | *77.6 %* | *40-130* | | *09-Oct-2014* | *18-Nov-2014* | *EPA 8081A* | |

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| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 16-Dec-2014 |

## Lumbriculus Batch 2 T0 C

**4091101-12 (Tissue)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Lipids** | **5.79** | | | % by Weight | | 12-Dec-2014 | 12-Dec-2014 | Lipid Content by Gravimetric Determinatio n | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| 4,4´-DDD | ND | 0.100 | 0.311 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | U |
| **4,4´-DDE** | **0.202** | 0.100 | 0.311 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| **4,4´-DDT** | **0.105** | 0.100 | 0.311 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.100 | 0.311 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | U |
| **2,4´-DDE** | **0.145** | 0.100 | 0.311 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | J |
| 2,4´-DDD | ND | 0.100 | 0.311 | ug/kg | | 09-Oct-2014 | 18-Nov-2014 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **1.65** | | *83.0 %* | *35-125* | | *09-Oct-2014* | *18-Nov-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **1.73** | | *87.1 %* | *40-130* | | *09-Oct-2014* | *18-Nov-2014* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360 | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 16-Dec-2014 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B410123 - Sonication (probe or bath)** | | | | | | | | | | | |
| **Blank (B410123-BLK1)** | | | | | Prepared: 09-Oct-2014 Analyzed: 18-Nov-2014 | | | | | | |
| 4,4′-DDD | ND | 0.160 | 0.500 | ug/kg | | | | | | | U |
| 4,4′-DDE | ND | 0.160 | 0.500 | ug/kg | | | | | | | U |
| 4,4′-DDT | ND | 0.160 | 0.500 | ug/kg | | | | | | | U |
| 2,4′-DDT | ND | 0.160 | 0.500 | ug/kg | | | | | | | U |
| 2,4′-DDE | ND | 0.160 | 0.500 | ug/kg | | | | | | | U |
| 2,4′-DDD | ND | 0.160 | 0.500 | ug/kg | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *4.48* | | | *ug/kg* | *8.000* | | *56.0* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *4.96* | | | *ug/kg* | *8.000* | | *62.0* | *40-130* | | | |
| **LCS (B410123-BS1)** | | | | | Prepared: 09-Oct-2014 Analyzed: 18-Nov-2014 | | | | | | |
| 4,4′-DDD | 5.20 | 0.160 | 0.500 | ug/kg | 8.000 | | 65.0 | 30-135 | | | |
| 4,4′-DDE | 4.85 | 0.160 | 0.500 | ug/kg | 8.000 | | 60.6 | 50-125 | | | |
| 4,4′-DDT | 5.12 | 0.160 | 0.500 | ug/kg | 8.000 | | 64.0 | 40-140 | | | |
| 2,4′-DDT | 6.16 | 0.160 | 0.500 | ug/kg | 10.00 | | 61.6 | 50-110 | | | |
| 2,4′-DDE | 6.04 | 0.160 | 0.500 | ug/kg | 10.00 | | 60.4 | 50-110 | | | |
| 2,4′-DDD | 5.16 | 0.160 | 0.500 | ug/kg | 10.00 | | 51.6 | 50-110 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *4.08* | | | *ug/kg* | *8.000* | | *51.0* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *5.16* | | | *ug/kg* | *8.000* | | *64.5* | *40-130* | | | |
| **Matrix Spike (B410123-MS1)** | **Source: 4091101-08** | | | | Prepared: 09-Oct-2014 Analyzed: 18-Nov-2014 | | | | | | |
| 4,4′-DDD | 6.53 | 0.163 | 0.510 | ug/kg | 8.163 | 0.136 | 80.0 | 30-135 | | | |
| 4,4′-DDE | 8.78 | 0.163 | 0.510 | ug/kg | 8.163 | 0.580 | 100 | 50-125 | | | |
| 4,4′-DDT | 6.65 | 0.163 | 0.510 | ug/kg | 8.163 | 0.259 | 78.3 | 40-140 | | | |
| 2,4′-DDT | 7.88 | 0.163 | 0.510 | ug/kg | 10.20 | 0.128 | 77.2 | 40-110 | | | |
| 2,4′-DDE | 8.16 | 0.163 | 0.510 | ug/kg | 10.20 | 0.363 | 76.4 | 40-110 | | | |
| 2,4′-DDD | 8.57 | 0.163 | 0.510 | ug/kg | 10.20 | 0.139 | 84.0 | 40-110 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *4.45* | | | *ug/kg* | *8.163* | | *54.5* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *7.47* | | | *ug/kg* | *8.163* | | *91.5* | *40-130* | | | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 16-Dec-2014 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B410123 - Sonication (probe or bath)** | | | | | | | | | | | |
| **Matrix Spike Dup (B410123-MSD1)** | **Source: 4091101-08** | | | Prepared: 09-Oct-2014 Analyzed: 18-Nov-2014 | | | | | | | |
| 4,4´-DDD | 5.23 | 0.140 | 0.439 | ug/kg | 7.018 | 0.136 | 74.5 | 30-135 | 22.2 | 30 | |
| 4,4´-DDE | 7.19 | 0.140 | 0.439 | ug/kg | 7.018 | 0.580 | 94.2 | 50-125 | 19.8 | 30 | |
| 4,4´-DDT | 5.30 | 0.140 | 0.439 | ug/kg | 7.018 | 0.259 | 71.8 | 40-140 | 22.7 | 30 | |
| 2,4´-DDT | 6.18 | 0.140 | 0.439 | ug/kg | 8.772 | 0.128 | 70.4 | 40-110 | 24.2 | 30 | |
| 2,4´-DDE | 6.32 | 0.140 | 0.439 | ug/kg | 8.772 | 0.363 | 67.9 | 40-110 | 25.5 | 30 | |
| 2,4´-DDD | 6.77 | 0.140 | 0.439 | ug/kg | 8.772 | 0.139 | 77.2 | 40-110 | 23.5 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *3.34* | | | *ug/kg* | *7.018* | | *47.6* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *5.65* | | | *ug/kg* | *7.018* | | *80.5* | *40-130* | | | |

# Chain of Custody

Date: 9/10/2014 

| | | | |
|---|---|---|---|
| Project Manager: Gunther Rosen | office: (619) 553-0886 | cell: (619) 890-9692 | |
| Company Name: SPAWAR Systems Center Pacific | email: gunther.rosen@navy.mil | | |
| Project Name: SEA Ring | | | |
| Sampler's Name(s): Gunther Rosen | | | |

| | | |
|---|---|---|
| Bill To: Gunther Rosen | | Report To: Gunther Rosen |
| Company: SPAWAR Systems Center Pacific | | Company: SPAWAR |
| Address: 53475 Strothe Rd., Bldg. 111 | | Address: Same |
| San Diego, CA 92152 | | (electronic copies only) |

QC Level: Standard | TAT: Standard | Preservatives: 4°C

| Sample ID | Sample Description | Date Collected | Time Collected | Container Type | No. Containers | Soil/Sediment | Seawater | Tissue | DDX | lipid | | | | | | | Comments: weight (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corbicula Batch 1 T0 A | Clam tissue | 9/9/14 | 07:00 | Scint vial | 1 | | | x | X | X | | | | | | | 1.4 |
| Corbicula Batch 1 T0 B | Clam tissue | 9/9/14 | 07:00 | " | 1 | | | X | X | X | | | | | | | 2.5 |
| Corbicula Batch 1 T0 C | Clam tissue | 9/9/14 | 07:00 | " | 1 | | | X | X | X | | | | | | | 2.1 |
| Corbicula Batch 2 T0 A | Clam tissue | 9/9/14 | 18:00 | " | 1 | | | X | X | X | | | | | | | 4.3 |
| Corbicula Batch 2 T0 B | Clam tissue | 9/9/14 | 18:00 | " | 1 | | | X | X | X | | | | | | | 3.6 |
| Corbicula Batch 2 T0 C | Clam tissue | 9/9/14 | 18:00 | " | 1 | | | X | X | X | | | | | | | 3.1 |
| Lumbriculus Batch 1 T0 A | Worm tissue | 9/9/14 | 07:00 | Ziploc | 1 | | | X | X | X | | | | | | | 13.3 |
| Lumbriculus Batch 1 T0 B | Worm tissue | 9/9/14 | 07:00 | " | 1 | | | X | X | X | | | | | | | 29.5 |
| Lumbriculus Batch 1 T0 C | Worm tissue | 9/9/14 | 07:00 | " | 1 | | | X | X | X | | | | | | | 25.0 |
| Lumbriculus Batch 2 T0 A | Worm tissue | 9/9/14 | 18:00 | " | 1 | | | X | X | X | | | | | | | 13.1 |
| Lumbriculus Batch 2 T0 B | Worm tissue | 9/9/14 | 18:00 | " | 1 | | | X | X | X | | | | | | | 13.3 |
| Lumbriculus Batch 2 T0 C | Worm tissue | 9/9/14 | 18:00 | " | 1 | | | X | X | X | | | | | | | 14.8 |

| | | |
|---|---|---|
| Submitted to (Laboratory Name): ERDC-EL | | |
| Relinquished By: Gunther Rosen | Date 9/10/14 | Time 1600HR |
| Received By: | Date | Time |
| Relinquished By: | Date | Time |
| Received By (LAB): [signature] | Date 9-11-14 | Time 11:30a |

**For Lab Use**

Does COC match samples: Y or N
Broken container: Y or N
Received within holding time: Y or N
COC seal intact: Y or N
Any other problems: Y or N
If problems, AMEC contacted: Y or N
Date contacted: ___/___/___
Temperature (°C): ______

**Comments**

Shipped Fedex priority overnight to ERDC-EL Lab. 3909 Halls Ferry Rd., Bldg. 3299. Vicksburg, MS 39180, Attn: Allyson Holman 601-634-4296

T0 = time zero. Batch 1 organimsms received 9/5/14; Batch 2 organimsms received 9/9/14.

DISCUSS with G. ROSEN BEFORE ANALYZING

## Items for Project Manager Review

| LabNumber | Analysis | Analyte | Exception |
|---|---|---|---|

**USACE ERDC-EP-C**
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**Vicksburg, MS 39180-6199**

15 December 2014

Gunther Rosen
Navy -- SPAWAR
Environmental Science and Applied System Branch, 536(
San Diego, CA 92152

RE: Quantico

Enclosed are the results of analyses for samples received by the laboratory on 25-Sep-2014. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Michael Catt For Allyson Holman
Biologist

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**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 15-Dec-2014 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| QT2-1-LV-Cl | 4101002-01 | Tissue | 24-Sep-2014 | 25-Sep-2014 |
| QT2-2-LV-Cl | 4101002-02 | Tissue | 24-Sep-2014 | 25-Sep-2014 |
| QT2-4-LV-Cl | 4101002-03 | Tissue | 24-Sep-2014 | 25-Sep-2014 |
| QT2-5-LV-Cl | 4101002-04 | Tissue | 24-Sep-2014 | 25-Sep-2014 |
| QT2-5dup-LV-Cl | 4101002-05 | Tissue | 24-Sep-2014 | 25-Sep-2014 |
| QT2-6-LV-Cl | 4101002-06 | Tissue | 24-Sep-2014 | 25-Sep-2014 |
| QT2-7-LV-Cl | 4101002-07 | Tissue | 24-Sep-2014 | 25-Sep-2014 |
| QT2-1-Cf-Cl | 4101002-08 | Tissue | 24-Sep-2014 | 25-Sep-2014 |
| QT2-2-Cf-Cl | 4101002-09 | Tissue | 24-Sep-2014 | 25-Sep-2014 |
| QT2-3F-Cf-Cl | 4101002-10 | Tissue | 24-Sep-2014 | 25-Sep-2014 |
| QT2-4-Cf-Cl | 4101002-11 | Tissue | 24-Sep-2014 | 25-Sep-2014 |
| QT2-5-Cf-Cl | 4101002-12 | Tissue | 24-Sep-2014 | 25-Sep-2014 |
| QT2-5dup-Cf-Cl | 4101002-13 | Tissue | 24-Sep-2014 | 25-Sep-2014 |
| QT2-6-Cf-Cl | 4101002-14 | Tissue | 24-Sep-2014 | 25-Sep-2014 |
| QT2-7-Cf-Cl | 4101002-15 | Tissue | 24-Sep-2014 | 25-Sep-2014 |

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|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 15-Dec-2014 |

## Case Narrative

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 15-Dec-2014 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| S-GC | Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate. |
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration. |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

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| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
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| San Diego CA, 92152 | Project Manager: Gunther Rosen | 15-Dec-2014 |

## QT2-1-LV-Cl

**4101002-01 (Tissue)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Lipids** | **2.94** | | | % by Weight | | 12-Dec-2014 | 12-Dec-2014 | Lipid Content by Gravimetric Determinatio n | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDD** | **11.1** | 0.096 | 0.299 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDE** | **8.01** | 0.096 | 0.299 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDT** | **0.648** | 0.096 | 0.299 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **2,4´-DDT** | **0.316** | 0.096 | 0.299 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **2,4´-DDE** | **1.61** | 0.096 | 0.299 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **2,4´-DDD** | **1.56** | 0.096 | 0.299 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.47** | | *72.5 %* | *35-125* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.44** | | *51.0 %* | *40-130* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 15-Dec-2014 |

## QT2-2-LV-Cl

### 4101002-02 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Lipids** | **2.74** | | | % by Weight | | 12-Dec-2014 | 12-Dec-2014 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDD** | **13.7** | 0.099 | 0.309 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDE** | **8.96** | 0.099 | 0.309 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDT** | **1.13** | 0.099 | 0.309 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.099 | 0.309 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | U |
| **2,4´-DDE** | **1.38** | 0.099 | 0.309 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **2,4´-DDD** | **1.62** | 0.099 | 0.309 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.72** | | *55.0 %* | *35-125* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.70** | | *54.5 %* | *40-130* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 15-Dec-2014 |

## QT2-4-LV-Cl

### 4101002-03 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Lipids** | **2.35** | | | % by Weight | | 12-Dec-2014 | 12-Dec-2014 | Lipid Content by Gravimetric Determinatio n | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDD** | **8.86** | 0.097 | 0.302 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDE** | **9.49** | 0.097 | 0.302 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDT** | **0.488** | 0.097 | 0.302 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **2,4´-DDT** | **0.336** | 0.097 | 0.302 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| 2,4´-DDE | ND | 0.097 | 0.302 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | U |
| **2,4´-DDD** | **1.29** | 0.097 | 0.302 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.61** | | *54.0 %* | *35-125* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.46** | | *51.0 %* | *40-130* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |

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**Vicksburg, MS 39180-6199**

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| Navy -- SPAWAR | Project: Quantico | |
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| San Diego CA, 92152 | Project Manager: Gunther Rosen | 15-Dec-2014 |

## QT2-5-LV-Cl

### 4101002-04 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C** | | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Lipids** | **3.52** | | | % by Weight | | 12-Dec-2014 | 12-Dec-2014 | Lipid Content by Gravimetric Determinatio n | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDD** | **51.2** | 0.160 | 0.500 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDE** | **40.8** | 0.160 | 0.500 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDT** | **4.48** | 0.160 | 0.500 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **2,4´-DDT** | **3.82** | 0.160 | 0.500 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **2,4´-DDE** | **18.5** | 0.160 | 0.500 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **2,4´-DDD** | **8.76** | 0.160 | 0.500 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **5.16** | | *64.5 %* | *35-125* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **8.52** | | *106 %* | *40-130* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
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| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 15-Dec-2014 |

## QT2-5dup-LV-Cl

**4101002-05 (Tissue)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Classical Chemistry Parameters**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **3.29** | | | % by Weight | | 12-Dec-2014 | 12-Dec-2014 | Lipid Content by Gravimetric Determination | |

**Organochlorine Pesticides by EPA Method 8081A**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **54.6** | 0.154 | 0.481 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDE** | **40.0** | 0.154 | 0.481 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDT** | **3.33** | 0.154 | 0.481 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **2,4´-DDT** | **1.32** | 0.154 | 0.481 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **2,4´-DDE** | **7.88** | 0.154 | 0.481 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **2,4´-DDD** | **7.46** | 0.154 | 0.481 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **6.65** | | *86.5 %* | *35-125* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **7.38** | | *96.0 %* | *40-130* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 15-Dec-2014 |

## QT2-6-LV-Cl

**4101002-06 (Tissue)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Lipids** | **2.62** | | | % by Weight | | 12-Dec-2014 | 12-Dec-2014 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDD** | **8.82** | 0.143 | 0.446 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDE** | **10.4** | 0.143 | 0.446 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDT** | **1.78** | 0.143 | 0.446 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **2,4´-DDT** | **0.789** | 0.143 | 0.446 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **2,4´-DDE** | **2.67** | 0.143 | 0.446 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **2,4´-DDD** | **1.64** | 0.143 | 0.446 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **7.04** | | *98.5 %* | *35-125* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **7.11** | | *99.5 %* | *40-130* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |

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|---|---|---|
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## QT2-7-LV-Cl

### 4101002-07 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C** | | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Lipids** | **2.34** | | | % by Weight | | 12-Dec-2014 | 12-Dec-2014 | Lipid Content by Gravimetric Determinatio n | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDD** | **6.51** | 0.157 | 0.490 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDE** | **8.94** | 0.157 | 0.490 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDT** | **0.553** | 0.157 | 0.490 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **2,4´-DDT** | **0.420** | 0.157 | 0.490 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | J |
| **2,4´-DDE** | **1.76** | 0.157 | 0.490 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **2,4´-DDD** | **0.976** | 0.157 | 0.490 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **5.80** | | *74.0 %* | *35-125* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **6.55** | | *83.5 %* | *40-130* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |

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## QT2-1-Cf-Cl

### 4101002-08 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Lipids** | **1.54** | | | % by Weight | | 12-Dec-2014 | 12-Dec-2014 | Lipid Content by Gravimetric Determinatio n | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDD** | **9.39** | 0.098 | 0.305 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDE** | **7.00** | 0.098 | 0.305 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDT** | **0.646** | 0.098 | 0.305 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **2,4´-DDT** | **0.183** | 0.098 | 0.305 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | J |
| **2,4´-DDE** | **1.22** | 0.098 | 0.305 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **2,4´-DDD** | **0.673** | 0.098 | 0.305 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.95** | | *81.0 %* | *35-125* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **4.15** | | *85.0 %* | *40-130* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |

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## QT2-2-Cf-Cl

### 4101002-09 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C** | | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Lipids** | **1.46** | | | % by Weight | | 12-Dec-2014 | 12-Dec-2014 | Lipid Content by Gravimetric Determinatio n | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDD** | **8.51** | 0.095 | 0.296 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDE** | **6.68** | 0.095 | 0.296 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDT** | **0.578** | 0.095 | 0.296 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **2,4´-DDT** | **0.789** | 0.095 | 0.296 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **2,4´-DDE** | **0.867** | 0.095 | 0.296 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **2,4´-DDD** | **1.50** | 0.095 | 0.296 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.22** | | *68.0 %* | *35-125* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.96** | | *83.5 %* | *40-130* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |

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# QT2-3F-Cf-Cl

## 4101002-10 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **ERDC- EL-EP-C** | | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Lipids** | **1.51** | | | % by Weight | | 12-Dec-2014 | 12-Dec-2014 | Lipid Content by Gravimetric Determinatio n | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDD** | **7.30** | 0.100 | 0.312 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDE** | **5.20** | 0.100 | 0.312 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDT** | **0.512** | 0.100 | 0.312 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **2,4´-DDT** | **0.655** | 0.100 | 0.312 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| 2,4´-DDE | ND | 0.100 | 0.312 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | U |
| **2,4´-DDD** | **1.33** | 0.100 | 0.312 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.40** | | *68.0 %* | *35-125* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.82** | | *76.5 %* | *40-130* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |

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## QT2-4-Cf-Cl

### 4101002-11 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Lipids** | **2.43** | | | % by Weight | | 12-Dec-2014 | 12-Dec-2014 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDD** | **6.73** | 0.096 | 0.300 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDE** | **6.13** | 0.096 | 0.300 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDT** | **0.435** | 0.096 | 0.300 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.096 | 0.300 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | U |
| **2,4´-DDE** | **0.750** | 0.096 | 0.300 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **2,4´-DDD** | **0.526** | 0.096 | 0.300 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.20** | | *66.5 %* | *35-125* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.37** | | *70.0 %* | *40-130* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |

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## QT2-5-Cf-Cl

**4101002-12 (Tissue)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Classical Chemistry Parameters**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **1.35** | | | % by Weight | | 12-Dec-2014 | 12-Dec-2014 | Lipid Content by Gravimetric Determinatio n | |

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **7.42** | 0.094 | 0.293 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDE** | **6.74** | 0.094 | 0.293 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| 4,4´-DDT | ND | 0.094 | 0.293 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.094 | 0.293 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | U |
| **2,4´-DDE** | **0.254** | 0.094 | 0.293 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | J |
| **2,4´-DDD** | **0.570** | 0.094 | 0.293 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **2.82** | | *60.0 %* | *35-125* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **2.93** | | *62.5 %* | *40-130* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |

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Project: Quantico

Project Manager: Gunther Rosen

**Reported:** 15-Dec-2014

## QT2-5dup-Cf-Cl

**4101002-13 (Tissue)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

**ERDC- EL-EP-C**

**Classical Chemistry Parameters**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **1.88** | | | % by Weight | | 12-Dec-2014 | 12-Dec-2014 | Lipid Content by Gravimetric Determination | |

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **8.33** | 0.097 | 0.302 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDE** | **6.88** | 0.097 | 0.302 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDT** | **0.454** | 0.097 | 0.302 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| 2,4´-DDT | ND | 0.097 | 0.302 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | U |
| **2,4´-DDE** | **0.517** | 0.097 | 0.302 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **2,4´-DDD** | **0.546** | 0.097 | 0.302 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.04** | | *63.0 %* | *35-125* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.82** | | *79.0 %* | *40-130* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |

| | | |
|---|---|---|
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# QT2-6-Cf-Cl

## 4101002-14 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|

### ERDC- EL-EP-C

**Classical Chemistry Parameters**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **1.57** | | | % by Weight | | 12-Dec-2014 | 12-Dec-2014 | Lipid Content by Gravimetric Determinatio n | |

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **4,4´-DDD** | **1.41** | 0.145 | 0.455 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDE** | **1.45** | 0.145 | 0.455 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDT** | **0.167** | 0.145 | 0.455 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | J |
| 2,4´-DDT | ND | 0.145 | 0.455 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | U |
| **2,4´-DDE** | **0.342** | 0.145 | 0.455 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | J |
| 2,4´-DDD | ND | 0.145 | 0.455 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **4.00** | | *55.0 %* | *35-125* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.67** | | *50.5 %* | *40-130* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |

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## QT2-7-Cf-Cl

### 4101002-15 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC- EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | | |
| **% Lipids** | **1.44** | | | % by Weight | | 12-Dec-2014 | 12-Dec-2014 | Lipid Content by Gravimetric Determinatio n | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | | |
| **4,4´-DDD** | **2.61** | 0.100 | 0.311 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| **4,4´-DDE** | **3.16** | 0.100 | 0.311 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| 4,4´-DDT | ND | 0.100 | 0.311 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.100 | 0.311 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | U |
| **2,4´-DDE** | **0.552** | 0.100 | 0.311 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | |
| 2,4´-DDD | ND | 0.100 | 0.311 | ug/kg | | 20-Oct-2014 | 03-Dec-2014 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **3.08** | | *62.0 %* | *35-125* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **4.00** | | *80.5 %* | *40-130* | | *20-Oct-2014* | *03-Dec-2014* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 15-Dec-2014 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B410182 - Sonication (probe or bath)** | | | | | | | | | | | |
| **Blank (B410182-BLK1)** | | | | | Prepared: 20-Oct-2014 Analyzed: 03-Dec-2014 | | | | | | |
| 4,4′-DDD | ND | 0.160 | 0.500 | ug/kg | | | | | | | U |
| 4,4′-DDE | ND | 0.160 | 0.500 | ug/kg | | | | | | | U |
| 4,4′-DDT | ND | 0.160 | 0.500 | ug/kg | | | | | | | U |
| 2,4′-DDT | ND | 0.160 | 0.500 | ug/kg | | | | | | | U |
| 2,4′-DDE | ND | 0.160 | 0.500 | ug/kg | | | | | | | U |
| 2,4′-DDD | ND | 0.160 | 0.500 | ug/kg | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *4.76* | | | *ug/kg* | *8.000* | | *59.5* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *5.32* | | | *ug/kg* | *8.000* | | *66.5* | *40-130* | | | |
| **LCS (B410182-BS1)** | | | | | Prepared: 20-Oct-2014 Analyzed: 03-Dec-2014 | | | | | | |
| 4,4′-DDD | 7.32 | 0.160 | 0.500 | ug/kg | 8.000 | | 91.5 | 30-135 | | | |
| 4,4′-DDE | 6.52 | 0.160 | 0.500 | ug/kg | 8.000 | | 81.5 | 50-125 | | | |
| 4,4′-DDT | 7.00 | 0.160 | 0.500 | ug/kg | 8.000 | | 87.5 | 40-140 | | | |
| 2,4′-DDT | 8.48 | 0.160 | 0.500 | ug/kg | 10.00 | | 84.8 | 50-110 | | | |
| 2,4′-DDE | 7.60 | 0.160 | 0.500 | ug/kg | 10.00 | | 76.0 | 50-110 | | | |
| 2,4′-DDD | 8.04 | 0.160 | 0.500 | ug/kg | 10.00 | | 80.4 | 50-110 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *5.24* | | | *ug/kg* | *8.000* | | *65.5* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *5.64* | | | *ug/kg* | *8.000* | | *70.5* | *40-130* | | | |
| **Matrix Spike (B410182-MS1)** | | **Source: 4101002-01** | | | Prepared: 20-Oct-2014 Analyzed: 03-Dec-2014 | | | | | | |
| 4,4′-DDD | 35.2 | 0.145 | 0.455 | ug/kg | 18.18 | 11.1 | 132 | 30-135 | | | |
| 4,4′-DDE | 24.9 | 0.145 | 0.455 | ug/kg | 18.18 | 8.01 | 92.9 | 50-125 | | | |
| 4,4′-DDT | 10.4 | 0.145 | 0.455 | ug/kg | 18.18 | 0.648 | 53.6 | 40-140 | | | |
| 2,4′-DDT | 12.8 | 0.145 | 0.455 | ug/kg | 22.73 | 0.316 | 54.9 | 40-110 | | | |
| 2,4′-DDE | 13.7 | 0.145 | 0.455 | ug/kg | 22.73 | 1.61 | 53.4 | 40-110 | | | |
| 2,4′-DDD | 14.1 | 0.145 | 0.455 | ug/kg | 22.73 | 1.56 | 55.0 | 40-110 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *39.6* | | | *ug/kg* | *7.273* | | *545* | *35-125* | | | *S-GC* |
| *Surrogate: Decachlorobiphenyl* | *6.80* | | | *ug/kg* | *7.273* | | *93.5* | *40-130* | | | |

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| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 15-Dec-2014 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC- EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B410182 - Sonication (probe or bath)** | | | | | | | | | | | |
| **Matrix Spike Dup (B410182-MSD1)** | **Source: 4101002-01** | | | Prepared: 20-Oct-2014 Analyzed: 03-Dec-2014 | | | | | | | |
| 4,4´-DDD | 33.4 | 0.143 | 0.446 | ug/kg | 17.86 | 11.1 | 125 | 30-135 | 5.17 | 30 | |
| 4,4´-DDE | 24.7 | 0.143 | 0.446 | ug/kg | 17.86 | 8.01 | 93.5 | 50-125 | 0.785 | 30 | |
| 4,4´-DDT | 10.3 | 0.143 | 0.446 | ug/kg | 17.86 | 0.648 | 54.0 | 40-140 | 1.11 | 30 | |
| 2,4´-DDT | 13.9 | 0.143 | 0.446 | ug/kg | 22.32 | 0.316 | 60.8 | 40-110 | 8.19 | 30 | |
| 2,4´-DDE | 15.9 | 0.143 | 0.446 | ug/kg | 22.32 | 1.61 | 63.8 | 40-110 | 14.3 | 30 | |
| 2,4´-DDD | 15.8 | 0.143 | 0.446 | ug/kg | 22.32 | 1.56 | 63.9 | 40-110 | 11.7 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *7.00* | | | *ug/kg* | *7.143* | | *98.0* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *6.96* | | | *ug/kg* | *7.143* | | *97.5* | *40-130* | | | |

## Items for Project Manager Review

| LabNumber | Analysis | Analyte | Exception |
|---|---|---|---|

**USACE ERDC-EP-C**
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**Vicksburg, MS 39180-6199**

14 January 2016

Gunther Rosen
Navy -- SPAWAR
Environmental Science and Applied System Branch, 536(
San Diego, CA 92152

RE: Quantico

Enclosed are the results of analyses for samples received by the laboratory on 14-Sep-2015. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Dale Rosado, Ph. D.

**USACE ERDC-EP-C**
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| | | |
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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 14-Jan-2016 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| QT12-T0-A-LV | 5091401-01 | Tissue | 10-Sep-2015 | 14-Sep-2015 |
| QT12-T0-B-LV | 5091401-02 | Tissue | 10-Sep-2015 | 14-Sep-2015 |
| QT12-T0-C-LV | 5091401-03 | Tissue | 10-Sep-2015 | 14-Sep-2015 |
| QT12-1-LV | 5091401-04 | Tissue | 10-Sep-2015 | 14-Sep-2015 |
| QT12-2-LV | 5091401-05 | Tissue | 10-Sep-2015 | 14-Sep-2015 |
| QT12-3-LV | 5091401-06 | Tissue | 10-Sep-2015 | 14-Sep-2015 |
| QT12-3DUP-LV | 5091401-07 | Tissue | 10-Sep-2015 | 14-Sep-2015 |
| QT12-4-LV | 5091401-08 | Tissue | 10-Sep-2015 | 14-Sep-2015 |
| QT12-5-LV | 5091401-09 | Tissue | 10-Sep-2015 | 14-Sep-2015 |
| QT12-6-LV | 5091401-10 | Tissue | 10-Sep-2015 | 14-Sep-2015 |
| QT12-7-LV | 5091401-11 | Tissue | 10-Sep-2015 | 14-Sep-2015 |
| QT12-T0-A-CF | 5091401-12 | Tissue | 10-Sep-2015 | 14-Sep-2015 |
| QT12-T0-B-CF | 5091401-13 | Tissue | 10-Sep-2015 | 14-Sep-2015 |
| QT12-T0-C-CF | 5091401-14 | Tissue | 10-Sep-2015 | 14-Sep-2015 |
| QT12-1-CF | 5091401-15 | Tissue | 10-Sep-2015 | 14-Sep-2015 |
| QT12-2-CF | 5091401-16 | Tissue | 10-Sep-2015 | 14-Sep-2015 |
| QT12-3-CF | 5091401-17 | Tissue | 10-Sep-2015 | 14-Sep-2015 |
| QT12-3DUP-CF | 5091401-18 | Tissue | 10-Sep-2015 | 14-Sep-2015 |
| QT12-4-CF | 5091401-19 | Tissue | 10-Sep-2015 | 14-Sep-2015 |
| QT12-5-CF | 5091401-20 | Tissue | 10-Sep-2015 | 14-Sep-2015 |
| QT12-6-CF | 5091401-21 | Tissue | 10-Sep-2015 | 14-Sep-2015 |
| QT12-7-CF | 5091401-22 | Tissue | 10-Sep-2015 | 14-Sep-2015 |

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**Case Narrative**

Early eluting interfering peaks in several samples resulted in high recoveries of the 2,4,5,6-TCMX surrogate.

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
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## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| S-GC | Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate/s. |
| RPD-04 | RPD between primary and confirmation column values >40%. Per SW846 8000C, the lower result has been reported. |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

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## QT12-T0-A-LV

**5091401-01 (Tissue)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **4.15** | | | % by Weight | 11-Nov-2015 | 11-Nov-2015 | Lipid Content by Gravimetric Determinatio n | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.225 | 0.702 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.225 | 0.702 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.225 | 0.702 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.225 | 0.702 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.225 | 0.702 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.225 | 0.702 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **5.94** | | *60.3 %* | *35-125* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **7.31** | | *74.2 %* | *40-130* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |

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| | | |
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## QT12-T0-B-LV

**5091401-02 (Tissue)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **4.11** | | | % by Weight | 11-Nov-2015 | 11-Nov-2015 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.213 | 0.666 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.213 | 0.666 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.213 | 0.666 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.213 | 0.666 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.213 | 0.666 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.213 | 0.666 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **9.38** | | *100 %* | *35-125* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **8.31** | | *88.9 %* | *40-130* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |

**USACE ERDC-EP-C**
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## QT12-T0-C-LV

**5091401-03 (Tissue)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Classical Chemistry Parameters**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **3.92** | | | % by Weight | 11-Nov-2015 | 11-Nov-2015 | Lipid Content by Gravimetric Determinatio n | |

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.220 | 0.688 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.220 | 0.688 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.220 | 0.688 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.220 | 0.688 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.220 | 0.688 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.220 | 0.688 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **5.84** | | *60.4 %* | *35-125* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **7.71** | | *79.8 %* | *40-130* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 14-Jan-2016 |

## QT12-1-LV

### 5091401-04 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **1.74** | | | % by Weight | 11-Nov-2015 | 11-Nov-2015 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.341 | 1.07 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.341 | 1.07 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.341 | 1.07 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| **4,4´-DDD** | **10.3** | 0.341 | 1.07 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| **4,4´-DDE** | **19.1** | 0.341 | 1.07 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| 4,4´-DDT | ND | 0.341 | 1.07 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **7.79** | | *52.1 %* | *35-125* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **8.25** | | *55.2 %* | *40-130* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |

# USACE ERDC-EP-C
## 3909 Halls Ferry Road
## Vicksburg, MS 39180-6199

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| San Diego CA, 92152 | Project Manager: Gunther Rosen | 14-Jan-2016 |

## QT12-2-LV
### 5091401-05 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **1.43** | | | % by Weight | 11-Nov-2015 | 11-Nov-2015 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.374 | 1.17 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.374 | 1.17 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.374 | 1.17 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| **4,4´-DDD** | **10.2** | 0.374 | 1.17 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| **4,4´-DDE** | **9.20** | 0.374 | 1.17 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | RPD-04 |
| 4,4´-DDT | ND | 0.374 | 1.17 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **10.6** | | *65.0 %* | *35-125* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **7.44** | | *45.4 %* | *40-130* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 14-Jan-2016 |

## QT12-3-LV

### 5091401-06 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.224 | 0.699 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.224 | 0.699 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.224 | 0.699 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| **4,4´-DDD** | **24.6** | 0.224 | 0.699 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| **4,4´-DDE** | **14.1** | 0.224 | 0.699 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| 4,4´-DDT | ND | 0.224 | 0.699 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **7.67** | | *78.2 %* | *35-125* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **7.59** | | *77.4 %* | *40-130* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |

USACE ERDC-EP-C
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| | | |
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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 14-Jan-2016 |

## QT12-3DUP-LV

**5091401-07 (Tissue)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.226 | 0.705 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.226 | 0.705 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.226 | 0.705 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| **4,4´-DDD** | **38.1** | 0.226 | 0.705 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| **4,4´-DDE** | **17.1** | 0.226 | 0.705 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| 4,4´-DDT | ND | 0.226 | 0.705 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **8.11** | | *81.9 %* | *35-125* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **7.63** | | *77.0 %* | *40-130* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 14-Jan-2016 |

## QT12-4-LV

### 5091401-08 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.221 | 0.692 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.221 | 0.692 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.221 | 0.692 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| **4,4´-DDD** | **21.3** | 0.221 | 0.692 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| **4,4´-DDE** | **12.6** | 0.221 | 0.692 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| 4,4´-DDT | ND | 0.221 | 0.692 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **6.46** | | *66.5 %* | *35-125* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **7.20** | | *74.2 %* | *40-130* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 14-Jan-2016 |

## QT12-5-LV

### 5091401-09 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.225 | 0.702 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.225 | 0.702 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.225 | 0.702 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| **4,4´-DDD** | **23.0** | 0.225 | 0.702 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| **4,4´-DDE** | **14.5** | 0.225 | 0.702 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| 4,4´-DDT | ND | 0.225 | 0.702 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **6.48** | | *65.7 %* | *35-125* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **7.23** | | *73.4 %* | *40-130* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## QT12-6-LV

### 5091401-10 (Tissue)

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.192 | 0.599 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.192 | 0.599 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.192 | 0.599 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| **4,4´-DDD** | **6.55** | 0.192 | 0.599 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| **4,4´-DDE** | **9.62** | 0.192 | 0.599 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| 4,4´-DDT | ND | 0.192 | 0.599 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **4.66** | | *55.5 %* | *35-125* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **5.50** | | *65.4 %* | *40-130* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## QT12-7-LV

**5091401-11 (Tissue)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.221 | 0.692 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.221 | 0.692 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.221 | 0.692 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| **4,4´-DDD** | **2.59** | 0.221 | 0.692 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| **4,4´-DDE** | **6.86** | 0.221 | 0.692 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| 4,4´-DDT | ND | 0.221 | 0.692 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **5.39** | | *55.5 %* | *35-125* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **3.66** | | *37.7 %* | *40-130* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | *S-GC* |

| | | |
|---|---|---|
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## QT12-T0-A-CF

**5091401-12 (Tissue)**

### ERDC-EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.221 | 0.692 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.221 | 0.692 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.221 | 0.692 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.221 | 0.692 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| **4,4´-DDE** | **5.31** | 0.221 | 0.692 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| 4,4´-DDT | ND | 0.221 | 0.692 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **30.6** | | *315 %* | *35-125* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **5.46** | | *56.2 %* | *40-130* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## QT12-T0-B-CF

**5091401-13 (Tissue)**

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.184 | 0.575 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.184 | 0.575 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.184 | 0.575 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.184 | 0.575 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.184 | 0.575 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.184 | 0.575 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **7.44** | | *92.3 %* | *35-125* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **5.07** | | *62.9 %* | *40-130* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## QT12-T0-C-CF

**5091401-14 (Tissue)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.188 | 0.589 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.188 | 0.589 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.188 | 0.589 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.188 | 0.589 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.188 | 0.589 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.188 | 0.589 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **14.8** | | *179 %* | *35-125* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **5.13** | | *62.0 %* | *40-130* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
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# QT12-1-CF

**5091401-15 (Tissue)**

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.213 | 0.666 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.213 | 0.666 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.213 | 0.666 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| **4,4´-DDD** | **29.3** | 0.213 | 0.666 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| **4,4´-DDE** | **23.1** | 0.213 | 0.666 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| **4,4´-DDT** | **7.47** | 0.213 | 0.666 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **16.1** | | *172 %* | *35-125* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **12.6** | | *135 %* | *40-130* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |

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|---|---|---|
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# QT12-2-CF

## 5091401-16 (Tissue)

### ERDC-EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.195 | 0.609 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.195 | 0.609 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.195 | 0.609 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| **4,4´-DDD** | **6.26** | 0.195 | 0.609 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| **4,4´-DDE** | **7.75** | 0.195 | 0.609 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| **4,4´-DDT** | **1.82** | 0.195 | 0.609 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **4.97** | | *58.1 %* | *35-125* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **4.14** | | *48.4 %* | *40-130* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

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## QT12-3-CF

**5091401-17 (Tissue)**

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.208 | 0.651 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.208 | 0.651 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.208 | 0.651 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| **4,4´-DDD** | **38.4** | 0.208 | 0.651 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| **4,4´-DDE** | **18.9** | 0.208 | 0.651 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| **4,4´-DDT** | **9.57** | 0.208 | 0.651 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **13.3** | | *146 %* | *35-125* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **8.55** | | *93.6 %* | *40-130* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
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## QT12-3DUP-CF

**5091401-18 (Tissue)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.206 | 0.645 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.206 | 0.645 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.206 | 0.645 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| **4,4´-DDD** | **34.3** | 0.206 | 0.645 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| **4,4´-DDE** | **22.4** | 0.206 | 0.645 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| **4,4´-DDT** | **8.68** | 0.206 | 0.645 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **10.4** | | *115 %* | *35-125* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **9.13** | | *101 %* | *40-130* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |

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## QT12-4-CF

**5091401-19 (Tissue)**

### ERDC-EL-EP-C

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.215 | 0.672 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.215 | 0.672 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.215 | 0.672 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| **4,4´-DDD** | **11.3** | 0.215 | 0.672 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| **4,4´-DDE** | **8.71** | 0.215 | 0.672 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| 4,4´-DDT | ND | 0.215 | 0.672 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **6.29** | | *66.7 %* | *35-125* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **7.26** | | *77.0 %* | *40-130* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
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## QT12-5-CF

### 5091401-20 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.210 | 0.657 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.210 | 0.657 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.210 | 0.657 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| **4,4´-DDD** | **29.8** | 0.210 | 0.657 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| **4,4´-DDE** | **24.1** | 0.210 | 0.657 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| **4,4´-DDT** | **5.00** | 0.210 | 0.657 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **9.40** | | *102 %* | *35-125* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **10.3** | | *112 %* | *40-130* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 14-Jan-2016 |

## QT12-6-CF

**5091401-21 (Tissue)**

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.214 | 0.669 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.214 | 0.669 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.214 | 0.669 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| **4,4´-DDD** | **12.1** | 0.214 | 0.669 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| **4,4´-DDE** | **20.2** | 0.214 | 0.669 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| 4,4´-DDT | ND | 0.214 | 0.669 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **10.6** | | *113 %* | *35-125* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **10.9** | | *116 %* | *40-130* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |

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| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 14-Jan-2016 |

## QT12-7-CF

**5091401-22 (Tissue)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.206 | 0.645 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.206 | 0.645 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.206 | 0.645 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| **4,4´-DDD** | **12.7** | 0.206 | 0.645 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| **4,4´-DDE** | **13.5** | 0.206 | 0.645 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | |
| 4,4´-DDT | ND | 0.206 | 0.645 | ug/kg | 19-Oct-2015 | 04-Dec-2015 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **13.1** | | *144 %* | *35-125* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **11.0** | | *122 %* | *40-130* | *19-Oct-2015* | *04-Dec-2015* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 14-Jan-2016 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC-EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B510181 - Sonication (probe or bath)** | | | | | | | | | | | |
| **Blank (B510181-BLK1)** | | | | | Prepared: 19-Oct-2015 Analyzed: 04-Dec-2015 | | | | | | |
| 2,4´-DDD | ND | 0.228 | 0.712 | ug/kg | | | | | | | U |
| 2,4´-DDE | ND | 0.228 | 0.712 | ug/kg | | | | | | | U |
| 2,4´-DDT | ND | 0.228 | 0.712 | ug/kg | | | | | | | U |
| 4,4´-DDD | ND | 0.228 | 0.712 | ug/kg | | | | | | | U |
| 4,4´-DDE | ND | 0.228 | 0.712 | ug/kg | | | | | | | U |
| 4,4´-DDT | ND | 0.228 | 0.712 | ug/kg | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *4.45* | | | *ug/kg* | *10.00* | | *44.5* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *5.79* | | | *ug/kg* | *10.00* | | *57.9* | *40-130* | | | |
| **LCS (B510181-BS1)** | | | | | Prepared: 19-Oct-2015 Analyzed: 04-Dec-2015 | | | | | | |
| 2,4´-DDD | 18.7 | 0.228 | 0.712 | ug/kg | 18.75 | | 99.7 | 50-125 | | | |
| 2,4´-DDE | 17.9 | 0.228 | 0.712 | ug/kg | 18.75 | | 95.5 | 50-125 | | | |
| 2,4´-DDT | 18.3 | 0.228 | 0.712 | ug/kg | 18.75 | | 97.6 | 50-125 | | | |
| 4,4´-DDD | 18.8 | 0.228 | 0.712 | ug/kg | 15.00 | | 125 | 30-135 | | | |
| 4,4´-DDE | 18.6 | 0.228 | 0.712 | ug/kg | 15.00 | | 124 | 50-125 | | | |
| 4,4´-DDT | 19.7 | 0.228 | 0.712 | ug/kg | 15.00 | | 131 | 40-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *3.90* | | | *ug/kg* | *10.00* | | *39.0* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *5.72* | | | *ug/kg* | *10.00* | | *57.2* | *40-130* | | | |
| **LCS Dup (B510181-BSD1)** | | | | | Prepared: 19-Oct-2015 Analyzed: 04-Dec-2015 | | | | | | |
| 2,4´-DDD | 18.0 | 0.228 | 0.712 | ug/kg | 18.75 | | 96.1 | 50-125 | 3.73 | 30 | |
| 2,4´-DDE | 16.9 | 0.228 | 0.712 | ug/kg | 18.75 | | 90.3 | 50-125 | 5.56 | 30 | |
| 2,4´-DDT | 18.2 | 0.228 | 0.712 | ug/kg | 18.75 | | 97.3 | 50-125 | 0.312 | 30 | |
| 4,4´-DDD | 18.3 | 0.228 | 0.712 | ug/kg | 15.00 | | 122 | 30-135 | 2.78 | 30 | |
| 4,4´-DDE | 18.2 | 0.228 | 0.712 | ug/kg | 15.00 | | 121 | 50-125 | 2.17 | 30 | |
| 4,4´-DDT | 19.3 | 0.228 | 0.712 | ug/kg | 15.00 | | 129 | 40-140 | 2.12 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *4.12* | | | *ug/kg* | *10.00* | | *41.2* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *5.53* | | | *ug/kg* | *10.00* | | *55.3* | *40-130* | | | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 14-Jan-2016 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC-EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B510181 - Sonication (probe or bath)** | | | | | | | | | | | |
| **Duplicate (B510181-DUP1)** | **Source: 5091401-15** | | | | Prepared: 19-Oct-2015 Analyzed: 04-Dec-2015 | | | | | | |
| 2,4′-DDD | ND | 0.222 | 0.695 | ug/kg | | ND | | | | 30 | U |
| 2,4′-DDE | ND | 0.222 | 0.695 | ug/kg | | ND | | | | 30 | U |
| 2,4′-DDT | ND | 0.222 | 0.695 | ug/kg | | ND | | | | 30 | U |
| 4,4′-DDD | 32.5 | 0.222 | 0.695 | ug/kg | | 29.3 | | | 10.1 | 30 | |
| 4,4′-DDE | 27.8 | 0.222 | 0.695 | ug/kg | | 23.1 | | | 18.4 | 30 | |
| 4,4′-DDT | 8.01 | 0.222 | 0.695 | ug/kg | | 7.47 | | | 6.95 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *13.0* | | | *ug/kg* | *9.756* | | *133* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *12.7* | | | *ug/kg* | *9.756* | | *130* | *40-130* | | | |
| **Matrix Spike (B510181-MS1)** | **Source: 5091401-18** | | | | Prepared: 19-Oct-2015 Analyzed: 04-Dec-2015 | | | | | | |
| 2,4′-DDD | 12.4 | 0.207 | 0.648 | ug/kg | 17.05 | ND | 72.7 | 40-110 | | | |
| 2,4′-DDE | 8.71 | 0.207 | 0.648 | ug/kg | 17.05 | ND | 51.1 | 40-110 | | | |
| 2,4′-DDT | 12.9 | 0.207 | 0.648 | ug/kg | 17.05 | ND | 75.4 | 40-110 | | | |
| 4,4′-DDD | 43.7 | 0.207 | 0.648 | ug/kg | 13.64 | 34.3 | 68.9 | 30-135 | | | |
| 4,4′-DDE | 32.5 | 0.207 | 0.648 | ug/kg | 13.64 | 22.4 | 74.2 | 50-125 | | | |
| 4,4′-DDT | 18.2 | 0.207 | 0.648 | ug/kg | 13.64 | 8.68 | 69.6 | 40-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *10.8* | | | *ug/kg* | *9.091* | | *119* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *7.36* | | | *ug/kg* | *9.091* | | *81.0* | *40-130* | | | |
| **Matrix Spike Dup (B510181-MSD1)** | **Source: 5091401-18** | | | | Prepared: 19-Oct-2015 Analyzed: 04-Dec-2015 | | | | | | |
| 2,4′-DDD | 10.6 | 0.214 | 0.669 | ug/kg | 17.61 | ND | 60.2 | 40-110 | 15.6 | 30 | |
| 2,4′-DDE | 9.79 | 0.214 | 0.669 | ug/kg | 17.61 | ND | 55.6 | 40-110 | 11.8 | 30 | |
| 2,4′-DDT | 10.9 | 0.214 | 0.669 | ug/kg | 17.61 | ND | 61.7 | 40-110 | 16.7 | 30 | |
| 4,4′-DDD | 43.3 | 0.214 | 0.669 | ug/kg | 14.08 | 34.3 | 64.0 | 30-135 | 0.883 | 30 | |
| 4,4′-DDE | 31.2 | 0.214 | 0.669 | ug/kg | 14.08 | 22.4 | 62.6 | 50-125 | 4.11 | 30 | |
| 4,4′-DDT | 16.1 | 0.214 | 0.669 | ug/kg | 14.08 | 8.68 | 52.4 | 40-140 | 12.3 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *29.8* | | | *ug/kg* | *9.390* | | *317* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *6.15* | | | *ug/kg* | *9.390* | | *65.6* | *40-130* | | | |

SPAWAR
Systems Center
San Diego

*ENVIRONMENTAL SCIENCES AND APPLIED SYSTEMS BRANCH, CODE 71760*
*53475 Strothe Rd*
*SAN DIEGO, CA 92152*

# Chain of Custody Record

Date: 9/10/2015
Page: 1 of 1

**Project Title/Project Number:** ER-201368 EMNR Monitoring Demonstration/Validation Project QT12

**Remarks/Air Bill:**

**Sampler(s):** Molly, Adrienne, Gunther

**Tel:** (619) 553-0886 **Fax:** **Email:** gunther.rosen@navy.mil

**Special Instructions:** Additionally: Sample QT12-7-Cf weight = ~~4.33~~ 18.15

**Please discuss w/ G. Rosen prior to subsampling/analysis

**Project Leader:** Gunther Rosen
**Contact Tel:** (619)553-0886
**email:** gunther.rosen@navy.mil

| Sample ID | Date | Time | Matrix | Container Type | # of Containers | Total Wet Weight (g) | DDX | LIPID | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Requested Analyses | | | | | | | | | |
| QT12-TØ-A-LV | 9/10/2015 | | TIS | 2oz. jar | 1 | 6.4 | X | X | | | | | | | | |
| QT12-TØ-B-LV | | | | | 1 | 6.9 | X | X | | | | | | | | |
| QT12-TØ-C-LV | | | | | 1 | 6.9 | X | X | | | | | | | | |
| QT12-1-LV | | | | | 1 | 1.0 | X | X | | | | | | | | |
| QT12-2-LV | | | | | 1 | 1.8 | X | X | | | | | | | | |
| QT12-3-LV | | | | | 1 | 9.7 | X | | | | | | | | | |
| QT12-3DUP-LV | | | | | 1 | mc ~~6.5~~ 4.5 | X | | | | | | | | | |
| QT12-4-LV | | | | | 1 | mc ~~9.7~~ 6.5 | X | | | | | | | | | |
| QT12-5-LV | | | | | 1 | 9.7 | X | | | | | | | | | |
| QT12-6-LV | | | | | 1 | 13.6 | X | | | | | | | | | |
| QT12-7-LV | | | | | 1 | 4.3 | X | | | | | | | | | |
| QT12-TØ-A-Cf | | | | | 1 | 2.6 | X | | | | | | | | | |
| QT12-TØ-B-Cf | | | | | 1 | 2.9 | X | | | | | | | | | |
| QT12-TØ-C-Cf | | | | | 1 | 3.0 | X | | | | | | | | | |
| QT12-1-Cf | | | | | 1 | 20.0 | X | | | | | | | | | |
| QT12-2-Cf | | | | | 1 | 17.0 | X | | | | | | | | | |
| QT12-3-Cf | | | | | 1 | 17.7 | X | | | | | | | | | |
| QT12-3DUP-Cf | | | | | 1 | 19.2 ~~15.8~~ mc | X | | | | | | | | | |
| QT12-4-Cf | | | | | 1 | 15.8 | X | | | | | | | | | |
| QT12-5-Cf | | | | | 1 | 17.3 | X | | | | | | | | | |
| QT12-6-Cf | | | | | 1 | 17.8 | X | | | | | | | | | |

★ See inst. for add'n sample

| Relinquished by: (Signature) | Received by: (Signature) | Date: | Time: |
|---|---|---|---|
| [signature] | | 9/10/2015 | |
| **Relinquished by: (Signature)** | **Received by: (Signature)** | **Date:** | **Time:** |
| | | | |

## Items for Project Manager Review

| LabNumber | Analysis | Analyte | Exception |
|---|---|---|---|

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**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

12 December 2016

Gunther Rosen
Navy -- SPAWAR
Environmental Science and Applied System Branch, 536(
San Diego, CA 92152

RE: Quantico

Enclosed are the results of analyses for samples received by the laboratory on 26-Aug-2016. The samples associated with this report will be held for 90 days from the date of this report. The raw data associated with this report will be held for 5 years from the date of this report. If you need us to hold onto the samples or the data longer then these specified times, you will need to notify us in writing at least 30 days before the expiration dates. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jenifer Milam For Dale Rosado, Ph. D.
Chemist

# USACE ERDC-EP-C
# 3909 Halls Ferry Road
# Vicksburg, MS 39180-6199


| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 12-Dec-2016 |

## WORK ORDER SUMMARY

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date of Work Order |
|---|---|---|---|---|
| QT24-T0-LV-A Rep | 6082603-01 | Tissue | 25-Aug-2016 | 26-Aug-2016 |
| QT24-T0-LV-B Rep | 6082603-02 | Tissue | 25-Aug-2016 | 26-Aug-2016 |
| QT24-T0-LV-C Rep | 6082603-03 | Tissue | 25-Aug-2016 | 26-Aug-2016 |
| QT24-1-C-LV | 6082603-04 | Tissue | 25-Aug-2016 | 26-Aug-2016 |
| QT24-3-C-LV | 6082603-05 | Tissue | 25-Aug-2016 | 26-Aug-2016 |
| QT24-3DUP-C-LV | 6082603-06 | Tissue | 25-Aug-2016 | 26-Aug-2016 |
| QT24-4-C-LV | 6082603-07 | Tissue | 25-Aug-2016 | 26-Aug-2016 |
| QT24-6-C-LV | 6082603-08 | Tissue | 25-Aug-2016 | 26-Aug-2016 |
| QT24-7-C-LV | 6082603-09 | Tissue | 25-Aug-2016 | 26-Aug-2016 |
| QT24-T0-CF-A Rep | 6082603-10 | Tissue | 25-Aug-2016 | 26-Aug-2016 |
| QT24-T0-CF-B Rep | 6082603-11 | Tissue | 25-Aug-2016 | 26-Aug-2016 |
| QT24-T0-CF-C Rep | 6082603-12 | Tissue | 25-Aug-2016 | 26-Aug-2016 |
| QT24-1-C-CF | 6082603-13 | Tissue | 25-Aug-2016 | 26-Aug-2016 |
| QT24-2-C-CF | 6082603-14 | Tissue | 25-Aug-2016 | 26-Aug-2016 |
| QT24-3-C-CF | 6082603-15 | Tissue | 25-Aug-2016 | 26-Aug-2016 |
| QT24-3DUP-C-CF | 6082603-16 | Tissue | 25-Aug-2016 | 26-Aug-2016 |
| QT24-4-C-CF | 6082603-17 | Tissue | 25-Aug-2016 | 26-Aug-2016 |
| QT24-5-C-CF | 6082603-18 | Tissue | 25-Aug-2016 | 26-Aug-2016 |
| QT24-6-C-CF | 6082603-19 | Tissue | 25-Aug-2016 | 26-Aug-2016 |
| QT24-7-C-CF | 6082603-20 | Tissue | 25-Aug-2016 | 26-Aug-2016 |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

## Case Narrative

No issues were experienced during the analysis of Work Order 6082603 unless specified below.

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 12-Dec-2016 |

## Notes and Definitions

| | |
|---|---|
| U | Analyte included in the analysis, but not detected |
| RPD-04 | RPD between primary and confirmation column values >40%. Per SW846 8000C, the lower result has been reported. |
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration. |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |

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| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 12-Dec-2016 |

## QT24-T0-LV-A Rep

### 6082603-01 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Classical Chemistry Parameters**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **3.55** | | | % by Weight | 31-Aug-2016 | 21-Nov-2016 | Lipid Content by Gravimetric Determination | |

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.622** | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.675** | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDE** | **3.25** | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **8.43** | | *41.3 %* | *35-125* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **11.1** | | *54.3 %* | *40-130* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360! | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 12-Dec-2016 |

## QT24-T0-LV-B Rep

**6082603-02 (Tissue)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Classical Chemistry Parameters**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **3.73** | | | % by Weight | 31-Aug-2016 | 21-Nov-2016 | Lipid Content by Gravimetric Determinatio n | |

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.750** | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.589** | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | RPD-04 |
| **4,4´-DDE** | **3.41** | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **8.62** | | *42.2 %* | *35-125* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **11.5** | | *56.3 %* | *40-130* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |

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| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 12-Dec-2016 |

## QT24-T0-LV-C Rep

**6082603-03 (Tissue)**

**ERDC-EL-EP-C**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **5.00** | | | % by Weight | 31-Aug-2016 | 21-Nov-2016 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| **4,4´-DDD** | **0.575** | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | RPD-04 |
| **4,4´-DDE** | **3.61** | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| 4,4´-DDT | ND | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **9.67** | | *47.4 %* | *35-125* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **12.6** | | *61.7 %* | *40-130* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

| | | |
|---|---|---|
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| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 12-Dec-2016 |

# QT24-1-C-LV

## 6082603-04 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC-EL-EP-C** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **2.13** | | | % by Weight | 31-Aug-2016 | 21-Nov-2016 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **3.42** | 0.149 | 0.495 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **2,4´-DDE** | **2.51** | 0.149 | 0.495 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.149 | 0.495 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| **4,4´-DDD** | **24.4** | 0.149 | 0.495 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDE** | **21.0** | 0.149 | 0.495 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDT** | **2.80** | 0.149 | 0.495 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **8.96** | | *45.2 %* | *35-125* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **11.9** | | *60.2 %* | *40-130* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
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| Environmental Science and Applied System Branch, 5360: | | Reported: |
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# QT24-3-C-LV

## 6082603-05 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC-EL-EP-C** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **3.01** | | | % by Weight | 31-Aug-2016 | 21-Nov-2016 | Lipid Content by Gravimetric Determinatio n | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **2.38** | 0.150 | 0.500 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **2,4´-DDE** | **1.57** | 0.150 | 0.500 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.150 | 0.500 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| **4,4´-DDD** | **13.9** | 0.150 | 0.500 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDE** | **13.1** | 0.150 | 0.500 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDT** | **1.99** | 0.150 | 0.500 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **9.13** | | *45.7 %* | *35-125* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **11.9** | | *59.3 %* | *40-130* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |

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## QT24-3DUP-C-LV

**6082603-06 (Tissue)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **2.37** | | | % by Weight | 31-Aug-2016 | 21-Nov-2016 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **2.99** | 0.152 | 0.505 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **2,4´-DDE** | **1.98** | 0.152 | 0.505 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.152 | 0.505 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| **4,4´-DDD** | **16.0** | 0.152 | 0.505 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDE** | **17.3** | 0.152 | 0.505 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDT** | **2.12** | 0.152 | 0.505 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **8.94** | | *44.2 %* | *35-125* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **11.8** | | *58.2 %* | *40-130* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |

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## QT24-4-C-LV

### 6082603-07 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **ERDC-EL-EP-C** | | | | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **3.11** | | | % by Weight | 31-Aug-2016 | 21-Nov-2016 | Lipid Content by Gravimetric Determinatio n | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.822** | 0.150 | 0.500 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **2,4´-DDE** | **1.28** | 0.150 | 0.500 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.150 | 0.500 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| **4,4´-DDD** | **5.03** | 0.150 | 0.500 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDE** | **6.18** | 0.150 | 0.500 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.695** | 0.150 | 0.500 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **9.46** | | *47.3 %* | *35-125* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **12.0** | | *60.1 %* | *40-130* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |

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## QT24-6-C-LV

**6082603-08 (Tissue)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **2.28** | | | % by Weight | 31-Aug-2016 | 21-Nov-2016 | Lipid Content by Gravimetric Determinatio n | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.309** | 0.149 | 0.495 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.792** | 0.149 | 0.495 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.149 | 0.495 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| **4,4´-DDD** | **3.02** | 0.149 | 0.495 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDE** | **4.91** | 0.149 | 0.495 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.753** | 0.149 | 0.495 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **8.79** | | *44.4 %* | *35-125* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **11.2** | | *56.3 %* | *40-130* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |

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## QT24-7-C-LV

### 6082603-09 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

### ERDC-EL-EP-C

**Classical Chemistry Parameters**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **1.97** | | | % by Weight | 31-Aug-2016 | 21-Nov-2016 | Lipid Content by Gravimetric Determinatio n | |

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| 2,4´-DDD | ND | 0.152 | 0.505 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| **2,4´-DDE** | **0.838** | 0.152 | 0.505 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.152 | 0.505 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| **4,4´-DDD** | **2.29** | 0.152 | 0.505 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDE** | **4.97** | 0.152 | 0.505 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDT** | **0.748** | 0.152 | 0.505 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **9.33** | | *46.2 %* | *35-125* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **12.8** | | *63.2 %* | *40-130* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |

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## QT24-T0-CF-A Rep

**6082603-10 (Tissue)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.800** | | | % by Weight | 31-Aug-2016 | 21-Nov-2016 | Lipid Content by Gravimetric Determinatio n | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.152 | 0.505 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.152 | 0.505 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.152 | 0.505 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.152 | 0.505 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.152 | 0.505 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.152 | 0.505 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **7.53** | | *37.3 %* | *35-125* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **11.2** | | *55.5 %* | *40-130* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |

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## QT24-T0-CF-B Rep

### 6082603-11 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.780** | | | % by Weight | 31-Aug-2016 | 21-Nov-2016 | Lipid Content by Gravimetric Determinatio n | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4´-DDD | ND | 0.156 | 0.521 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| 2,4´-DDE | ND | 0.156 | 0.521 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| 2,4´-DDT | ND | 0.156 | 0.521 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| 4,4´-DDD | ND | 0.156 | 0.521 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| 4,4´-DDE | ND | 0.156 | 0.521 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| 4,4´-DDT | ND | 0.156 | 0.521 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **9.11** | | *43.7 %* | *35-125* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **12.8** | | *61.5 %* | *40-130* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |

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## QT24-T0-CF-C Rep

### 6082603-12 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **0.810** | | | % by Weight | 31-Aug-2016 | 21-Nov-2016 | Lipid Content by Gravimetric Determinatio n | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| 2,4′-DDD | ND | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| 2,4′-DDE | ND | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| 2,4′-DDT | ND | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| 4,4′-DDD | ND | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| 4,4′-DDE | ND | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| 4,4′-DDT | ND | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **8.42** | | *41.3 %* | *35-125* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **11.8** | | *57.9 %* | *40-130* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |

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## QT24-1-C-CF

**6082603-13 (Tissue)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

**ERDC-EL-EP-C**

**Classical Chemistry Parameters**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **2.28** | | | % by Weight | 31-Aug-2016 | 21-Nov-2016 | Lipid Content by Gravimetric Determinatio n | |

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **3.09** | 0.150 | 0.500 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **2,4´-DDE** | **1.88** | 0.150 | 0.500 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.150 | 0.500 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| **4,4´-DDD** | **16.3** | 0.150 | 0.500 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDE** | **12.8** | 0.150 | 0.500 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDT** | **6.86** | 0.150 | 0.500 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **9.64** | | *48.2 %* | *35-125* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **11.7** | | *58.5 %* | *40-130* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |

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|---|---|---|
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# QT24-2-C-CF

## 6082603-14 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **2.13** | | | % by Weight | 31-Aug-2016 | 21-Nov-2016 | Lipid Content by Gravimetric Determination | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **1.93** | 0.149 | 0.495 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **2,4´-DDE** | **1.28** | 0.149 | 0.495 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.149 | 0.495 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| **4,4´-DDD** | **10.0** | 0.149 | 0.495 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDE** | **1.23** | 0.149 | 0.495 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDT** | **5.25** | 0.149 | 0.495 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **9.45** | | *47.7 %* | *35-125* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **11.7** | | *58.9 %* | *40-130* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |

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## QT24-3-C-CF

### 6082603-15 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

### ERDC-EL-EP-C

**Classical Chemistry Parameters**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **1.81** | | | % by Weight | 31-Aug-2016 | 21-Nov-2016 | Lipid Content by Gravimetric Determinatio n | |

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **2.15** | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **2,4´-DDE** | **1.51** | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| **4,4´-DDD** | **12.0** | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDE** | **11.9** | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDT** | **8.53** | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **9.64** | | *47.2 %* | *35-125* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **12.1** | | *59.5 %* | *40-130* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |

| | | |
|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 12-Dec-2016 |

# QT24-3DUP-C-CF

## 6082603-16 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

### ERDC-EL-EP-C

**Classical Chemistry Parameters**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **1.59** | | | % by Weight | 31-Aug-2016 | 21-Nov-2016 | Lipid Content by Gravimetric Determinatio n | |

**Organochlorine Pesticides by EPA Method 8081A**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **2.16** | 0.150 | 0.500 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **2,4´-DDE** | **1.70** | 0.150 | 0.500 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.150 | 0.500 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| **4,4´-DDD** | **11.7** | 0.150 | 0.500 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDE** | **12.4** | 0.150 | 0.500 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDT** | **6.64** | 0.150 | 0.500 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **9.60** | | *48.0 %* | *35-125* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **12.8** | | *64.0 %* | *40-130* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

**USACE ERDC-EP-C**
**3909 Halls Ferry Road**
**Vicksburg, MS 39180-6199**

| | | |
|---|---|---|
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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 12-Dec-2016 |

## QT24-4-C-CF

**6082603-17 (Tissue)**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | **ERDC-EL-EP-C** | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **2.12** | | | % by Weight | 31-Aug-2016 | 21-Nov-2016 | Lipid Content by Gravimetric Determinatio n | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **1.15** | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **2,4´-DDE** | **1.16** | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| **4,4´-DDD** | **6.52** | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDE** | **6.69** | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDT** | **3.45** | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **8.61** | | *42.2 %* | *35-125* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **11.0** | | *53.8 %* | *40-130* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |

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|---|---|---|
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# QT24-5-C-CF

## 6082603-18 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

### ERDC-EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **2.22** | | | % by Weight | 31-Aug-2016 | 21-Nov-2016 | Lipid Content by Gravimetric Determinatio n | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **1.90** | 0.147 | 0.490 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **2,4´-DDE** | **1.50** | 0.147 | 0.490 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.147 | 0.490 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| **4,4´-DDD** | **9.51** | 0.147 | 0.490 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDE** | **8.92** | 0.147 | 0.490 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDT** | **3.84** | 0.147 | 0.490 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **8.15** | | *41.6 %* | *35-125* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **11.0** | | *55.9 %* | *40-130* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |

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| Environmental Science and Applied System Branch, 5360: | | **Reported:** |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 12-Dec-2016 |

# QT24-6-C-CF

## 6082603-19 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|

### ERDC-EL-EP-C

**Classical Chemistry Parameters**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **% Lipids** | **1.70** | | | % by Weight | 31-Aug-2016 | 21-Nov-2016 | Lipid Content by Gravimetric Determinatio n | |

**Organochlorine Pesticides by EPA Method 8081A**

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| **2,4´-DDD** | **0.414** | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | J |
| **2,4´-DDE** | **0.867** | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| **4,4´-DDD** | **2.83** | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDE** | **3.78** | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDT** | **1.10** | 0.153 | 0.510 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | RPD-04 |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **9.04** | | *44.3 %* | *35-125* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **12.0** | | *58.7 %* | *40-130* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |

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|---|---|---|
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# QT24-7-C-CF

## 6082603-20 (Tissue)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Prepared | Analyzed | Method | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | **ERDC-EL-EP-C** | | | | | |
| **Classical Chemistry Parameters** | | | | | | | | |
| **% Lipids** | **1.71** | | | % by Weight | 31-Aug-2016 | 21-Nov-2016 | Lipid Content by Gravimetric Determinatio n | |
| **Organochlorine Pesticides by EPA Method 8081A** | | | | | | | | |
| **2,4´-DDD** | **0.500** | 0.152 | 0.505 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | J |
| **2,4´-DDE** | **1.01** | 0.152 | 0.505 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| 2,4´-DDT | ND | 0.152 | 0.505 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | U |
| **4,4´-DDD** | **3.46** | 0.152 | 0.505 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDE** | **5.53** | 0.152 | 0.505 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| **4,4´-DDT** | **1.48** | 0.152 | 0.505 | ug/kg | 31-Aug-2016 | 05-Dec-2016 | EPA 8081A | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | **9.48** | | *46.9 %* | *35-125* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |
| *Surrogate: Decachlorobiphenyl* | **13.2** | | *65.3 %* | *40-130* | *31-Aug-2016* | *05-Dec-2016* | *EPA 8081A* | |

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|---|---|---|
| Navy -- SPAWAR | Project: Quantico | |
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## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC-EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B611043 - Sonication (probe or bath)** | | | | | | | | | | | |
| **Blank (B611043-BLK1)** | | | | | Prepared: 31-Aug-2016 Analyzed: 05-Dec-2016 | | | | | | |
| 2,4′-DDD | ND | 0.150 | 0.500 | ug/kg | | | | | | | U |
| 2,4′-DDE | ND | 0.150 | 0.500 | ug/kg | | | | | | | U |
| 2,4′-DDT | ND | 0.150 | 0.500 | ug/kg | | | | | | | U |
| 4,4′-DDD | ND | 0.150 | 0.500 | ug/kg | | | | | | | U |
| 4,4′-DDE | ND | 0.150 | 0.500 | ug/kg | | | | | | | U |
| 4,4′-DDT | ND | 0.150 | 0.500 | ug/kg | | | | | | | U |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *9.67* | | | *ug/kg* | *20.00* | | *48.3* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *13.0* | | | *ug/kg* | *20.00* | | *65.1* | *40-130* | | | |
| **LCS (B611043-BS1)** | | | | | Prepared: 31-Aug-2016 Analyzed: 05-Dec-2016 | | | | | | |
| 2,4′-DDD | 11.2 | 0.150 | 0.500 | ug/kg | 20.00 | | 56.2 | 50-125 | | | |
| 2,4′-DDE | 10.3 | 0.150 | 0.500 | ug/kg | 20.00 | | 51.4 | 50-125 | | | |
| 2,4′-DDT | 11.5 | 0.150 | 0.500 | ug/kg | 20.00 | | 57.6 | 50-125 | | | |
| 4,4′-DDD | 11.6 | 0.150 | 0.500 | ug/kg | 20.00 | | 58.1 | 30-135 | | | |
| 4,4′-DDE | 11.7 | 0.150 | 0.500 | ug/kg | 20.00 | | 58.3 | 50-125 | | | |
| 4,4′-DDT | 13.6 | 0.150 | 0.500 | ug/kg | 20.00 | | 68.2 | 40-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *9.91* | | | *ug/kg* | *20.00* | | *49.5* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *12.4* | | | *ug/kg* | *20.00* | | *62.2* | *40-130* | | | |
| **LCS Dup (B611043-BSD1)** | | | | | Prepared: 31-Aug-2016 Analyzed: 05-Dec-2016 | | | | | | |
| 2,4′-DDD | 10.4 | 0.150 | 0.500 | ug/kg | 20.00 | | 52.0 | 50-125 | 7.75 | 30 | |
| 2,4′-DDE | 10.2 | 0.150 | 0.500 | ug/kg | 20.00 | | 50.8 | 50-125 | 1.24 | 30 | |
| 2,4′-DDT | 11.0 | 0.150 | 0.500 | ug/kg | 20.00 | | 54.8 | 50-125 | 5.13 | 30 | |
| 4,4′-DDD | 8.97 | 0.150 | 0.500 | ug/kg | 20.00 | | 44.9 | 30-135 | 25.7 | 30 | |
| 4,4′-DDE | 10.3 | 0.150 | 0.500 | ug/kg | 20.00 | | 51.5 | 50-125 | 12.5 | 30 | |
| 4,4′-DDT | 10.3 | 0.150 | 0.500 | ug/kg | 20.00 | | 51.6 | 40-140 | 27.7 | 30 | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *8.56* | | | *ug/kg* | *20.00* | | *42.8* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *10.5* | | | *ug/kg* | *20.00* | | *52.4* | *40-130* | | | |

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| Navy -- SPAWAR | Project: Quantico | |
| Environmental Science and Applied System Branch, 5360: | | Reported: |
| San Diego CA, 92152 | Project Manager: Gunther Rosen | 12-Dec-2016 |

## Organochlorine Pesticides by EPA Method 8081A - Quality Control

## ERDC-EL-EP-C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch B611043 - Sonication (probe or bath)** | | | | | | | | | | | |
| **Matrix Spike (B611043-MS1)** | **Source: 6082603-09** | | | | Prepared: 31-Aug-2016 Analyzed: 05-Dec-2016 | | | | | | |
| 2,4´-DDD | 10.1 | 0.149 | 0.495 | ug/kg | 19.80 | ND | 50.9 | 40-110 | | | |
| 2,4´-DDE | 11.6 | 0.149 | 0.495 | ug/kg | 19.80 | 0.838 | 54.3 | 40-110 | | | |
| 2,4´-DDT | 10.6 | 0.149 | 0.495 | ug/kg | 19.80 | ND | 53.7 | 40-110 | | | |
| 4,4´-DDD | 12.3 | 0.149 | 0.495 | ug/kg | 19.80 | 2.29 | 50.4 | 30-135 | | | |
| 4,4´-DDE | 15.8 | 0.149 | 0.495 | ug/kg | 19.80 | 4.97 | 54.5 | 50-125 | | | |
| 4,4´-DDT | 13.9 | 0.149 | 0.495 | ug/kg | 19.80 | 0.748 | 66.3 | 40-140 | | | |
| *Surrogate: 2,4,5,6 Tetrachloro-m-xylene* | *8.79* | | | *ug/kg* | *19.80* | | *44.4* | *35-125* | | | |
| *Surrogate: Decachlorobiphenyl* | *11.2* | | | *ug/kg* | *19.80* | | *56.4* | *40-130* | | | |

## Items for Project Manager Review

| LabNumber | Analysis | Analyte | Exception |
|---|---|---|---|