SITE-SPECIFIC WORK PLAN [MONITORED NATURAL ATTENUATION]

•FINAL•

January 26, 2012

Brown & Bryant Superfund Site
600 South Derby Street
Arvin, California
Contract No. W912PP-10-D0014
Task Order 0008

Prepared for:
U.S. Army Corps Of Engineers
Albuquerque District
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Albuquerque, NM 87109-3435

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Project No.: Eco-11-481

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ABBREVIATIONS, ACRONYMS, & SYMBOLS

°	degrees
1,2,3-TCP	1,2,3-Trichloropropane
1,2-DCP	1,2-Dichloropropane
1,3-DCP	1,3-Dichloropropane
B&B	Brown & Bryant, Inc.
bgs	below ground surface
COC	chemicals of concern
DBCP	1,2-Dibromo-3-chloropropane
Eco	Eco & Associates, Inc.
EDB	Ethylene dibromide
gpm	gallons per minute
H&A	Hargis & Associates
MNA	monitored natural attenuation
NAS	Natural Attenuation Software
QAPP	Quality Assurance Program Plan
QA/QC	quality assurance/quality control
RCRA	Resource and Conservation Recovery Act
ROD	Record of Decision
SSWP	Site-Specific Work Plan
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound

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1.0 INTRODUCTION

This Site-Specific Work Plan (SSWP) is prepared for monitored natural attenuation (MNA) evaluation at the former Brown & Bryant, Inc. (B&B) facility, in Arvin, California. This Site is a U.S. Environmental Protection Agency (USEPA) Superfund Site located at 600 South Derby Road, in the City of Arvin, Kern County, California (hereafter, the "Site"). This SSWP was prepared under Contract No. W912PP-10-D0014, Task Order 0008 in general conformance with the guidance of Performance Monitoring of MNA Remedies for volatile organic compounds (VOCs) in Ground Water, EPA/600/R-04/027 (USEPA 2004).

1.1 PURPOSE AND SCOPE OF WORK

Periodic groundwater monitoring at the Site for chemicals of concern (COCs) is described in other project Work Plans. Data obtained from that monitoring is to be used in evaluation of MNA in the Site's B-zone groundwater.

The goal of monitoring and performance evaluation is to verify that there is demonstrated attenuation capacity to mitigate the COC concentrations over time and that the attenuation capacity is reasonably maintained to continue reduction of COC concentrations, allowing remediation goals to be met.

The following factors important for verification of remedy during process and performance monitoring will be considered and addressed:

- Wells in the B-zone that will be used for evaluation of MNA performance
- Methods to be used for evaluation of MNA performance
- Frequency of monitoring and an estimate of the time to reasonably define the attenuation mechanisms and the rates of attenuation
- Approach to transition from process to performance monitoring

- Conditions for reduction of the data requirements and the frequency of monitoring
- Alternatives for enhancements and considerations in case the attenuation rates are not satisfactory

1.2 WORK PLAN ORGANIZATION

This Work Plan has been broken down into the following major components:

- **Introduction** – Describes the purpose and scope of this Work Plan and presents the organization of the Work Plan.
- **Site Conditions and Background** – Summarizes the history of the property, describes previous environmental investigations and physical characteristics of the Site including physiography, geology, topography, hydrology, and hydrogeology.
- **Project Organization** – Describes the responsibilities of project personnel involved in the Site assessment activities.
- **Field Operations** – Describes the work tasks included in this scope of work, specifically the data that are needed for performance monitoring. Groundwater sampling and analyses are covered in other project plans and are referenced but not repeated herein.
- **Data Evaluation and Attenuation Model** – Provides the approach to analyze the data that are available for evaluation of the attenuation of the groundwater COCs and the implementation of the Natural Attenuation Software model.
- **Quality Assurance and Control (QA/QC)** – Discusses QA/QC and refers to the Quality Assurance Project Plan (QAPP). See Appendix C.
- **Deliverables and Schedule** – Provides the reporting for this task and distribution for the reports. The schedule for implementation of the task is discussed.

The following Appendices are part of this Work Plan. These are adapted from the same documents for Groundwater Monitoring prepared in April 2011. They are tailored for the scope of work of this task.

- **Appendix A – Sampling and Analysis Plan:** This Plan is to address those data that are to be obtained for MNA performance evaluation. Since no additional field work is necessary for MNA performance evaluation at this time, this Plan is essentially the same as the 2011 Groundwater Monitoring Sampling and Analysis Plan and will reference that Plan.
- **Appendix B – Health and Safety Plan:** This Plan is to address health and safety during the fieldwork for collection of data that are to be obtained for MNA performance evaluation. Since no additional field work is necessary for MNA performance evaluation at this time, this Plan is essentially the same as the 2011 Groundwater Monitoring Health and Safety Plan and will reference that Plan.
- **Appendix C – Quality Assurance Project Plan:** This Plan QA/QC for data and data analysis for this task. Since no additional field work is necessary for MNA performance evaluation at this time, this Plan is essentially the same as the

2011 Groundwater Monitoring Quality Assurance Project Plan and will reference that Plan.

2.0 SITE CONDITIONS AND BACKGROUND

2.1 SITE BACKGROUND

The B&B Arvin facility is located at 600 South Derby Road in Arvin, California about 18 miles southeast of the City of Bakersfield (Figure 1, Site Vicinity Map). The Site is located on the east side of Arvin in a light industrial and commercial area. A residential area is located across the street from the facility.

The B&B facility operated as a pesticide re-formulator and custom applicator facility from 1960 to 1989. The facility formulated agricultural chemicals, including pesticides, herbicides, fumigants, and fertilizers for sale to the local farming community between 1960 and 1968. In 1981, the facility was licensed under the Resource and Conservation Recovery Act (RCRA) as a hazardous waste transporter. Contamination of soil and groundwater resulted from inadequate procedural controls, chemical spills during operations, and leaks from a surface wastewater pond and sumps. The largest releases onsite were from the waste pond, a sump area, and a dinoseb spill area.

The waste pond located in the southwest portion of the Site was originally excavated as an unlined earthen pond in 1960. The pond was used to collect run-off water from the yard and from two sumps (since excavated). The pond was also used to collect rinse water from rinsing tanks used for fumigants. Excess pond water and rain water run-off also collected in a topographically low area to the east and south of the pond. In addition, ponded water from precipitation and irrigation from the east has occasionally breached the berm in the southeast corner of the pond and drained into the pond. The pond was double lined with a synthetic liner in November 1979. The liner and additional soil were excavated in August 1987. Approximately 640 cubic yards of soil that showed visible signs of contamination were removed from the pond at that time. The depths of this excavation ranged from approximately one and one-half feet on the sides to five feet on the bottom.

In 1960, an unlined earthen sump was constructed in the center of the Site (near wells AMW-2P and AMW-4R). The sump was used to collect wash water from a pad where equipment and tanks used for liquid fertilizers and fumigants were washed. Water from the sump was drained to the pond through an underground pipeline. In 1980, the sump was replaced with two double-lined sumps, and two lined sand traps were installed west of the pond. Dinoseb was stored in a smaller tank storage area along the eastern fence, just north of the pond. In 1983, there was a significant dinoseb spill in this area. As a result, the soil and groundwater underlying this portion of the Site has been reported with the highest concentrations of dinoseb. The USEPA excavated highly contaminated soil from this area in the mid 1990s.

In 1989, the Site was listed on the National Priorities List. Subsequently, various emergency and removal actions were initiated to minimize or eliminate immediate threats to human health and the environment.

Currently the Site is vacant. A warehouse and a metal shed are located on the property. The property is secured by a chain-link fence and paved with asphalt concrete. The asphalt concrete is a RCRA cap in the southern portion and a non-RCRA cap in the northern portion.

2.1.1 PREVIOUS INVESTIGATIONS

Eco & Associates, Inc.'s (Eco) background information is based on data presented in past project reports. These reports, dated between 1987 and 1999, generally present the results of on-Site soil and groundwater investigations, feasibility studies, and remedial action plans. A brief review of some of the more pertinent studies is provided below.

The earliest document reviewed, prepared by Hargis & Associates (H&A) in June 1987, presented a Work Plan to assess the extent of soil and groundwater contamination by the release of on-Site chemicals. This Work Plan presented the results of shallow soil sampling and the groundwater testing (Wells AMW-1 through AMW-4) conducted in 1984 by H&A. The water and soil collected from these wells/borings were noted as having elevated concentrations of COCs. This data was used to plan further on-Site assessment. H&A implemented this Work Plan in 1987 and 1988. H&A's investigation included sampling vadose zone soils and the installation of six monitoring wells (AP-1 through AP-5, and AR-1). COCs were detected in each of the wells. Tables 1 and 2 provide the COC analytical results for Site wells (A-zone and B-zone, respectively) through the sampling event in April 2011.

The shallow impacted soils (up to 12-foot depths) beneath the former on-Site sumps and pond were excavated in August 1987 by Canonie Environmental. Soil samples collected from the base of the excavations were noted as containing elevated concentrations of the COCs. Groundwater testing was not conducted during this remedial action.

EPA divided the Site into two operable units. The first operable unit (OU-1) consists of the original source area of contamination (facility waste pond, tanks, sump area and the dinoseb spill area), the surface soils, the subsurface soils to the first water bearing unit (A-zone soils, and the first water bearing unit, the A-zone groundwater located approximately 65 to 70 feet below ground surface (bgs). The Record of Decision (ROD) for the OU-1 was signed on November 8, 1993. The selected OU-1 remedy included extraction and treatment of the A-zone groundwater. However, based on design studies and additional information collected during the remedial action phase of the project, the A-zone groundwater extraction and treatment was not implemented.

The OU-2 includes subsurface soil from the base of the A-zone groundwater to the second water-bearing unit (B-zone groundwater), and the B-zone groundwater.

Subsurface investigations conducted onsite during OU-1 and OU-2 investigations have confirmed the presence of a number of potentially hazardous substances in the groundwater. Fifty-six organic compounds were found within the A-zone groundwater samples and 11 were found in the B-zone groundwater samples. The following seven primary COCs were identified during the OU-1 investigation:

- Chloroform
- 1,2-dibromo-3-chloropropane (DBCP)
- 1,2-dichioropropane (1,2-DCP)
- 1,3-dichloropropane (1,3-DCP)
- l,2,3-trichloropropane (l,2,3-TCP)
- Ethylene dibromide (EDB
- Dinoseb

These same chemicals were COCs for B-zone groundwater as identified in OU-2 investigations. The contamination in the A-zone perched groundwater poses a potential threat to the underlying unconfined regional aquifer (B-zone), and the confined C-zone aquifer that is used for municipal drinking water. The OU-2 ROD was signed in September 2007.

2.1.2 OU-2 REMEDY

Seven alternatives were considered in the B&B Site OU-2 RI/FS. The Remedial Action Objectives for OU-2 that were identified when considered the alternatives were to remove or control groundwater contamination source in the A-zone, to restore B-zone groundwater to its potential use as a drinking water source, and to prevent future exposure to contaminated groundwater. Additionally, the relocation of the Arvin City Well CW-l to prevent exposure to contaminated groundwater is part of all alternatives except the No Action Alternative.

A combination of Alternatives 2 (Monitored Natural Attenuation for B-zone groundwater) and Alternative 3 (A-zone Groundwater Source Reduction) were selected as the OU-2 remedy. The selected remedy for the B&B Site OU-2 as described in the ROD is presented below:

1. **Relocate the Arvin City Well CW-1:** Discontinued use of the Arvin City Well CW- 1 (proper plugging and abandonment of the well) will eliminate the only known potential pathway for contamination in the A-zone and B-zone groundwater to infiltrate to the C-zone aquifer. The Arvin City Well will be relocated to an alternative location a suitable distance from the known B&B Site contaminant plume.
2. **Monitored Natural Attenuation for Groundwater:** The ultimate objective for the groundwater remedial action is to restore contaminated groundwater in the B-zone to its beneficial use. The B-zone groundwater could be used as a future source of drinking water, but it is not being used currently for this purpose either onsite or offsite. MNA for the groundwater in the B-zone is considered by USEPA to be an alternative means of achieving remediation objectives that may be appropriate for specific, well-documented Site circumstances where its use meets the applicable statutory and regulatory requirements. MNA is the reliance on natural attenuation processes to achieve Site-specific remediation objectives within a time frame that is reasonable compared to that offered by other more active methods. The natural attenuation processes that are at work in such a remediation approach include a variety of physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume or concentration of contaminants in soil or groundwater. The fate and transport model for the Site indicate that relatively fast flow and transport in B-zone aquifer, in conjunction with source reduction/control in the A-zone, would attain COC concentrations below the Cleanup Levels (CL) within a reasonable timeframe.
3. **A-zone Groundwater Source Reduction:** This alternative consists of source reduction and control by dewatering the A-zone and treating the extracted water. In this alternative, several large-diameter wells will be installed in specific strategic locations. The large-diameter sump wells will be constructed by drilling 8-foot diameter holes at the selected locations to a depth of 75 feet or into the clay layer that separates the A-zone and B-zone. The extracted

groundwater will be treated by an UV/Oxidation system located onsite. The treated water would be discharged to the Arvin City sewer. Alternatively, a service contract might be utilized for offsite treatment and disposal of the water, if such an approach is found to be cost advantageous.

This Work Plan addresses Item 2 above.

2.2 SITE CONDITIONS

These sections provide the Site conditions and, specifically, the Site geology and groundwater conditions at the Site. They also provide a summary description of the Groundwater Monitoring Plan that uses onsite and offsite monitoring wells to samples and monitor groundwater conditions in both the A-zone and B-zone. Data obtained during this monitoring comprise important input for work to be implemented as part of this plan.

2.2.1 SITE GEOLOGY AND HYDROGEOLOGY

The geology at the Site is an alluvial deposit of alternating layers and mixtures of unconsolidated sands, silts, and clay. Soil underlying the Site to a depth of 80 feet generally consists of silty fine sand to fine sandy silt. Clean, well-graded sand lenses and thin seams of silty clay occur locally within these soils. The soils are thinly interbedded, with textural changes occurring every few vertical inches. These textural changes are also believed to occur laterally.

The Site geology has been divided into two zones, the A-zone and the B-zone. The A-zone includes unsaturated soil to depths of 65 to 75 feet below ground surface (bgs) and includes the first water bearing unit, the A-zone groundwater. The depth to the saturated zone (see groundwater depths in Table 3.1 which also presents a summary of well construction details) varied between 65 and 85 feet bgs during the January 2004 groundwater-sampling event. The base of the A-zone is a thin sandy clay layer from 75 to 85 feet bgs. The clay layer and the A-zone groundwater occur under the entire Site but disappear approximately 900 feet south of the Site.

The B-zone includes unsaturated soil below the A-zone and the second water-bearing unit (B-zone groundwater) at depths between 150 to 165 feet bgs. The B-zone extends to at least 250 feet bgs and ends at a clay layer, known as the Corcoran Clay, that confines the drinking water aquifer below it. The thickness of this clay layer beneath the Site is unknown.

Groundwater in the A-zone flows in a generally southern direction, with some mounding of the water table observed from the southwest corner of the Site extending south. The saturated thickness of the A-zone groundwater ranges from 0 to 10 feet. The groundwater velocity in the A-zone has been estimated at 53 feet/year. Slug test results suggest that a yield of less than 100 gallons per day can be expected for wells in the A-zone. Aquifer testing of three of the on-Site extraction wells showed a groundwater yield of approximately ¼ gallon per minute (gpm). This yield was unsustainable during the testing.

The B-zone groundwater is comprised of a series of water-bearing units. All of the wells in the B-zone were installed in the water-bearing unit located at approximately 170 feet bgs. The direction of flow in this unit is to the south, and the gradient is very flat (0.0004). Permeabilities are much higher than for the A-zone groundwater. Past pump tests indicated that wells could be pumped at 7 gpm for an extended period.

For reference, a schematic showing the typical thickness for the A-zone and B-zone are shown in Figure 2 and cross-section across the Site is presented in Figure 3. These figures were adapted from the OU-2 RI/FS report (Panacea 2008).

2.2.2 WELL DESCRIPTION AND LOCATIONS

Forty eight wells are part of the Site groundwater monitoring program: 25 wells installed in the A-zone and 23 in the B-zone. All of these wells are sampled and analyzed for COCs during the plan groundwater monitoring at the Site. The City Well (CW-1) near the Site is also sampled during these events, if it is in operation and being used. The monitoring well locations are shown on Figure 4.

2.2.3 WELL CONSTRUCTION AND GROUNDWATER DEPTHS

The groundwater monitoring wells used during this study vary in construction. A description of the well depths, screened intervals, and well diameters is provided in Table 3.1 for the A-zone wells and in Table 3.2 for B-zone wells. These tables include the groundwater depths, surveyed casing elevations, and groundwater elevations.

2.2.4 RESULTS OF SAMPLING AND ANALYSIS

Groundwater monitoring was started at the Site in 1987. It has continued at periodic intervals through April 2011. The results of the groundwater sampling and analysis for COCs are presented in Tables 1 and 2, for A-zone and B-zone wells, respectively. It is currently planned to continue this monitoring on a schedule to be determined by the U.S. Army Corps of Engineers (USACE)/USEPA.

The following figures presented in the draft monitoring report for the April 2011 sampling event are included for reference in this plan:

- Figures 5 and 6 show the groundwater flow for the A-zone and the B-zone for water elevations measured in April 2011.
- Figures 7 through 9 show the isopach maps for A-zone concentrations for the following COCs: 1,2-DCP, chloroform, and 1,2,3-TCP.
- Figures 10 through 13 show the isopach maps for B-zone concentrations for the following COCs: 1,2-DCP, chloroform, dinoseb, and 1,2,3-TCP.

A-zone data are presented only for information. Hereafter, this plan refers only to data for the B-zone.

3.0 PROJECT TEAM ORGANIZATION

Personnel responsible for preparing, coordinating, and conducting the groundwater monitoring and sampling of the on-Site wells include the Project Director, Corporate Health and Safety Officer, the Site Health and Safety Officer, Project Geologist, team members, and subcontractors. The personnel assigned to this project are as follows:

- Project Director – Dr. Mohammad Estiri
- Corporate Health and Safety Officer – Mr. Hsin Chou, CIH
- Site Health and Safety Officer and Project Geologist – Mr. Quin Kinnebrew, RG or designee
- Project Manager – Dr. Mitra Fiuzat

- Team members – Will be designated at the time of field work
- Subcontractor and third parties – Will be designated at the time of field work

All field personnel used on this project will have successfully completed 40 hours of training in hazardous waste operations and/or current 8-hour hazardous waste operations training refresher. A copy of the Site Health and Safety Plan for the conduct of Site work is included as Appendix B to this plan. There is no change to this plan from the document that was included as part of the previous plans.

4.0 MONITORED NATURAL ATTENTUATION OBJECTIVES AND GENERAL APPROACH

This MNA plan is for implementation of the OU-2 remedy and specifically to evaluate groundwater conditions within the B-zone to evaluate whether there is reasonable attenuation of COC concentrations in that groundwater. Details of the groundwater monitoring are presented in the Groundwater Monitoring Plan, and natural attenuation progress evaluation for the B-zone groundwater is discussed in this plan.

Specifically, this plan provides a description of the following activities:

- Collect groundwater data that will be used for the attenuation model.
- Perform groundwater trend analysis.
- Prepare input for and implement the attenuation model.
- Evaluate the results of the attenuation model.
- Prepare the MNA Performance Plan.

This plan describes the actual performance of the natural attenuation remedy. It is expected that, using a predictive model, the rate of COC attenuation can be described providing a measure to gauge progress. If monitoring data indicate that the COC levels do not continue to decline in accordance with expectation as defined by this model, USACE and USEPA will reconsider the remedy decision.

In order to develop the conceptual model for attenuation of the COCs in the B-zone groundwater the following factors will be considered:

- Hydrogeologic Setting: This indicates the nature of the hydrogeologic regime that will shape the groundwater plume. Hydrogeology influences a number of key natural attenuation processes, such as the contaminant mass flux in a source zone; the time that is available for contaminant degradation while migrating; and, the type of groundwater monitoring system required for evaluation. U.S. EPA's DRASTIC system (Aller et al., 1987) provides a method for evaluating the hydrogeologic setting. The flow regime will allow evaluation of plume dispersion and dilution.
- Geochemical Setting: The geochemical setting drives the types of degradation reactions that are present in the area of the contaminant plume. Site-specific data are used to evaluate if the plume is aerobic, anaerobic, or anoxic. The setting will provide information on the details of the reactions necessary for MNA such as, dechlorination (direct or co- metabolism, hydrolysis, or reduction), sorption, or degradation).

- Source Consideration: Source strength is a function of source contaminant mass and the contaminant mass flux leaving the source: Mass flux defines the contaminant loading to the B-zone plume that will need to be attenuated. Whereas A-zone contribution to the B-zone COC plume is estimated from the RI/FS fate and transport analysis, this estimate will need to be re-evaluated on the basis of planned source control remedy and inferred source contribution from the on-going periodic groundwater monitoring.
- Receptors/Travel Time: Travel time allows estimation of the intensity of the MNA monitoring program. Receptors are either nearby groundwater wells that could capture plume contaminants or an administrative boundary that is defined based on regulatory decision. The downgradient plume boundary may serve as such a location for estimation of travel times.
- Plume Stability: Plume stability is a factor in assessing sufficiency of MNA. The plume may be stable, expanding, shrinking, or no trend may be observed. This assessment is the result of evaluating concentration versus time and distance plots (plume maps) and performing trend analyses.

The conceptual model will be prepared based on the evaluation of the factors described above. Also, when taken together the sustainability of the processes will need to be assessed for the key processes to be available over the term during which MNA will occur.

5.0 ATTENTUATION MODEL

The U.S. Geological Survey, Virginia Polytechnic Institute and State University (Virginia Tech), and the U.S. Navy have developed a software package that helps estimate how far plumes will migrate and how long natural attenuation processes will take to clean up groundwater contamination. The software package is called Natural Attenuation Software (NAS). NAS is an interactive computer-screening tool written in Microsoft Visual Basic that requires input for the Site's hydrogeology, contaminant characteristics, and Site-specific remediation goals. This software allows:

- an evaluation of source area contaminant concentrations at which the natural attenuation is protective of the environment,
- an estimate of time for the contamination plume to shrink to an acceptable configuration when contaminant concentrations in the source area are lowered, and
- an estimate of time for a given mass of contaminants to dissolve and disperse at the Site.

The main purpose of using this software tool is to obtain the estimate described in the last bullet above. The use of this package for this Site has been pre-approved by USACE and USEPA.

5.1 NAS MODEL

NAS is designed for application to groundwater systems consisting of porous, relatively homogeneous, saturated media such as sands and gravels and assumes that groundwater flow is uniform and unidirectional. NAS consists of a combination of analytical and numerical solute transport models. Natural attenuation processes that NAS models include advection, dispersion, sorption, non-aqueous phase liquid dissolution, and biodegradation. NAS

determines redox zonation. It also estimates and applies varied biodegradation rates from one redox zone to the next.

5.2 DATA NEEDED FOR ATTENUATION MODEL

Site information about hydrogeology, redox conditions, and contaminant concentrations are required for input to the NAS software. Table 4 below provides a summary of the basic Site data required by NAS and the source of these data that will be used.

SUMMARY OF NAS SITE DATA REQUIREMENTS

Hydrogeology	Data to be used
Hydraulic Conductivity	Site-specific use RI/FS fate and transport data. See RI/FS document Appendix A.
Hydraulic Gradient	Determine gradients from plots of B-zone water elevation contours; verify that the estimated gradients are comparable; estimate the average of three estimated gradients.
Weight Percent Organic carbon	Site-specific use RI/FS fate and transport data. See RI/FS document Appendix A. Assume the TOC in B-zone is same as that in A-zone.
Total Porosity	Site-specific use RI/FS fate and transport data, see RI/FS document Appendix A.
Effective Porosity	Estimate effective porosity based on total porosity values and based on professional judgment.
Contaminant Source Width	Best estimate based on plot for contaminant in the B-zone.
Contaminant source length	Best estimate based on plot for contaminant in the B-zone.
Average Saturated Thickness Impacted by Contamination	Use minimum, average, and maximum impacts in the B-zone.
Redox Indicators	
Concentration: Dissolved Oxygen, Ferrous Iron, Sulfate	Values from 1 or more wells along the solute plume centerline.
Concentration: Nitrate, Sulfide, Methane, Dissolved Hydrogen	Values from 1 or more wells along the solute plume centerline.
Contaminant	
Concentration: Contaminant	Values from 3 wells along the solute plume flow path.

All of the requisite data will be identified from sampling and analysis during the most recent groundwater sampling event and/or will be obtained from the RI/FS report (Panacea, 2005). No additional sampling and analysis is proposed for MNA evaluation.

Additional data may become available as supplemental site investigations are performed or groundwater monitoring network is enhanced. Such data may require that the MNA analysis be updated to verify that conditions assessed remain valid.

5.3 NAS MODEL IMPLEMENTATION

The NAS model implementation will lead to the following descriptions:

1. A description of the plume for each COC that is detected above laboratory reporting limits in the B-zone.
2. A selection of five wells to describe the COC plume at the source, mid-plume and at the boundary of the plume, concentration vs. time plots will be output that describe the time to remediation for the COC. The five wells that will be used for this evaluation will be listed in the MNA performance plan.
3. Sensitivity analyses will be performed to evaluate the reduction of concentration away from the source for the COCs and to evaluate likely spreading of the plume in the direction along the flow and laterally. This evaluation will help determine the well or wells that may be designated as point/s of compliance during performance evaluation period.

The results of the NAS model will be included in MNA evaluation report described in Section 7.

6.0 GROUNDWATER TREND ANALYSIS

All COC concentrations for each well that has been monitored at the Site will be plotted for the period of monitoring. One set of plots have been prepared for data obtained during the Spring 2011 sampling event. The planned re-analyses and plots will be completed one more time after the Fall 2011 sampling event for consideration and inclusion in the MNA performance plan. Thereafter, these plots will be done either as part of periodic groundwater monitoring reports, or as part of MNA performance reporting.

Time-concentration plots will be prepared as follows:

- Data that are available in Excel spreadsheets will be assembled by compound for the A- and B-zone wells.
- Samples that were reported non-detect will be assigned a concentration of zero.
- Samples that are designated as not analyzed and/or not sampled will be shown as no sample, and there will be no data assigned for that sampling date.
- For each compound, the wells will be sorted to rank wells in accordance with the maximum contaminant concentration reported for any sampling event.
- Wells for which none of the samples showed detectable concentrations will be separated and not included in the plotting for trend observation.
- For each COC, the wells were then assembled (3 to 6 wells per plot) for purposes of plotting and will be ordered with higher concentration wells for a COC plotted first. The scale on each plot will be adjusted to best cover the range of concentrations for samples from the wells being plotted.

- The CLs as identified in the table below will be included for each COC on the plot header and as a reference line on the plot. Where the CL is outside the range of the concentrations being plotted or plots over the x-axis, it will not be plotted but will be shown only on the figure header.

B-ZONE CONTAMINATION OF CONCERN AND CLEANUP LEVELS

Contamination of Concern	Cleanup Levels (µg/L)
1,2-Dichloropropane (1,2-DCP)	5
1,3-Dichloropropane (1,3-DCP)	0.5
1,2,3-Trichloropropane (TCP)	0.005
Chloroform	80
Dinoseb	7
1,2-Dibromo-3-chloropropane (DBCP)	0.2
Ethylene dibromide (EDB)	0.05

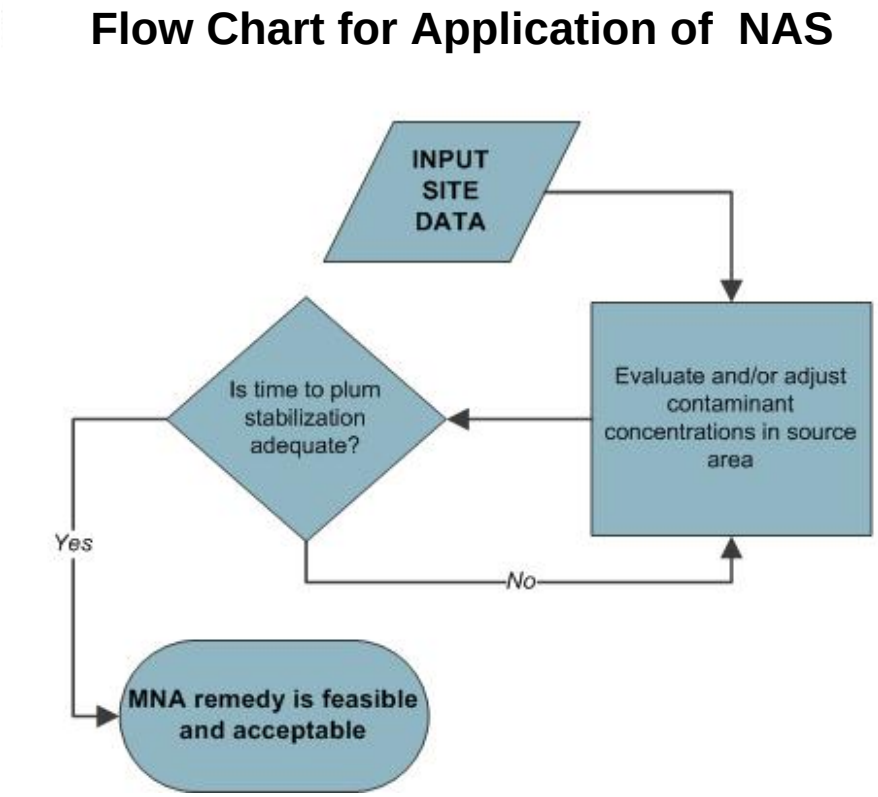
Notes:
1,2-DCP = 1,2-Dichloropropane: Clean-up level based on Federal National Primary Drinking Water Standards - 40 Code of Federal Regulations, Part 141 or 40CFR141
1,3-DCP = 1,3-Dichloropropane: California Safe Drinking Water Act (CCR, Title 22, Sec 64444)
1,2,3-TCP = 1,2,3-Trichloropropane: Notification level set by California Office of Environmental Health Hazard Assessment, August 2009
Chloroform: 40CFR141 - total trihalomethanes (sum of bromodichloromethane, dibromochloromethane, bromoform and chloroform)
Dinoseb: 40CFR141
DBCP = 1,2-Dibromo-3-chloropropane: 40CFR141
EDB = Ethylene dibromide, also called 1,2-Dibromoethane: 40CFR141

The plots will be reviewed and analyzed for observed concentration trends and assessment of factors that may influence them. The interpretation of the data will be summarized in memorandum form that will be submitted to USACE/USEPA and be included as part of the MNA performance plan.

7.0 EVALUATION OF ATTENTUATION MODEL RESULTS

After data entry into the software package, NAS estimates Site-specific ground-water flow rates, biodegradation rates, and sorption properties. Based on the range of estimates, analytical solutions for the time to remediation are then obtained. This approach and solution addresses plume concentration issues, including the distance of stabilization for given source-area contaminant concentrations and the time of stabilization if source-area concentrations are changed. For the distance of stabilization, an allowable maximum source-area concentration can be calculated. Using NAS, estimates for time to plume stabilization or steady-state configuration are also obtained depending on the assumptions for source area concentrations. Once both the distance of stabilization and the time of stabilization are

acceptable, MNA can be considered acceptable and become useful for period monitoring of Site remediation. The process is as described in the figure below:



7.1 MNA EVALUATION REPORT

The results of the data evaluation and the implementation of the NAS model will allow an assessment of MNA processes at the Site. The evaluation will specifically address each of the following project objectives:

1. Evaluate whether natural attenuation is occurring at the Site and specifically evaluate the nature and rate of attenuation for each COC.
2. Identify changes in on-Site and off-Site geologic or hydrogeologic conditions that may reduce or increase the effectiveness of natural attenuation. These factors will be evaluated on the basis of interpretation of Site conditions and the results of the NAS model analysis. Additionally, knowledge of in-situ conditions will be supplemented by planned Site investigations to obtain input data for the NAS model.
3. Identify potentially toxic transformation or reduction products of the COCs. This will be inferred on the basis of the data assessment and, as required, will be included as additional analyses in the MNA performance plan. It is possible, but unlikely, that these products will be recognized from the results of the EPA

8260B analyses for VOCs that is conducted on the samples of monitored water. If such products are identified, their mobility will also be assessed relative to the COCs.

4. The dimensions of the plume: down-gradient and cross-gradient will be estimated and its boundaries described.

Additionally, the following factors will be reviewed in the MNA evaluation report as these factors impact the feasibility of meeting MNA goals in the B-zone:

1. The plume boundaries will allow an assessment of possible impact on receptors. The likelihood of receptor impact will be assessed on the basis of the data.
2. Evaluate data that may suggest the continuing or new releases of contaminants from the A-zone.

The main objective of the evaluation is to verify that the B-zone groundwater Cleanup Levels (CLs) can be reached and that the timeframe to reach CL is estimated to be reasonable. Once this conclusion is reached and accepted, then an MNA performance plan can be prepared to serve as a basis for verifying the interim milestones to meet the goals.

7.2 REMEDY NOT FEASIBLE

As the described MNA implementation is being assessed and evaluated, it is possible that one or more COCs will be found to not be remedied at all, or remedied in a reasonable time frame. Under these circumstances, the following approach shall be followed:

1. Alternatives will be considered to facilitate MNA through enhancements that may allow COC concentration reductions in the acceptable time period. Such an approach, if feasible, will allow maintenance of the remedy but will require additional action than originally intended. Such action, if deemed necessary, will be identified in the MNA plan evaluation.
2. If a change in remedy is the only solution to the assessed conditions as part of the MNA evaluation, such a conclusion will be described, and possible alternatives to consider will be identified for USACE/USEPA evaluation.

7.3 MNA MODEL ANALYSIS EVALUATION REPORT

After completion of the MNA model analysis (NAS model implementation) and data evaluation, a draft report will be prepared to describe the following:

- Description of the NAS model (its advantages and limitations)
- Description of the conceptual Site model
- Collection of data required for model input
- Implementation of the NAS model and the results of the model analysis
- Assessment of MNA and Site data including conclusions regarding the achievement of MNA goals for the B-zone groundwater
- Establishment of the performance criteria
- Description of elements of the MNA performance plan.

The report will be finalized after comments are received from USACE/USEPA.

8.0 PREPARATION OF MNA PERFORMANCE PLAN

The MNA evaluation report will provide the framework for MNA performance monitoring. Since the model and the rate of expected decay in COC concentrations are defined in the model prepared for Site's B-zone conditions, the MNA performance plan is to verify periodically that the expected mitigation is occurring.

Compilation and presentation of MNA performance monitoring data will be in conjunction with the periodic groundwater monitoring. It is possible that the two plans will conveniently be merged into one for B-zone monitoring and MNA performance evaluation.

The following will be the main elements of the MNA performance plan and well as the periodic MNA performance reports:

- Background and Site description
- Wells constituting the monitored wells for MNA network and schedule description for monitoring
- Evaluation of new data and comparisons with previous data and established performance criteria
- Interpretation of new data with respect to the conceptual Site model for MNA
- Recommendations for action

Each of these elements is discussed in the following sections.

8.1 SITE BACKGROUND AND DESCRIPTION

Background information on the Site will be presented to serve as description of Site conditions. This will consist of a discussion of the Site setting, history, characteristics, remedial goals, past and present remedial activities, and institutional controls. These subjects will be presented in summary fashion and/or may be included by reference to previous project documents. Important sections include: hydrogeologic setting, contaminant distribution, remedial goals, and remedial actions. These will be supplemented by Site maps and cross-sections, as necessary.

8.2 MNA NETWORK AND MONITORING SCHEDULE

The MNA performance plan will identify the B-zone groundwater monitoring wells and will include a listing and figure showing the location of the monitoring locations. A description of the construction of each monitoring point; and a monitoring schedule specifying monitoring parameters, analytical methods, and sampling frequency will be presented in table format. Information regarding Data Quality Objectives will be incorporated by reference to the project QAPP.

Based on the MNA evaluation, a schedule for MNA performance monitoring will be described. It is expected that for the first few years there will be a requirement to obtain groundwater data bi-annually. This may be relaxed to an annual or 2-year cycle once the MNA performance is assessed to be satisfactory.

8.3 DATA COMPARISON

The evaluation of new MNA data and comparisons with previous data will provide the following:

- Detailed discussion of new results and evaluations with presentation of data in tables and figures
- Comparison of the new data with previous data and established performance criteria
- Discussion of uncertainty with statistical measures of variability including discussion of measurement variability assessed through evaluation of QA/QC data
- Discussion of trends and the relation of any data trends to the remedial goals (CL concentrations for COCs in the B-zone)

Tables will be prepared for hydraulic head, COC concentrations, and geochemical data for the wells being monitored. Figures will be prepared showing the contamination plumes allowing comparison with previous conditions. Contour maps of the contaminant concentrations and geochemical parameters will be prepared as data allow to present visualization of the broader trends.

8.4 DATA INTERPRETATION

The data will be interpreted and conceptual Site model evaluated in light of the new data and data trends. The MNA performance plan will include consideration of the following:

- Are there changes regarding the suspected sources for continued groundwater contamination (e.g., number, location(s), and characteristics of sources)?
- Are the trends in contaminant concentrations and geochemistry values consistent with the expectations as described in the MNA evaluation plan report?
- Are there changes in hydrologic factors (e.g., groundwater elevations, hydraulic gradients, flow parameters) that require re-consideration of the MNA progress?
- Is the conceptual Site model applicable as initially described for the project or does it require refinement or modification?
- Do the new data support MNA parameter predictions?

As part of the data interpretation, the uncertainties in the data (both new and old) will be considered including the implications of these uncertainties on the effectiveness of MNA mechanisms and the groundwater monitoring network.

8.5 RECOMMENDATIONS

Recommendations for action, based on interpretation and evaluation of the new data in reference to the monitoring objectives and MNA performance criteria, will be listed and discussed. Recommendations for action may include one or more of the following:

- Changes in monitoring locations
- Changes in the schedule for monitoring
- Changes to analytical methods and/or the analyses required along with the rationale for such changes

Recommended actions may also include additional source considerations or other remedy modifications, implementation of contingency or alternative remedies, advancement to verification monitoring, or termination of performance monitoring based on progress and achievement of Site remedial goals.

All recommendation will be made after consideration of the OU-2 ROD requirements. Changes that are recommended need to remain consistent with ROD requirements. If there are items in the recommendation that are inconsistent with the ROD, a discussion of approaches for their implementation will be included for USACE and EPA consideration.

8.6 MNA PERFORMANCE PLAN DOCUMENT

A Draft MNA Performance Plan will be prepared to describe the approach to monitoring MNA performance and the requirements for achieving the MNA goals which are CLs for each of the seven COCs in the B-zone. The elements of the MNA performance plan will be as described in the previous sections. The plan will describe the expected trend for COC concentrations and their reduction over the remediation period.

The draft MNA Performance Plan will be finalized after the receipt of review comments from USACE/USEPA.

9.0 DELIVERABLES AND PROJECT SCHEDULE

The following deliverables are part of this task:

- Draft memorandum describing the collection of attenuation parameters and Site investigations for this purpose
- Draft and Final MNA Evaluation Report (This report will also include the groundwater trend plots and their interpretation.)
- Draft and Final MNA Performance Plan

All of these submittals will be made to the distribution described in Section 9.1.

9.1 REPORT AND DISTRIBUTION

A letter of transmittal will accompany each submittal. It will reference the project by title and location and will certify that the submitted document has undergone Quality Control review prior to submittal. The letter will also include a listing of enclosures and attachments.

Submissions will be made, in the quantities indicated to each office as designated in the following submittal distribution list. Submittals will be furnished directly to the following addresses via courier or overnight service.

U. S. Army Corps of Engineers, Albuquerque District
ATTN: Ms. Cecilia Horner
4101 Jefferson Plaza NE
Albuquerque, NM 87109

(Draft and Final: 1 hard copy, 1 electronic copy)

Environmental Protection Agency
ATTN: Brunilda Davila (SFD-7-1)
75 Hawthorne St.
San Francisco, CA 94105

(Draft and Final: 1 hard copy, 1 electronic copy)

Environmental Protection Agency

ATTN: Mr. Glenn Bruck (SFD-8-4)
75 Hawthorne St.
San Francisco, CA 94105

(Draft and Final: 1 hard copy, 1 electronic copy)

Environmental Protection Agency
ATTN: Mr. Alejandro Diaz (SFD-6-3)
75 Hawthorne St.
San Francisco, CA 94105

(Draft and Final: 2 hard copies, 2 electronic copies)

U. S. Army Corps of Engineers, Albuquerque District
ATTN: Carol Wies-Brewer
4101 Jefferson Plaza NE
Albuquerque, NM 87109

(Draft and Final: 1 hard copy, 1 electronic copy)

U. S. Army Corps of Engineers, Los Angeles District
ATTN: Mr. Thad Fukushige/Mr. Rick Lainhart
645 N. Durfee Ave.
Los Angeles, CA 91733

(Draft and Final: 2 hard copies, 2 electronic copies)

9.2 PROJECT SCHEDULE

The project schedule is as follows:

Final Work Plans ..... January 26, 2012

Approval of Work Plans ..... February 24, 2012

Draft MNA Evaluation Report ..... April 13, 2012

Final MNA Evaluation Report ..... May 25, 2012

Draft MNA Performance Plan ..... June 15, 2012

Final MNA Performance Plan ..... August 17, 2012

10.0 REFERENCES

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Hargis & Associates, Inc., 1988. *Interim Assessment Report, Brown & Bryant Facility, Arvin, California*, dated July 27, 1988.

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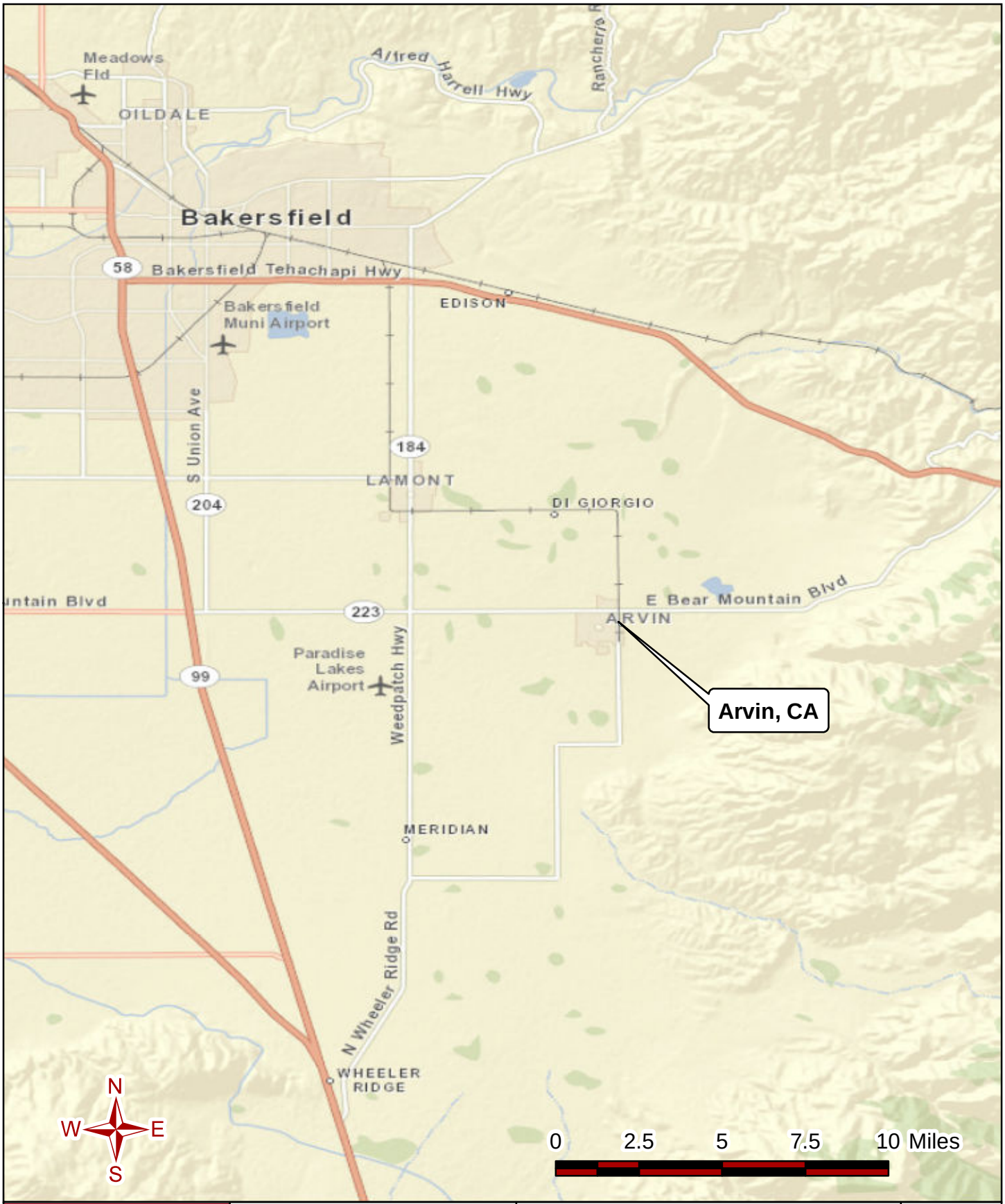
_____, 1993. *Remedial Investigation / Feasibility Study Report, Brown & Bryant Superfund Site, Arvin, California*, dated May 28, 1993.

_____, 1990. *Brown & Bryant Superfund Site Remedial Investigation / Feasibility Study Work Plan*, dated December 1990.

_____, 2004. *Performance Monitoring of MNA Remedies for VOCs in Ground Water*, EPA/600/R-04/027, dated April 2004.

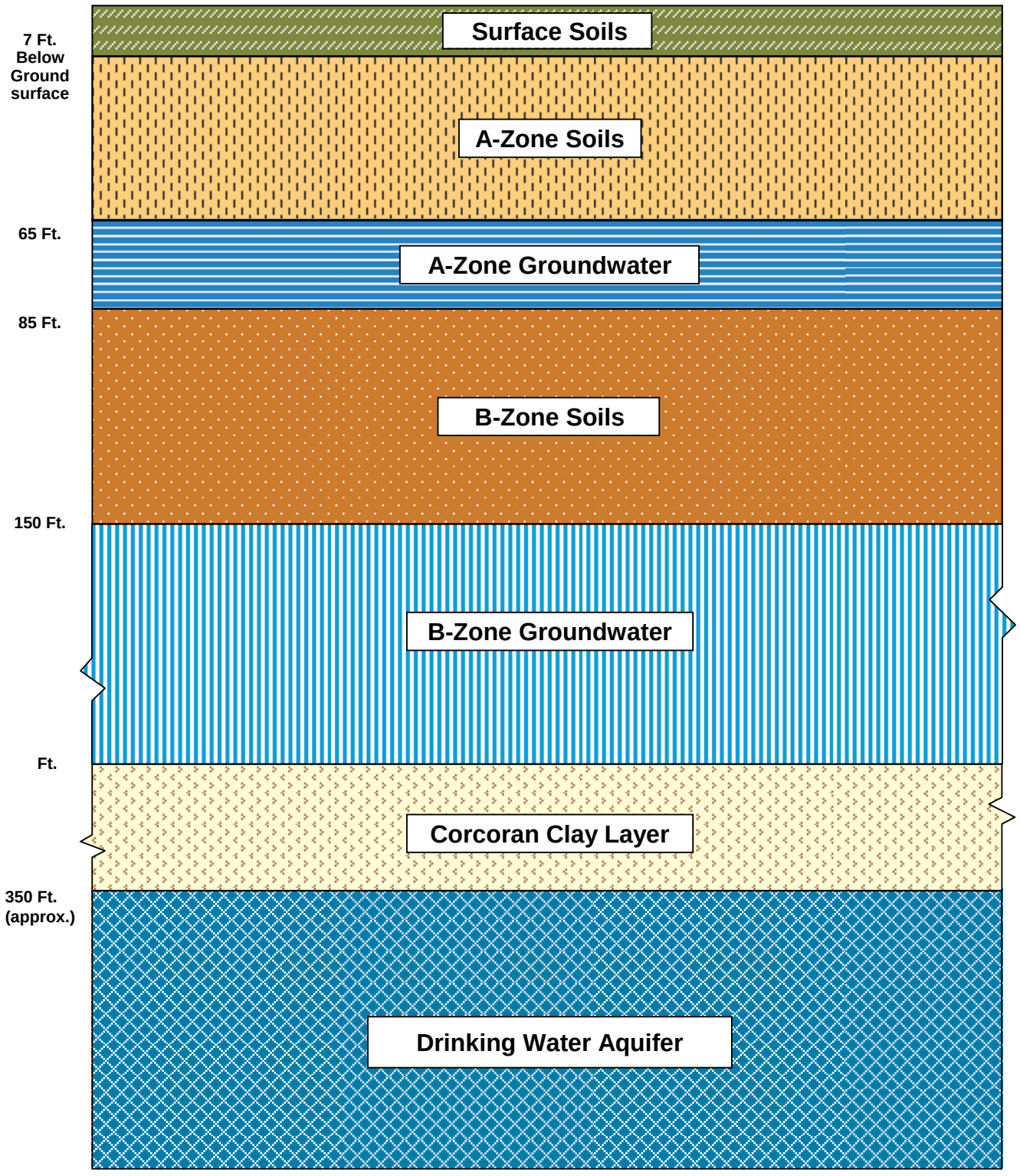
_____, 2007. *Drinking Water Contaminants*, http://www.epa.gov/safewater/contaminants/index.html#mcls, September 2007.

FIGURES



Environmental Excellence	**Eco & Associates, Inc.** 1855 W. Katella Avenue, Suite 340 Orange, California 92867 Phone: 714.289.0995 Fax: 714.289.0965	**SITE LOCATION MAP** **Brown & Bryant Superfund Site** **600 South Derby Street, Arvin, CA** Project No. Eco-11-501 | Dated January 2012	FIGURE 1

Geological Profile



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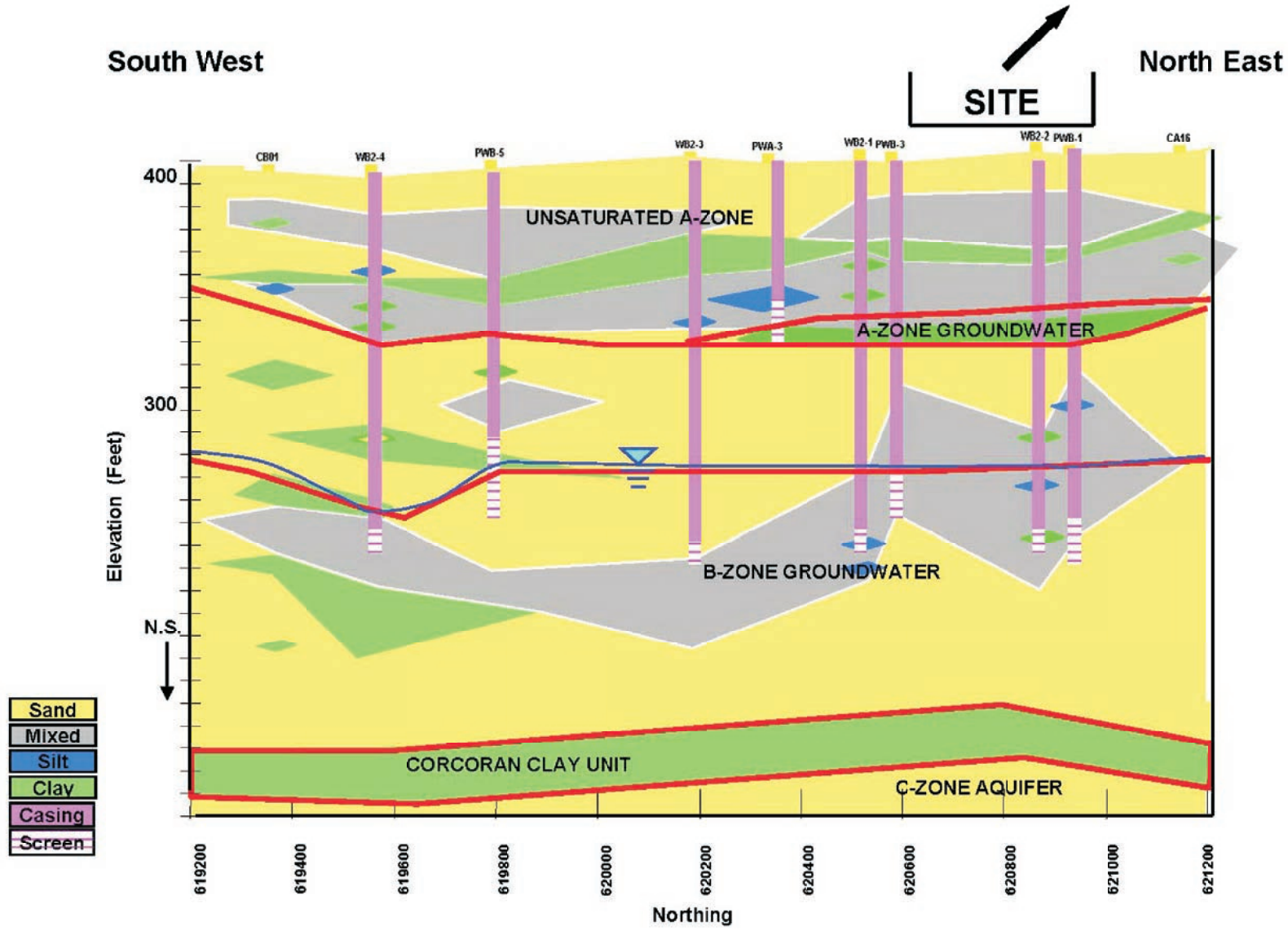
TYPICAL A-ZONE AND B-ZONE THICKNESS

Brown & Bryant Superfund Site, Arvin, CA

Project No. Eco-11-481 | Dated January 2012

FIGURE 2



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Orange, California 92867

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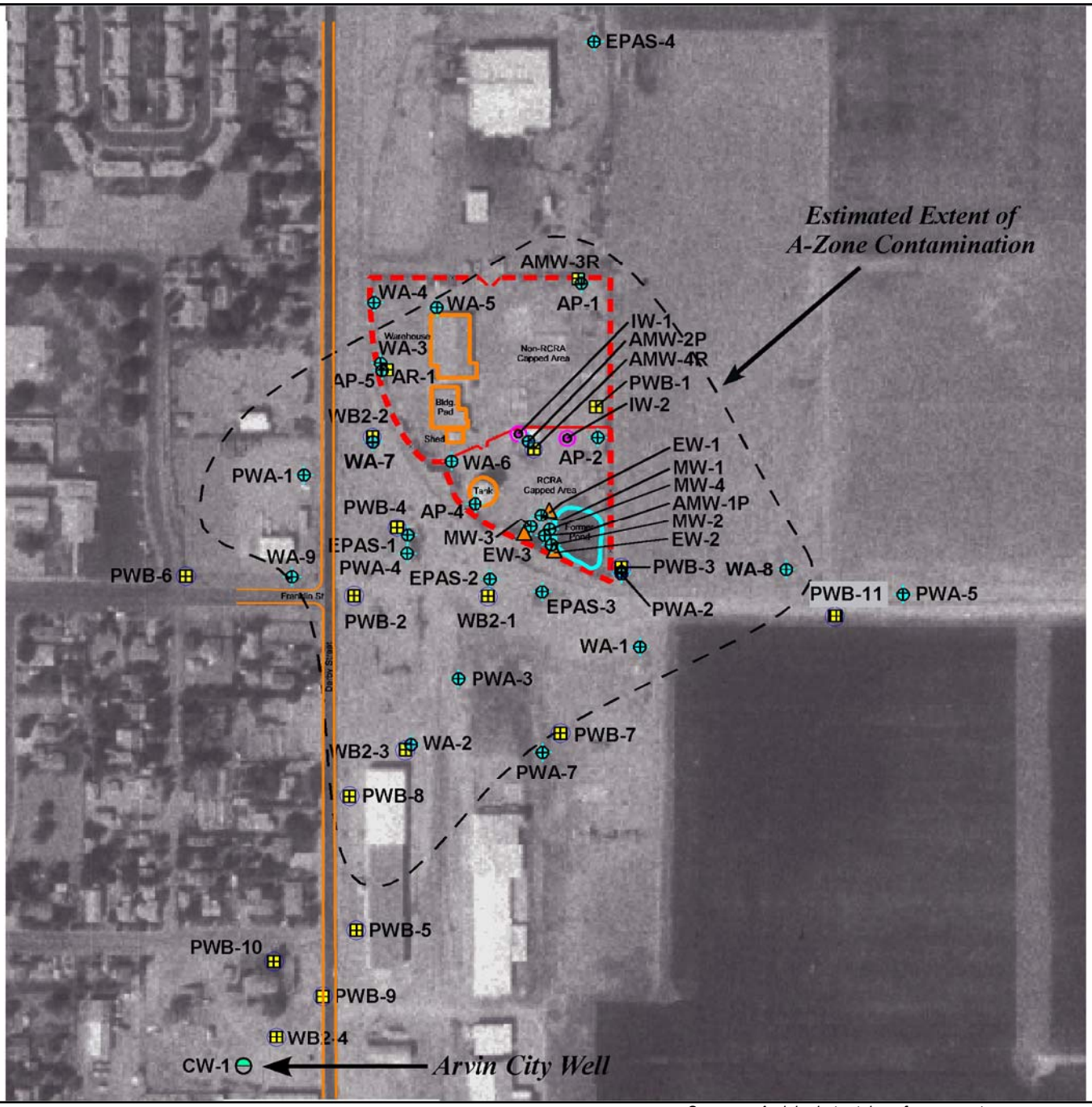
CROSS-SECTION ACROSS THE SITE

Brown & Bryant Superfund Site
600 South Derby Street
Arvin, California

PROJECT NO. Eco-11-481

Dated January 2012

FIGURE
3



Source: Aerial photo taken from www.terraserver.com

LEGEND & NOTES:

Well location based on NAD 27 coordinates.
All other location areas approximate.

- A-Zone Monitoring Well
- B-Zone Monitoring Well
- Arvin City Well
- Injection Well
- Extraction Well

N
W E
S

Approximate Scale:

0 300 feet

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SITE PLAN AND MONITORING WELL LOCATIONS

Brown & Bryant Superfund Site
600 South Derby Street, Arvin, California

Project No. Eco-11-481 | Dated January 2012

FIGURE 4

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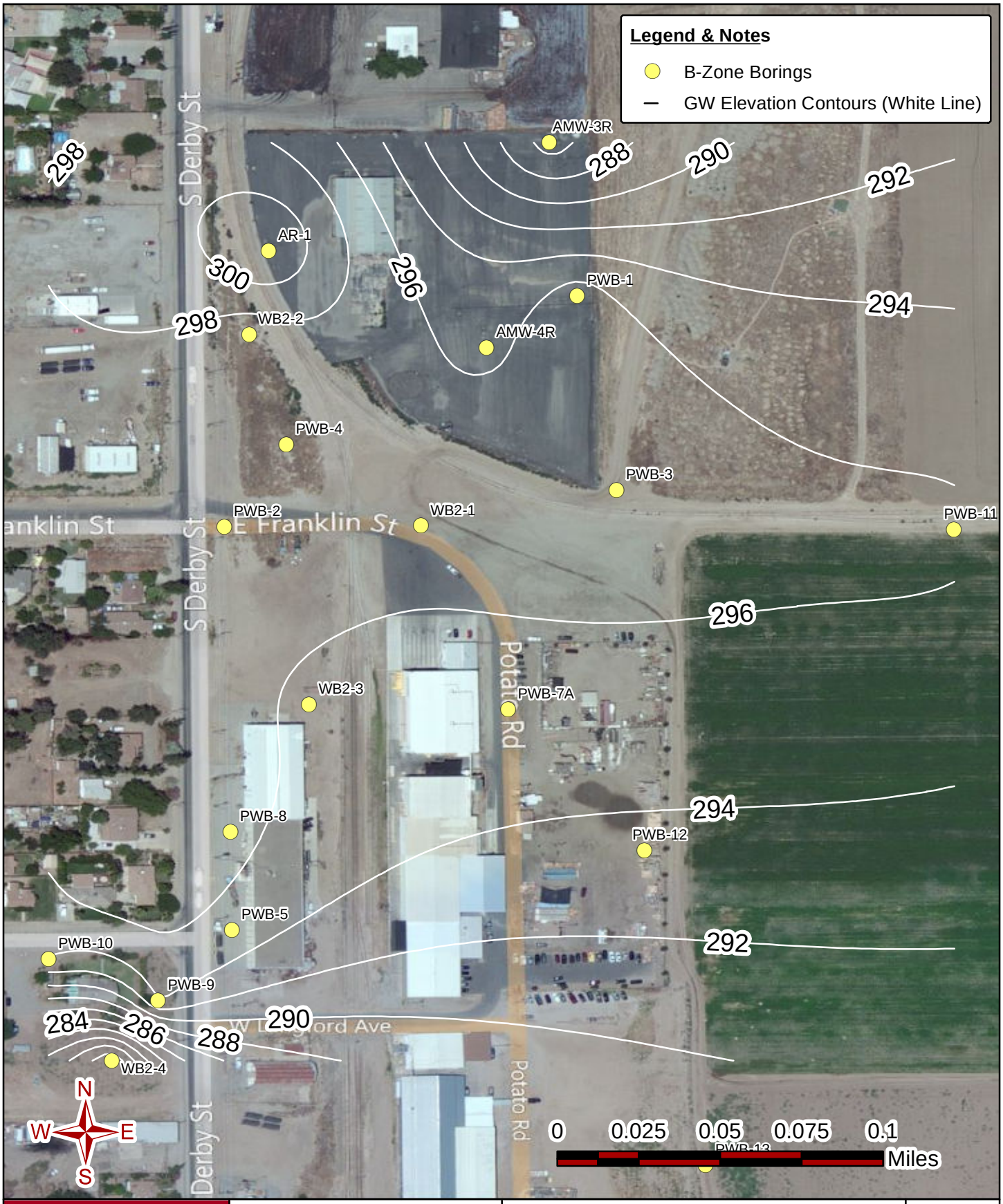
A-ZONE GROUNDWATER CONTOURS

Brown & Bryant Superfund Site
600 South Derby Street, Arvin, CA

Project No. Eco-11-481 | Dated January 2012

FIGURE

5



Environmental Excellence	**Eco & Associates, Inc.** 1855 W. Katella Avenue, Suite 340 Orange, California 92867 Phone: 714.289.0995 Fax: 714.289.0965	**B-ZONE GROUNDWATER CONTOURS** **Brown & Bryant Superfund Site** **600 South Derby Street, Arvin, CA** Project No. Eco-11-481 | Dated January 2012	FIGURE 6

Environmental Excellence	**Eco & Associates, Inc.** 1855 W. Katella Avenue, Suite 340 Orange, California 92867 Phone: 714.289.0995 Fax: 714.289.0965	**A-ZONE 1,2-DCP IN GROUNDWATER** **Brown & Bryant Superfund Site** **600 South Derby Street, Arvin, CA** Project No. Eco-11-481 | Dated January 2012	FIGURE 7

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A-ZONE CHLOROFORM ISOPACH MAP

Brown & Bryant Superfund Site
600 South Derby Street, Arvin, CA

Project No. Eco-11-481 | Dated January 2012

FIGURE
8

Environmental Excellence	**Eco & Associates, Inc.** 1855 W. Katella Avenue, Suite 340 Orange, California 92867 Phone: 714.289.0995 Fax: 714.289.0965	**A-ZONE 1,2,3-TCP IN GROUNDWATER** **Brown & Bryant Superfund Site** **600 South Derby Street, Arvin, CA** Project No. Eco-11-481 | Dated January 2012	FIGURE 9

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B-ZONE 1,2-DCP ISOPACH MAP

Brown & Bryant Superfund Site
600 South Derby Street, Arvin, CA

Project No. Eco-11-481 | Dated January 2012

FIGURE
10

Environmental Excellence	**Eco & Associates, Inc.** 1855 W. Katella Avenue, Suite 340 Orange, California 92867 Phone: 714.289.0995 Fax: 714.289.0965	**B-ZONE CHLOROFORM ISOPACH MAP** **Brown & Bryant Superfund Site** **600 South Derby Street, Arvin, CA** Project No. Eco-11-481 | Dated January 2012	FIGURE 11

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B-ZONE DINOSEB ISOPACH MAP

Brown & Bryant Superfund Site
600 South Derby Street, Arvin, CA

Project No. Eco-11-481 | Dated January 2012

FIGURE
12

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B-ZONE 1,2,3-TCP ISOPACH MAP

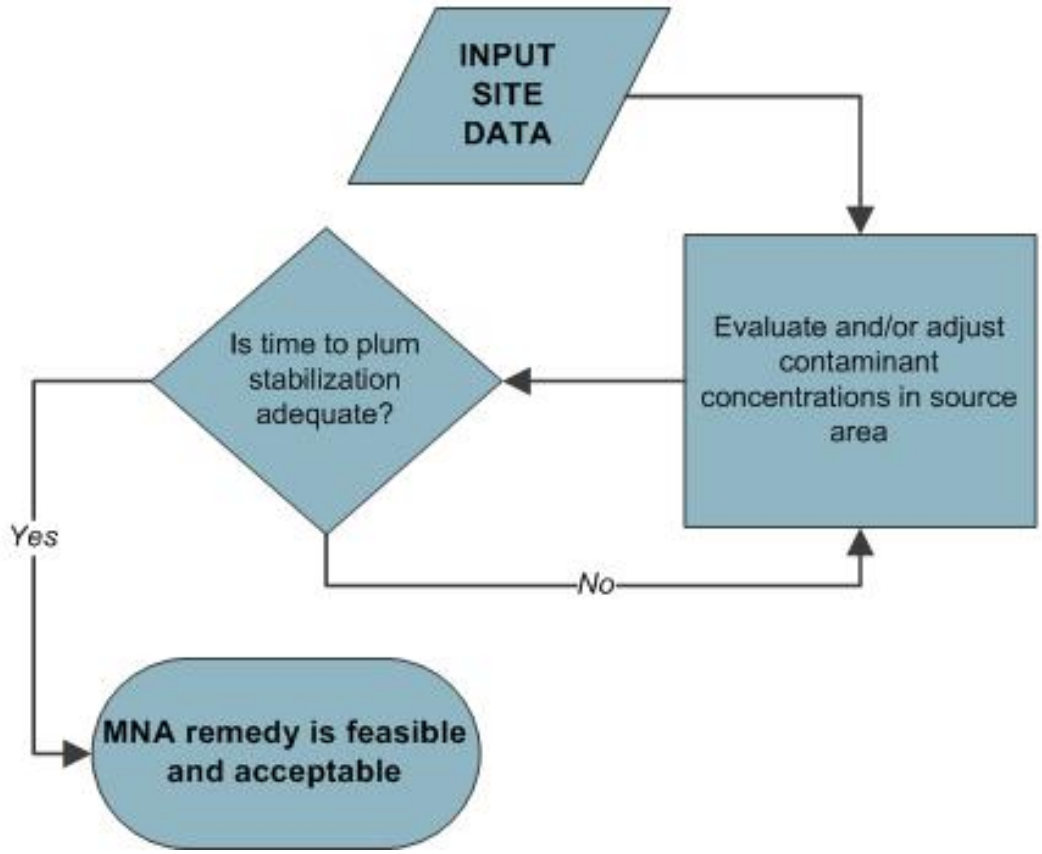
Brown & Bryant Superfund Site
600 South Derby Street, Arvin, CA

Project No. Eco-11-481 | Dated January 2012

FIGURE
13

FIGURE 14

Flow Chart for Application of NAS



TABLES

TABLE 1: CHEMICALS OF CONCERN IN A-ZONE GROUNDWATER - SELECTED PARAMETERS
(more listed starting May 1997)

Well No.	Chemical	DATE SAMPLED AND CONCENTRATION (µg/L)																																						MCL (µg/L)
		Sep 1987	Oct 1987	Dec 1987	Feb 1988	Mar 1988	Apr/May 1990	Jan 1991	Apr 1991	Jun/Aug 1991	Dec 1991	Apr 1992	Jul 1992	Dec 1992	Aug 1994	Mar 1995	Nov 1995	Nov 1996	May 1997	Jan 1998	Jul 1998	Jul 2000	Nov 2000	Mar 2001	Jul 2001	Oct 2001	Feb 2002	May 2002	Jul 2002	Oct 2002	Feb 2003	May 2003	Aug 2003	Jan 2004	Aug 2007	Apr 2008	Apr 2009	Apr 2011	
AMW-1P	1,2-DCP	64,000	63,000				30,000	29,000	31,500	25,000	19,000	9,800		15,000	4,700	5,050	1,000	700	500	670	110	112	188	168	254	322	2,300	4100	5100	5700	6200	6300	6000	2700	NS	NS	NS	NS	5
	1,3-DCP	950	1,000				620	550	485	670	600	390		360	130	135	18	9 LJ	5 J	6 L	1	–	–	–	–	–	–	–	–	–	–	–	–	–	NS	NS	NS	NS	—
	Chloroform	-1,000	-1,000				–	–	52	38	35	18		22	12	10	2 L	–	–	1 L	–	–	–	–	–	–	–	–	–	–	–	–	15 f,L	NS	NS	NS	NS	100*
	DBCP	30	660				380	694	400	170	180	64		140	48	54	13	10	10 J	4.8	?	–	17	1.27	–	–	12	62	130	160	180 G+,H+	220	–	85	NS	NS	NS	NS	0.2
	Dinoseb	21,000	3,800					16,350	13,100	6,700	35,000	34,000	40,000	51,000	28,000	83,000	42,000 J	830	1,600 J	15.0	?	432	474	497	547	1,710	4,300	4400	5000 I	R	5500 K	4200	15000	6700 K	NS	NS	NS	NS	7
	EDB	10	720				1200	1,564	1,300	605	930	380		30	150	86	19	11	2.9 J	13.8	?	1.26	0.15	1.32	2.3	0.83	4.2	18	32 G+	75	56 G+	51	49 G+,C-,K	35	NS	NS	NS	NS	0.05
	1,2,3-TCP	10,000	10,000				7,300	6,800	6,350	11,000	9,000	6,900		5,900	5,700	8,250	1,900	980	840	450	40	36	50	34	75	87	320	430	830	750	1100	1000	1300	430	NS	NS	NS	NS	5
AMW-2P	1,2-DCP	110,000	82,000					76,000	86,000	89,000	81,000	48,000		50,000	67,000	88,000	84,000	110,000	73,000	51,000	77,000	46,500	68,900	62,800	105,000	56,200	130,000	16000	38000	100,000	92000	100000	140000 G+	120000	NS	NS	NS	NS	5
	1,3-DCP	-500	200					70	73	78	84	45		52	94	100	96	88	110	50 L	96	–	68	102	163	–	–	–	–	–	–	–	–	–	NS	NS	NS	NS	—
	Chloroform	1,900	1,500					955	1,100	1,100	855	435		390	350	520	560	340	240	110 L	320	164	207	161	197	191J	–	570 J	–	230 L	–	–	–	1500 L,f	NS	NS	NS	NS	100*
	DBCP	-0.1	440					453	320	388	485	268		150	325	350	335	420	320 J	96	?	118	186	188	307	300J	370	540	270	540	620 H+	670	–	630 G-	NS	NS	NS	NS	0.2
	Dinoseb	20,000	930					49	–	21	440	240	190	3,000	485	1,100	1,085 J	200	330	85	?	274	220	180	200	250	520	470	NS	R	450	720	1000	600 K	NS	NS	NS	NS	7
	EDB	22	130					1.4	67	2	2	1		51	1	–	–	–	0.053 J	21	?	0.208	0.280	0.13	–	–	–	–	0.029	–	–	–	–	0.380	NS	NS	NS	NS	0.05
	1,2,3-TCP	4,800	5,000					3,400	4,100	3,000	3,900	1,700		1,300	2,450	3,500	3,250	3,800	3,800	1,400	3,800	1,610	1,970	2,420	3,920	5,940	7,000	8700	3400	4600	6500	5800	8700 L,G+	6100	NS	NS	NS	NS	5
AP-1	1,2-DCP			2		1	–	–	–	–	–	–		1	0.9	0.7J	0.7 L	0.4 L	11.0		–	172	8	–	–	1.2 J	1.2	1.0	0.91 L	2 H-	0.96 L	1.2	0.76 G+,L	0.46L	NS	NS	NS	NS	5
	1,3-DCP			-1		-1	–	–	–	–	–	–		1	–	–	–	–	–		–	–	–	–	–	–	–	–	–	–	–	–	–	–	NS	NS	NS	NS	—
	Chloroform			-1		-1	–	–	–	–	–	–		–	–	–	–	–	6.0		–	–	–	–	–	–	–	–	–	–	0.078 L	0.15 O,f,L	–	0.15 L,f	NS	NS	NS	NS	100*
	DBCP			-0.02		-0.02	–	0.01	–	–	–	–		–	–	–	–	–	–		?	–	–	–	–	–	0.045	0.13	0.24	0.22	0.22	0.22	0.12	0.07	NS	NS	NS	NS	0.2
	Dinoseb			-0.5		-0.5	–	45	–	0.3	8	–		11	NS	–	1.2 J	–	NS		?	2.14	1.44	0.81	1.13	13.3	4.5	2.4	7.0 I	R	4.7	2.5 I, j-, H-	3.1 I,f	4.5	NS	NS	NS	NS	7
	EDB			-0.02		-0.02																–	–	–	–	–	–	–	–	–	–	–	–	–	NS	NS	NS	NS	0.05
	1,2,3-TCP			8		5	3	–	1	–	1	–		1	0.9	0.5J	1.0	1.0	2.0		3.0	5.7	–	–	–	11	9.0	19	18	16	18	22	13 G+	7	NS	NS	NS	NS	5
AP-2	1,2-DCP				72	32	–	8	8	10	–	22		7	7	8	6	3	4.0	3.0	3.7	NS	NS	NS	NS	NS	NS	2.5	2.4	2.6	2.5	2.5	2.3	2.7	NS	NS	NS	NS	5
	1,3-DCP				-1	-1																NS	NS	NS	NS	NS	NS	–	–	–	–	–	–	–	NS	NS	NS	NS	—
	Chloroform				14	12	6	–	3	4	5	5		4	–	3	4	3	2.0	2.0	3.3	NS	NS	NS	NS	NS	NS	1.3	1.1	1.2	1.0	0.83 O, L	0.64 L	0.90L	NS	NS	NS	NS	100*
	DBCP				0.4	1	–	1.8	3	1	2	1		–	0.3	0.2	0.2	0.09 P	0.079	–	?	NS	NS	NS	NS	NS	NS	0.01J	0.013	0.0062 L	0.0071 L	–	0.027	–	NS	NS	NS	NS	0.2
	Dinoseb				-0.5	-0.5	–	–	310		0.4	–		–	–	NS	0.4 J	–	R	–	?	NS	NS	NS	NS	NS	NS	–	–	R	0.82	0.27 I, j-, H-	2.7	2.2	NS	NS	NS	NS	7
	EDB				0.3	1														9.5	9.5	NS	NS	NS	NS	NS	NS	–	–	–	–	–	–	–	NS	NS	NS	NS	0.05
	1,2,3-TCP				9	9	7	8	8	9	8	8		5	6	5	4.0	3.0	3.0	2.0	4.6	NS	NS	NS	NS	NS	NS	1.9	1.4	2.0	2.3	2.1	2.5	2.0	NS	NS	NS	NS	5
AP-3	1,2-DCP				110	81	64	36	22	28	48	86		3,200	2,800	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5
	1,3-DCP				1	1	–	–	–	–	–	–		21	36	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	—
	Chloroform				-1	-1	–	–	–	–	1	1		18	6	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	100*
	DBCP				1.2	12	–	6.2	6.5	2.5	20	61		620	300	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.2
	Dinoseb				33	29	–	–	–	16	230	13		9,000	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	7
	EDB				0.9	2.3	4	4	0.9	0.9	3.5	3.5		5	550	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.05
	1,2,3-TCP				80	70	11	16	16	16.5	33	47		370	520	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	5
AP-4	1,2-DCP			22,000		18,000	8,800	8,700	9,400	9,800	13,000	11,000		15,000	9,700	17,000	39,000	110,000 J	23,000	53,000	44,000	22,600	25,600	28,600	40,900	39,900	20,000	17000	18000	17000 H-	3200	2200	3400 G+	1400	NS	NS	NS	NS	5
	1,3-DCP			-500		-500	9	11	11	12	14	15		36	22	25	47	73 J	23	39 L	34	–	21	26	43	53.0	–	–	–	–	–	–	–	–	–	NS	NS	NS	NS	—
	Chloroform			-500		-500	–	–	–	–	–	–		74	60	83	150	800 J	140	150 L	230	85	114	81	103	82.0	–	86 J	–	–	–	23 L, f	–	9.0 L,f	NS	NS	NS	NS	100*
	DBCP			7		57	11	15	42	18	30	57		24	52	33	160	190 J	74 J	71	?	53	–	34	60	37.0	24	29	24	23	8.1	3.7	–	2.8	NS	NS	NS	NS	0.2
	Dinoseb			-0.5		2.3	–	–	–	1	18	10		26	NS	NS	1,700 J	180 J	180	4.2	?	123	–	98.8	66.9	84.5	35	5.2	46 I	R	9.3	3.3 I, j-, H-	17	4.7 K	NS	NS	NS	NS	7
	EDB			5		16	–	–	2	0.3				24	30	5J	8 L	4 J	4 J	50	?	0.845	–	0.10	0.24	0.47	–	–	0.28	0.28	–	–	–	–	NS	NS	NS	NS	0.05
	1,2,3-TCP			670		900	410	390	400	490	500	460		540	510	890	1,900	6,100 J	1,400	2,200	2,500	1,130	1,160	1,350	2010.0	1670.0	800 J	860 J	990 L	920	190 L	99 L	250 G+	70	NS	NS	NS	NS	5
EPAS-1	1,2-DCP																											4900	4900	8000 H-	9000	6300	7500	6400	6700	5400	2,400	NS	5
	1,3-DCP																											–	–	–	–	–	–	–	2.20	3.1	1.4	NS	—
	Chloroform																											47 J	65 L	92 L	110 L	97 L, f	75 L	110 L,f	51.0	31	15	NS	100*
	DBCP																											17	11	18	17	21	–	13	9.8	9.7	6.7	NS	0.2
	Dinoseb																											6.3	NS	R	27	25 I, j-, H-	60	42 K	27	25	20	NS	7
	EDB																											–	–	–	–	–	0.086 I	–	0.038	–	–	NS	0.05
	1,2,3-TCP																											500	470	590	540	470	680	410L	400	320	250	NS	5
EPAS-2	1,2-DCP						3,700	–	–	7,400	9,700	9,600		13,000	15,500	18,000	18,000	25,500	48,000	49,000	21,000	5,980	6,390	6,640	7,330	9,680	9,300	6500	5400	4900	3900	3600	2400 G+	960	110	100	520	51	5
	1,3-DCP						11	36	27	21	25	34		44	42	43	44	30	92	58 L	28	–	–	–	–	16.0	–	–	–	–	–	–	–	–	0.22J	–	1.8	–	—
	Chloroform						21	–	38	42	51	60		78	86	96	91	76	160	130 L	66	29	23	20	20	21.0	22 J	–	–	11 L,p	–	41 L, f	–	7.4 L,f	0.67J	0.58J	1.3	1.9	100*
	DBCP						38	166	92	60	56	74		62	72	77	80	110	100 J	77	?	18	17	17	16	15.0	9.1	8.8	9.6	9.9	11 H+	9.4	–	5.0	7.2	9.5	4.3	1.3	0.2
	Dinoseb						–	–	310	140	800	1,050		1,600	1,500	11,000	12,000 J	710	2500 J	67	?	894	955	597	435	741.0	240	180	270 I	R	190	230 I, j-,H-	160 p	80K	16	23	32	7.1	7
	EDB						3	51	22	15	38	62		19	67	64	85	34	26 J	66	?	3.89	0.35	3.86	2.2	3.96	0.63	0.55	0.84	0.99	0.86	0.60	0.43 K	–	0.01J	–	–	–	0.05
	1,2,3-TCP						170	520	440	420	500	600		640	860	800	900	745	2,400	1,650	860	350	260	257	289	390	280	140 J	–	170	170 L	150 L	130 G+,L	52	10.0	25	31	5.4	5

TABLE 1: CHEMICALS OF CONCERN IN A-ZONE GROUNDWATER - SELECTED PARAMETERS
(more listed starting May 1997)

Well No.	Chemical	DATE SAMPLED AND CONCENTRATION (µg/L)																																					MCL (µg/L)
		Sep 1987	Oct 1987	Dec 1987	Feb 1988	Mar 1988	Apr/May 1990	Jan 1991	Apr 1991	Jun/Aug 1991	Dec 1991	Apr 1992	Jul 1992	Dec 1992	Aug 1994	Mar 1995	Nov 1995	Nov 1996	May 1997	Jan 1998	Jul 1998	Jul 2000	Nov 2000	Mar 2001	Jul 2001	Oct 2001	Feb 2002	May 2002	Jul 2002	Oct 2002	Feb 2003	May 2003	Aug 2003	Jan 2004	Aug 2007	Apr 2008	Apr 2009	Apr 2011	
EPAS-3	1,2-DCP						44,000	34,000	33,000	38,000	37,000	34,000		35,000	38,000	29,000	43,000	86,000	46,000	35,000	38,000	30,700	28,600	28,200	33,400	31,600	14,000	27,000	22,000	23,000	1,400	8,100	4300 C-	6,400	10,000	10,000	9,200	7,200	5
	1,3-DCP						200	200	180	220	200	180		180	170	200	180	150	170	110 L	150	–	64	63	106	86	–	–	–	–	–	24 L	–	–	21	19	15	9.4	—
	Chloroform						28	–	22	26	32	31		27	40	36	36	26	44	23 L	39	31	28	24	–	24	–	–	–	–	–	41 L,f	–	–	11	10	9.1	6.2	100*
	DBCP						11,000	10,550	17,000	4,400	5,200	5,100		4,100	4,000	2,900	7,500	3,300	2,200 J	817	?	1,300	–	1,240	1,980	1,200	590	1,200	1,200	1,200	110 G+,H+	460	–	380	1,100	680	530	370	0.2
	Dinoseb						–	411	664	680	1,100	1,000		3,900	2,700	17,000	6,400 J	1,600	4,900 J	110	?	1,520	2,980	4,000	2,930	2,900	1,800	2,200	3,800 I	R	240	1,300	960	1,300K	2,000	2,900	2,300	700	7
	EDB						36	68	214	34	78	32		27	46	41	42	41	40 J	66	?	36	31	24	31	34	7	21	33 G+	55 G+	11 G+	23 G+	11 C-,K	8	17	10	6.6	4.0	0.05
	1,2,3-TCP						2,700	2,100	2,200	2,700	2,200	2,500		2,400	4,000	3,500	5,900	3,900	4,900	2,500	3,400	2,260	1,930	2,340	2,800	2,710	1,300	2,000	1,800 L	1,900	180	720	410 C-,L	640	1,400	1,600	940	770	5
EPAS-4	1,2-DCP						–	–	–	–	2	1		2	2	2	–	–	0.5 J	0.5 L	–	91.0	–	–	–	–	–	–	–	0.78 L	–	–	–	–	–	NS	NS	–	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	–	NS	NS	–	—
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	0.13 L,f	–	NS	NS	–	100*
	DBCP																		0.017 J	–	?	10	–	–	–	–	–	–	–	–	–	–	–	–	–	NS	NS	–	0.2
	Dinoseb						–	–	0.2	–	–	–		–	–	–	–	–	R	–	?	1.61	–	–	–	–	–	–	–	R	–	–	–	–	–	NS	NS	–	7
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	–	NS	NS	–	0.05
	1,2,3-TCP						–	–	–	–	–	–		1	3	3	–	–	2.0	1.0	–	5.8	–	–	–	–	–	–	–	–	–	–	–	0.18L	–	NS	NS	0.39	5
WA-1	1,2-DCP						NS	NS	NS	NS	NS		2	2.0	12	0.9	0.6 L	0.08 LJ	2.0	1200	4.5	62	24	116	97	5.2	2.8	0.97 J	0.64 L	0.31 L,H-	0.32 L	0.48 L	0.36 L	1	1.1	–	–	0.96J	5
	1,3-DCP						NS	NS	NS	NS	NS		–	–	0.2	–	–	–	–	11	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—
	Chloroform															–	–	–	0.2 J	1.5	–	–	–	–	–	–	0.11 J	–	–	–	0.12 O,f,L	–	0.31 f,L	1.6	8.3	6.6	ND	100*
	DBCP						NS	NS	NS	NS	NS		0.8	–	10	0.6	0.31	0.28	1.7 J	196	?	–	–	10	–	1.7 J	0.40	0.18	0.17	0.10	0.17	0.14	0.091	0.490	0.16	0.024	0.016	0.1	0.2
	Dinoseb						NS	NS	NS	NS	NS		7	NS	160	2.0	–	–	–	116	?	14.6	31.5	143	137	9.5	4.4	0.97	0.94 I	R	1.1	0.70 I, ,j-,H-	1.3 f,I	3.7	0.59	0.20	0.06	–	7
	EDB						NS	NS	NS	NS	NS		–	–	2	0.05	0.03 L	0.13	0.81 J	149	?	0.800	1.28	7.55	7.4	2.480	0.36	0.20	0.14	0.093	0.083	0.047	0.029 I	1.000	–	–	–	–	0.05
	1,2,3-TCP						NS	NS	NS	NS	NS	4	7	10	15	7.0	4.0	5.0	10	460	7.5	5.6	6.4	26	29	8.2	15	13	12	5.6	2.4	2.1	4.0	5.9	1.6	0.67	0.55	1.5	5
WA-2	1,2-DCP						NS	NS	NS	NS	NS	–	–	0.3	0.3	0.3	0.4 L	–	5.0	0.3 L	–	7.3	–	–	–	–	0.23 J	0.23 J	–	–	–	–	–	–	–	–	–	–	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—
	Chloroform						NS	NS	NS	NS	NS	275	330	240	200	230	310	160 J	230	150	210	189	187	169	213	180.0	170	190	87	200	50	33	20 G+	15	92	45	67	68	100*
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.2
	Dinoseb						NS	NS	NS	NS	NS	–	–	–	–	–	1.5 J	–	R	–	?	–	–	–	–	–	–	–	–	R	–	–	–	–	–	–	–	–	7
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.05
	1,2,3-TCP						NS	NS	NS	NS	NS	–	–	–	–	–	–	0.2 LJ	–	–	–	–	–	–	–	–	–	–	–	–	0.22 O, L	–	0.26L	–	–	–	0.01	5
WA-3	1,2-DCP						NS	NS	NS	NS	NS	41	37	29	12	12	11	7.0	7.0	9.0	7.8	7.4	5.3	–	5.3	5.9	6.1	5.5	6.0	5.1	5.1	7.6	7.4	5.1	5.4	4.3	2.5	–	5
	1,3-DCP						NS	NS	NS	NS	NS	–	–	–	–	–	0.2 L	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—
	Chloroform						NS	NS	NS	NS	NS	1.0	1.0	0.9	–	–	0.9 L	0.7	0.6 J	0.6 L	0.8L	–	–	–	–	–	0.76 J	1.0	0.98 L	0.80 L	0.65 L	0.99 L	0.96 L	1.2 f,L	0.65J	0.52J	–	–	100*
	DBCP						NS	NS	NS	NS	NS	–	–	–	0.04	–	0.02 L	0.01	0.018 J	–	?	–	–	0.71	–	2.0	2.1	1.8	1.7	1.9	1.7	2.6	2.0	4.5	5.4	2.8	–	0.2
	Dinoseb						NS	NS	NS	NS	NS	–	–	2	–	–	–	–	–	–	?	1.49	2.19	4.49	7.5	10.4	19	9.9	7.7 I	R	7.9	4.0 I, j-,H-	14 I, f	21	80	110	69	–	7
	EDB																		3.2	?	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.05
	1,2,3-TCP						NS	NS	NS	NS	NS	6.0	7.0	8.0	12.0	7.0	7.0	9.0	8.0	11.0	15.0	24	28	–	–	72.0	82	84.00	56 RE	92	75	100 RE G+, C-	140	86	190	170	100	–	5
WA-4	1,2-DCP						NS	NS	NS	NS	NS		5.0	4.0	6.0	4.0	5.0	5.0	4.0	2.0	3.1	–	–	–	–	–	3.3	4.4	3.8	4.1 H-	3.8	3.8	3.9	3.0	NS	NS	NS	NS	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	NS	NS	NS	NS	—
	Chloroform						NS	NS	NS	NS	NS		–	0.3	–	–	0.3 L	–	–		–	–	–	–	–	–	0.12 J	0.16 J	0.26 L	1.0 L	0.15 L	0.23 O, L	0.17 L	0.25 L,f	NS	NS	NS	NS	100*
	DBCP						NS	NS	NS	NS	NS		–	–	–	–	0.03 L	–	–	–	?	–	–	–	–	–	–	–	–	–	–	–	–	0.33L	NS	NS	NS	NS	0.2
	Dinoseb	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	R	–	–	–	–	NS	NS	NS	NS	7
	EDB						NS	NS	NS	NS	NS		–	–	–	0.3	–	–	–	–	?	–	–	–	–	–	–	–	–	–	–	–	–	–	–	NS	NS	NS	NS	0.05
	1,2,3-TCP						NS	NS	NS	NS	NS		–	–	0.8	0.3	–	0.4 LJ	–		–	–	–	–	–	–	0.13 J	0.20 J	–	–	–	–	0.17 L	0.20L	NS	NS	NS	NS	5
WA-5	1,2-DCP						NS	NS	NS	NS	NS		2.0	1.0	2.0	1.0	0.6 L	0.7 LJ	0.6	0.9 L	–	–	–	–	–	–	1.2	0.88 J	1.1	1.5	1.9	2.1	2.3	2.2	2.9	3.1	3.3	5.6	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	0.13 J	–	0.11 L	0.36 L	0.14 L	0.23 O,f,L	0.15 L	0.25 f,L	0.17J	0.15J	–	0.33J	100*
	DBCP						NS	NS	NS	NS	NS		–	–	–	–	–	0.02 JP	–	–	?	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.2
	Dinoseb						NS	NS	NS	NS	NS		–	–	–	1.2	–	–	R	–	?	–	–	–	–	–	–	–	–	R	–	–	–	–	–	0.01J	0.01J	–	7
	EDB																			0.2	?	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.05
	1,2,3-TCP						NS	NS	NS	NS	NS		–	0.8	0.5	0.5	1.0	–	–	0.7 L	–	–	–	–	–	–	0.66 J	0.61 J	0.39 L	0.45 L	0.35 L	0.19 O, L	0.38 L	0.27L	–	0.085	0.18	0.23	5
WA-6	1,2-DCP						NS	NS	NS	NS	NS	100,000	91,000	90,000	50,000	140,000	100,000	360 J	20,000	35,000	36,000	4,760	8,930	7,770	13,100	20,700	11,000	11,000	8,600	15,000	6,100	7,800	23,000 G+	40,000	27,000	17,000	NS	NS	5
	1,3-DCP						NS	NS	NS	NS	NS	90	80	85	59	96	77	–	16	16 L	18	–	–	–	9.1	12.0	–	–	–	–	–	–	–	–	8.1	7.4	NS	NS	—
	Chloroform						NS	NS	NS	NS	NS	1,200	810	900	450	1,700	1,300	11 J	290	240 L	450	53	81	60	106	155.0	91 J	95 J	–	160 L	42 L	59 L, f	–	200 f,L	85	48	NS	NS	100*
	DBCP						NS	NS	NS	NS	NS	365	160	190	140	320	200	7 J	82 J	60	?	9.3	16	19	33	34.0	24	29	39	52	64	72	–	110 G-	130	140	NS	NS	0.2
	Dinoseb						NS	NS	NS	NS	NS	420	360	2,800	1,100	2,800	3,100 J	1.4	R	170	?	58.2	89.4	75.1	86.2	137.0	77	92	51 I	R	28 K	30 I, j-, H-	180	200 K	150	180	NS	NS	7
	EDB						NS	NS	NS	NS	NS	5	3	120	2	3J	2 L	–	0.23 J	45	?	0.038	–	–	–	0.17	–	–	–	–	–	–	–	–	0.10	0.15	NS	NS	0.05
	1,2,3-TCP						NS	NS	NS	NS	NS	3,700	2,500	3,100	2,800	6,100	5,600	51 J	1,000	1,200	1,900	260	349	345	660	946 J	610	430 J	560 L	920	700	980	2300 L,G+	2900	3000	2200	NS	NS	5

TABLE 1: CHEMICALS OF CONCERN IN A-ZONE GROUNDWATER - SELECTED PARAMETERS
(more listed starting May 1997)

Well No.	Chemical	DATE SAMPLED AND CONCENTRATION (µg/L)																																					MCL (µg/L)
		Sep 1987	Oct 1987	Dec 1987	Feb 1988	Mar 1988	Apr/May 1990	Jan 1991	Apr 1991	Jun/Aug 1991	Dec 1991	Apr 1992	Jul 1992	Dec 1992	Aug 1994	Mar 1995	Nov 1995	Nov 1996	May 1997	Jan 1998	Jul 1998	Jul 2000	Nov 2000	Mar 2001	Jul 2001	Oct 2001	Feb 2002	May 2002	Jul 2002	Oct 2002	Feb 2003	May 2003	Aug 2003	Jan 2004	Aug 2007	Apr 2008	Apr 2009	Apr 2011	
WA-7	1,2-DCP						NS	NS	NS	NS	NS	24,000	28,000	22,000	15,000	17,000	18,000	27,000	8,100	15,000	18,000	10,300	15,500	14,300	14,600	19,600	18,000	4,900	11,000	9,500 H-	8300	6500	10,000 G+	5700	NS	NS	NS	NS	5
	1,3-DCP						NS	NS	NS	NS	NS	6	5	6	3	3	3	4 LJ	3 J	–	3.3	–	–	–	–	5.5	–	–	–	–	–	–	–	–	NS	NS	NS	NS	—
	Chloroform						NS	NS	NS	NS	NS	180	185	180	97	76	98	130	57	94 L	110	119	–	119	113.0	132.0	160 J	27 J	78 L	68 L	–	75 L,f	73 L,G+	58 f,L	NS	NS	NS	NS	100*
	DBCP						NS	NS	NS	NS	NS	38	30	31	15	8	9 L	21	74	7.1	?	5.9	11	8.2	9.8	11.0	9.1	8.5	8.6	0.19	7.5	4.6	–	4.1	NS	NS	NS	NS	0.2
	Dinoseb						NS	NS	NS	NS	NS	7	7	220	–	–	1 J	0.2 J	R	–	?	9.4	10.8	9.89	6.60	8.4	7.4	5.2	2.9 I	R	3.0	1.6 I, j-, H-	2.5	2.4 K	NS	NS	NS	NS	7
	EDB						NS	NS	NS	NS	NS	–	–	12	–	–	–	–	–	9.3	?	–	–	–	–	–	–	–	–	0.015 L	–	–	–	–	NS	NS	NS	NS	0.05
	1,2,3-TCP						NS	NS	NS	NS	NS	540	590	580	480	385	370	420	380	330	440	283	302	282	318	308 J	350 J	240	220 L	250	210 L	180 L	300 L,G+	150L	NS	NS	NS	NS	5
WA-8	1,2-DCP						NS	NS	NS	NS	NS	4.0	3.0	3.0	4.0	9.0	9.0	–	7.0	4.0	6.2	44	38	–	–	–	1.2	0.53 J	0.45 L	0.47 L,H-	0.26 L	–	0.29 G+,L	0.23L	NS	NS	NS	NS	5
	1,3-DCP						NS	NS	NS	NS	NS	–	–	–	0.2	0.5	0.5 L	0.5 LJ	0.4J	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	NS	NS	NS	NS	—
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	0.14 O, f, L	–	0.13 L,f	NS	NS	NS	NS	100*
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	–	NS	NS	NS	NS	0.2
	Dinoseb						NS	NS	NS	NS	NS	–	–	–	–	54	58 J	13.9 J	13.9J	16	?	13.5	26.5	50.3	36.0	8.9	11	15	180 I	R	36	20 I, j-, H-	71	62 K	NS	NS	NS	NS	7
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	–	NS	NS	NS	NS	0.05
	1,2,3-TCP						NS	NS	NS	NS	NS	14	15	16	22	26	39	35	40	24	33	20	22	19	35.0	10.0	9.0	4.7	2.7	5.4	3.9	3.3	4.4 G+	2.9	NS	NS	NS	NS	5
WA-9	1,2-DCP						NS	NS	NS	NS	NS	16	23	20	17.5	16	18	12	0.6J	7.0	8.9	7.3	–	–	–	1.6 J	2.6	0.85 J	0.35L	–	–	–	0.66 L	0.11L	–	–	–	–	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—
	Chloroform						NS	NS	NS	NS	NS	27	31	25	15.5	12	9.0	6.0	–	4.0	4.6	–	–	–	–	1.5 J	1.9	1.4	1.0	0.92 L	0.62 L	0.86 L	1.3	0.62L	0.98J	0.51J	0.39J	0.22J	100*
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.2
	Dinoseb						NS	NS	NS	NS	NS	1.0	–	–	–	–	–	–	R	–	?	–	31.6	–	–	–	–	–	–	R	–	–	–	–	–	–	–	–	7
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.05
	1,2,3-TCP						NS	NS	NS	NS	NS	–	–	1.0	1.5	1.0	2.0	2.0	–	2.0	2.9	–	–	–	–	–	1.2	0.20 J	–	–	–	–	–	–	–	0.049	0.03	0.02	5
PWA-1	1,2-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	600	1200	1100	1500 H-	1600	1600	1900 G+	2300	3100	3300	2,600	NS	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.21 J	–	–	–	–	–	–	–	0.74J	0.67J	0.72J	NS	—
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8.9	19 J	20 L	22L	26 L	32 L, f	32 L,G+	36L	36	39	38	NS	100*
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.17	0.25	0.39	0.42	0.61	0.62	0.71	1.10	1.6	2.8	1.3	NS	0.2
	Dinoseb	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	R	–	–	–	–	1.2	1.5	1.4	NS	7
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	ND	NS	0.05
	1,2,3-TCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	92	130	90 L	170	140	140	210 G+	160	180	160	150	NS	5
PWA-2	1,2-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	740	990	1000	1700	2200	2500	4300 G+	7300	5200	6300	5,200	8,000	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	19L	12	12	9.1	13.0	—
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.7 J	–	–	–	–	20 L, f	–	30 L,f	7.5	9.2	8.5	11.0	100*
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	38	45	58	87	71 G+,H+	100	–	310 G+	300	610	250	340	0.2
	Dinoseb	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,200	1300	1900 I	R	7200 K	4100	15000	13000 K	4600	6600	8,300	6,700	7
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	67	66.0	120	140	110 G+	110	120 C-,K	140 G+	150	300	140	99	0.05
	1,2,3-TCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	79	72 J	100 p	140	190	190	430 L,G+	840	910	1400	710	1,200	5
PWA-3	1,2-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	170	98.00	57	25 H-	0.26 L	0.79 L	–	–	1.2	–	ND	0.67J	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	0.18 J	–	–	–	–	–	–	–	–	–	—
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.5 J	1.6	3.5 L	3.4	0.34 L	1.1	0.78 G+,L	0.24 f,L	1.7	1.1	1.4	3.5	100*
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.72	0.73	0.54	6.2	–	–	–	–	0.018	–	–	0.2
	Dinoseb	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	13	9.5	8.1 I	R	–	–	–	–	0.52	0.81	–	–	7
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.058	0.017 J	0.048	–	–	–	–	–	–	–	–	–	0.05
	1,2,3-TCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	15	8.4	4.1 L	1.8	–	–	–	–	–	0.17	–	–	5
PWA-4	1,2-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,400	5900	NS	NS	NS	NS	NS	9800.0	3000	2400	NS	NS	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	NS	NS	NS	NS	NS	–	3.1	2.6	NS	NS	—
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	27 J	46 J	NS	NS	NS	NS	NS	170 L,f	13	9.2	NS	NS	100*
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8.2	11	NS	NS	NS	NS	NS	15.0	8.3	5.5	NS	NS	0.2
	Dinoseb	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	73	–	NS	NS	NS	NS	NS	160 K	70	70	NS	NS	7
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.37	0.50	NS	NS	NS	NS	NS	–	0.05	0.055	NS	NS	0.05
	1,2,3-TCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	230	280	NS	NS	NS	NS	NS	390L	210	180	NS	NS	5
PWA-6	1,2-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	NS	NS	NS	NS	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	NS	NS	NS	NS	—
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.16 O,f,L,G+	–	0.14 f,L	NS	NS	NS	NS	100*
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	NS	NS	NS	NS	0.2
	Dinoseb	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11 I, j-,H-	3.2 f, I	0.25 K	NS	NS	NS	NS	7
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	NS	NS	NS	NS	0.05
	1,2,3-TCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.5 G+	3.1	1.7	NS	NS	NS	NS	5

TABLE 1: CHEMICALS OF CONCERN IN A-ZONE GROUNDWATER - SELECTED PARAMETERS
(more listed starting May 1997)

Well No.	Chemical	DATE SAMPLED AND CONCENTRATION (µg/L)																																					MCL (µg/L)
		Sep 1987	Oct 1987	Dec 1987	Feb 1988	Mar 1988	Apr/May 1990	Jan 1991	Apr 1991	Jun/Aug 1991	Dec 1991	Apr 1992	Jul 1992	Dec 1992	Aug 1994	Mar 1995	Nov 1995	Nov 1996	May 1997	Jan 1998	Jul 1998	Jul 2000	Nov 2000	Mar 2001	Jul 2001	Oct 2001	Feb 2002	May 2002	Jul 2002	Oct 2002	Feb 2003	May 2003	Aug 2003	Jan 2004	Aug 2007	Apr 2008	Apr 2009	Apr 2011	
PWA-7	1,2-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	NS	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	NS	—
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	0.17 O, L	0.41 L	0.15 f,L	0.16J	0.16J	–	NS	100*
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	0.01	NS	0.2
	Dinoseb	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	0.01J	0.10	0.11	–	7
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	NS	0.05
	1,2,3-TCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.8	0.20 O, L	0.15 L	0.086L	–	0.27	0.42	NS	5
PWA-7A	1,2-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	6
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	—
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	100*
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	4.9
	Dinoseb	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	6
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	6.42
	1,2,3-TCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.51	7	

Notes:
– indicates that the analyte was not detected.
? = EDB, DBCP, and dinoseb data not available by 2/23/99.
(-) = Less than; numerical value is limit of detection for that compound.
NA = Not analyzed since the well did not exist at this particular time.
NS = Well not sampled for this compound. In most cases it means that the well was not sampled either because the well was dry at the time of sampling or there was a problem with well.
PWA-7 was installed on February 2003.
RE = Re-analysis
+ = High Bias Indicator
- = Low Bias Indicator
— = no MCL data found or given.
* = Total trihalomethanes (sum of bromodichloromethane, dibromochloromethane, bromoform, and chloroform)
MCL = Maximum Contaminant Level
µg/L = Micrograms per liter

B = Analyte is found in the associated blank as well as in the sample.
C = This sample was analyzed beyond the EPA recommended holding time.
f = Method Blanks f = Method Blanks
F = Contaminated due to carryover from preceding analysis.
G = Surrogate Recovery
H = MS/MSD (Matrix Spike/Matrix Spike Duplicate) Recovery
I = MS/MSD (Matrix Spike/Matrix Spike Duplicate) RPD (Relative Percent Difference)
j = LCS (Laboratory Control Sample) Recovery
J = Estimated value (laboratory qualifier) for various causes.
K = LCS (Laboratory Control Sample) RPD (Relative Percent Difference)
L = Data below the required reporting limit.
O = Trip Blank [Field QC (Quality Control)]
p = Field Duplicate [Field QC (Quality Control)]
P = High % difference between 1st and 2nd column.
R = Results rejected during QA/QC (Quality Assurance/Quality Control) due to lab problems.

1,2-DCP = 1,2-Dichloropropane
1,3-DCP = 1,3-Dichloropropane
DBCP = 1,2-Dibromo-3-chloropropane (See Appendix B for analysis value used.)
(8260B analysis value used) (From July 2000, EPA 504.1 analysis value used.)
EDB = Ethylene dibromide, also called 1,2-Dibromoethane
1,2,3-TCP = 1,2,3-Trichloropropane

Analytical Methods:
Volatile organic compounds by EPA Method 8260B by Gas Chromatography / Mass Spectrometry (GC/MS)
Fumigants (EDB; DBCP; and 1, 2, 3-Trichloropropane) by EPA Method 8260 SIM by Gas Chromatography / Mass Spectrometry (GC/MS)
Dinoseb by EPA Method 8321A
Nitrates and sulfates by EPA Method 300.0 by Ion Chromatography (IC)
Total organic carbon (TOC) by EPA Method 415.1

Other VOCs (acetone, chloromethane, chlorobenzene, methylene chloride, tetrachloroethene,toluene) are occasionally detected at low concentrations. See Table 4.
Prior to July 2002 the qualifiers were extracted from the laboratory report. After and including July 2002 the qualifiers are conformable to the Automated Data Review from the Data Validation Report.

References:
Data source: Hargis+Associates, Inc. (data collected between 9/87 and 3/88), U.S EPA (data collected between 4&5/90 and 12/92), Ecology and Environment, Inc. (between 8/94 and 7/98), Panacea, Inc. (between 7/00 and 8/07), Eco & Associates, Inc. (from 4/08 to present).
Electronic file obtained from Ralph Lambert of Ecology and Environment, Inc., file name ALLCHEM.XLS.

TABLE 2: CHEMICALS OF CONCERN IN B-ZONE GROUNDWATER

Well No.	Chemical	DATE SAMPLED AND CONCENTRATION (µg/L)																																	MCL (µg/L)
		Sep 1987	Oct 1987	Feb 1988	Mar 1988	Jan 1991	Apr 1991	Jul 1991	Dec 1991	Apr 1992	Jul 1992	Aug 1994	Mar 1995	Nov 1995	Nov 1996	May 1997	Jan 1998	Jul 1998	Jul 1990	Nov 2000	Mar 2001	Jul 2001	Oct 2001	Feb 2002	May 2002	Jul 2002	Oct 2002	Feb 2003	May 2003	Aug 2003	Jan 2004	Aug 2007	Apr 2008	Apr 2009 *	Apr 2011	
AR-1	1,2-DCP			18	16	12	10	8	6	5	4	NS	3	62	3	3.0 J	2	5.1	–	–	–	–	2.5 J	1.5	1.3	1.0	1.0	1.3	1.3 G+	0.93 L	1.1	–	0.47J	–	–	5
	1,3-DCP			-1	-1	–	–	–	–	–	–	NS	–	0.2 L	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—
	1,2,3-TCP			-1	-1	–	–	–	–	–	–	NS	–	7	–	0.3 JL	–	1.2	–	–	–	–	–	0.56 J	0.44 J	–	0.34 L	0.54 L	0.49 O,L,G+	0.37 L	0.70L	–	0.41	0.18	0.11	5
	Chloroform			-1	-1	–	–	–	–	–	–	NS	–	0.3 L	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.13 O,L,G+	0.089 L	0.46 O,f,L	0.14J	0.35J	–	–	100*
	Dinoseb			-0.5	-0.05	–	–	–	–	–	–	–	–	–	–	0.2 J	NA	?	–	–	–	–	–	–	–	–	R	–	–	–	–	0.01J	–	–	–	7
	DBCP			-0.02	-0.02	–	–	–	–	–	–	NS	–	12	0.01 JP	–	–	?	–	–	–	–	–	–	–	–	–	0.0059 L	–	–	–	–	0.021	–	–	0.2
	EDB			-0.02	-0.02	–	–	–	–	–	–	NS	0.2J	0.31	–	–	–	?	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.05
AMW-3R	1,2-DCP	5	3			0.7	0.6	0.9	2	1	0.7	4	2	8	3	1	1	–	13	–	–	–	–	1.6	1.9	2.6 G+	2.0	1.3	1.7	2.1	1.2	1.3	0.41J	–	0.31J	5
	1,3-DCP	-1	3																–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—
	1,2,3-TCP	-1	8			–	–	–	–	–	–	0.4	–	1	0.9 JL	–		–	–	–	–	–	–	0.36 J	0.38 J	0.31G+,L	0.36 L	0.34 L	0.43 O,L	0.60 j-,K,L	0.39L	–	0.35	0.23	0.21	5
	Chloroform	-1	-1																–	–	–	–	–	–	0.088 J	0.18 O,H+,L,G+	0.22 L	0.17 L	0.25 O,L	0.35 L	0.47 O,f,L	0.18J	0.21J	–	–	100*
	Dinoseb	-0.05	-0.05				0.4	–	–	–	–	–	–	–	–	0.22 J	–	?	–	–	–	–	–	–	–	–	R	–	–	–	–	–	–	0.01J	–	7
	DBCP	-0.1	-0.01			–	–	–	–	–	–	–	–	1.9	0.02 JP	–		?	–	–	–	–	–	–	–	–	–	–	–	–	–	0.014	0.029	0.042	–	0.2
	EDB	-0.02	0.02			–	–	–	–	–	–	2	–	0.03 L	–	–	–	?	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.05
AMW-4R	1,2-DCP	6	4			1	2	3	4	2.7	6	2	330	39	0.4 JL	340	210	6.6 F	–	11	34	47	45	36	2.0	3.2 G+	2.5	4.5	3.5	–	1.7	–	7.2	2.5	0.68J	5
	1,3-DCP	-1	-1																–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—
	1,2,3-TCP	-1	-1			–	–	–	–	–	–	0.2	0.4J	3	–	–	–	4.6 F	–	–	–	–	1.3 J	1.2	0.27 J	0.30 G+,L	0.38 L	–	–	–	0.67L	–	0.80	0.41	0.34	5
	Chloroform	-1	1			–	–	–	–	–	–	–	4	0.2 L	–	3	5	–	–	–	–	–	–	0.47 J	0.17 J	0.32 O,H+,L,G+	0.18 L	0.22 L	0.17 O,L	–	0.43 O,f,L	0.19J	0.30J	–	–	100*
	Dinoseb	-0.05	-0.05			–	–	–	–	–	–	–	–	–	–	0.22 JP	–	?	4.76	–	–	–	–	–	–	–	R	–	–	–	–	0.03	–	0.13	–	7
	DBCP	-0.1	-0.01			–	–	–	–	–	–	0.03	0.05	7	0.02 JP	–		?	–	–	0.03	–	–	0.075	0.017	0.017	0.021	0.013	–	–	–	0.014	–	0.035	–	0.2
	EDB	-0.02	0.03			–	–	–	–	–	–	0.8	–	–		–	–	?	–	–	–	–	–	–	–	0.011 L	–	–	–	–	–	–	–	–	–	0.05
WB2-1	1,2-DCP					NS	NS	NS	NS	1700	890	5	3	4	5	8	18	93	34	44	47	62	72	86	87	110	120	88	64	53	38.0	22	1.5	1.9	1.0	5
	1,3-DCP					NS	NS	60	NS	1	1		–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—
	1,2,3-TCP					NS	NS	NS	NS	72	60.5	1	0.7J	0.9 L	0.8 JL	1	8	52	110	143	153	311	283	330	320	330	480	280	240	250	140	110	23	4.3	1.7	5
	Chloroform					NS	NS	NS	NS	–	–	–	–	0.4 L	0.28 J	0.2 J	1	3.9	–	–	–	–	1.5 J	2.0 J	1.9 J	2.0 L	2.0 L	1.4 L	1.8 L	3.4 L	2.7 L,f	0.90J	–	–	–	100*
	Dinoseb					NS	NS	NS	NS	4	3.5	–	0.2	–	–	–	7.9	?	18.2	20	22.1	20.8	22.7	32	45	69	R	78 I	39 K, j-	58 I, f	28 I	39	5.4	0.62	0.28J	7
	DBCP					NS	NS	NS	NS	30	27	0.1	–	0.4	0.28 J	0.3	2.5	?	–	–	0.24	–	–	0.34	0.077	0.093	0.079	–	0.045	2.1 p,G+	0.035 K	0.011	0.053	–	–	0.2
	EDB					NS	NS	NS	NS	–	0.6	1	–	–	–	–	0.6	?	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.05
WB2-2	1,2-DCP					NS	NS	NS	NS	47	40	17	11	8	60	4	5	23	–	–	–	–	3.4 J	2.8	0.83 J	1.2 G+	5.2	7.0	19	18	17.0	20	20	11	10	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—
	1,2,3-TCP					NS	NS	NS	NS	19	19	21	20	17	–	2	–	–	–	–	–	–	3.4 J	0.75 J	0.17 J	0.58 G+,L	8.5	21	44	42	40	58	48	40	35	5
	Chloroform					NS	NS	NS	NS	–	–	–	–	0.8 L	–	–	0.1 L	–	–	–	–	–	–	–	–	–	0.15 L	0.18 L	0.60 O, L	0.46 L	0.70 O,f,L	0.65J	0.64J	0.50J	0.53J	100*
	Dinoseb					NS	NS	NS	NS	2	8	–	0.5	–	–	–	–	?	–	0.15 J	–	–	–	–	–	–	R	2.9 I	6.5 K,j-	5.8	4.6 I	10	6.5	12	4	7
	DBCP					NS	NS	NS	NS	7	7	5	4.5	5.6	0.75 J	0.3	–	?	–	–	0.122	–	–	0.040	–	0.10	1.2	3.0	6.7	4.9	4.7	4.8	5.0	3.1	1.5	0.2
	EDB					NS	NS	NS	NS	–	–	–	–	–	0.07	0.1	–	?	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.05
WB2-3	1,2-DCP					NS	NS	NS	NS	0.8	0.8	9	13	6	12 JL	15	14	–	–	–	–	–	4.1 J	3.5	3.9	4.2	4.0	4.3	2.2	–	2.1	0.52J	2.0	0.85J	4.8	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.22J	—
	1,2,3-TCP					NS	NS	NS	NS	–	–	–	0.5	–	–	0.7 J	–	2.6	–	–	–	–	–	0.29 J	0.22 J	–	–	–	–	–	–	–	0.035	0.075	0.72	5
	Chloroform					NS	NS	NS	NS	–	–	7	6	9	–	6	7	7	–	9	9.2	9.9	10	11	9.4	9.9	6.5	5.1	2.1	1.7J	1.2 O,f	–	–	–	0.22J	100*
	Dinoseb	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	0.32	R	–	0.57 K,p,j-	–	–	0.03	–	0.08	–	7
	DBCP					NS	NS	NS	NS	–	–				004 J	0.04 J	–	?	–	–	0.03	–	–	0.016	0.0097J	0.0066 L	0.0054 L	–	–	–	–	–	–	–	–	0.2
	EDB					NS	NS	NS	NS	–	–	0.2	0.2	0.11	0.1	0.1J	–	?	–	–	0.03	–	–	0.029	0.023	0.019 L	–	–	–	–	–	–	–	–	–	–	0.05
WB2-4	1,2-DCP					NS	NS	NS	NS		0.3	0.6	–	0.2 L	–	–	0.4 L	–	–	–	–	–	–	–	–	–	–	0.22 L	–	0.34 G+,L	0.31L	1.1	1.2	1.8	1.7	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—
	1,2,3-TCP																1	–	–	–	–	–	–	0.2 J	–	–	–	–	–	–	–	–	0.042	0.067	0.079	5
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.16J	–	0.24J	100*
	Dinoseb																26	?	–	–	–	–	–	–	–	–	R	–	–	–	–	–	–	0.02J	–	7
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	0.055	–	–	0.097	–	–	0.2
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.05
PWB-1	1,2-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	1.1	1.1	2.2	1.1	0.77 L	1.0	0.62L	–	0.79J	–	0.37J	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	—
	1,2,3-TCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.33 J	0.40 J	1.3	1.3	0.48 L	0.35 O, L	0.31 j-,K,L	–	–	0.37	0.28	0.17	5
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.72 J	–	–	–	–	–	0.17 L	0.25 O,f,L	–	–	–	–	100*
	Dinoseb	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	0.63 p	R	–	–	–	–	0.06	0.01J	–	–	7
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	0.0080J	0.22	0.19	0.017	–	–	–	–	–	–	–	0.2
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	0.05

TABLE 2 (CONT'): CHEMICALS OF CONCERN IN B-ZONE GROUNDWATER

Well No.	Chemical	DATE SAMPLED AND CONCENTRATION (µg/L)																																	MCL (µg/L)
		Sep 1987	Oct 1987	Feb 1988	Mar 1988	Jan 1991	Apr 1991	Jul 1991	Dec 1991	Apr 1992	Jul 1992	Aug 1994	Mar 1995	Nov 1995	Nov 1996	May 1997	Jan 1998	Jul 1998	Jul 1990	Nov 2000	Mar 2001	Jul 2001	Oct 2001	Feb 2002	May 2002	Jul 2002	Oct 2002	Feb 2003	May 2003	Aug 2003	Jan 2004	Aug 2007	Apr 2008	Apr 2009 *	Apr 2011	
PWB-2	1,2-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.2	2.9	4.1 G+	1.3	6.8	8.1	11	16.0	21	26	18	21	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	2.0	—
	1,2,3-TCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	0.48J	0.20	0.22	0.25	5
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.1	4.7	7.2 G+,H+	1.7	6.8	6.7	7.6	9.8	9.2	9.5	5.7	5.0	100*
	Dinoseb	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	R	–	–	–	–	0.01J	–	–	–	7
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	0.2
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	0.05
PWB-3	1,2-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5	3.0	3.4	3.1	0.69 L	0.54 L	–	0.44L	0.68J	–	0.43J	0.34J	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	—
	1,2,3-TCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.4	6.1	7.2	6.2	0.64 L	1.0 O, L	–	0.53L	0.46J	0.32	0.27	0.25	5
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	0.11 J	0.15 O,L	0.083 L	–	–	–	–	–	–	–	–	100*
	Dinoseb	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	0.87	0.80	R	–	–	–	–	0.07	0.02J	0.018J	–	7
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.13	1.2	1.2	1.3	0.090	0.040	0.06	–	0.034	0.036	0.013	–	0.2
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.10	–	–	–	–	–	–	–	–	–	–	–	0.05
PWB-4	1,2-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	50	37	74 G+	80	64	72	110 E	80.0	47	31	16	4	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	—
	1,2,3-TCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	160	130	200 G+	210 H+	200	220	350 E	290	340	140	70	19	5
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.5	1.5 J	1.6 G+,H+,L	2.0 L	1.5 L	1.6 L	2.1	5.1 L,f	4.1	2.1	1.2	0.35J	100*
	Dinoseb	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	15	19	21	R	39 I	33 K, j-	61	36 I	50	30	9.0	2.0	7
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	31	32	29 G+	44	40	36	41	16 K	2.6	3.1	4.1	0.4	0.2
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	4.9 C-,p	–	–	–	–	–	0.05
PWB-5	1,2-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5	2.1	0.79 L	2.3	1.9	2.9 G+	2.7	2.7	4.7	3.7	4.0	NS	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	NS	—
	1,2,3-TCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.19 J	–	–	–	–	–	–	–	1.2	2.5	NS	5	
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.19 J	0.20 J	–	0.25 L	0.27 L	0.64 O,L,G+	0.41 L	0.84 O,f,L	1.3	0.94J	1.3	NS	100*
	Dinoseb	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	R	–	–	–	–	0.08	0.03	0.43	NS	7
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	0.013 K	0.059	0.024	0.40	NS	0.2
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	0.013 L	–	–	–	–	–	–	–	–	NS	0.05
PWB-6	1,2-DCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	—
	1,2,3-TCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	0.089	0.58	–	5
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	0.29 O,f,L	–	–	–	–	100*
	Dinoseb	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	7
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	0.67	0.096	–	0.2
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	0.05
PWB-7	1,2-DCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	930	NS	NS	NS	NS	NS	NS	NS	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	NS	NS	NS	NS	NS	NS	NS	—
	1,2,3-TCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	110	NS	NS	NS	NS	NS	NS	NS	5
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8.1 L	NS	NS	NS	NS	NS	NS	NS	100*
	Dinoseb	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	NS	NS	NS	NS	NS	NS	NS	7
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	130	NS	NS	NS	NS	NS	NS	NS	0.2
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	NS	NS	NS	NS	NS	NS	NS	0.05
PWB-7A	1,2-DCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	12	50	–	8	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	ND	—
	1,2,3-TCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	37	44.0	75	27	5
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.44J	0.73J	–	ND	100*
	Dinoseb	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	31	37	51	ND	7
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	24	16	31	1	0.2
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	0.017J	–	–	0.05
PWB-8	1,2-DCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.0	2.9	3.6	2.3	0.95J	0.87J	1.6	2.2	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–		–	–	–	–	–	–	—
	1,2,3-TCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.73 L	0.76 O,L	0.67 L	0.26L	–	0.06	–	6.5	5
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.091 L	0.091 O,p,L	0.091 L	0.29 O,f,L	–	0.19J	0.61J	0.48J	100*
	Dinoseb	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	0.1	0.01J	0.041	1.0	7
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	0.72	0.2
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.070	–	0.025	–	–	–	–	–	0.05

TABLE 2 (CONT'): CHEMICALS OF CONCERN IN B-ZONE GROUNDWATER

Well No.	Chemical	DATE SAMPLED AND CONCENTRATION (µg/L)																																		MCL (µg/L)
		Sep 1987	Oct 1987	Feb 1988	Mar 1988	Jan 1991	Apr 1991	Jul 1991	Dec 1991	Apr 1992	Jul 1992	Aug 1994	Mar 1995	Nov 1995	Nov 1996	May 1997	Jan 1998	Jul 1998	Jul 1990	Nov 2000	Mar 2001	Jul 2001	Oct 2001	Feb 2002	May 2002	Jul 2002	Oct 2002	Feb 2003	May 2003	Aug 2003	Jan 2004	Aug 2007	Apr 2008	Apr 2009 *	Apr 2011	
PWB-9	1,2-DCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	0.48J	–	1.100	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	—
	1,2,3-TCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	0.091	–	3.0	5
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.3	2.9	2.9	2.5	2.2	3.1	–	–	100*
	Dinoseb	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	0.06	0.02J	–	1.2	7
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	0.031	–	–	0.011	–	0.030J	0.2
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	0.05
PWB-10	1,2-DCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.20 L	–	0.31 L	0.30L	1.0	5.7	1.7	0.36J	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	—
	1,2,3-TCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	13.0	1.6	0.33	5
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.3	4.9	4.6	5.3	7.2	7.7	–	–	100*
	Dinoseb	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	0.02J	1.9	0.36	–	7
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	0.007J	5.1	0.18	0.037J	0.2
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	0.05
PWB-11	1,2-DCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.27 L	0.39 L	–	0.19J	0.53J	1.1	0.73J	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	—
	1,2,3-TCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.18 O, L	0.16 K, j-, L	–	–	1.2	4.0	3.3	5
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.12 O, L	–	0.28 O,f,L	–	–	–	–	100*
	Dinoseb	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	0.02J	0.12	0.97	0.45	7
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	0.067	–	–	0.2
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	0.05
PWB-12	1,2-DCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6	4.8	5.2	4.7	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	—
	1,2,3-TCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	17	17	17	17	5
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.38J	0.54J	0.38J	0.64J	100*
	Dinoseb	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.2	9.4	16.0	25.0	7
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.3	4.0	2.1	2.9	0.2
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	AN	AN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.017J	–	–	–	0.05
PWB-13A	1,2-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	23.0	19	5.0
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	—
	1,2,3-TCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.9	8.2	5.0
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	21.0	20	100*
	Dinoseb	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.5	1.1	7.0
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.1	–	0.2
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	0.05
PWB-14	1,2-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	29.0	21	5.0
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	—
	1,2,3-TCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.9	3.3	5.0
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8.7	9.2	100*
	Dinoseb	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.8	0.52	7.0
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	0.35	0.2
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	0.05
PWB-15	1,2-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.0	5.3	5.0
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	—
	1,2,3-TCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.5	0.3	5.0
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	19.0	13	100*
	Dinoseb	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	7.0
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	0.2
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	0.05
PWB-16	1,2-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8.1	10	5.0
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	—
	1,2,3-TCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0	2.5	5.0
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.0	1.1	100*
	Dinoseb	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	0.72	7.0
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	0.2
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	0.05

TABLE 2 (CONT'): CHEMICALS OF CONCERN IN B-ZONE GROUNDWATER

Well No.	Chemical	DATE SAMPLED AND CONCENTRATION (µg/L)																																		MCL (µg/L)
		Sep 1987	Oct 1987	Feb 1988	Mar 1988	Jan 1991	Apr 1991	Jul 1991	Dec 1991	Apr 1992	Jul 1992	Aug 1994	Mar 1995	Nov 1995	Nov 1996	May 1997	Jan 1998	Jul 1998	Jul 1990	Nov 2000	Mar 2001	Jul 2001	Oct 2001	Feb 2002	May 2002	Jul 2002	Oct 2002	Feb 2003	May 2003	Aug 2003	Jan 2004	Aug 2007	Apr 2008	Apr 2009 *	Apr 2011	
CW-1	1,2-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	–	–	NS	NS	NS	5
	1,3-DCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	–	–	NS	NS	NS	—
	1,2,3-TCP												–	–	–	–	1	poor data	–	–	–	–	–	0.18 J	–	–	–	–	–	–	–	–	NS	NS	NS	5
	Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	0.27 O,L,G+	–	–	–	NS	NS	NS	100*
	Dinoseb	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	0.29	R	–	–	–	–	0.02J	NS	NS	NS	7
	DBCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	–	–	NS	NS	NS	0.2
	EDB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	–	–	–	–	–	–	–	–	–	–	–	–	–	–	NS	NS	NS	0.05

Notes:
The following wells were installed in February 2003: PWB-6, PWB-7, PWB-8, PWB-9, & PWB-10 .
* = Total trihalomethanes (sum of bromodichloromethane, dibromochloromethane, bromoform, and chloroform)
** = Wells PWB-13A, PWB-14, PWB-15 and PWB16 sampled May 2009
– indicates that the analyte was not detected.
? = EDB, DBCP, and dinoseb data not available by 2/23/99.
(-) = Less than; numerical value is limit of detection for that compound.
NA = Not analyzed since the well did not exist at this particular time.
NS = Well not sampled for this compound. In most cases it means that the well was not sampled either because the well was dry at the time of sampling or there was a problem with well.
RE = Re-analysis
+ = High Bias Indicator
- = Low Bias Indicator
— = no MCL data found or given.
MCL = Maximum Contaminant Level
µg/L = Micrograms per liter

C = This sample was analyzed beyond the EPA recommended holding time.
E = Extraction to analysis was beyond the EPA recommended holding time.
f = Method Blanks f = Method Blanks
F = Contaminated due to carryover from preceding analysis.
G = Surrogate Recovery
H = MS/MSD (Matrix Spike/Matrix Spike Duplicate) Recovery
I = MS/MSD (Matrix Spike/Matrix Spike Duplicate) RPD (Relative Percent Difference)
j = LCS (Laboratory Control Sample) Recovery
J = Estimated value (laboratory qualifier) for various causes.
K = LCS (Laboratory Control Sample) RPD (Relative Percent Difference)
L = Data below the required reporting limit.
O = Trip Blank [Field QC (Quality Control)]
p = Field Duplicate [Field QC (Quality Control)]

1,2-DCP = 1,2-Dichloropropane
1,3-DCP = 1,3-Dichloropropane
DBCP = 1,2-Dibromo-3-chloropropane (See Appendix B for analysis value used.) (8260B analysis value used) (From July 2000, EPA 504.1 analysis value used.)
EDB = Ethylene dibromide, also called 1,2-Dibromoethane
1,2,3-TCP = 1,2,3-Trichloropropane

Analytical Methods:
Volatile organic compounds by EPA Method 8260B by Gas Chromatography / Mass Spectrometry (GC/MS)
Fumigants (EDB; DBCP; and 1, 2, 3-Trichloropropane) by EPA Method 8260 SIM by Gas Chromatography / Mass Spectrometry (GC/MS)
Dinoseb by EPA Method 8321A
Nitrates and sulfates by EPA Method 300.0 by Ion Chromatography (IC)
Total organic carbon (TOC) by EPA Method 415.1

Other VOCs (acetone, chloromethane, chlorobenzene, methylene chloride, tetrachloroethene,toluene) are occasionally detected at low concentrations. See Table 4.
Prior to July 2002 the qualifiers were extracted from the laboratory report. After and including July 2002 the qualifiers are conformable to the Automated Data Review from the Data Validation Report.

References:
Data source: Hargis+Associates, Inc. (data collected between 9/87 and 3/88), U.S EPA (data collected between 4&5/90 and 12/92), Ecology and Environment, Inc. (between 8/94 and 7/98), Panacea, Inc. (between 7/00 and 8/07), Eco & Associates, Inc. (from 4/08 to present).
Electronic file obtained from Ralph Lambert of Ecology and Environment, Inc., file name ALLCHEM.XLS.

TABLE 3.1: SUMMARY OF CONSTRUCTION DETAILS FOR A-ZONE WELLS

No.	Well ID	Drill Date	Drill Depth	Well Depth	Sand Pack		Well Screen Interval		Screened Interval	Slot Size	Well Diameter	Barcad Depth	Barcad Length	Depth To Groundwater	Casing Elevation	Groundwater Elevation
			feet	ft bgs	ft bgs		ft bgs		ft	inches	inches	ft btc	feet	ft btc	reamsl	reamsl
					from	to	from	to								
1	AMW-1P	03/25/84	72.0	70.70	2.5	70.8	60.75	70.75	10.00	0.01	4	74.67	1.00	73.40	435.78	362.38
2	AMW-2P	03/26/84	73.5	75.83	2.0	71.0	63.60	73.60	10.00	0.01	4	73.87	1.00	Dry	433.75	Dry
3	AP-1		69.5	71.15	55.0	69.5	59.50	69.50	10.00		4	68.70	1.00	Dry	434.67	Dry
4	AP-2		NR	NR	NR	NR	NR	NR	NR		4	71.26	1.00	Dry	435.35	Dry
5	AP-4		75.0	75.19	54.0	73.5	60.00	70.00	10.00		4	73.69	1.00	Dry	436.04	Dry
6	WA-1	02/07/92	79.0	78.50	60.5	78.0	63.00	78.00	15.00	0.01	4	77.25	1.00	69.72	429.52	359.80
7	WA-2	02/28/92	76.0	75.50	63.0	73.0	63.00	73.00	10.00	0.01	4	72.25	1.00	66.16	428.24	362.08
8	WA-3	03/01/92	79.0	80.08	65.5	79.0	68.00	78.00	10.00	0.01	4	78.35	1.00	77.48	436.03	358.55
9	WA-4	03/03/92	76.0	78.58	63.0	76.0	66.00	76.00	10.00	0.01	4	77.19	1.00	Dry	436.88	Dry
10	WA-5	03/04/92	77.0	79.50	66.0	77.0	67.00	77.00	10.00	0.01	4	78.63	1.00	75.92	435.81	359.89
11	WA-6	03/11/92	74.0	78.10	59.0	74.0	64.00	74.00	10.00	0.01	4	76.26	1.00	75.97	434.90	358.93
12	WA-7	03/13/92	79.5	79.00	64.5	76.0	66.00	76.00	10.00	0.01	4	76.19	1.00	Dry	434.75	Dry
13	WA-8	03/17/92	72.0	71.60	59.0	71.0	61.00	71.00	10.00	0.01	4	71.27	1.00	71.18	433.25	362.07
14	WA-9	03/24/92	79.0	78.50	66.0	78.0	68.00	78.00	10.00	0.01	4	74.65	1.00	73.44	429.25	355.81
15	EPAS-1	04/20/90	90.0	88.75	74.0	87.0	77.00	87.00	10.00	0.01	4	88.85	1.00	87.75	433.56	345.81
16	EPAS-2	04/30/90	92.0	86.20	60.0	84.0	64.00	84.00	20.00	0.01	4	83.25	1.00	75.43	433.89	358.46
17	EPAS-3	04/15/90	90.0	86.30	60.0	84.0	64.00	84.00	20.00	0.01	4	83.25	1.00	74.91	432.39	357.48

TABLE 3.1: SUMMARY OF CONSTRUCTION DETAILS FOR A-ZONE WELLS

No.	Well ID	Drill Date	Drill Depth	Well Depth	Sand Pack		Well Screen Interval		Screened Interval	Slot Size	Well Diameter	Barcad Depth	Barcad Length	Depth To Groundwater	Casing Elevation	Groundwater Elevation
			feet	ft bgs	ft bgs		ft bgs		ft	inches	inches	ft btc	feet	ft btc	reamsl	reamsl
					from	to	from	to								
18	EPAS-4	04/25/90	93.5	84.20	58.0	82.0	62.00	82.00	20.00	0.01	4	78.28	1.00	77.07	436.38	359.31
19	PWA-1	11/09/01	85.0	85.05	62.0	85.0	65.00	85.00	20.00	0.01	4	84.00	1.00	Dry	430.07	Dry
20	PWA-2	11/07/01	86.5	84.30	62.0	85.0	65.00	85.00	20.00	0.01	4	83.70	1.00	77.24	430.57	353.33
21	PWA-3	11/08/01	86.5	84.90	62.0	85.0	65.00	85.00	20.00	0.01	4	84.25	1.00	71.93	429.42	357.49
22	PWA-4	11/08/01	86.5	84.65	62.0	85.0	65.00	85.00	20.00	0.01	4	83.50	1.00	Dry	429.82	Dry
23	PWA-5	11/09/01	85.0	84.65	62.0	85.0	65.00	85.00	20.00	0.01	4	84.25	1.00	Dry	430.32	Dry
24	PWA-6	03/26/03	86.5	84.50	61.2	86.5	63.00	83.00	20.00	0.01	4	82.25	2.00	Dry	430.25	Dry
25	PWA-7A	01/08/03	87.0	85.00	63.0	85.0	65.00	85.00	20.00	0.01	4	84.25	2.00	69.45	429.02	359.57

TABLE 3.2: SUMMARY OF CONSTRUCTION DETAILS FOR B-ZONE WELLS

No.	Well ID	Drill Date	Drill Depth	Well Depth	Sand Pack		Well Screen Interval		Screened Interval	Slot Size	Well Diameter	Barcad Depth	Barcad Length	Depth To Groundwater	Casing Elevation	Groundwater Elevation
			feet	ft bgs	ft bgs		ft bgs		ft	inches	inches	ft btc	feet	ft btc	reamsl	reamsl
					from	to	from	to								
1	AMW-3R	06/20/84	205.0	202.40	2.0	201.5	121.50	201.50	80.00	0.02	4	196.50	1.00	148.79	433.80	285.01
2	AMW-4R	09/08/84	203.0	205.00	10.0	203.0	138.00	198.00	60.00	0.02	4	193.00	1.00	139.33	434.92	295.59
3	AR-1		182.0	186.40	132.0	182.0	140.00	182.00	42.00		4	177.00	1.00	133.00	435.24	302.24
4	WB2-1	02/02/92	211.0	186.00	163.5	181.5	169.50	179.50	10.00	0.01	4	174.50	1.00	136.14	432.38	296.24
5	WB2-2	02/13/92	204.0	180.85	166.0	178.5	168.00	178.00	10.00	0.01	4	173.00	1.00	138.35	434.94	296.59
6	WB2-3	02/27/92	190.0	186.50	169.0	182.0	172.00	182.00	10.00	0.01	4	177.00	1.00	132.51	428.13	295.62
7	WB2-4	02/24/92	210.0	180.00	164.0	178.0	168.00	178.00	10.00	0.01	4	173.00	1.00	151.48	425.41	273.93
8	PWB-1	11/14/01	180.0	186.20	162.0	185.0	165.00	185.00	20.00	0.01	4	184.00	1.00	136.74	433.83	297.09
9	PWB-2	12/04/01	166.0	160.20	138.0	166.0	140.00	160.00	20.00	0.02	4	159.00	1.00	133.76	430.52	296.76
10	PWB-3	12/05/01	166.5	164.90	143.0	166.0	145.00	165.00	20.00	0.02	4	164.00	1.00	133.92	430.67	296.75
11	PWB-4	11/27/01	166.5	164.55	143.0	166.0	145.00	165.00	20.00	0.02	4	164.00	1.00	134.02	430.78	296.76
12	PWB-5	11/28/01	166.5	164.90	143.0	166.0	145.00	165.00	20.00	0.02	4	164.00	1.00		427.47	
13	PWB-6	01/22/03	161.5	159.29	138.0	160.0	140.00	160.00	20.00	0.02	4	159.00	2.00	131.69	428.48	296.79
14	PWB-7A	01/24/06	163.0	160.50	137.0	163.0	140.00	160.00	20.00	0.02	4	159.00	2.00	132.22		
15	PWB-8	01/08/03	180.0	161.29	138.0	160.0	140.00	160.00	20.00	0.02	4	159.00	2.00	130.96	427.40	296.44
16	PWB-9	01/14/03	161.5	158.60	138.0	160.0	140.00	160.00	20.00	0.02	4	159.00	2.00	131.90	425.93	294.03
17	PWB-10	01/16/03	161.5	159.78	138.0	160.0	140.00	165.00	25.00	0.02	4	164.00	2.00	130.59	424.44	293.85

TABLE 3.2 (CONT'): SUMMARY OF CONSTRUCTION DETAILS FOR B-ZONE WELLS

No.	Well ID	Drill Date	Drill Depth	Well Depth	Sand Pack		Well Screen Interval		Screened Interval	Slot Size	Well Diameter	Barcad Depth	Barcad Length	Depth To Groundwater	Casing Elevation	Groundwater Elevation
			feet	ft bgs	ft bgs		ft bgs		ft	inches	inches	ft btc	feet	ft btc	reamsl	reamsl
					from	to	from	to								
18	PWB-11	03/25/03	226.5	163.70	141.0	165.0	145.00	165.00	20.00	0.02	4	164.00	2.00	134.10	430.47	296.37
19	PWB-12	09/12/06	163.0	160.50	136.0	163.0	140.00	160.00	20.00	0.01	4	159.00	2.00	130.73		
20	PWB-13A	04/06/09	157.00	156.00	133.00	157.00	136.00	156.00	20.00	0.01	4	155.00	2.00	130.12		
21	PWB-14	03/31/09	162.00	161.00	138.00	162.00	141.00	161.00	20.00	0.01	4	160.00	2.00	131.25		
22	PWB-15	4/2/2009	158.00	157.00	130.00	158.00	137.00	157.00	20.00	0.01	4	156.00	2.00	129.14		
23	PWB-16	4/1/2009	157.00	156.00	133.00	157.00	136.00	156.00	20.00	0.01	4	155.00	2.00	128.61		

TABLE 4: SUMMARY OF NAS SITE DATA REQUIREMENTS

Hydrogeology	Data to be used
Hydraulic Conductivity	Site-specific use RI/FS fate and transport data. See RI/FS document Appendix A.
Hydraulic Gradient	Determine gradients from plots of B-zone water elevation contours; verify that the estimated gradients are comparable; estimate the average of three estimated gradients.
Weight Percent Organic carbon	Site-specific use RI/FS fate and transport data. See RI/FS document Appendix A. Assume the TOC in B-zone is same as that in A-zone.
Total Porosity	Site-specific use RI/FS fate and transport data, see RI/FS document Appendix A.
Effective Porosity	Estimate effective porosity based on total porosity values and based on professional judgment.
Contaminant Source Width	Best estimate based on plot for contaminant in the B-zone.
Contaminant source length	Best estimate based on plot for contaminant in the B-zone.
Average Saturated Thickness Impacted by Contamination	Use minimum, average, and maximum impacts in the B-zone.
Redox Indicators	
Concentration: Dissolved Oxygen, Ferrous Iron, Sulfate	Values from 1 or more wells along the solute plume centerline.
Concentration: Nitrate, Sulfide, Methane, Dissolved Hydrogen	Values from 1 or more wells along the solute plume centerline.
Contaminant	
Concentration: Contaminant	Values from 3 wells along the solute plume flow path.

Notes:
NAS – Natural Attenuation Software
RI/FS – Remedial Investigation/Feasibility Study

APPENDIX A

SAMPLING AND ANALYSIS PLAN

SAMPLING AND ANALYSIS PLAN

•FINAL•

January 26, 2012

Site-Specific Work Plan
Brown and Bryant Superfund Site
600 South Derby Street
Arvin, California 93203-1937

Prepared for:
US Army Corps of Engineers
Albuquerque District
4101 Jefferson Plaza, NE
Albuquerque, NM 87109-3435

Prepared by:
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SAMPLING AND ANALYSIS PLAN

•FINAL•

Site-Specific Work Plan
Brown & Bryant Superfund Site
600 South Derby Street
Arvin, California

1.0 INTRODUCTION

This Appendix contains the Sampling and Analysis Plan (SAP) for the MNA evaluation plan prepared for monitoring the remedy for the B-zone at the former Brown & Bryant, Inc. (B&B) facility, in Arvin, California. This site is a U. S. Environmental Protection Agency (USEPA) Superfund Site located at 600 South Derby Road, in the City of Arvin, Kern County, California (hereafter, the "Site"). Since no additional investigations are planned, and all new data will be obtained at part of the periodic sampling events for B-zone groundwater, this Appendix is the same as the 2011 Groundwater Monitoring Sampling and Analysis Plan.

2.0 SCOPE OF WORK

Forty eight (48) wells are part of the site groundwater monitoring program: 25 wells installed in the A-zone and 23 in the B-zone. The sampling and analysis plan is to periodicall monitor the B-zone for the presence of the following seven (7) compounds as the primary COCs in the shallow water (A-zone and B-zone):

- Chloroform
- 1,2-Dibromo-3-chloropropane (DBCP)
- 1,2-Dichloropropane (1,2-DCP)
- 1,3-Dichloropropane (1,3-DCP)
- 1,2,3-Trichloropropane (1,2,3-TCP
- Ethylene dibromide (EDB)
- Dinoseb

The contamination in these shallower zones poses a potential threat to the underlying regional aquifer (C-zone) that is used for municipal drinking water. The planned monitoring is to evaluate the condition of the A-zone and B-zone groundwater

All samples of groundwater collected during periodic sampling events will be analyzed in the laboratory for the following analyses:

- Chemicals of concern (COCs) — EPA Test Methods 8260B, 8260SIM & 8151A
- Water quality parameters — nitrates and sulfates (EPA Test Method 300) & total organic carbon (EPA Test Method 415.1).

3.0 PROCEDURES

All procedures and methods identified in the Groundwater Sampling and Analysis Plan are applicable to this task.

APPENDIX B

HEALTH AND SAFETY PLAN

HEALTH & SAFETY PLAN

•FINAL•

January 26, 2012

Site-Specific Work Plan
Brown and Bryant Superfund Site
600 South Derby Street
Arvin, California 93203-1937

Prepared for:
US Army Corps of Engineers
Albuquerque District
4101 Jefferson Plaza, NE
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HEALTH AND SAFETY PLAN

•FINAL•

Site-Specific Work Plan
Brown & Bryant Superfund Site
600 South Derby Street
Arvin, California

1.0 INTRODUCTION

This Appendix contains the Health and Safety Plan (SAP) for the MNA evaluation plan prepared for monitoring the remedy for the B-zone at the former Brown & Bryant, Inc. (B&B) facility, in Arvin, California. This site is a U. S. Environmental Protection Agency (USEPA) Superfund Site located at 600 South Derby Road, in the City of Arvin, Kern County, California (hereafter, the "Site"). Since no additional investigations are planned, and all new data will be obtained at part of the periodic sampling events for B-zone groundwater, this Appendix is the same as the 2011 Groundwater Monitoring Health and Safety Plan.

2.0 SCOPE OF WORK

The health and safety plan (HASP) is to provide a document that establishes personnel protection standards and mandatory safety practices for all field work conducted at Operable Unit No. 2 (OU2) at the Brown & Bryant (B&B) Superfund Site in Arvin, California. The HASP also provides for contingencies that may arise during field investigations and operations. The provisions of this HASP are mandatory for all onsite investigations. All personnel shall abide by this HASP. Any supplemental plans used by subcontractors shall conform to this HASP as a minimum. All personnel who engage in field investigation activities shall be familiar with this HASP and comply with its requirements. A tailgate safety meeting will be conducted prior to initiating field operations and at least weekly thereafter. In addition, all personnel working on this project shall follow the U.S. Army Corps of Engineers' (USACE) Safety & Health Requirements Manual (EM385-1-1) as applicable (USACE, 2003).

This HASP document presented as part of the 2011 Groundwater Sampling and Analysis Plan is presented in the following format. These sections are included in this plan by reference.

- Section 1 – Purpose and Policy
- Section 2 – Objectives
- Section 3 – Anticipated Field Activities
- Section 4 – Project Team Organization
- Section 5 – Training and Medical Monitoring Requirements
- Section 6 – Safety and Health Risk Analysis
- Section 7 – Emergency Response Plan
- Section 8 – Personal Protective Equipment
- Section 9 – Air Monitoring

- Section 10 – Decontamination Procedures
- Section 11 – References

In addition, the following documents are included with that plan. These documents are included in this plan by reference:

- Activity Hazard Analysis Matrix
- Figure 1 – Site Location Map
- Figure 2 – Hospital Route
- Appendix A – Chemical Hazard Summary Information
- 1,2-Dichloropropane (1,2-DCP)
- 1,2,3-Trichloropropane (TCP)
- Chloroform
- 1,2-Dibromo-3-Chloropropane (DBCP)
- 1,2-Dibromoethane (Ethylene Dibromide [EDB])
- 1,3-Dichloropropane (1,3-DCP)
- Dinoseb
- Appendix B – Health and Safety Compliance Agreement
- Appendix C – Accident Investigation Report (ENG Form 3394)

3.0 PROCEDURES

All procedures and methods identified in the Groundwater Health and Safety Plan are applicable to this task.

APPENDIX C

QUALITY ASSURANCE PROJECT PLAN

QUALITY ASSURANCE PROJECT PLAN

•FINAL•

January 26, 2012

Site-Specific Work Plan
Brown and Bryant Superfund Site
600 South Derby Street
Arvin, California 93203-1937

Prepared for:
US Army Corps of Engineers
Albuquerque District
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QUALITY ASSURANCE PROJECT PLAN

•**FINAL**•

Site-Specific Work Plan
Brown & Bryant Superfund Site
600 South Derby Street
Arvin, California

1.0 INTRODUCTION

This Appendix contains the Quality Assurance Project Plan (SAP) for the MNA evaluation plan prepared for monitoring the remedy for the B-zone at the former Brown & Bryant, Inc. (B&B) facility, in Arvin, California. This site is a U. S. Environmental Protection Agency (USEPA) Superfund Site located at 600 South Derby Road, in the City of Arvin, Kern County, California (hereafter, the "Site"). Since no additional investigations are planned, and all new data will be obtained at part of the periodic sampling events for B-zone groundwater, this Appendix is the same as the 2011 Groundwater Monitoring Quality Assurance Project Plan.

2.0 SCOPE OF WORK

The QAPP describes the specific protocols that will be followed for sample handling and storage, chain-of-custody, and laboratory analysis. The information contained in this QAPP, by reference to the 2011 Groundwater QAPP, is for use in groundwater sampling and analysis that is described in the project workplans.

All QA/QC procedures will be conducted in accordance with applicable professional standards; state and federal requirements, regulations, and guidelines; and specific project goals and requirements. All analytical laboratory work will be consistent with the requirements provided in DOD QSM (version 3, 2006). The overall QA objective for data is to ensure that they are obtained with known and acceptable quality. In order to meet these objectives, the following QA/QC parameters will be addressed for all data measurements:

- Precision
- Accuracy
- Completeness
- Comparability
- Representativeness

No new field investigations are planned as part of the MNA evaluation and the Groundwater is included here by reference for the period groundwater sampling and analysis events. Should additional field work become necessary a revised QAPP will be prepared and substituted in place of this Appendix.

3.0 PROCEDURES

All procedures and methods identified in the Groundwater Quality Assurance Project Plan are applicable to this task.