

Petroleum Products Corporation
3130 Southwest 17th Street
Pembroke Park, Florida
County: Broward
District: Southeast
Site Lead: EPA
Placed on National Priorities List: July 22, 1987
HWC # 023

Site Description and History

The Petroleum Products Corporation (PPC) site, located in Section 20, Township 51S, Range 42E at 25° 59' 35.6294" N, 80° 10' 10.4587" W, was operated from 1953 to the 1970's under various company names as a broker and processor of used petroleum and other hydrocarbon products. It is suspected from earlier sample analyses that other materials, such as solvents, were handled at the site. The sulfuric acid/clay process was used at the site to re-refine used motor oil.

PPC operated from approximately 1958 to 1971 as a processor and broker of waste oil and other hydrocarbon products. Sludges generated by the re-refining process were disposed of in unlined pits that covered approximately a 2-acre area. Between 1970 and 1971, PPC sold most of its property, covered the pits, and reportedly spread contaminated fill across the southern half of the site, extending the contamination to an approximate total of 7 acres. After 1971, PPC operations were restricted to the southeast corner of the site, which reportedly functioned only as a storage/distribution facility until complete de-activation in 1985. During this period, the remainder of the original PPC property was developed as a commercial/industrial warehouse complex. Several of the warehouses were constructed over the abandoned disposal pits.

Threat

As a result of inadequate plant practices, large amounts of petroleum hydrocarbons, acid, and heavy metals have contaminated the soil and ground water. These materials have spread to adjacent properties and to more distant areas as dissolved components in ground water. The Hallandale municipal wells are located approximately one-half mile east of the PPC site, and the one-foot drawdown contour line established by the Broward well field Protection Program is within 500 feet of the site. The Hollywood well field is less than 2 miles away, and the PPC site lies within its one-foot drawdown line. A third proposed well field for Broward County will be located approximately 7,500 feet west of the site. Several private wells are located closer than one-half mile from the site.

Response Strategy and Status (December 2013)

In March 1984, the present owner's consultant installed six shallow monitoring wells around the site. A hydrocarbon layer up to 20 inches thick was found under the site. Analysis of this layer revealed high levels of metals, petroleum hydrocarbons, and volatile organic compounds.

The Department of Environmental Regulation (FDER, now DEP) and the Broward County Environmental Quality Control Board have pursued enforcement actions against the PPC site's responsible parties since 1979. In March 1985, the EPA issued an administrative order requiring the owner to perform certain cleanup measures at the site, including disposal and removal of all tanks from the site. All remaining on-site buildings were demolished and removed, and the site was graded and covered with clean fill.

In March 1985, the FDER contractor, O.H. Materials, constructed an oil recovery system at the site. By December 1990, the system had recovered approximately 7,000 gallons of oil, yet over two feet of oil was still present in some on-site monitor wells. It was estimated that approximately 20,000 – 60,000 gallons of oil are floating on the water table. In January 1991, FDER had the free product recovery system discontinued due to consistent malfunctions & minimal oil recovery.

In 1986, the FDER contractor, Ecology and Environment, Inc., initiated a Remedial Investigation/Feasibility Study (RI/FS) to determine the extent of contamination and to investigate remedial alternatives. In March 1988, a final RI/FS was submitted by the FDER contractor. In April 1988, the EPA and FDER agreed that additional treatability tests should be conducted before selecting a remedy for soils. In March 1990, EPA provided FDER with the funds for a soil washing treatability study. This study was completed in June 1991.

In July 1990, the State of Florida Administrative Hearing Officer determined that the PPC site was eligible for reimbursement of cleanup costs from the State Early Detection Incentive Program. In October 1990, the lead management role was transferred to EPA.

A three phased approach to site remediation had been undertaken: Operable Unit (OU) 1 addressing free product recovery and containment of the groundwater plume; OU 2 addressing remediation of contaminated soils; and OU 3 addressing remediation of contaminated groundwater.

In August 1991, the EPA conducted a Public Meeting to propose OU 1. In October 1990, the EPA signed a Record of Decision (ROD) for OU 1. The State concurred only with the recommended enhancement of free product recovery. In October 1990, the PRP contractor, Blasland, Bouck & Lee (BB&L), began development of the OU 1 Work Plan. In December 1991, the PRPs submitted the work plan to the EPA and FDER for review. Review comments were submitted to the PRPs in January 1992, and a revised work plan was submitted and approved in February 1992. In April 1992, the PRPs and EPA entered into a Consent Decree for OU 1. Also in April, the Department of Transportation closed out all subsurface drainage wells on the site. In June 1992, BB&L completed fieldwork activities to evaluate locations for the free product recovery wells. In September 1992, BB&L submitted a 30% Remedial Design (RD) to the EPA and FDER for review. The RD proposed a combination of OU 1 and OU 3 for an active pump and treat/free product recovery system. In May 1993, a final design was submitted to FDER for review.

In October 1990, the EPA tasked Bechtel to conduct a Supplemental Remedial Investigation. In March 1992, Bechtel submitted both the Baseline Risk Assessment and the Supplemental Feasibility Study (FS) to the EPA. In April 1992, review comments for the Risk Assessment were submitted to Bechtel. In June 1992, a revised Risk Assessment was submitted to the EPA and FDER. The Supplemental Feasibility Study was finalized in July 1992. In June 1992, the EPA submitted a Proposed Plan for OU 2 to FDER for concurrence. The plan proposed soil washing and stabilization as the selected remedial alternative for contaminated soils at the site. In July 1992, the EPA submitted a revised plan, which proposed solidification/stabilization as the selected remedial alternative. The State did not concur with the EPA Proposed Plan.

Final design for OU1 was submitted and approved by the DEP in July 1993. The construction contract for OU1 was awarded to Blasland, Bouck & Lee (BB&L) in October 1993. BB&L began construction of the free product recovery system in November 1993, and completed construction in June 1994. The groundwater and free product recovery system went on-line in July 1994.

An elevated groundwater table due to a high volume of rainfall rendered the infiltration gallery inoperative, resulting in a shutdown of the treatment system for an eight month period of time. In July 1995, the DEP approved a design for replacing the infiltration gallery with an underground injection well for effluent disposal. The injection well was installed in July 1995. Free product recovery was at a minimum between July 1995 and April 1996. In April 1996, the free product recovery rate dramatically increased with the incorporation of the 24-inch DEP well to the recovery system. To date, the system has been able to achieve the recovery rates stipulated in the consent decree.

In November 1995, the minimal effectiveness of the OU 1 remedy was recognized. It was decided to proceed with the proposed selected remedial alternative for OU 2. The proposed OU 2 remedial action was reviewed by the National Remedy Review Board (NRRB) in May 1996. The NRRB agreed with the proposed remedy provided it was guaranteed to be at least 75% effective in treating contaminated soils. EPA and DEP reviewed the site data along with the improvements to OU 1 and agreed to proceed with the proposed remedy.

In July 1996, during an operation and maintenance oversight visit, product was discovered seeping out of the ground near RW-10 and possible RW-8. The staining near RW-8 initially appeared to be the result of a spill unrelated to the site. Both areas are being monitored. The plan of action to correct the situation at RW-10 will be part of OU 2. Future spills, or product seeping from the ground near RW-8, will be handled on an individual basis.

In November 1996, EPA prepared the draft proposed plan for OU 2 identifying in situ solidification/stabilization of approximately 131,200 cubic yards of contaminated soil as the preferred alternative. DEP provided verbal concurrence with the proposed plan. A Public Meeting was conducted in February 1997. The public comment period for the proposed plan was extended to April 9, 1997. The draft ROD for OU 2 was submitted to the DEP in July 1997, for review and comments.

A remedial action plan (RAP) modification was prepared and approved by DEP and EPA to enhance free product recovery operations while OU 2 was being negotiated. The RAP modification was for installation of additional wells to fill data gaps regarding product and water table levels. All additional wells were installed in June 1997. EPA initiated groundwater sampling of 24 specific monitor wells on a quarterly basis in order to provide new data regarding plume migration.

A BioSlurp pilot test was conducted by Battelle Corporation in July 1997. Final results from the pilot test indicated that this technology could provide an increase in system efficiency over the current free product recovery system, and increase natural attenuation of certain products. The bioslurping system was proposed as an enhancement to OU 1.

A Geoprobe investigation was performed in February 1998, to gather data to help determine the boundaries of the contaminant plume and to design the full scale bioslurp system. The bioslurping system design (RAP) by Battelle was submitted to DEP and EPA in August 1998. The EPA and DEP agreed that the bioslurp system would be constructed in phases in order to evaluate the efficiency of the innovative technology. Phase I installation would cover the southern part of the site known as Zone 1. Installation of the bioslurp wells was conducted in December 1998, and the existing groundwater and free product recovery system was shut down to upgrade and accommodate the new bioslurp construction specifications.

Bioslurp installation was completed at the end March 1999, and a final inspection was conducted by the EPA and DEP in May 1999. During the first six weeks of operation, the bioslurp unit collected 776 gallons of oil from Zone 1. Parts of the old OU 1 system have been integrated into the operational bioslurp system. In order to increase the efficiency of the system in regards to oil emulsification in the extracted groundwater, an 18,000 gallon water-holding was incorporated into the bioslurp design.

The bioslurp system was shut down in April 2000, due to extensive oil emulsification in the extracted groundwater that blocked the carbon polishing system. Chemical treatment of the extracted groundwater was selected as the treatment technology for the emulsified oil, and the system was installed in early September 2000. System performance has been improved with the chemical treatment, and the DEP and EPA agree that Phase II of the remedial action should be initiated to address the remainder of the site. Phase II will include oil recovery from Zone 2.

Results of quarterly groundwater sampling conducted by EPA in August 1999 indicated that there was no offsite groundwater contamination. Soil samples were also taken at six points in the residential trailer park area located south of the site. Upon evaluation of the analytical data, both EPA and DEP agreed that additional soil assessment should be conducted at the trailer park. This soil assessment was completed by DEP in March 2001, and additional delineation was completed by the PRPs in August 2002. The sampling results indicated a small area of contamination located on the trailer park property, and on the southern right-of-way of Carolina Street. The Town of Pembroke Park initiated installation of a stormwater run-off pipe system in

this right-of-way in June 2003, and this work was completed in September 2003. The collection pipe was located above ground in specific right-of-way areas associated with soil contamination.

Phase II of the remedial action for the bioslurp system was initiated in August 2002. One vacuum pump is being used for the entire bioslurp system. DEP and EPA reviewed all treatment system data in July 2002, and agreed that the system was performing with improved efficiency and capture of free product. During 2003 (January-November), the bioslurp system averaged 200 to 300 gallons of recovered product per month. Groundwater sampling was conducted in May 2003, at specific monitor wells located on and off site property. The sampling results indicated there was no groundwater contamination outside of site boundaries, and minimal groundwater contamination located near the center of the site.

Twenty-one monitor wells were abandoned in February 2004. This work was approved by both DEP and EPA in order to remove redundant monitor well information and mitigate the potential for further groundwater contamination. An annual groundwater evaluation was conducted in June 2005, and the data indicated one offsite monitoring well had low levels of total recoverable petroleum contamination. The bioslurp system has been modified to increase efficiency. The average monthly free product removal from January to October 2005 was approximately 149 gallons/month. DEP received a copy of the second Five Year Review on January 13, 2006. Recommendations for the Five Year Review include addressing the following: (1) contaminated soil at Bamboo Mobile Home Park; (2) product seepage; (3) efficiency of the bioslurp operation and; (4) quarterly submittal of status reports.

In August 2006, DEP met with EPA and PRPs regarding the status of the site. The EPA will evaluate implementing additional, long-term institutional controls for the site, and will continue to evaluate the OU3 (soils) option. From June 2006 to March 2007, a total of 1,492 gallons of product has been recovered.

The EPA will continue to evaluate implementing additional institutional controls for the long term. Petroleum Product PRPs submitted a 2007 report to DEP, documenting that product found in the monitor wells on the Kelsey property is not from Petroleum Products.

The treatment system recovered 1,600 gallons of LNAPL in 2007, and an additional 560 gallons in the first quarter of 2008.

On October 27-28, 2008, Petroleum Products reported a 10,000 gallon treated groundwater spill to DEP's State Warning Point and EPA. The spill occurred due to equipment malfunction. A written report was submitted to DEP on October 31, detailing the events that occurred.

For 2008, the bioslurp system recovered a total of 2,056 gallons of LNAPL and emulsified hydrocarbons from 3.24 million gallons of recovered groundwater.

On December 22, 2008, the Petroleum Products PRPs submitted an "Evaluation of In-situ Thermal Treatment Technology" report to DEP for review. Upon approval by EPA and DEP, Petroleum Product PRPs will begin implementing the recommendations in the report.

In April 2009, a site visit meeting was held with the EPA, PRPs and DEP to discuss the current status of the site and alternative remedial methods. The PRPs were requested by EPA to submit possible remedies to enhance the cleanup of the site. The EPA also requested the Army Corps of Engineers to evaluate the site for remedial alternatives.

EPA completed their Five Year Site review on February 4, 2010. EPA contracted the Army Corps of Engineers to perform additional sampling and delineation of the site. Delineation activities are being coordinated with DEP to reduce duplication of sampling activities.

In February 2011, petroleum-contaminated soil was removed from the Cotter Property mobile home to a depth of 4 to 4.5 feet. Clean backfill was used to restore the property to original grade.

The bioslurp treatment system was turned off in October 2012, due to reduced efficiency of the system.

In 2013, EPA submitted the draft Human Health Risk Assessment (HHRA) to DEP for review by Technical Support. EPA will be submitting a draft Remedial Investigation (RI) Report to DEP for comment by June 2013. The Feasibility Study will be submitted to DEP for comment in late summer of 2013.

The Army Corps of Engineers completed the 2013 annual groundwater monitoring event and will submit the laboratory analyses to EPA for review.

Schedule

The FS and RI Draft Reports will be submitted to DEP by December 2013. The next EPA Five Year Review is due in 2015.