

POLREP 20
Tuscarora Oil Site
Intersection of Ely and River Roads
Solebury Township, Bucks County, Pennsylvania 18938

Attention:

EPA3 - RRC
G. Heston, EPA
F. Burns, EPA
P. Ryan, USCG-NPFC
S. Sinding, PADEP
S. Oneil, PADEP

- I. **SITUATION** (as of January 5, 2015)
Event – Closeout of FPN 04322 and Continuing Assessment
 - A. The Tuscarora Oil Site (Site) is located in Solebury, Bucks County, Pennsylvania. The Site is the location of a Facility from which large volumes of oil were documented to have spilled, discharged, or burned from tanks and pipelines between approximately 1915 and 1938. There is some information relating to response activities relating to some of these old incidents. The Facility is no longer operating and is mostly dismantled and removed. Contamination of residential drinking water wells is documented since about 1941. Reports of petroleum-related contamination in residential wells and a surface water body near the Facility resurfaced in the early 1990s. An assessment of the oil discharges and associated odors has been conducted over many years. Involvement by an EPA OSC was initiated in 1993.
 - B. The OSC is not aware of a specific oil pollution number for activities between 1993 and 2004.
 - C. An Oil Project was opened in 2004 (FPN E04322) with a ceiling of \$7,000. **This POLREP intends to suffice as a FINAL POLREP for FPN 04322.**
 - D. By 1906, elements of the Standard Oil Company of New Jersey had established an oil pumping station near Centre Bridge, Solebury Township, Bucks County, Pennsylvania. The pump station was located within the southwestern quadrant of the intersection of Ely and River Roads. River Road parallels the Delaware River.
 - E. Between River Road and the Delaware River runs the Delaware Division of the Pennsylvania Canal (a/k/a Delaware Canal or “Canal”) which operated from the mid 1800s to the 1930s. A footer drain runs along the eastern side of the Canal and eventually courses to the Delaware River. The footer drain served a purpose during the operation of the Canal and now simply accepts ground water and surface water flow to form a flowing stream which eventually discharges to the Delaware River. Today the Canal and adjacent towpath is a State Park. The land east of the Canal in

the vicinity of the Site is a Bucks County Park. Oil discharges and odors are most associated with the footer drain.

- F. By 1908, a pipeline was constructed (originally known as the A.C. Bedford Pipeline) reportedly consisting of several 8-inch pipes. This pipeline carried crude oil eastward from western Pennsylvania to a refinery in New Jersey. Associated with the pump station, Tuscarora Oil Company also operated an estimated 28 storage tanks located generally northwest of the pump station and the pipeline that moved oil into New Jersey. Information indicates that the storage tanks of the Tuscarora Oil Company may have been abandoned in the 1920s.
- G. The National Transit Company was divested from Standard Oil by 1912. National Transit Company operated storage tanks in two areas generally located north and west of the Tuscarora Oil Company pumping station and abutting the Tuscarora Oil Company's pump station lands. National Transit Company may also have operated its own pipeline(s) and pump station not specifically involved with moving oil across the Delaware River into New Jersey. Information indicates that oil was pumped to the National Transit tanks, but that all oil pumped eastward under the Delaware River was then pumped through the Tuscarora Oil Company pump station and/or pipeline.
- H. Tuscarora Oil Company is now dissolved. Generally and for the purpose of this Site, Exxon is the successor entity to the Tuscarora Oil Company. National Transit Company is still an active but not operating entity which is wholly owned by Pennzoil-Quaker State Company which, in turn, is wholly owned, for the purposes of this Site, by Shell Oil Company (Shell).
- I. According to Exxon, Shell, and newspaper accounts, lightning strikes destroyed a number of National Transit Company's crude oil storage tanks between 1915 and 1937. A newspaper article describing a lightning strike incident in 1937 indicates that 2 National Transit tanks burned and boiled over. Reportedly the oil spread over 2 to 3 acres. No records were available as to the extent of remediation of the oil discharge events resulting from the lightning strikes.
- J. In 1929, Tuscarora Oil Company converted the Tuscarora pipeline, in part, to refined product service (primarily gasoline).
- K. According to Exxon, a well drilled on the Tuscarora Oil Company property in 1938 indicated the subsurface presence of crude oil.
- L. In July 1938, Tuscarora discovered a leak in their pipeline. The leak was discovered after a week's worth of rain caused gasoline and crude oil to seep out along the Delaware Canal and its adjacent lowland areas. It is unknown how much petroleum was discharged, but, according to Exxon, 2200 BBLs of gasoline, crude oil, and water were recovered. Available information indicates that the oil discharge was recovered from an area along the Canal just south of the intersection of Ely Road and River

- Road. Waste materials from the remediation efforts of the 1938 discharge event were reportedly burned in pits located in the lowland area east of the Canal.
- M. Apparently, the pipe leak affected residential drinking water wells downstream of the Site (or there was coincidental timing) because for several years after the pipe leak, Tuscarora Oil Company attempted to install filters and then new wells at several homes due to impacted groundwater (the local drinking water source). In 1941, Tuscarora Oil Company drilled a water supply well in a shallow aquifer northeast of the spill area (i.e., upgradient) and along the Delaware River. Tuscarora Oil Company also installed a distribution system to connect the new water supply well to the affected homes south of the Site.
 - N. It is believed that Tuscarora Oil Company removed its pipeline from service by the 1950s and had ceased all operations by 1953. In 1952, National Transit also transferred part of its property. A property deed indicates that the subject parcel had tanks, pipelines, valves, pump house and store rooms. Information indicates that operations at the entirety of the Site were discontinued in the 1950s (with possible dismantlement of certain elements at later dates).
 - O. By 1962, the responsibility for the common water supply system providing water to affected homes generally south of the Site/Facility was transferred to the Limeport Company, Inc. and Tuscarora Oil Company was dissolved.
 - P. In 1983, the Limeport Company indicated that their operations had ended and that the affected residential homes were then using their own private wells.
 - Q. By the mid 1980's a new development of homes was constructed generally south of the former oil Facility and between the location of the former oil Facility and the homes affected by the oil discharges documented before 1938.
 - R. By 1986, the Bucks County Health Department began to document poor quality water in private residential wells in the area of the new development generally located south of the Site. Additionally and in the early 1990s, County officials began to receive complaints of and to subsequently document petroleum odor in residential well water and within the air near a portion of the Canal. Oily material was observed near a pipe in the footer drain that runs along the eastern bank of the Canal.
 - S. In November 1992, EPA received correspondence from a resident requesting EPA involvement in assessment of the Site. EPA assigned the Site to an On-Scene Coordinator (OSC) on December 4, 1992. A case number of PA 93221 was assigned.
 - T. An initial assessment was conducted January 4, 1993. No odor of oil was reported along the Canal. The OSC directed a sampling event of residential wells and a sampling plan was produced on January 7, 1993.

- U. On January 8, 1993, EPA received a report through the NRC (152381) initiated by a resident reporting a smell of oil near the intersection of Ely and River Roads for about a week.
- V. On January 11 and 12, 1993, numerous residential wells were sampled by an EPA contractor (Weston). No organic contaminants were found. Well water was noted to have a petroleum odor.
- W. On April 2, 1993 the OSC directed additional sampling to include residential wells, as well as surface water and sediment from the footer drain running alongside the Canal. These samples were collected on April 6th; one of the sediment samples showed low levels of organic compounds indicative of petroleum contamination. Otherwise, the results were unremarkable.
- X. On April 6, 1993 the OSC met with a resident and assessed the drainage alongside the Canal. Oil odors and brown/orange seeps were noted. A sheen was also noted but attributed to “natural processes”.
- Y. On June 14, 1993, according to POLREP 4 (dated June 25, 1993), samples were collected from the drainage along the Canal. POLREP 7 (undated) indicates that samples collected in the Canal on *June 25, 1993*, revealed low levels of unknown hydrocarbons. The exact circumstances of this sampling activity are not known.
- Z. On July 20, 1993 a sample was collected from a residential well and analyzed by “Flavor Profile Analysis (FPA)”, by Closed-Loop Stripping/Thermal Desorption/Gas Chromatography/Mass Spectrometry, and by “Smell Chromatography” by the Philadelphia Suburban Water Company. The FPA analysis indicated petroleum. The laboratory testing detected numerous hydrocarbon compounds (e.g., cyclohexanes, substituted benzenes, naphthalenes) at very low concentrations. Smell testing suggested odors such as “refinery”. The results demonstrated the presence of petroleum hydrocarbon compounds in residential well water.
- AA. On August 18, 1993, the OSC coordinated with the PA Fish and Boat Commission and conducted an assessment of the Delaware River shoreline alongside the Site and found no evidence of oil seeps into the Delaware River.
- BB. On August 26, 1993 EPA evaluated available information in the context of the Clean Water Act (as amended by Oil Pollution Act of 1990). At the time, there was no obvious oil discharge to the surface water. Without an oil discharge to navigable water (or substantial threat thereof), EPA would have limited authority to respond to contamination of ground water by oil originating from the former oil Facility. The original discharge event is also known to have occurred before 1990 (predating OPA).

- CC. On September 8, 1993 EPA and Exxon met to discuss the situation. Exxon volunteered to initiate assessment activities focused on identifying a source of possible contamination to residential wells generally located south of the Site.
- DD. Between Winter 1993 and Spring 1995, contractors for Exxon (primarily Geraghty & Miller and Arthur D. Little, Inc.) conducted extensive assessment activities involving the installation and testing of wells; sampling of soil and water; and, analysis and evaluation of historical and currently collected analytical data. In general, the assessment found the presence of oil in soil and water (including ground water used as drinking water). The oil was located in the likely flow pathway between the former oil Facility and the residences reporting oil odors.
- EE. On August 4, 1994, the results of toxicity testing conducted by EPA on surface water samples collected in May 1994 found that the surface waters adjacent to the Canal (footer drain) did not indicate adverse effects or chronic toxicity.
- FF. On November 30, 1994, the EPA Technical Assistance Contractor (Weston) reported the potential that the geologic formation (Lockatong) underlying some of the residences reporting oil odors, may itself contain some organic compounds that have an oil odor via the presence of measurable quantities of naturally occurring gas.
- GG. On March 11, 1995 a Shell contractor (SAIC) comprehensively evaluated the information and data collected and summarized primarily by Exxon contractors between 1993 and 1995. In short, the evaluation showed petroleum compounds are found in the environment between the Site and the affected residential wells.
- HH. On March 18, 1995, the EPA OSC met with PADEP and Shell. Shell indicated its willingness to conduct additional characterization work. Generally, the assessment intended to follow procedures to enable comparison of environmental data to State standards.
- II. On April 19, 1995, the OSC received a call from a citizen reporting an oil sheen in the Canal. The OSC inspected the Site on April 20, 1995 and reported no evidence of such sheen.
- JJ. The Exxon effort conducted between 1993 and 1995 was summarized and evaluated in a Report prepared by Arthur D. Little, Inc. in July 1996 entitled Solebury Township, Pennsylvania Well Water Investigation Report. In short, weathered petroleum compounds were found in soil and water, inclusive of water from residential wells. Petroleum globules, and in one case a layer, were observed on the ground water in some newly installed wells located between the Site and affected

- residential wells. The Arthur D. Little Report was sent from Exxon to Shell in 1996 initiating formal discussion relating to the Site.
- KK. On February 1, 1996, an electrical worker reported an odor in an “unnamed stream” between the Delaware Canal and the Delaware River.
- LL. On May 19, 1997, Exxon notified the OSC of the observance of oiled soil on property operated by National Transit Company located north of Ely Road and west of River Road. Exxon sought assistance from EPA to obtain formal access to the subject property.
- MM. In 1998, National Transit Company and Exxon agree to jointly maintain filter units at affected residents. National Transit Company manages the program. The OSC was notified by Pennzoil of the change in management on January 30, 1998.
- NN. On February 9, 1998, the Site was inspected by the EPA Technical Assistance Contractor (Weston). No evidence of oil was noted upon the navigable water.
- OO. On January 4, 1999, the OSC documented the end of the EPA removal assessment of the Tuscarora Site (POLREP 18 and Final). Among other things, the OSC concluded that oil has not been observed discharging to the navigable water which makes involvement by EPA to address aspects of the Site potentially outside the authority of the EPA. Instead, PADEP was positioned to take the lead on the Site and work with Shell to move the Site through characterization. Petroleum odors are often reported and detected. Weathered petroleum compounds are detected on the ground water. Present day oil companies are maintaining filter units in identified affected homes.
- PP. On August 5, 2002, local government reported oil odors associated with the footer drain detected July 30, 2002 (NRC Report 618993).
- QQ. Sometime in 2004, PADEP contacted EPA to request assistance regarding the petroleum odors. On September 22, 2004, the OSC visited the Site with PADEP. Oil odor was detected, but no oil discharge was observed. Samples were collected and shipped for analysis by USCG Marine Safety Laboratory (Case 04-165). These actions are summarized in POLREP 19 (FPN 043222). The results indicate only that a light petroleum was detected in the footer drain. Afterwards, EPA and its contractor initiated a search of deed information to define the facility. The EPA OSC also continued coordination with PADEP and others.
- RR. On January 1, 2005, a resident reported to the PADEP a petroleum sheen and odors east of the Canal.

- SS. In May 2005, SAIC prepared, for Pennzoil Quaker State (Shell), a Site Characterization Report addressing one of the former National Transit property parcel located north of Ely Road and west of River Road. Petroleum compounds were detected on the ground water (cyclohexane, hexane, isopropylbenzene, naphthalene, sec-butylbenzene, toluene, and phenanthrene). The Report concludes that concentrations do not exceed Pennsylvania DEP Statewide Health Standards.
- TT. In August 2008, and after several additional sampling events, SAIC prepared, for Pennzoil Quaker State, a Final Report, Former National Transit Station. This report addresses the former National Transit property parcel located north of Ely Road and west of River Road. The report contains information and conclusions similar to the 2005 report. The direction of the flow of the contaminated ground water is reported as variable but generally east/southeastward.
- UU. In October 2009, PADEP reviewed and approved the Final Report, National Transit Station and Remedial Investigation Report, dated October 24, 2009. PADEP correspondence indicates that remediation under Land Recycling and Environmental Remediation Standards Act (Act 2) is now complete.

II. ACTIONS

- VV. In May 2014, a resident contacted EPA to request the status of issues at the Site. The OSC contacted the resident who explained that there were still odors of petroleum along the Canal. The OSC agreed to look into the current status of the situation and initiated contact with PADEP and Shell. PADEP has indicated that its involvement is limited to addressing reports submitted by entities characterizing or conducting remediation. Shell indicates that it is characterizing the Site (or at least its formerly owned properties).
- WW. On July 15, 2014, the OSC visited the Site, met with a resident, and observed what appeared to be an oil sheen in the footer drain. The sheen was caught behind a branch and was not observed downstream from that point. An odor of petroleum was evident.
- XX. On July 23, 2014, and in response to a report of oil at the Canal, PADEP investigated the Site and reported no incidence of oil.
- YY. On July 25, 2014, PADEP revisited the Site after Local government verified the odor, and identified oil odor and an oily sheen in the Canal footer drain. A sample was collected. The sample identified organic compounds in the water (isopropylbenzene, n-butylbenzene, sec-butylbenzene, 1-butyl alcohol). Additionally, several organic compounds were tentatively identified (alkanes, cyclic alkanes, substituted benzenes, methyl substituted naphthalenes, indane and other similar compounds). The analytical

- results indicate the presence of petroleum hydrocarbons in an oily sheen in the footer drain.
- ZZ. On August 5, 2014, PADEP again visited the Site and collected samples of the oily water. The results were similar to the results of 7/25/14. Additionally, a sample was submitted for UV/IR analysis by the DEP Laboratory. The result indicated an oil similar to “bullet oil”. A headspace reading on a sample jar was 2.5 ppm.
- AAA. On August 20, 2014, the OSC visited the Site with the PADEP. The OSC verified that the sheen on the water behaved like oil (e.g., quickly coalescing once disturbed without clumping) and smelled like oil. The OSC determined at this time, considering available information, that the footer drain now had an oil discharge. The discharge was largely trapped behind a fallen branch and was not visible downstream. The PADEP deployed adsorbent materials to remove the accumulated oil. Additionally a sample was collected for metals analysis.
- BBB. On August 21, 2014, the OSC again visited the Site and verified that oil was not visible downstream of the adsorbent materials. However, the extent of the area subject to sheen had grown to additional upstream locations inclusive of an area where sections of pipes were visible in the banks of and across the stream (footer drain).
- CCC. On August 22, 2014, the PADEP returned to the Site to address the oiled adsorbent pads.
- DDD. On September 4, 2014, and after coordination with the OSC and PADEP, contractors for Shell assessed the situation and collected samples from the oiled area.
- EEE. On November 11, 2014, the OSC received the analytical results from the samples collected by Shell from the footer drain. Samples of the sheen atop the water showed low levels of organic contamination consistent with petroleum compounds (isopropylbenzene, methylcyclohexane, alkanes, alkenes, and TPH). Samples collected from a large amount of biomass also present in the footer drain did not show similar contaminants.
- FFF. The analytical data from the July/August 2014 oil sheen event is similar to the analytical data collected from monitoring wells located west of River Road (e.g., 2005 Report by SAIC for Shell). This information, along with ground water flow direction information, indicates that oil-contaminated ground water located west of River Road is likely discharging into the footer drain and the cause of the odors and intermittent sheen events.

- GGG. There is very little information indicating the manner in which the Facility operated or its layout (beyond the position of various structures). Such information may indicate more precisely how oil or oil-contaminated ground water is entering the footer drain (e.g., via subsurface pipes, pipe trenches, former surface water drainage, normal ground water flow, etc.). Presently, there is not a good understanding of how/why the oil from/under the Facility is entering the surface water. Such information may be helpful when considering the potential that any response actions contemplated would be successful.
- HHH. The discharge of oil into the footer drain occurs intermittently, but likely in a manner which is unlikely to travel to the Delaware River (based upon current understanding). However, there is insufficient evaluation of the amount of oil upgradient to the discharge point into the surface water and, thus, the potential that a discharge could occur which poses a more substantial threat is not presently completely evaluated.
- III. Beyond the toxicity testing of 1993 (when a discharge was not evident), there is no known evaluation of the magnitude of harm, if any, caused to the receiving stream, a tributary to the Delaware River.
- JJJ. On November 24, 2014, after coordination between the OSC and USCG NPFC relating to the currently open FPN (04322), USCG NPFC adjusted the FPN ceiling to address the costs associated with the 2004 effort. However, the OSC is conducting current coordination issues with PADEP and Shell and others outside the FPN.

III. FUTURE ACTIONS

- A. The OSC is presently coordinating with PADEP, Local Government entities, and Shell and will continue to do so in order to determine the extent of additional assessment or other activities required in order to conclude an Assessment of the Tuscarora Oil Site in accordance with the NCP. At this time, the involved parties are evaluating the extent of available information and data and comparing the same to applicable standards. Additionally, the OSC is evaluating the information and conditions in the context of the authorities and requirements of the OPA.

Michael Towle, OSC

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