



West Virginia Department of Environmental Protection
Office of Environmental Remediation
601 57th Street, S.E.
Charleston, WV 25304
(304) 926-0455

VRP NO.	04506
SITE NAME	PQS #5117-Etowah
LOCATION	Barlow Road-Charleston

Final Report

December 2004

Facility: VRP # : 4506
former Pennzoil-Quaker State
Etowah Terminal

Applicant:
Pennzoil-Quaker State dba SOPUS
Products

LRS: LRS # : 62
George Robertson

Project Manager: David Hight

Date: 12-06-04

Check List for Final Report

Check List Steps	Yes	No	Comments
1 Has the property been sub-divided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
2 Does the Final Report address the correct tract (sub-division)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3 Are all reports and work plans required by the VRA incorporated into the Final Report?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4 Ecological De Minimis Check List completed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Incorporated by reference to the Baseline/Residual Human Health and Ecological Risk Assessment
5 Have all applicable standards been met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
6 Have the Names, Addresses, Telephone Numbers and Fax Numbers of the following been provided?			
6a -----Current owners of the site	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
6b -----Current operators of the site	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
6c -----Owners and/or operators conducting the remediation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
6d -----Licensed Remediation Specialist	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
6e -----Individual names and titles for each organization	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
7 Site Location			
7a -----Street address	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
7b -----Legal description	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
7c -----Site location map	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
8 Engineering Controls Criteria			
8a -----Cover/cap required	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
8b -----Treatment system required	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
8c -----Ground water or surface water monitoring	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quarterly groundwater monitoring with annual review for lead and TPH/DRO
8d -----Monitoring schedule	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Quarterly with annual review
9 Institutional Controls			
9a -----Deed restriction	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
9b -----Land Use Covenant	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Restriction on groundwater uses for potable and non-potable uses
9c -----Site map identifying control areas	<input type="checkbox"/>	<input checked="" type="checkbox"/>	NA
10 Statement of Certification signed by the LRS and applicant			
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Comments:

Final Report is approved and a request for a Certificate of Completion was sent by the applicant.

**FINAL REPORT
PENNZOIL-QUAKER STATE dba SOPUS PRODUCTS
FORMER ETOWAH TERMINAL
1015 BARLOW DRIVE
CHARLESTON, WEST VIRGINIA
VCP No. 04506**

Prepared for:

**Pennzoil-Quaker State dba SOPUS Products
700 Milam
Houston, Texas 77002**



Prepared by:

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FORMER ETOWAH TERMINAL
1015 BARLOW DRIVE
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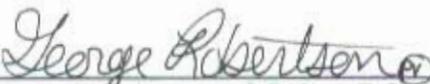
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December 2004

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PENNZOIL-QUAKER STATE dba SOPUS PRODUCTS
FORMER ETOWAH TERMINAL
1015 BARLOW DRIVE
CHARLESTON, WEST VIRGINIA
VRP No. 04506

CERTIFICATION:

I hereby certify that the information presented in this report is, to the best of my knowledge and belief, true, accurate, and complete having been prepared under a system and organization designed to produce true, accurate, and complete information.

Applicant:

By: DANIEL G. McQUINN
Signature: *Daniel G. McQuinn*
Title: REMEDATION COORDINATOR
Date: 12-3-2004

Property Owner:

By: DENNIS P FARRELL
Signature: *Dennis P Farrell*
Title: PRESIDENT
Date: 12-6-04

Licensed Remediation Specialist:

By: George A. Robertson
Signature: *George A. Robertson*
Title: LRS No. 62
Date: 12-3-2004

1.0 INTRODUCTION

Shaw Environmental, Inc. (Shaw Environmental) has completed the following Final Report for the former Pennzoil-Quaker State (PQS) Etowah Terminal located in Kanawha County at 1015 Barlow Drive in Charleston, West Virginia (**Figures 1 and 2**). On November 16, 2001, PQS submitted an application to the West Virginia Department of Environmental Protection (WVDEP)-Division of Land Restoration (DLR), Office of Environmental Remediation (OER) to participate in Voluntary Remediation Program (VRP). The VRP is established under the West Virginia Voluntary Remediation and Redevelopment Rule (The Rule), Title 60 Code of State Regulations (CSR), Series 3, as established in the Voluntary Remediation and Redevelopment Act (VRRRA) in West Virginia Code 22-22-3 and 14 W.V. Reg. 452.60-34. The VRP application was approved on January 3, 2002. A VRP Agreement to investigate and remediate the property (hereafter referred to as the Site) was executed on April 15, 2002 and modified for schedule changes on September 23, 2002, and March 4, 2003.

1.1 Background

1.1.1 Chain of Title and Deed

On December 28, 1938, Edith Bowers Bailey and Homer Bailey sold Plot 32 (a 1.56-acre tract identified as Plot 32 on Elk District Map 44L) to the Elk Refining Company (**Table 1 and Figure 3**). On August 30, 1941, Delia Bowers and James C. Bowers sold Plot 31 (a 1.3-acre tract of land identified as Plot 31 on Elk District Map 44L) to the Elk Refining Company. On July 30, 1947, Ambrose C. Smith and his wife sold Plot 30 (a 1.0-acre tract of and identified as Plot 30 on Elk District Map 44L) to the Elk Refining Company. On January 9, 1948, the Board of Education of the County of Kanawha sold Plot 33 (a 1.01 tract of land identified as Plot 33 on Elk District Map 44L) to the Elk Refining Company. On January 1, 1970, Elk Refining Company was merged with Pennzoil United, Inc. (later PQS). On November 30, 2001, PQS sold the subject property to Etowah River Terminal, LLC.

1.1.2 Facility History

Prior to the construction of the Site, the subject property was used for agricultural purposes. On December 28, 1938, Elk Refining Company purchased a 1.56-acre tract of land (identified as Plot 32 on Elk District Map 44L) from Edith Bowers Bailey and Homer Bailey. The first above-ground storage tanks (ASTs) were constructed on-site during 1938 and additional ASTs were added as the petroleum bulk storage terminal expanded (See Table 1 in Shaw Environmental, 2003). On August 30, 1941, Elk Refining Company purchased a 1.3-acre tract of land (identified as Plot 31 on Elk District Map 44L) from Delia Bowers and James C. Bowers. On July 30, 1947, Elk Refining Company purchased a 1.0-acre tract of (identified as Plot 30 on Elk District Map 44L) from Ambrose C. Smith and his wife. On January 9, 1948, Elk Refining Company purchased a 1.01 tract of land including the former one-story "Bower's School" building (identified as Plot 33 on Elk District Map 44L) from the Board of Education of the County of Kanawha. The warehouse/office and garage/storage buildings were constructed during 1950.

On January 1, 1970, Elk Refining Company was merged with Pennzoil United, Inc. (later PQS). On November 30, 2001, PQS sold the subject property to Etowah River Terminal, LLC.

1.1.3 Facility Description

The Site consists of a two-story warehouse/office building, a garage/storage building, asphalt, parking lots, a grave yard, a fire (pump) house, a flair, a fuel loading rack, an oil loading rack, an oil/water separator, a dock, two former fire houses, a former pump house, a former loading rack, 19 AST's and associated aboveground product piping (**Figure 2**). The 14 main ASTs (numbered ASTs) are located inside of the diked areas and are summarized in (Table 1 in Shaw Environmental, 2003). The four non-numbered ASTs include the following:

- A 275-gallon diesel additive AST installed during 1999 inside the diked area adjacent to the fuel loading rack;
- A 275-gallon drip oil AST installed during 1999 inside the diked area adjacent to the oil loading rack;
- A 320-gallon kerosene heating oil AST located on a concrete floor inside the garage/storage building; and
- A 30-gallon hydraulic oil AST located on a concrete floor in the garage/storage building.

The fuel loading rack is constructed on bermed concrete near the center of the site. The inactive oil loading rack is constructed on gravel near the north end of the site.

Stormwater drains located in the diked area and on the asphalt parking lot on the northern end of the site flow into an oil/water separator located on the eastern side of the site (**Figure 2**). Treated stormwater from the oil/water separator discharges into the Elk River in accordance with national Pollution Discharge Elimination System (NPDES) Permit No. WV0045225. Stormwater that falls on the asphalt parking lot located on the southern end of the site flows into catch basins along the western edge of the facility and is discharged into the Elk River.

1.2 Current Property Use

Currently, the Etowah River Terminal LLC operates the Site as bulk storage terminal for freeze conditioning agents including ethylene glycol and calcium chloride solutions. Calcium chloride is stored in ASTs 403, 404 and 405. Ethylene glycol mixtures are stored in ASTs 393 and 398 through 402. The Site is zoned for Industrial use. Current land surface completion is shown on **Figure 2**.

Drinking water wells do not exist within 2,000 feet of the facility (Shaw Environmental, 2003). The closest water supply wells are located west of the Site on the opposite side of the Elk River. No groundwater irrigation activity is known in the vicinity of the Site. Groundwater is not used as a local drinking water supply and depth to the unconfined groundwater aquifer ranges from approximately 14 to 40 feet below ground surface (b.g.s). Drinking water in the area is supplied by the West Virginia American Water

Company, which obtains potable water from an intake along the Elk River located approximately 1.3 miles southwest (downstream) of the Site.

Basements are reported in residential buildings located approximately 200 feet south of the Site. The office/warehouse and garage/storage buildings at the Site are constructed on concrete slabs and foundations. This bottom floor of the Office/Warehouse is approximately 50% below grade.

1.2.1 Future Land Use

The current operations are expected to continue at the Site. The future land use is expected to remain non-residential.

1.2.2 Adjacent Land Use

Residences are located to the south of the Site. The hillside across Barlow Road is wooded and relatively steep and is unlikely to be developed. Land use of adjacent properties is not expected to change.

1.3 Geological and Hydrogeological Setting

The Site is located in Charleston, West Virginia on a steep sided fluvial terrace adjacent to the Elk River (**Figure 1**). The Elk River is a southwest flowing tributary of the Kanawha River. The unconfined groundwater table ranges from approximately 15 to 38 feet b.g.s. The area lies within the unglaciated portion of the Appalachian Plateau physiographic province, which is generally characterized by relatively flat lying gently folded Upper Paleozoic sedimentary rocks. Quaternary fluvial and colluvial deposits greater than approximately 40 feet thick underlie the site. Udorthents Smoothed-Urban Land complex soils are developed at the surface of the Site (Van Houten, et. al., 1981). The Udorthents Smoothed-Urban Land complex typically consists of areas of heterogeneous fill material that has been leveled by cutting the higher parts and filling the lower parts.

Based on lithologic descriptions included in boring logs, the site is underlain by fill materials that range from approximately 4 to 12 feet thick. The fill appears to be underlain by a fining upward sequence of Quaternary alluvial deposits generally comprised of silty clayey fine to medium grained sand with occasional gravel overlain by clayey silt and silty clay. The Quaternary alluvium is disconformably underlain by the Pennsylvanian Allegheny Formation, which is generally comprised of cyclic sequences of sandstone, siltstone and shale with occasional thin limestone and coal strata (Cardwell, et. al., 1986). Depth to bedrock is unknown. Additional information and data including hydrogeological cross-sections are included in the Additional Site Characterization Report (ASCR) (Shaw Environmental, 2003).

The normal pool elevation of the Elk River is approximately 566 feet above mean sea level (MSL). The unconfined groundwater table ranges from approximately 14 feet to 40 b.g.s. (estimated to be approximately 572-587 feet MSL). Lithologic descriptions included on boring logs indicated the unconfined aquifer is generally characterized by gray to orangish brown silty, clayey fine to medium grained sand with occasional gravel and occasional intercalated silty clay and clayey silt. Historical

potentiometric data indicate that groundwater in the unconfined aquifer flows westward toward the Elk River with an average hydraulic gradient ranging from approximately 0.07 to 0.12 feet/foot. Analyses of single well aquifer tests (slug tests) conducted on monitoring wells MW-3, MW-5 and MW-8 on August 30, 2004, indicated an average hydraulic conductivity of approximately 0.002008 feet/minute (2.892 feet/day). This hydraulic conductivity is typical of silty sand. Based on an average hydraulic gradient of 0.10, an average effective porosity of 0.20 and an average hydraulic conductivity of 2.892 feet/day, the average interstitial velocity would be approximately 1.446 feet/day.

Surface water runoff flows westward to the adjacent Elk River (**Figure 2**). Stormwater drains located in the diked area and on the asphalt parking lot on the northern end of the site flow into an oil/water separator located on the eastern side of the site. Treated stormwater from the oil/water separator discharges into the Elk River in accordance with NPDES Permit No. WV0045225. Stormwater from the asphalt parking lot located on the southern end of the Site flows into catch basins along the western edge of the facility and is discharged into the Elk River.

1.4 Summary of Environmental Assessments

From 1938 until 2001, the Site was a bulk storage terminal for petroleum products including gasoline, diesel, kerosene, bulk oil and additives. Additionally, an Allegheny Power natural gas pipeline crosses the northern end of the site (**Figure 2**).

Prior to the establishment of WVDEP regulations for underground storage tanks (USTs), a 2,000-gallon gasoline UST and a 2,000-gallon diesel UST were removed from a single basin in the southeast side of the Site. Additionally, a 550-gallon used oil UST was removed from a basin located near the southwest corner of the property.

On February 3, 1988, approximately 120 gallons of diesel fuel was released during truck loading operations. The product spilled onto the ground and flowed into a ditch where it was recovered. Notes were not available to document where the ditch was located or the manner in which the fuel was recovered. Former PQS personnel indicated that the ditch was located adjacent to the fuel loading rack near the oil/water separator. The spill incident was reported to the WVDEP and the National Spill Release Center. No enforcement actions were taken by the WVDEP.

On November 1, 1989, approximately one quart of diesel fuel was released during transfer operations from a barge hose into the Elk River. A boom and absorbent pad were used to contain and remove the spilled product.

Lead based paint was used on 12 of the ASTs located in the diked areas. On August 19, 1997, paint chip samples were collected from AST No. 398 and AST No. 401 through AST No. 404 for the analysis of total lead. Analytical results indicated total lead concentrations ranging from 260 milligrams per kilogram (mg/kg) to 34,000 mg/kg.

During April 2000, PQS personnel observed stained soil and stressed vegetation caused by a subsurface release from the Allegheny Power (Former Mountaineer Gas) pressurized natural gas line that extends beneath the north end of the Site immediately north of AST No. 393. Natural gas line repair was completed by Allegheny Power on July 2, 2003. In a telephone communication on July 24, 2003, Mr. Robert Bostic of Allegheny Power stated that oils had not been used in the natural gas line and that there would be no reason to suspect polychlorinated biphenyls or other oil born substances in the line. On July 23, 2003, Shaw Environmental collected a soil sample from the excavated material in the location of the natural gas line repair. The soil sample was submitted to REI Consultants (REIC) in Beaver, West Virginia for analyses of volatile organic compounds (VOC) plus mercaptan (a compound added to natural gas that imparts a distinct odor). Sampling procedures are included in Section 2.1.3 and analytical results are presented in Section 2.4.1. VOC compounds and mercaptan were not detected in the soil sample collected from the natural gas repair area.

1.4.1 Pre-VRP Environmental Investigations

On September 20, 2000, IT Corporation (now Shaw Environmental) conducted a Phase I Environmental Assessment. Oil staining was noted only on the ground surface adjacent to the oil loading rack at the northern end of the Site. No other staining or visual signs of a release from the ASTs were observed at the time of the site inspection.

During November 2000, IT Corporation (now Shaw Environmental) conducted a Phase II Environmental Investigation at the Site. In order to determine if the shallow subsurface had been impacted by petroleum hydrocarbons, soil samples were collected from five (5) hand auger borings (HA-1 through HA-5) advanced in the diked areas to depths ranging from approximately 1.5 to 4.5 b.g.s. on November 3, 2000 (**Figure 2**). Soil samples were submitted to SPL, Inc. (SPL) in Scott, Louisiana for analyses of benzene, toluene, ethylbenzene and xylenes (BTEX) according to EPA Method 8021B, total petroleum hydrocarbons (TPH) gasoline range organics (GRO), diesel range organics (DRO), and oil range organics (ORO) in accordance with EPA Method 8015B, and total lead and toxicity characteristic leaching procedure (TCLP) lead in accordance with EPA Method 6010B. Groundwater was not encountered in the hand auger borings. Analytical results are summarized in Table 2 of Shaw Environmental, 2003. A benzene concentration above the WVDEP action level of 0.05 mg/kg and a total BTEX concentration above the WVDEP action level of 10 mg/kg were detected in the soil sample collected from the 3.0-3.5 feet b.g.s. soil sample from HA-2. One (1) TPH-GRO concentration was detected above the WVDEP action level of 1,900 mg/kg in the 3.0-3.5 feet b.g.s. soil sample from HA-2.

In order to determine the ground surface had been impacted by lead from lead-based paint used on the ASTs, IT Corporation (now Shaw Environmental) collected three (3) composite soil samples (C-1, C-2 and C-3) from inside the diked area surrounding the ASTs on November 3, 2000 for the analysis of TCLP lead. A TCLP lead concentration exceeding the Resource Conservation and Recovery Act (RCRA) maximum concentration level (MCL) of 5.0 milligrams per liter (mg/L) was detected in the composite soil sample collected from the area around ASTs No. 398 through No. 402.

Further delineation of the area impacted by lead was accomplished by collecting five (5) discrete soil samples (C2-A through C2-E) from 0 to 0.5 feet b.g.s. inside the diked area between AST No. 398 through AST No. 402. Total lead concentrations in soil samples C2-A (1,590 mg/kg) and C2-C (3,050 mg/kg) were detected above the Table 60-3B Industrial De Minimis level of 1,000 mg/kg. Analytical results indicated TCLP lead concentrations above the RCRA MCL of 5.0 mg/L in two (2) soil samples collected near AST No. 399 (Table 2 in Shaw Environmental, 2003). Based on total lead and TCLP lead analytical results, lead impacted soil was identified and additional surface soil sampling was recommended to further delineate the areal extent of adsorbed-phase lead in surface soil.

In order to further determine if the subsurface soil at the Site had been impacted by potential releases of petroleum hydrocarbons or lead, IT Corporation (now Shaw Environmental) supervised the completion of ten (10) Geoprobe® borings (GP-1 through GP-10) ranging from 16-43 feet b.g.s. on November 16-17, 2000. Soil samples were submitted to SPL in Scott, Louisiana for analyses of BTEX according to EPA Method 8021B, TPH GRO, DRO and ORO according to EPA Method 8015B and total lead according to EPA Method 6010B. Groundwater samples were not collected. Analytical results for soil samples collected from Geoprobe® borings are summarized in Table 2 in Shaw Environmental, 2003. Benzene concentrations above the WVDEP Action Level of 0.05 mg/kg were detected in six (6) soil samples. A TPH DRO concentration in one (1) soil sample exceeded the WVDEP Action Level of 2,600 mg/kg.

In order to determine if releases of petroleum hydrocarbons had impacted groundwater at the Site, IT Corporation (now Shaw Environmental) supervised the drilling/installation of monitoring wells MW-1 through MW-6 during June 2001. Total depths ranged from 20 to 44 feet b.g.s. at the locations that appeared most likely to be impacted (**Figure 2**). MW-1 through MW-3 was installed along the topographic bench adjacent to the Elk River. MW-4 was installed in the west side of the former UST basin near the southeastern corner of the site. MW-5 was installed near the fuel loading rack near the center of the site. MW-6 was installed adjacent to the oil landing rack at the north end of the facility. Soil and groundwater samples were submitted to SPL in Scott, Louisiana for analyses of BTEX and methyl tertiary butyl ether (MTBE) according to EPA Method 8021B, and TPH GRO, DRO and ORO according to EPA Method 8015B.

Analytical results for soil and groundwater samples collected from the six (6) soil boring/monitoring wells are summarized in Tables 2 and 3 in Shaw Environmental, 2003. Adsorbed-phase benzene and total BTEX concentrations exceeded the WVDEP action levels in the 18 to 20 feet b.g.s. soil sample from MW-5. Analytical results for groundwater samples collected from the six (6) monitoring wells indicated dissolved-phase petroleum hydrocarbons did not exceed the West Virginia Groundwater Standards (WVGS) as referenced in Title 46 CFR Series 12, Appendix A.

As part of a site investigation for a property purchase by Etowah River Terminal LLC, CTL Engineering, Inc. (CTL) drilled/installed monitoring well MW-7 on September 27, 2001. CTL collected soil samples from the MW-7 boring and groundwater samples from MW-1 through MW-

5 and MW-7. Soil and groundwater samples were submitted to Test America in Nashville, Tennessee for analyses of BTEX according to EPA Method 8021B and TPH GRO and DRO according to EPA Method 8015B. Analytical results are summarized in Tables 2 and 3 in Shaw Environmental, 2003. Dissolved-phase BTEX, TPH GRO and TPH DRO concentrations were not detected above WVDEP action levels.

1.4.2 Additional Site Characterization

Shaw Environmental, Inc. (Shaw Environmental) developed an Additional Site Characterization Sampling and Analysis Plan (SAP) approved by the WVDEP-OER on July 10, 2003. Chemicals of concern (COCs) are listed in **Table 2**. Directed surface and subsurface soil samples were collected from 28 soil borings and 18 temporary monitoring wells were installed in accordance with the above referenced SAP. Sample collection locations are shown on **Figure 2**. Soil samples were collected from the 0-2 foot depth interval b.g.s. to evaluate the risk of dermal contact, inhalation of soil particles, vapors and incidental ingestion. Soil samples were collected from the 2-8 foot depth interval b.g.s. to evaluate the risk of incidental ingestion to construction and utility workers. In order to evaluate the potential soil to groundwater migration pathway, soil samples were collected from the two-foot interval immediately above the saturated zone. Analytical results from soil samples indicated that COCs were not detected above Table 60-3B Industrial De Minimis levels or WVDEP Draft Industrial De Minimis levels (see Tables 8-10 in Shaw Environmental, November 2003).

In order to delineate lead concentrations detected in soil adjacent to AST No. 399, six (6) surface soil samples (SS-1 through SS-6) were collected using a decontaminated stainless steel hand auger from the 0 - 0.5 foot depth interval at locations shown on **Figure 2**. Analytical results are summarized in Table 11 of the ASCR (Shaw Environmental, November, 2004).

Groundwater samples were collected from 15 temporary monitoring wells/soil borings (TMW/SB-2S, TMW/SSB-3S, TMW/SB-3D, TMW/SB-7S, TMW/SB-11, TMW/SB-12, TMW/SB-13, TMW/SB-14, TMW/SB-16, TMW/SB-17, TMW/SB-20, TMW/SB-22, TMW/SB-23, TMW/BG-1, TMW/BG-2) and seven (7) monitoring wells (MW-1 through MW-7) on August 15, 2003. Analytical results are summarized in Table 12 of the ASCR (Shaw Environmental, November, 2003).

Liquid-phase hydrocarbons (LPH), were detected in TMW/SB-7D on August 14, 2003. TMW/SB-7 was abandoned and replaced with a four-inch diameter monitoring well (MW-8) and LPH was remediated using dual-phase high vacuum recovery technology. Based on quarterly groundwater monitoring results, LPH has been removed from the Site.

Groundwater analytical results are described in Sections 2.4.3 and 6.5 and are summarized in Table 12 of the ASCR (Shaw Environmental, 2003). Analytical results above WVDEP De Minimis levels and areas of groundwater impact are shown on **Figure 4**.

In order to evaluate the potential risk to the surface water habitat, five near shore water and sediment samples were collected and 15 additional surface water samples were collected in accordance with Appendix J of the West Virginia Voluntary Remediation and Redevelopment Act Guidance Manual. Sample locations are shown on **Figure 2**. Surface water samples were collected from three additional locations (E-2, E-5 and E-7) on June 14, 2004. Analytical results of surface water sampling indicated that the Site is not impacting the Elk River (Shaw Environmental, July, 2004).

1.4.3 Removal and Off-Site Disposal/Recycling of Lead-Impacted Soil

In order to determine the final dimensions of the area to be excavated to remove lead impacted soil above the RCRA MCL of 5.0 mg/L for TCLP lead, soil samples were collected from five (5) soil borings (SS-7 through SS-11) on July 19, 2003 (**Figure 2**). Additionally, these soil samples were collected to confirm that the soils underlying the proposed excavation were below the referenced MCL for TCLP lead.

During August 2004, Shaw Environmental prepared a Remedial Action Plan (RAP) for the removal of lead-impacted soil from two areas encompassing approximately 940 square feet (ft²) to a depth of at least 0.5 foot b.g.s. (see Figure 1 in Shaw Environmental, August, 2004). Additional details are included in the referenced RAP (Shaw Environmental, August, 2004). On September 23, 2004, the WVDEP approved the referenced RAP.

During October 12 – 14, 2004, lead-impacted surface soil surrounding AST No. 399 and AST No. 400 was removed from two 0.5-foot deep excavations in accordance with the above referenced WVDEP approved RAP. Where sandy material was encountered the excavation was deepened below 0.5 feet until clay was encountered. An approximately 335-ft² area located between AST No. 399 and AST No. 400 and an approximately 605-ft² area located on the northeastern side of AST No. 399 were excavated to a depth of approximately 0.5 feet. Approximately 33.5 tons of lead impacted soil was excavated and transported under manifests MI9348426 and MI9348427 to Michigan Disposal Water Treatment Plant (EPA ID No.: MID000724831) located at 49350 N. I-94, Service Drive, Belleville, Michigan, 48111. The excavation was restored in accordance with the above referenced RAP by backfilling with low permeability clay material. The clay was smoothed and compacted. The compacted, low permeability clay was covered by gravel. A report describing the remediation of lead-impacted soil by excavation and off-site disposal/recycling is included as **Appendix C**.

1.4.4 Baseline/Residual Human Health and Ecological Risk Assessment

On October 19, 2004, Shaw Environmental submitted a Baseline /Residual Human Health and Ecological Risk Assessment (HHERA) to the WVDEP for the Site. WVDEP comments on the HHERA were addressed and a revised HHERA dated November 2004 was accepted by the WVDEP on December 3, 2004. Constituents detected during previous referenced environmental investigations included BTEX, MTBE, TPH, GRO, DRO, and ORO, chromium (both trivalent and

hexavalent), lead, 18 polynuclear aromatic hydrocarbons (PAHs), acetone, 2-butanone, carbon disulfide, and methylene chloride. Constituents detected in groundwater include BTEX, MTBE, TPH (including GRO, DRO, and ORO), 18 PAHs, and dissolved lead. Constituents detected in surface water include TPH (DRO and ORO, only); lead, both total and dissolved; and 11 PAHs. Constituents detected in near shore sediment include TPH (ORO, only) and lead. Analytical data are summarized in tables included in Appendix A of the above referenced Risk Assessment (Shaw Environmental, October, 2004).

Based on analytical data, chemicals of potential human concern (COPHCs) do not exist for soil, sediment and surface water. An evaluation of ecological risks associated with potential surface water and sediment COPECs was conducted for the Elk River. Based on the evaluation of surface water and sediment COPECs, potential impacts to aquatic biota are not predicted.

COPHCs for groundwater include benzene, MTBE, TPH-GRO, TPH-DRO, TPH-ORO, dissolved lead, 1-methylnaphthalene, 2-methylnaphthalene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene. A groundwater model was constructed to assess the potential for soil to groundwater migration and to assess the fate and transport of COPHCs in groundwater. Using the surface water data and the model results, a screening level assessment for both current and future exposure scenarios was completed to assess the potential of surface water concentrations to pose health concerns for human receptors. Since the referenced potential groundwater concentrations were below the referenced screening levels, COPHCs do not exist for surface water.

A conceptual site model was developed for the Site. Potential human receptors evaluated in the risk assessment included on-site commercial workers and on-site construction workers. On-site commercial workers are assessed for exposure to COPHCs in groundwater via inhalation of indoor air. On-site construction workers are assessed for exposure to COPHCs in groundwater via dermal contact and inhalation of indoor air. Estimated cancer risks for all receptors were within or below both West Virginia's and USEPA's target risk range of 1×10^{-6} to 1×10^{-4} . The WVDEP and USEPA consider noncarcinogenic hazard indices that are less than one (1.0) to be acceptable. Hazard indices for all receptors are below 1.0. Based on analytical and field data collected during the environmental site assessments and the results of this risk assessment, the Site does not pose a risk to potential human or ecological receptors. Additional information is included in the above referenced Revised HHERA (Shaw Environmental, October, 2004).

The WVDEP accepted the Revised HHERA and requested the installation of a new monitoring well in the vicinity of TMW/SB-16 and TMW/SB-17 and quarterly groundwater monitoring to verify that lead concentrations in groundwater do not pose a threat to ecological receptors in the Elk River. In a telephone conversation on December 3, 2004, Pete Costello of the WVDEP stated that it would be acceptable to collect quarterly groundwater samples from the referenced new monitoring well and monitoring wells MW-2 and MW-3 for the analyses of dissolved lead only. Monitoring wells MW-2 and MW-3 are located upstream and downstream of the referenced new monitoring well adjacent to the Elk River. Details of the proposed groundwater monitoring program are included in **Appendix D**.

2.0 VRRRA INFORMATION

Applicant: Pennzoil-Quaker State Company (Now PQS dba SOPUS Products)
700 Milam, P.O. Box 4427
Houston, Texas 77210-4427

Applicant Contact: Daniel McQuillen
Phone: (703) 546-8517
Facsimile: (703) 546-8505

Property Owner: Etowah River Terminal, LLC
1344 Poca River Road
Poca, WV 25159

Owner Contact: Denny Ferrell (Owner)
Phone: (304) 552-2919
Facsimile: (304) 343-0028

Site Location: Former PQS Etowah Terminal (Now Etowah River Terminal)
1015 Barlow Drive
Charleston, WV 25311-1011

Legal Description: Parcels 30,31, 32 and 33, City of Charleston, Tax Assessor Map 44L (see Deed Book 1576 pages 141 and 142)

LRS: George A. Robertson (LRS No. 62)
Shaw Environmental, Inc.
Rock Branch Industrial Park
6 Craddock Way
Poca, West Virginia 25159 Phone: (304) 759-2741
Facsimile: (304) 759-0491

3.0 INSTITUTIONAL AND ENGINEERING CONTROLS

3.1 Land Use Covenant

The Applicant proposes to file a deed restriction with the Clerk of Kanawha County Commission in the form of a Land Use Covenant (LUC) to restrict Site usage to non-residential and restrict groundwater from potable usage as defined by Title 60 CSR Series 3, Voluntary Remediation and Redevelopment Rule. The proposed LUC is included as **Appendix B**. Additionally, certain engineering controls concerning facility maintenance will be required as described in Section 3.2.

3.2 Engineering Controls

As part of the LUC, the Applicant will also require that the current concrete and asphalt pavement and concrete floors at the Site be maintained in a contiguous, unbroken, impermeable condition to prevent human receptor exposure to COCs and minimize subsurface infiltration. Further, the LUC will define conditions for excavations beneath the concrete and asphalt paved areas.

4.0 SITE RELATED VRP DOCUMENTS

Information regarding the physical characteristics of the Site and the presence of anthropogenic and naturally-occurring chemicals in the Site soil and groundwater has been submitted in the following documents:

IT Corporation (Now Shaw Environmental), July 2001, Supplemental Phase II Environmental Investigation, Former PQS Etowah Terminal, 1015 Barlow Drive, Charleston, West Virginia, 5 pp.

IT Corporation (Now Shaw Environmental), November 2001, Application to Participate in Voluntary Remediation Program, Pennzoil-Quaker State Company, Etowah Terminal No. 5117, Charleston, West Virginia, VCP No. 045, One Volume.

Shaw Environmental, Inc., 2002, Additional Site Characterization Sampling and Analysis Plan, Former Pennzoil-Quaker State Etowah Terminal, Charleston, West Virginia, 49 p.

Shaw Environmental, Incorporated, 2003, Additional Site Characterization Report, Former PQS Etowah Terminal, 1015 Barlow Drive, Charleston, West Virginia, VCP No. 04506, 38 pp.

Shaw Environmental, Incorporated, July 2004, Surface Water Sampling, Former PQS Etowah Terminal, 1015 Barlow Drive, Charleston, West Virginia, VCP No. 04506, 3 pp.

Shaw Environmental, Incorporated, August 2004, Remedial Action Plan For Removal Of Lead Impacted Soil, Former PQS Etowah Terminal, 1015 Barlow Drive, Charleston, West Virginia, VCP No. 04506, 3 pp.

Shaw Environmental, Incorporated, October 2004, Baseline/Residual Human Health and Ecological Risk Assessment for Pennzoil-Quaker State dba SOPUS Products Former PQS Etowah Terminal, 1015 Barlow Drive, Charleston, West Virginia, VCP No. 04506, 27 pp.

5.0 REQUEST FOR CERTIFICATE OF COMPLETION

The Applicant requests a Certificate of Completion to be issued for the Site. An amended deed containing the LUC with proposed institutional and engineering controls has been prepared by PQS dba SOPUS Products and executed by the landowner. Upon WVDEP approval of the LUC, the LUC will be filed with the county clerk of Kanawha County. Certification or verification of the LUC filing will be forwarded to the WVDEP-OER.

6.0 REFERENCES

Caldwell, Dudley H., R.B. Erwin, H.P. Woodward, 1986, Geologic Map of West Virginia. West Virginia Geological and Economic Survey.

CTL Engineering of West Virginia, November 2003, Soil and Groundwater Investigation Report, Etowah Terminal, Charleston, West Virginia, 4pp.

IT Corporation (now Shaw Environmental), 2000, Environmental Site Assessment Report, Pennzoil-Quaker State Etowah Terminal, 1015 Barlow Road, Charleston, West Virginia, 13 pp.

IT Corporation (now Shaw Environmental), January 2001, Phase II Environmental Investigation, Former PQS Etowah Terminal, 1015 Barlow Drive, Charleston, West Virginia, VCP No. 04506, 4 pp.

IT Corporation (Now Shaw Environmental), July 2001, Supplemental Phase II Environmental Investigation, Former PQS Etowah Terminal, 1015 Barlow Drive, Charleston, West Virginia, 5 pp.

IT Corporation (Now Shaw Environmental), November 2001, Application to Participate in Voluntary Remediation Program, Pennzoil-Quaker State Company, Etowah Terminal No. 5117, Charleston, West Virginia, VCP No. 045, One Volume.

Shaw Environmental, Inc., 2002, Additional Site Characterization Sampling and Analysis Plan, Former Pennzoil-Quaker State Etowah Terminal, Charleston, West Virginia, 49 p.

Shaw Environmental, Incorporated, 2003, Additional Site Characterization Report, Former PQS Etowah Terminal, 1015 Barlow Drive, Charleston, West Virginia, VCP No. 04506, 38 pp.

Shaw Environmental, Incorporated, July 2004, Surface Water Sampling, Former PQS Etowah Terminal, 1015 Barlow Drive, Charleston, West Virginia, VCP No. 04506, 3 pp.

Shaw Environmental, Incorporated, August 2004, Remedial Action Plan For Removal Of Lead Impacted Soil, Former PQS Etowah Terminal, 1015 Barlow Drive, Charleston, West Virginia, VCP No. 04506, 3 pp.

Shaw Environmental, Incorporated, October 2004, Baseline/Residual Human Health and Ecological Risk Assessment for Pennzoil-Quaker State dba SOPUS Products Former PQS Etowah Terminal, 1015 Barlow Drive, Charleston, West Virginia, VCP No. 04506, 27 pp.

Van Houten, David G., F.D. Childs, C.C. Teets, R Estepp and F. A. Doonan, 1981, Soil Survey of Kanawha County, West Virginia, U.S.D.A., 111 pp.

West Virginia Title 47 Code of State Regulations (CSR) Series 59, Monitoring Well Regulations.

West Virginia Title 47 Code of State Regulations (CSR) Series 60, Monitoring Well Design Standards.

West Virginia Department of Environmental Protection, Division of Environmental Remediation, August 2001, West Virginia Guidance Document for Leaking Underground Storage Tank Site Assessments and Corrective Actions, 85pp.

West Virginia Department of Environmental Protection, Division of Environmental Remediation, 3:00 PM December 3, 2004, Telephone conversation between Pete Costello (WVDEP) and George Robertson (Shaw Environmental) regarding groundwater monitoring.

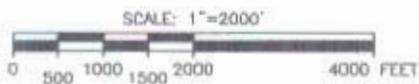
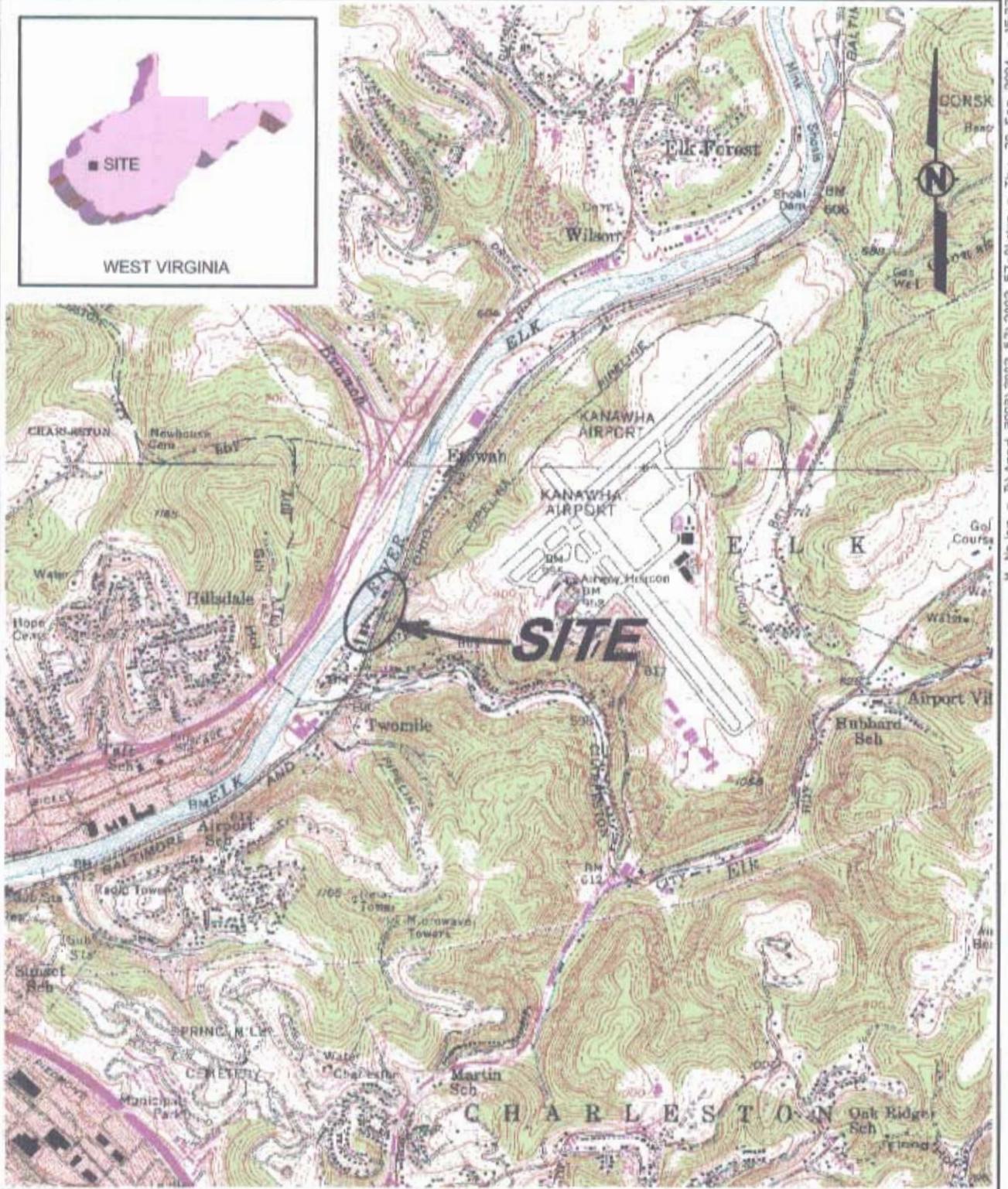
West Virginia Department of Environmental Protection, Division of Water Resources, 2000, Quality Assurance/Quality Control Plan and Standard Operating Procedures for Ground Water Sampling, 67pp.

WVDEP (2002). West Virginia Voluntary Remediation and Redevelopment Act Guidance Manual, Version 2.1, West Virginia Department of Environmental Protection, Office of Environmental Remediation.

FIGURES

Large maps not
scanned

DRAWN BY: MSN 7/31/02
 CHECKED BY: GAR 11/7/03
 APPROVED BY: DAC 11/7/03
 DRAWING NUMBER: 57-01.DWG



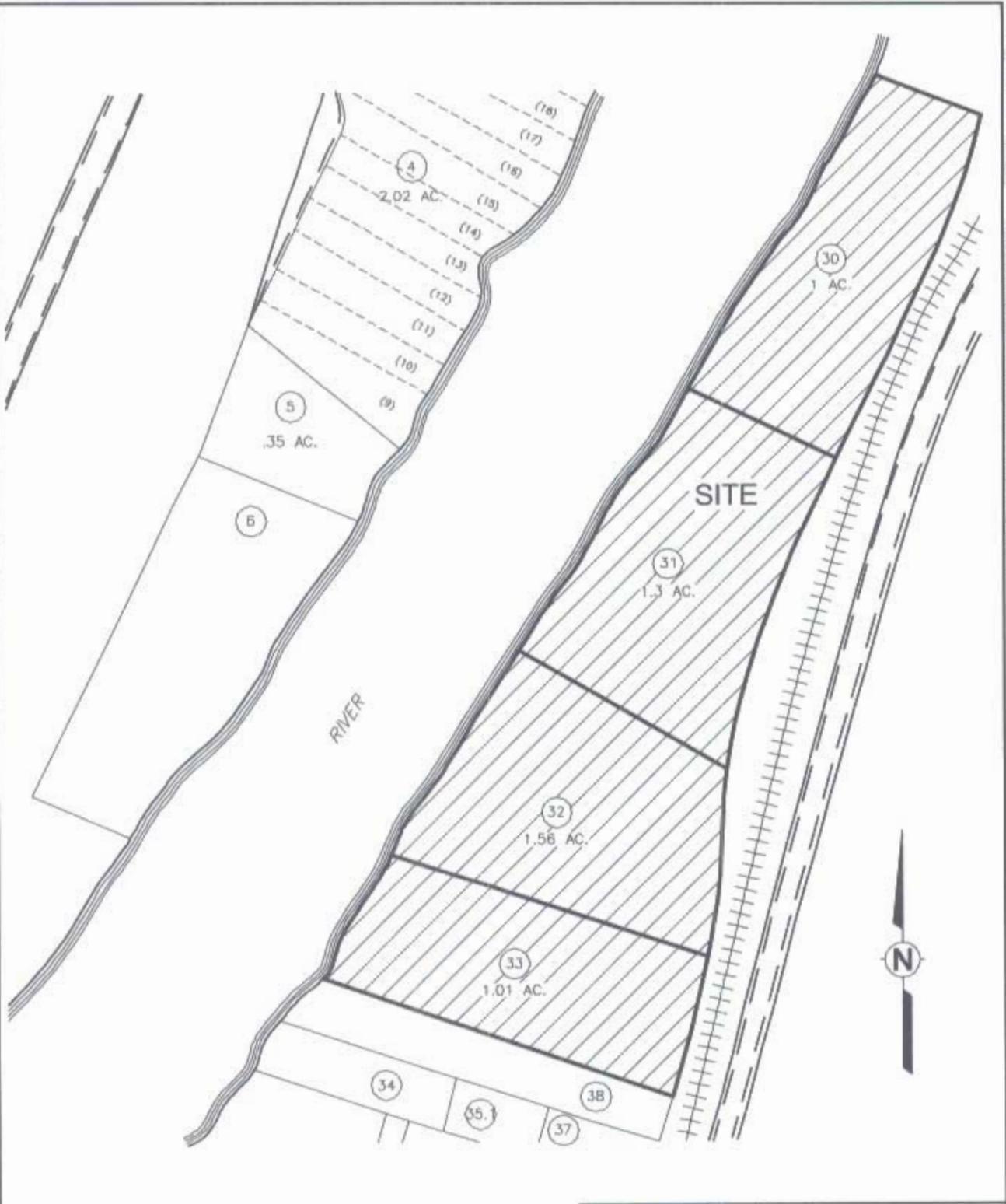
REFERENCE:
 U.S.G.S. 7.5 MIN. TOPOGRAPHIC MAP OF
 CHARLESTON EAST WEST VIRGINIA,
 DATED 1958, PHOTOREVISED 1968;
 SCALE: 1"=2000'



SHELL OIL PRODUCTS, U.S.

FIGURE 1
 SITE LOCATION MAP
 FORMER PQS ETOWAH TERMINAL
 1015 BARLOW DRIVE
 CHARLESTON, WEST VIRGINIA

DRAWN BY	MSN	CHECKED BY	GAR	11/5/04	DRAWING NUMBER	57-20.DWG
	11/5/04	APPROVED BY	DAC	11/5/04		



KANAWHA COUNTY OFFICE OF ACCESSOR
 CHARLESTON, WEST VIRGINIA
 ELK DISTRICT MAP 44L 7-6-66

NOT TO SCALE

 <p>Shaw Environmental, Inc.</p>	<p>SHELL OIL PRODUCTS, U.S.</p>
<p>FIGURE 3 TAX MAP</p> <p>FORMER PQS ETOWAH TERMINAL 1015 BARLOW DRIVE CHARLESTON, WEST VIRGINIA</p>	

TABLES

Table 1
Chain of Title
Former PQS Etowah Terminal
1015 Barlow Drive
Charleston, West Virginia

Deed Book	Page Number	Grantor	Grantee	Date
		Pennzoil-Quaker State Company	Etowah River Terminal, LLC	11/30/2001
1576	141 - 142	Elk Refining Company merged with Pennzoil United, Inc.		1/1/1970
820	232 - 235	Kanawha Co. Board of Education	Elk Refining Company	1/9/1948
799	407 - 409	Ambrose C. Smith and wife	Elk Refining Company	7/30/1947
588	145 - 146	Delia Bowers and James C. Bowers	Elk Refining Company	8/30/1941
481	499 - 500	Edith Bowers Bailey and Homer Bailey	Elk Refining Company	12/28/1938

Table 2
Chemicals of Concern (Standards Have Been Met)
Former PQS Etowah Terminal
1015 Barlow Drive
Charleston, West Virginia

Parameter	CAS Number	Table 60-3B De Minimis (mg/L)	Analysis	SW 846 Method	Matrix
Benzene	71-43-2	0.005	VOCs Solvents	8260B (10mL Purge when solvents are included)	Soil and Water
Toluene	108-88-3	1			
Ethylbenzene	100-41-4	1.3			
Xylenes	1330-20-7	10			
Methyl tertiary butyl ether	none	0.020 (b)			
Acetone	67641	0.61			
n-Butanol (1-Butanol)	71-36-3	3.7			
Carbon disulfide	75150	1			
Carbon tetrachloride	56235	0.005			
Chlorobenzene	108907	0.11			
Cyclohexanone	108941	180,000			
1,2-Dichlorobenzene	95501	0.6			
Isobutanol	78831	1.8			
1,1,2-Trichloroethane	79005	0.005			
Trichloroethene	79016	0.005			
Methylene chloride	75-92	0.005			
Methyl ethyl ketone (MEK)	78933	1.9			
Methyl isobutyl ketone (MIBK)	108101	0.16			
Tetrachloroethene	127184	0.005			
1,1,1-Trichloroethane (TCA)	71556	0.54			
Trichlorofluoromethane	75694	1.3			
o-Cresol (2-Methylphenol)	95487	1.8	VOCs Solvents and PAH	8270C SIMS	
m-cresol (3-Methylphenol)	108394	1.8			
p-Cresol (4-Methylphenol)	106445	0.18			
Pyridine	110861	0.037			
Nitrobenzene	98953	0.0034			
Acenaphthene	83-32-9	0.37			
Anthracene	120-12-7	1.8			
Benzo(a)anthracene	56-55-3	0.000091			
Benzo(a)pyrene	50328	0.0002			
Benzo(b)fluoranthene	205992	0.000091			
Benzo(k)fluoroanthene	207089	0.00091			
Chrysene	218-01-9	0.0091			
Dibenzo(a,h)anthracene	53703	0.0000091			

Table 2 (Continued)
Chemicals of Concern (Standards Have Been Met)
Former PQS Etowah Terminal
1015 Barlow Drive
Charleston, West Virginia

Parameter	CAS Number	Table 60-3B De Minimis (mg/L)	Analysis	SW 846 Method	Matrix
Fluoranthene	206-44-0	1.5	Solvents and PAH (Continued)	8270C SIMS	Soil and Water
Fluorene	86-73-7	0.24			
Indeno(1,2,3-cd)pyrene	193395	0.000091			
Naphthalene	91-20-3	0.0062			
Pyrene	129-00-0	0.18			
2-Ethoxyethanol	110805	15	TPH	8015B	
Ethylene glycol	107211	73			
Methanol	67561	18			
Diesel range organics C ₁₀ -C ₂₈	none	0.33 (b)			
Oil range organics C ₂₈ -C ₃₅	none	0.16 (b)			
Gasoline range organics C ₆ -C ₁₀	800-61-9	1.5 (b)	Inorganics	6010B 6010B 6010B 7196A	
Cadmium	7440439	0.018			
Chromium III	16065831	55			
Lead	7439-82-1	0.015			
Chromium VI	18540299	0.11			

APPENDIX A
PROPERTY DEED

THIS DEED, Made and entered into this 1st day of January, 1970, by and between ELK REFINING COMPANY, a West Virginia corporation, party of the first part, and PENNZOIL UNITED, INC., a Delaware corporation, party of the second part,

WHEREAS, effective on or prior to the date of this deed, Elk Refining Company was merged into Pennzoil United, Inc., which became the surviving corporation, in accordance with an Agreement of Merger duly filed for recordation in the office of the Secretary of State of the State of West Virginia and a Certificate of Ownership and Merger duly filed in the office of the Secretary of State of Delaware, and otherwise filed and recorded in accordance with the laws of West Virginia and Delaware; and

WHEREAS, the parties hereto desire to evidence further the title of Pennzoil United, Inc., the surviving corporation, to all of the property, rights, interests and estates situate in the State of West Virginia and formerly owned by Elk Refining Company by the execution, acknowledgment and recordation of this confirmatory deed in accordance with the provisions of Chapter 31, Article 1, Section 63(b) of the Code of West Virginia:

NOW, THEREFORE, THIS DEED WITNESSETH: That for and in consideration of said merger, the party of the first part does hereby grant, bargain, sell, assign, convey, transfer and set over unto the party of the second part, its successors and assigns, all property, real, personal and/or mixed, and all rights in and to property, whether legal or equitable, including, without limiting the generality of the foregoing, all lands, tenements and hereditaments, buildings, plants, machinery, equipment, improvements, easements, leases and leasehold estates, options and other rights to acquire property, pipe lines, rights of way, chattels real, chattels personal and appurtenances, now or formerly belonging to the party of the first part or to which it may in the future become entitled, and situate in Kanawha County in the State of West Virginia and elsewhere in said State.

The party of the first part covenants to and with the party of the second part that it will warrant the title to the property and rights above referred to and hereby conveyed and assigned in the same manner and to the same extent and by the same warranties contained in the deeds and other instruments whereby the party of the first part acquired such property and rights, and, further, that the party of the first part will execute such further assurances of title to the property and rights hereby conveyed and assigned as may be requisite.

IN WITNESS WHEREOF, Elk Refining Company, a corporation under the laws of the State of West Virginia, has caused this deed to be signed in its corporate name and its corporate seal to be hereunto affixed by its Vice President, thereunto duly authorized, this day and year first above written.



RECORDED
70 JAN -3 PM 10:23
NOTARY PUBLIC
KANAWHA COUNTY
WEST VIRGINIA

ELK REFINING COMPANY

By [Signature]
Its Vice President

STATE OF WEST VIRGINIA,
COUNTY OF KANAWHA, TO-WIT:

I, Mary Jane Burgraph, a Notary Public in and for said County, do certify that Paul W. Emery, who signed the writing above bearing date the 1st day of January, 1970, for Elk Refining Company, a West Virginia corporation, has this day in my said County, before me, acknowledged the said writing to be the act and deed of said corporation.

Given under my hand, this 3rd day of January, 1970.

Mary Jane Burgraph
Notary Public in and for the County
and State aforesaid.

My commission expires November 12, 1973.

This document was prepared by Harry V. Campbell, Attorney, 1200 Charleston National Plaza, Charleston, West Virginia.

Note to Clerks of County Courts:

This deed has been executed for the purpose of confirming merger of Elk Refining Company, a West Virginia corporation, into Pennzoil United, Inc., a Delaware corporation. No monetary consideration has been paid and, consequently, no West Virginia excise tax stamps are required. See West Virginia Code, 11-22-1, paragraph 299. ~~Serial Section 50 (sssss)~~
This instrument was presented to the Clerk of the County Court of Kanawha County, West Virginia, on JAN -3 1970 and the same is admitted to record.

Teste: [Signature] Clerk
Kanawha County Court

#657
Mail: H. V. Campbell
P. O. Box 1513
City

This deed, made this the 9th day of January, 1948, by and between The Board of Education of the County of Kanawha, a corporation under the laws of the State of West Virginia, party of the first part, and Elk Refining Company, a corporation organized and doing business under the laws of the Commonwealth of Pennsylvania, duly qualified to do business in the State of West Virginia, party of the second part;

Witnesseth that, whereas, pursuant to Section 7, Article 5, Chapter 18, of the Code of West Virginia, as last amended, the party of the first part did ascertain, according to law, that the building and grounds hereinafter described and conveyed should be sold; and thereafter, on January 5, 1948, did sell said real estate at public auction at the offices of the party of the first part, at the corner of Quarrier and Morris Streets in the City of Charleston, Kanawha County, West Virginia, after publication of proper notice of such sale according to law; at which sale said party of the second part was the highest bidder for said real estate and became the purchaser thereof for the sum of Twelve Thousand Dollars (\$12,000.00), all of which has been paid in cash to the party of the first part;

Now, therefore, in consideration of said sum of Twelve Thousand Dollars (\$12,000.00), receipt whereof is hereby acknowledged, the said party of the first part does hereby grant and convey unto the said party of the second part, all of that certain school building and grounds commonly known as the "Bowers School", the same being all of that certain parcel of land, together with all improvements thereon and appurtenances thereunto belonging, situate on the southeasterly side of Elk River, a short distance above the mouth of Elk Two Mile Creek, in Elk

District, Kanawha County, West Virginia, being a part of Lot Four (4) of the partition of the lands of Melissa Bowers described in a deed between the heirs of Melissa Bowers, bearing date November 25, 1913, and of record in the office of the Clerk of the County Court of Kanawha County, West Virginia, in Deed Book 141, page 494, and shown upon a map attached to said deed, made by J. G. Gilbert, and dated October, 1913; and which part of Lot 4 hereby conveyed is bounded and described as follows:

Beginning at a stake in the westerly line of the right of way of the Baltimore & Ohio Railroad, which stake is the common corner of the land hereby conveyed and lands now or formerly owned by A. C. Smith; thence with the line of the said A. C. Smith property and with a fence; N. 58° 23' W. (passing an old iron pin at 242 feet), in all a distance of 319 feet, more or less, to a stake at the water's edge of Elk River; thence with said Elk River and up the same, N. 42° 33' E. 141.88 feet to a stake at the water's edge, corner to a parcel of land conveyed by Edith Bowers Bailey and husband to Elk Refining Company, by deed dated December 28, 1938, and duly of record in said Clerk's office; thence with the property of said Elk Refining Company (acquired from Edith Bowers Bailey and husband, as aforesaid), S. 59° 04' E. (this is the reverse of the call given in the deed from Edith Bowers Bailey and husband to Elk Refining Company as N. 65° 03' W.) 285.80 feet, more or less, to a stake in the right of way line of the Baltimore & Ohio Railroad; thence with said railroad right of way line, S. 29° 05' W. 142.40 feet to the place of beginning; which said real estate is shown upon a map entitled "Map Showing Parcel of Land known as the Bowers School Lot, located in Elk District, Kanawha County, W. Va. now owned by The Board of Education of the County of Kanawha, to be conveyed to Elk Refining Company", dated January 6, 1948, made by Field

Engineering Company, attached hereto and made a part hereof; being the same real estate heretofore conveyed unto The Board of Education of Elk District, a corporation, by George H. Bowers and Delia Bowers, his wife, by deed bearing date the 14th day of September, 1926, and of record in said Clerk's Office in Deed Book 304, page 182, the title of the said The Board of Education of Elk District having passed to and become vested in the Board of Education of the County of Kanawha by operation of law; to all of which maps and deeds reference is here made for a further description of said real estate.

The foregoing real estate is conveyed subject to the following:

(a) A reservation of the minerals together with mining and operating rights set forth in a certain deed of partition between the heirs of Melissa Bowers, dated November 25, 1913, and of record in said Clerk's Office in Deed Book 141, page 484; excepting insofar as said minerals were acquired by George H. Bowers, predecessor in title to the party of the first part and by him conveyed to the party of the first part by the deed aforesaid; it being understood that this deed conveys to the party of the second part all minerals under said real estate owned by the party of the first part.

(b) A certain pipe line easement granted by Melissa Bowers to United States Natural Gas Company by deed dated February 24, 1908, of record in said Clerk's Office in Deed Book 111, page 559, and now owned by United Fuel Gas Company.

(c) An electric line and telephone and telegraph lines running parallel to and approximately ten feet from the easterly boundary line of said real estate.

In witness whereof, the said The Board of Education of the County of Kanawha has caused its name to be hereto signed and its corporate seal to be hereunto affixed by Charles P. McCabe, its President, thereunto duly authorized.



THE BOARD OF EDUCATION OF THE COUNTY OF KANAWHA

BY Charles P. McCabe
Its President

Stamp Tax Exemption Claimed

STATE OF WEST VIRGINIA
COUNTY OF KANAWHA, TO-WIT:

I, William M. Anderson, a Notary Public within and for the State and County aforesaid, do certify that Charles P. McCabe, who signed the foregoing writing, bearing date the 9th day of January, 1948, for The Board of Education of the County of Kanawha, a corporation, has this day, in my said County, before me, acknowledged the said writing to be the act and deed of said corporation.

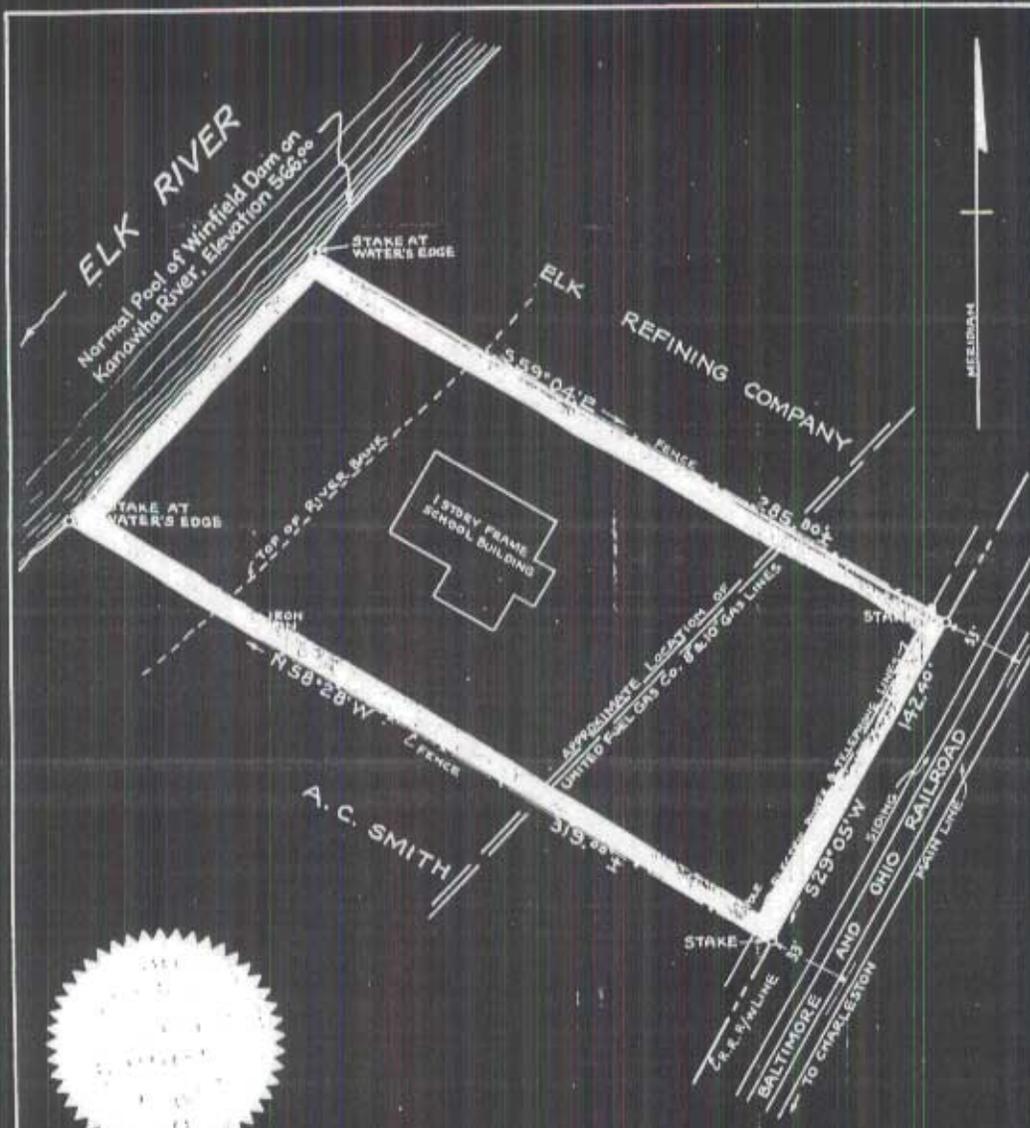
Given under my hand this the 26th day of January, 1948.

10:43 My commission expires June 15, 1957

William M. Anderson
Notary Public

West Virginia Kanawha County Court Clerk's Office JAN 29 1948
This instrument was this day presented to me in my office, and thereupon, together with the Certificate thereto annexed, is admitted to Record.

Teste: Paul E. Fulkler Clerk
Kanawha County Court



MAP SHOWING
**PARCEL OF LAND KNOWN AS
 THE BOWERS SCHOOL LOT**
 LOCATED IN ELK DISTRICT, KANAWHA COUNTY, W. VA.
 NOW OWNED BY
**THE BOARD OF EDUCATION OF THE
 COUNTY OF KANAWHA**
 TO BE CONVEYED TO
ELK REFINING COMPANY
 SCALE: - 1" = 50 - JANUARY 6, 1948
FIELD ENGINEERING CO.
 CHARLESTON, W. VA.

THIS DEED, Made this 30th day of July, 1947, by and between
 AMBROSE C. SMITH and AMANDA SMITH, his wife, parties of the first
 part, and ELK REFINING COMPANY, a corporation, party of the second
 part;

W I T N E S S E T H:

That for and in consideration of the sum of Ten Dollars
 (\$10.00) and other valuable considerations, cash in hand paid to
 the party of the second part by the parties of the first part, the
 receipt of all of which is hereby acknowledged, the said parties
 of the first part do hereby grant and convey unto the party of the
 second part, all of that certain lot or parcel of real estate, to-
 gether with the improvements thereon and the appurtenances there-
 unto belonging, lying and being situate in Elk District, Randolph
 County, West Virginia, being more particularly bounded and de-
 scribed as follows, to-wit:

BEGINNING at a stake in the westerly right of way
 line of the Baltimore and Ohio Railroad dead end, known
 to the property heretofore conveyed by the parties of
 the first part herein to Opal Edens, by deed bearing
 date the 21st day of January, 1938, and of record in
 the office of the Clerk of the County Court of Randolph
 County, West Virginia, in Deed Book No. 410 at page 433;
 thence with the division line between said Edens prop-
 erty and the property hereby conveyed, in a westerly
 direction 350 feet, more or less, to low water of Elk
 River; thence in a northerly direction and binding on
 low water mark of Elk River, 117 feet, more or less, to
 a stake, corner to the School House Lot; thence with the
 division line between said School House Lot and the
 property hereby conveyed, in an easterly direction, a
 distance of 323 feet, more or less, to an iron pin in
 the westerly right of way line of said Baltimore and
 Ohio Railroad, thence binding on said westerly right of
 way line of the aforesaid railroad, in a southerly di-
 rection, 110 feet to the place of beginning; containing
 one acre, more or less, and being all of the property
 conveyed to the parties of the first part herein by
 Henry A. Walker and others by deed bearing date the 27th
 day of April, 1931, of record in the aforesaid Clerk's
 Office in Deed Book No. 377 at page 422, after deducting
 and excepting from the boundaries set forth in the last
 deed above mentioned, two certain parcels of fifty (50)
 feet each, the first of which said parcels was conveyed

#6563 Mail: H. V. Campbell
 Box 1813, City

by the parties of the first part herein to Opie A. Boner by deed bearing date the 12th day of August, 1935, duly of record in the aforesaid Clerk's Office in Deed Book No. 405, at page 319; the second of which said parcels was conveyed by the parties of the first part herein to Opal Edens by deed bearing date the 21st day of January, 1936, duly of record in the aforesaid Clerk's office in Deed Book No. 410 at page 433, reference to all of which deeds is herein made for a more particular description of the property hereby conveyed.

There is excepted from this conveyance and reserved from the operation hereof, that part of the graveyard lot included within the boundaries above set forth, all of which graveyard lot is described as follows, to-wit:

"BEGINNING at a point which is located S 46° W 67 feet from an iron pin, which is situated on the said line of the School House lot 80 feet distant from Elk River; thence S 44° W 37.5 feet; thence S 43° E 33 feet; N 36° E 37.5 feet; N 44° 15' W 26.5 feet."

This conveyance is made expressly subject to a right of way five (5) feet in width running from the northeast corner of said graveyard lot to the line of the school house lot at the iron pin eighty (80) feet distant from the river. HOWEVER, in the event the bodies shall hereafter be removed from said graveyard lot, the said parties of the first part DO GRANT unto the party of the second part, its successors or assigns, whatever right, title and interest they now have, or may ever have, in and to said graveyard lot and the right of way to and from the same.

There is expressly reserved from this conveyance, the undivided one-sixth (1/6th) interest in and to the mineral in and underlying said parcel of land, which said interest is the interest in said mineral now or formerly owned by Luella M. Foster.

This conveyance is made expressly subject to the ten (10) foot right of way (for roadway purposes) granted to Opie A. Boner and to Opal Edens by the separate deeds hereinabove mentioned and described,

and which said right of way adjoins the western right of way line of the Baltimore and Ohio Railroad Company.

This conveyance is made expressly subject to the right of way for pipe lines and water mains, heretofore granted and conveyed to the West Virginia Water Service Company by the parties of the first part herein, by deed bearing date the 7th day of July, 1946, duly of record in the aforesaid Clerk's Office in Deed Book No. 543 at page 135.

Subject to the rights of way hereinabove set forth, the parties of the first part WARRANT GENERALLY the property hereby conveyed, and covenant with the party of the second part that the same is free and clear of all liens and encumbrances save and except for the taxes for the year 1947, which taxes shall be pro-rated between the parties hereto as of the date of this deed.

WITNESS the following signatures and seals:

Ambrose C. Smith (SMAR)
Amanda Smith (SMAR)

STATE OF WEST VIRGINIA

COUNTY OF KANAWHA, TO-WIT:

I, *J. P. Reynolds*, a Notary Public in and for the State and County aforesaid, do certify that Ambrose C. Smith and Amanda Smith, his wife, whose names are signed to the writing above, bearing date on the 30th day of July, 1947, have this day acknowledged the same before me in my said County.

Given under my hand this 30th day of July, 1947.

My Commission expires: March 20, 1949.

J. P. Reynolds
Notary Public in and for Kanawha County, West Virginia

2:28



West Virginia Kanawha County Court Clerk's Office
This Instrument was this day presented to me in my office, and thereupon, together with the Certificate thereto annexed, is admitted to record.

Teste: *Paul E. Furbush* Clerk
Kanawha County Court

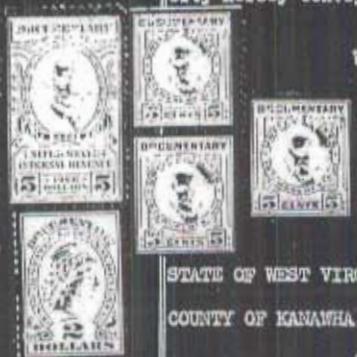
THIS DEED, Made this 30th day of August, 1941, by and between DELIA BOWERS, widow, and JAMES C. BOWERS, unmarried, parties of the first part, and ELK REFINING COMPANY, a corporation under the laws of the Commonwealth of Pennsylvania, having its principal office in the City of Charleston, Kanawha County, West Virginia, party of the second part.

WITNESSETH: That for and in consideration of the sum of Ten Dollars (\$10.00) cash in hand paid, and other valuable considerations, the receipt and sufficiency of all which is hereby acknowledged, the parties of the first part hereby grant and convey unto the party of the second part all that certain tract or parcel of land, together with the appurtenances thereunto belonging, situate, lying and being between the right-of-way of the Baltimore & Ohio Railroad Company and the Elk River, in Elk District, Kanawha County, West Virginia, and being more particularly bounded and described as follows: BEGINNING at an iron pin in the westerly line of the right-of-way of said Baltimore & Ohio Railroad Company, which pin is at the common corner between the property hereby conveyed and a tract of 1.56 acres on the southerly side thereof which was conveyed to said Elk Refining Company by Edith Bowers Bailey and Homer W. Bailey, her husband, by deed dated the 28th day of December, 1938, of record in the office of the Clerk of the County Court of Kanawha County, West Virginia, in Deed Book 481, at page 499; thence with the westerly line of said right-of-way and with a curve to the right 200 feet in a northeasterly direction to a stake; thence continuing with the westerly line of said right-of-way N. 26° 30' E. 175 feet to an iron pin; thence leaving said right-of-way N. 64° W. 106.5 feet to a stake at low water mark of Elk River; thence down Elk River and with the meanders thereof S. 39° 25' W. 385.6 feet to an iron pin, which is a common corner between the property hereby conveyed and the adjoining tract owned by the Elk Refining Company; thence with the division line between said tracts S. 64° 0' E. 196 feet to the point and place of beginning, containing 1.3 acres, more or less, as shown by a survey of said property made by C. B. Holsclaw, Engineer, in July, 1941, and being a part of the same property conveyed to Delia Bowers by Thomas E. Nutter, single, by deed dated February 2, 1930, of record in said Clerk's office in Deed Book 353, at page 427; and being ^{also} a part of the same property conveyed to the said James C. Bowers by Delia Bowers, by deed dated the 20th day of December, 1938, of record in said Clerk's office in Deed Book 486, at page 265.

Mail: Blue, Dayton & Campbell,
Security Bldg.,
City

The parties of the first part covenant to and with the party of the second part that the grantee herein shall have quiet possession of the said land, free from all encumbrances; that they, the parties of the first part, will execute such further assurances of the said land as may be requisite; and that they, the said parties of the first part, will Warrant Generally the property hereby conveyed.

WITNESS the following signatures and seals.



Delia Bowers (SEAL)
James C Bowers (SEAL)

STATE OF WEST VIRGINIA,
COUNTY OF KANAWHA, TO-WIT:

I, John Waters, a Notary Public of said County, do certify that DELIA BOWERS, widow, whose name is signed to the writing above bearing date on the 30th day of August, 1941, has this day acknowledged the same before me in my said County and State.

Given under my hand this 2nd day of Sept, 1941.

John Waters
Notary Public in and for the County and State aforesaid.

My commission expires Aug 19-1947.

STATE OF WEST VIRGINIA,
COUNTY OF KANAWHA, TO-WIT:

I, John Waters, a Notary Public of said County, do certify that JAMES C. BOWERS, unmarried, whose name is signed to the writing hereto annexed bearing date on the 30th day of August, 1941, has this day acknowledged the same before me in my said County and State.

Given under my hand this 2nd day of Sept, 1941.

John Waters
Notary Public in and for the County and State aforesaid.

10:17 My commission expires August 19-1947

SEP -3 1941

West Virginia Kanawha County Court Clerk's Office
This Instrument was this day presented to me in my office, and thereupon, together with the Certificate thereto annexed, is admitted to record.

Teste: Paul J. Kubrick Clerk
Kanawha County Court

THIS DEED, Made this 28th day of December, 1938, by and between EDITH BOWERS BAILEY and HOMER BAILEY, her husband, parties of the first part, and ELK REFINING COMPANY, a corporation under the laws of the Commonwealth of Pennsylvania which is authorized to do business in the State of West Virginia, party of the second part,

WITNESSETH: That for and in consideration of the sum of Ten Dollars (\$10.00) and other valuable considerations cash in hand paid, the receipt and sufficiency of all of which is hereby acknowledged, the parties of the first part hereby grant and convey unto the party of the second part a certain tract or parcel of land situate, lying and being on the waters of Elk River, in Elk District, Kanawha County, West Virginia, and being more particularly bounded and described as follows, to-wit:

Beginning at an iron pin in the northwest right-of-way line of the Baltimore & Ohio Railroad, which pin is also at the northeast corner of the property of the Board of Education of Kanawha County (known locally as the Bowers School); thence leaving the Baltimore & Ohio Railway right-of-way line and running with the north line of said Bowers School property N. 66° 03' W. passing an iron pin at 204 feet, at the top of the river bank, in all 285 feet to low water mark of Elk River; thence leaving said Bowers School property and running up Elk River with low water mark N. 40° 35' E. 303 feet to a stake; thence leaving Elk River S. 64° E. passing an iron pin at the top of the river bank at 76 feet, in all 196 feet, to an iron pin in the northwest right-of-way line of the Baltimore & Ohio Railroad; thence with the northwest right-of-way line of the Baltimore & Ohio Railroad by a slightly curved line to the left 155.5 feet to a stake; thence S. 22° 03' W. 128.5 feet to the beginning, containing 1.56 acres, more or less, it being the intention of the parties of the first part to convey all of the property conveyed to Edith Bowers Bailey by Delia Bowers by deed dated the 18th day of July, 1938, and of record in the office of the Clerk of the County Court of Kanawha County, West Virginia, in Deed Book 468, at page 231.

The parties of the first part hereby warrant generally the title to

the surface of the property hereby conveyed, it being understood that the parties of the first part intend to transfer by this deed the fee simple absolute title to the surface of the lot or parcel of land above described, and all of their right, title, interest and estate in and to the minerals underlying the same.

WITNESS the following signatures and seals:

Edith Bowers Bailey (SEAL)

Romer Bailey (SEAL)

STATE OF WEST VIRGINIA,
COUNTY OF KANAWHA, TO-WIT:

I, R. G. Watah, a Notary Public of

said county, do certify that EDITH BOWERS BAILEY and ROMER BAILEY, her husband, whose names are signed to the writing above bearing date on the 28th day of December, 1938, have this day acknowledged the same before me, in my said county and state.

Given under my hand this 28th day of December, 1938.

R. G. Watah
Notary Public in and For Kanawha County,
West Virginia.

My commission expires December 16th - 1948.

1:45

DEC 29 1938

West Virginia Kanawha County Court Clerk's Office
This Instrument was this day presented to me in my office, and thereupon, together with the Certificate thereto annexed, is admitted to record.

Tests: Paul E. Furbush Clerk
Kanawha County Court



APPENDIX B

PROPOSED LAND USE COVENANT

LAND USE COVENANT

**FORMER PENNZOIL-QUAKER STATE ETOWAH TERMINAL
1015 BARLOW DRIVE
CHARLESTON, WEST VIRGINIA
VRP No. 04506**

Pennzoil-Quaker State (PQS, now PQS dba SOPUS Products) entered into a Voluntary Remediation Agreement executed on April 15, 2002 (hereinafter referred to as "the Agreement") with the Department of Environmental Protection for the State of West Virginia pursuant to the Voluntary Remediation and Redevelopment Act, W.Va. Code §§ 22-22-1 through 22-22-21 (hereinafter referred to as "the Act"), for certain property, located at 1015 Barlow Drive in Charleston, Kanawha County, West Virginia and more particularly described in a deed of record (Deed Book 1576, page 141 and 142) in the office of the Clerk of the County Commission of Kanawha County, West Virginia. In the Agreement, the current owner of this property, Etowah River Terminal, LLC, hereinafter referred to as "Owner," has agreed to the imposition of the restrictions on this property, as required by the Agreement (Paragraph 75). The Agreement allows certain levels of contamination to remain on the property and requires a land use covenant be recorded in the office of the Clerk of the Kanawha County Commission for the purposes of protecting public health and the environment and to prevent interference with the performance, operation and maintenance of any remedial actions required by the Agreement.

NOW THEREFORE, the following restrictions shall apply to this property:

1. The Owner shall prohibit all activities on the property which may interfere with the remedial action required by the Agreement.
2. The Owner shall prohibit all activities that may result in human exposures above those specified by the Agreement or that would result in the release of a contaminant that was contained as part of the remedial action. These activities include, but are not limited to:

- a) Excavation or other penetration of the subsoil below the water table in the yellow shaded area of Figure 1 shall be by a contractor who is qualified and knowledgeable about releases and exposure to contaminants known to exist at the site. The contractor will be required to perform the work in accordance with a site specific Health and Safety Plan developed by an LRS or similarly qualified individual. Alternately, a contractor working under the direct supervision of an LRS, or similarly qualified individual may be used.

The current paved area, including the floors of existing buildings, shall be maintained in a contiguous, unbroken, impermeable condition. If excavated material is found to be contaminated, the removed materials shall be disposed in a proper manner. Following completion of construction, the exposed surface within the area of the former paving, shall be covered with concrete or paving in a similar manner to the pre-construction surface that results in a contiguous, unbroken, impermeable surface.

- b) Extraction of groundwater at the site for any potable or non-potable use.

3. The Owner shall restrict the uses of the property to:

- a) Commercial and industrial use. The restriction prohibits use of the property for any residential use, including schools, daycare centers, nursing homes, or any other use considered to be residential in nature.
4. The Owner shall provide written notice to the Secretary of the Department of Environmental Protection of the intent to transfer any interest in the property.
 5. The Owner shall not convey any title, easement, or other interest in the property without adequate and complete provision for the continued implementation, operation and maintenance of any remedial action that has been implemented on the property pursuant to the Agreement and without assuring prevention of the releases and exposures described in the provisions of paragraph 2, above.
 6. The Owner shall grant the West Virginia Department of Environmental Protection and its designated representatives the right to enter the property at reasonable times for the purpose of monitoring compliance with the Agreement, and the Certificate of Completion, including the right to take samples, inspect the operation to evaluate the effectiveness of remedial activities, and inspect records all as provided in the Agreement.
 7. The Department of Environmental Protection may enforce the restrictions set forth in this Land Use Covenant by legal action in a court of appropriate jurisdiction.
 8. In accordance with the provisions of the Act regarding land use covenants, W. Va. Code §22-22-15, and in addition to any rights or duties contained in the Certificate of Completion, this Land Use Covenant relieves the applicant, its successors and assigns, the Owner and any subsequent successors and assigns of the Owner, and any person identified in W. Va. Code §22-22-18 from all civil liability to the state as provided under the Act so long as the property complies with the applicable standards identified in the Agreement.
 9. The restrictions and other requirements described in this Land Use Covenant shall run with the land and shall be binding upon any future owners, successors or assigns and their authorized agents, employees or persons acting under their direction or control. Subject to subsequent written modification or release signed by the Secretary and the owner at the time of such modification or release, and filed in the office of the Clerk of the County Commission of the county where these covenants have been recorded, this Land Use Covenant shall continue in perpetuity.
 10. If any provision of this Land Use Covenant is held to be invalid by any court of competent jurisdiction, the invalidity of such provision shall not affect the validity of any other provisions hereof. All such other provisions shall continue unimpaired and in full force and effect.
 11. This Land Use Covenant shall not be amended, modified or terminated except by written instrument executed by and between the Owner at the time of the proposed amendment, modification or termination, and the Secretary of the West Virginia Department of Environmental Protection, or his successor in accordance with regulations promulgated by the Secretary or his successor. Within 5 days of executing an amendment, modification or termination of this Land Use Covenant, the

Owner shall record such amendment, modification or termination with the Clerk of the Kanawha Commission, and within 5 days thereafter, the Owner shall provide a true copy of the recorded amendment, modification or termination to the Secretary of the Department of Environmental Protection.

IN WITNESS WHEREOF, the said Owner of the above-described property and the Secretary of the Department of Environmental Protection have caused this Land Use Covenant to be executed this ____ day of _____, 20__.

SIGNED:

Property Owner

Secretary, Department of Environmental
Protection

I, _____, a Notary Public in and for the State and County aforesaid, do hereby certify that _____, whose name is signed to the writing above, bearing date the ____ day of _____, 20__, has this day acknowledged same to be his true act and deed.

Given under my hand this the ____ day of _____, 20__.

My commission expires _____

Notary Public

I, _____, a Notary Public in and for the State and County aforesaid, do hereby certify that _____, whose name is signed to the writing above, bearing date the ____ day of _____, 20__, has this day acknowledged same to be his true act and deed.

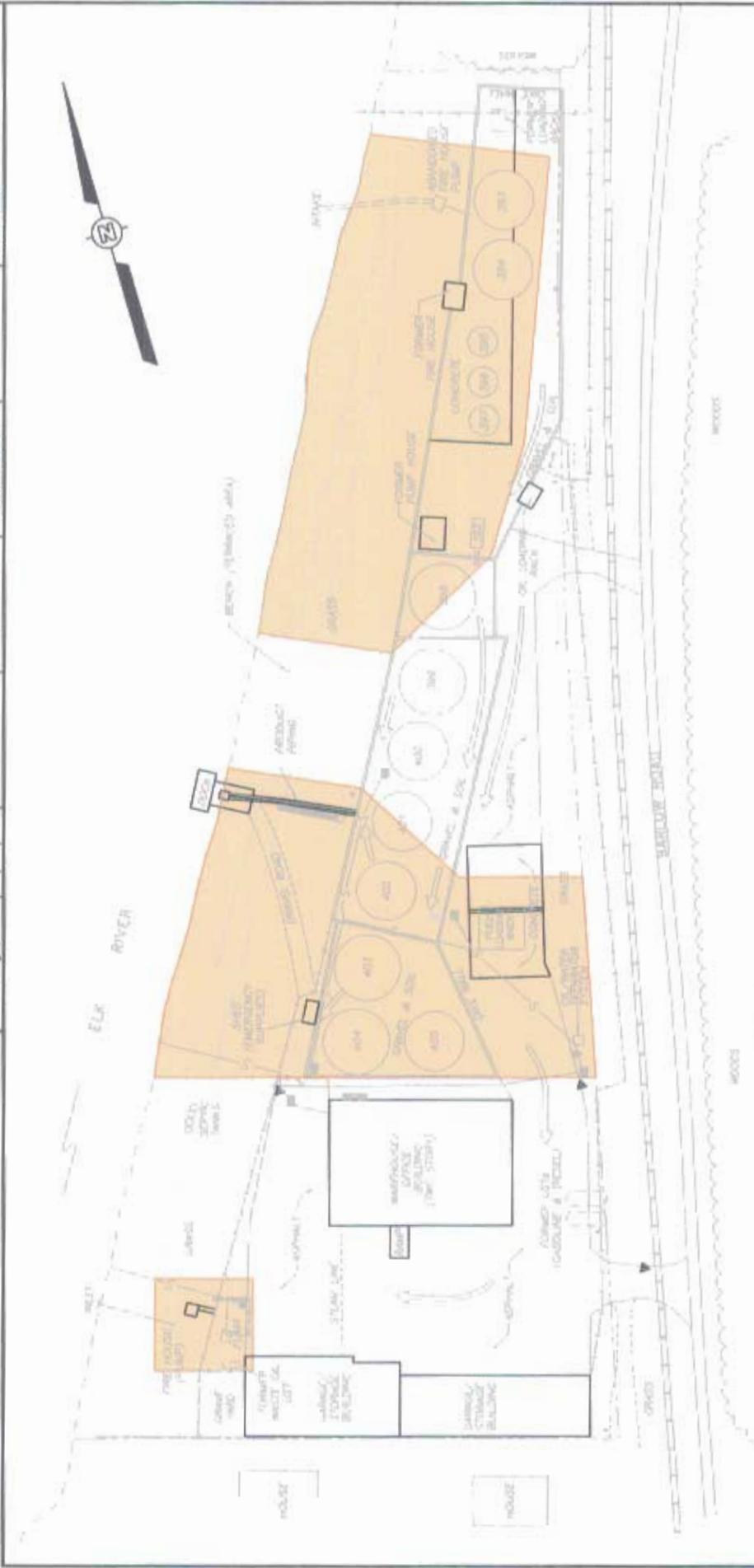
Given under my hand this the ____ day of _____, 20__.

My commission expires _____

Notary Public

It is requested that a true and executed copy of the recorded deed with this attached Land Use Covenant be forwarded to the Secretary of the West Virginia Department of Environmental Protection.

OFFICE	DATE	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
Pittsburgh, PA	11/17/04	--	A. Smith	G. Robertson	--	845335-A1



LEGEND:

	RAILROAD TRACKS
	NATURAL GAS PIPELINE
	FENCE LINE
	STORM SEWER
	DRAIN
	AREA REQUIRING PROCEDURES SPECIFIED IN THE LAND-USE COVENANT FOR EXCAVATION OR PENETRATION BELOW THE WATER TABLE

Shaw Environmental, Inc.
 PQS dba SOPUS PRODUCTS

FIGURE 1
SITE PLAN
 FORMER POS ETOWAH TERMINAL
 1015 BARLOW DRIVE
 CHARLESTON, WEST VIRGINIA



APPENDIX C

REMOVAL OF LEAD-IMPACTED SOIL

**Removal of Lead Impacted Soil
Former Pennzoil-Quaker State Etowah Terminal
1015 Barlow Drive
Charleston, West Virginia
VCP No. 04506**

Background

Lead-based paint was used on above ground storage tanks (ASTs) inside of the diked area at the former Pennzoil-Quaker State (PQS) Etowah Terminal (hereafter referred to as the Site) located at 1015 Barlow Drive in Charleston, West Virginia. In order to determine if the ground surface had been impacted by lead from lead-based paint used on the ASTs, three (3) composite soil samples (C-1, C-2 and C-3) were collected from inside the diked area at the Site on November 3, 2000 for the analysis of toxicity leaching characteristic procedure (TCLP) lead. A TCLP lead concentration of 8.2 milligrams per liter (mg/L) was detected above the Resource Conservation and Recovery Act (RCRA) maximum concentration level (MCL) of 5.0 mg/L in composite soil sample C-2 collected from the area around ASTs No. 398 through No. 402 (**Table 1**).

On May 30, 2001, five (5) discrete surface soil samples (C2-A - C2-E) were collected from 0 to 0.5 feet below ground surface (b.g.s.) inside the diked area between AST No. 398 through AST No. 402. TCLP lead concentrations of 75.2 mg/L and 6.49 mg/L were detected above the RCRA MCL of 5.0 mg/L in soil samples C2-C and C2-D, respectively. Soil samples C2-C and C2-D were collected near AST No. 399. Sample collection locations and analytical results are shown on **Figure 1** of the Remediation Action Plan (RAP) for Removal of Lead Impacted Soil prepared by Shaw Environmental, Inc. (Shaw Environmental), August 2004 (Shaw, August, 2004).

In order to delineate lead concentrations detected in soil adjacent to AST No. 399, six (6) discrete surface soil samples (SS-1 through SS-6) were collected from the 0 – 0.5-foot depth interval on July 18, 2003. The surface soil samples were analyzed for TCLP lead according to EPA Method 6010B/1311. Analytical results indicated that TCLP lead concentrations ranged from below the method detection limit of 0.500 mg/L in SS-1, SS-3, SS-5 and SS-6 to 3.05 mg/L in SS-4. Based on these data, the area of TCLP lead concentrations above 5.0 mg/L near AST 399 was fully delineated.

In order to finalize the dimensions of the area to be excavated to remove lead impacted soil above the RCRA MCL of 5.0 mg/L for TCLP lead, soil samples were collected from five (5) soil borings (SS-7 through SS-11) on July 19, 2003. Additionally, these soil samples were collected to confirm that the soils underlying the proposed excavation are below the referenced MCL for TCLP lead.

Soil samples were collected from the 0.5 - 1.5-foot depth intervals in soil borings SS-7, SS-10 and SS-11 to confirm that TCLP lead concentrations were below the MCL of 5.0 mg/L below the depth of the proposed soil excavation. TCLP lead concentrations of 0.0709 mg/L, <0.04 mg/L and <0.04 mg/L were detected in SS-7, SS-10 and SS-11, respectively. These data confirmed that an

excavation depth of 0.5 feet would be sufficient to remediate all lead concentrations above the referenced MCL.

In order to further delineate the excavation boundary on the eastern side of AST No. 400 and AST No. 399, soil samples were collected from the 0.0 – 0.5-foot depth intervals in soil borings SS-8 and SS-9. TCLP lead concentrations of <0.04 mg/L and 0.113 mg/L were detected in SS-8 and SS-9, respectively. Based on these data and previous soil data, the lateral extent of TCLP lead-impacted soil above the referenced MCL for TCLP lead was determined.

During August 2004, Shaw Environmental prepared a Remedial Action Plan for the removal of lead-impacted soil from two areas encompassing approximately 940 square feet (ft²) to a depth of at least 0.5 foot below ground surface (b.g.s.). The estimated volume of lead-impacted soil was approximately 470 cubic feet (ft³). The first area was located between AST No. 400 and AST No. 399 and the second area was on the northeastern side of AST No. 399 (see Figure 1 in Shaw, August, 2004). Additional details are included in the referenced RAP (Shaw, August, 2004). On September 23, 2004, the West Virginia Department of Environmental Protection (WVDEP) approved the referenced RAP. A copy of the WVDEP Public Notice of Voluntary Remediation and Redevelopment Action Act Application Receipt listing excavation as the proposed cleanup method to remove lead-impacted soil, is attached.

Soil Excavation

During October 12 - 14, 2004, lead-impacted surface soil surrounding AST No. 399 and AST No. 400 was removed from two 0.5-foot deep excavations in accordance with the above referenced WVDEP approved RAP. Where sandy material was encountered the excavation was deepened below 0.5 feet until clay was encountered. An approximately 335-ft² area located between AST No. 399 and AST No. 400 and an approximately 605-ft² area located on the northeastern side of AST No. 399 were excavated to a depth of approximately 0.5 feet (**Figure 1**). Approximately 33.5 tons of lead impacted soil was excavated and transported under manifests MI9348426 and MI9348427 to Michigan Disposal Water Treatment Plant (EPA ID No.: MID000724831) located at 49350 N. I-94, Service Drive, Belleville, Michigan, 48111. Copies of the referenced manifests and certificates of disposal are attached.

Site Restoration

The excavation was restored in accordance with the above referenced RAP by backfilling with low permeability clay material. The clay was smoothed and compacted. The compacted, low permeability clay was covered by gravel.

TABLE 1
SURFACE SOIL ANALYTICAL RESULTS FOR TCLP LEAD
Former PQS Etowah Terminal
1015 Barlow Drive
Charleston, West Virginia

Sample Identification			TCLP Lead (mg/L)
Sample Location	Depth (Feet)	Date	
C-1	0 - 0.5	11/3/2000	0.07
C-2	0 - 0.5	11/3/2000	8.2
C-3	0 - 0.5	11/3/2000	1.2
C2-A	0 - 0.5	5/30/2001	3
C2-B	0 - 0.5	5/30/2001	3.2
C2-C	0 - 0.5	5/30/2001	75.2
C2-D	0 - 0.5	5/30/2001	6.49
C2-E	0 - 0.5	5/30/2001	0.228
SS-1	0 - 0.5	7/18/2003	<0.500
SS-2	0 - 0.5	7/18/2003	0.57
SS-3	0 - 0.5	7/18/2003	<0.500
SS-4	0 - 0.5	7/18/2003	3.05
SS-4 Field Split	0 - 0.5	7/18/2003	2.94
SS-5	0 - 0.5	7/18/2003	<0.500
SS-6	0 - 0.5	7/18/2003	<0.500
SS-7	0.5 - 1.5	7/19/2004	0.0709
SS-8	0 - 0.5	7/19/2004	<0.04
SS-9	0 - 0.5	7/19/2004	0.113
SS-10	0.5 - 1.5	7/19/2004	<0.04
SS-11	0.5 - 1.5	7/19/2004	<0.04

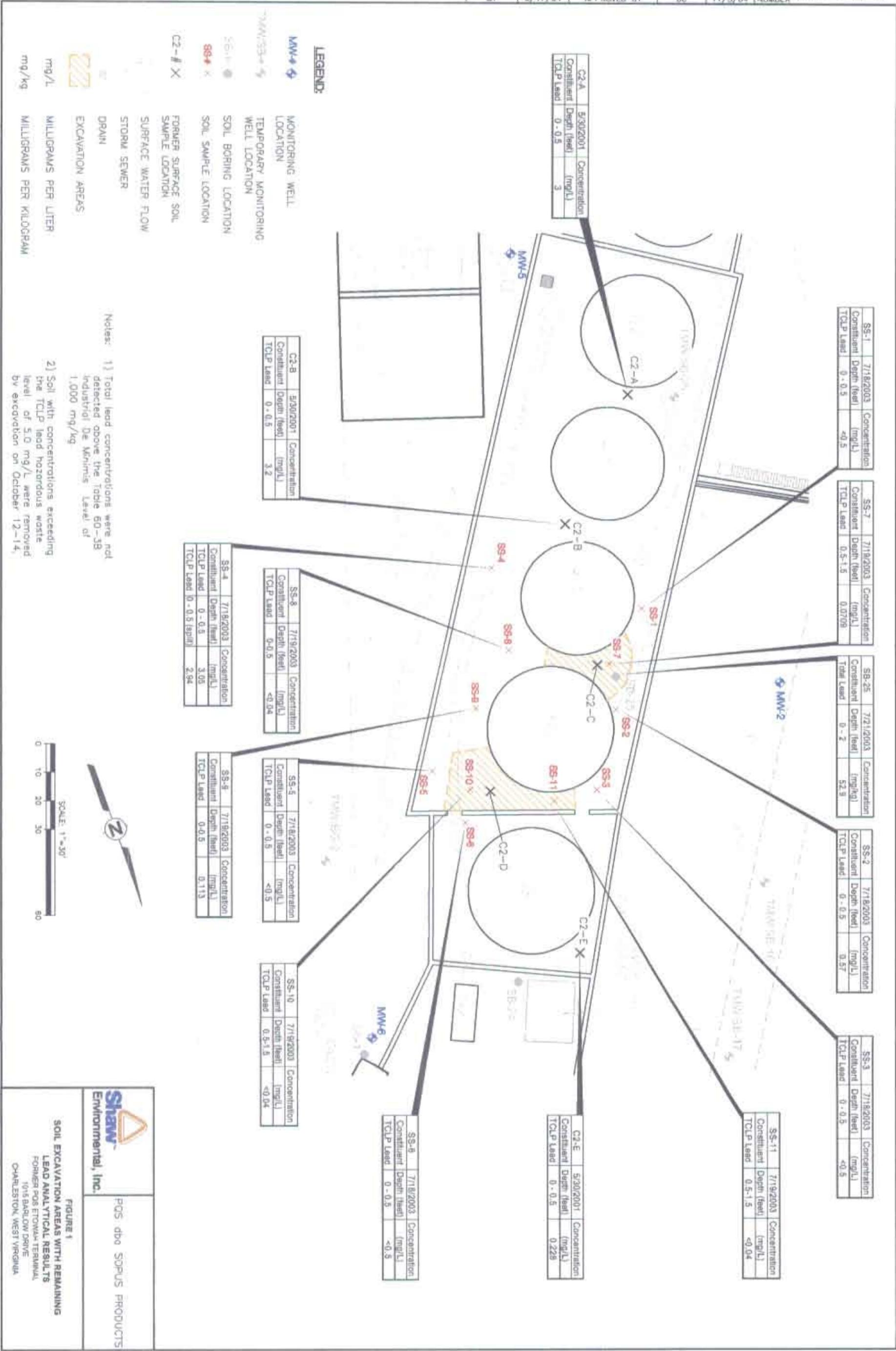
TCLP - toxicity characteristic leaching procedure.

SS - surface soil sample

mg/L - milligrams per liter

Concentrations exceeding the maximum concentration level (MCL) of 5.0 mg/L for TCLP lead are shaded.

Areas including soil samples C-2, C2-C and C2-D were removed by excavation and off-site disposal.



Shaw Environmental, Inc.

FIGURE 1
 SOIL EXCAVATION AREAS WITH REMAINING LEAD ANALYTICAL RESULTS
 FORMER POS FTOWMA, TENNVAI
 1015 BARLOW DRIVE
 CHARLESTON, WEST VIRGINIA

POS dba SOPUS PRODUCTS

Invoice ID: 20101257

Receipt ID: 365124

Manifest: M1934842b



WASTE MANAGEMENT DIVISION
MICHIGAN DEPARTMENT OF
ENVIRONMENTAL QUALITY

DO NOT WRITE IN THIS SPACE
ATT. DIS. REJ. PR.

Failure to file may subject you to
criminal and/or civil penalties under
Sections 304.11151 or 304.12116 MCL.

Please print or type.

Form Approved. OMB No. 2050-0020

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. WV D055573745	Manifest Document No. 048071	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.
3. Generator Name and Mailing Address SHELL OIL 325 MARKUS CT. SUITE E NEWARK DE 19713			A. State Manifest Document Number MI 9348428		B. State Generator ID 1015 BARLOW DR CHARLESTON, WV 25311
4. Generator's Phone () 443 271-6433			C. State Transporter's ID N/A		D. Transporter's Phone (937) 237-1097
5. Transporter 1 Company Name ONYX INDUSTRIAL SERVICES, INC.		8. US EPA ID Number OHD988988040		E. State Transporter's ID	
7. Transporter 2 Company Name		9. US EPA ID Number		F. Transporter's Phone	
9. Designated Facility Name and Site Address WCH DISPOSED WASTE TREATMENT 49350 N I-94 SERVICE DRIVE BELLEVILLE, MI 48111			10. US EPA ID Number MID000724831		G. State Facility's ID N/A
			H. Facility's Phone (313) 992-4288		

HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER)		12. Containers		13. Total Quantity	14. Unit Wt/Vol	15. Waste No.
	No.	Type	No.	Type			
a.	X	HAZARDOUS WASTE, SOLID, R.O.C., (LEAD), U, NA3077, III	001	CM	26,000 38570	P	0008
b.							
c.							
d.							

16. Additional Descriptions for Materials Listed Above
NONE TO 30000 POUNDS

17. Handling Codes
a. b. c. d.

15. Special Handling Instructions and Additional Information
PACKING SLIPS ATTACHED FOR CLARIFICATION - EMERGENCY NUMBER INFOTRAC: 1-800-535-5053 BILL TO ONYX WV
Box 226

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment. OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: George Kobara - Shell
Signature: [Signature]
Date: 10/29/04

17. Transporter 1 Acknowledgment of Receipt of Materials
Printed/Typed Name: [Name]
Signature: [Signature]
Date: [Date]

18. Transporter 2 Acknowledgment of Receipt of Materials
Printed/Typed Name: [Name]
Signature: [Signature]
Date: [Date]

19. Discrepancy Indication Space
OK to change 13 a PER Jason Saunders @ Onyx. They're not busy.

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name: [Name]
Signature: [Signature]
Date: 10/29/04

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM, IN MICHIGAN AT 1-800-252-4759 AND THIS NATIONAL RESPONSE CENTER AT 1-800-424-9383 OR OUT OF STATE AT 1-800-988-4759 OR OUT OF STATE AT 1-800-988-4759 AND THIS NATIONAL RESPONSE CENTER AT 1-800-988-4759 OR OUT OF STATE AT 1-800-988-4759.



CERTIFICATE OF DISPOSAL

This certificate is to verify the wastes specified on Manifest # MI 9348402
have been properly disposed of in accordance with all local, state and federal regulations.

"Disposed of" means either: 1) Burial or 2) Processed as specified in 40 CFR et seq.

FACILITY NAME:
(Please check one)

Michigan Disposal Waste Treatment Plant
(EPA ID # MDD000724931)

Wayne Disposal, Inc.
(EPA ID # MDD048090631)

ADDRESS:

49350 N. I-94 Service Drive
Belleville, Michigan 48111

PHONE NUMBER:

1-800-592-5489

FAX NUMBER:

1-800-592-5329

Authorized Signature:

Jacques

Invoice ID: 20101257

Receipt ID: 365125

Manifest: M19348427



WASTE MANAGEMENT DIVISION
MICHIGAN DEPARTMENT OF
ENVIRONMENTAL QUALITY

DO NOT WRITE IN THIS SPACE

ATT. DIS. REJ. PR.

Required under authority of Part 311 and
Part 21 of Act 451, 1994, as amended.

Failure to file may subject you to
criminal and/or civil penalties under
Sections 324.11191 or 324.12116 MCL.

Please print or type.

Form Approved: OMB No. 2010-0039

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator US EPA ID No. WVD055573745	Manifest Page 1 of 1	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.
3. Generator Name and Mailing Address (SHELL OIL) 325 MARCUS CT., SUITE E NEWARK, DE 19713			A. State Manifest Document No. MI 9348427		
4. Generator's Phone () 443 371-5433			B. State Generator's ID 0015 BARLOW DR CHARLESTON, WV 25311		
5. Transporter 1 Company Name ONYX INDUSTRIAL SERVICES, INC.		6. US EPA ID Number OH098888040	C. State Transporter's ID N/A		
7. Transporter 2 Company Name		8. US EPA ID Number	D. Transporter's Phone (337) 231-3087		
9. Destination Facility Name SHELL OIL SERVICE TREATMENT 49350 N I-94 SERVICE DRIVE BELLEVILLE, MI 48111		10. US EPA ID Number MID000724831	E. State Transporter's ID		
			F. Transporter's Phone		
			G. State Facility's ID N/A		
			H. Facility's Phone (313) 962-6400		

HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER)	12. Containers		13. Total Quantity	14. Unit Wt/Vol	1. Waste No.
		No.	Type			
a. X	HAZARDOUS WASTE, SOLID, n.o.s., (LEAD), 9, NA3077, III	001	c m	26,000 28,140 B		0008
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above
NONE TO 30000-013

K. Handling Codes
a.
b.
c.
d.

15. Special Handling Instructions and Additional Information
PACKING SLIPS ATTACHED FOR CLARIFICATION - EMERGENCY NUMBER INFOTRAC: 1-800-635-5053 BILL TO ONYX WV

GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment. OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: George A. Hester for Shell
Signature: [Signature]
Date: 10/1/04

17. Transporter 1 Acknowledgment of Receipt of Materials
Printed/Typed Name: [Name]
Signature: [Signature]
Date: [Date]

18. Transporter 2 Acknowledgment of Receipt of Materials
Printed/Typed Name: [Name]
Signature: [Signature]
Date: [Date]

19. Discrepancy Indication Space
Oh to change 13 can be on seconds onyx stay date 10-05-04

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name: Lori Bero
Signature: [Signature]
Date: 10/25/04

ALL WASTES MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM, IN MICH. CALL 1-800-251-3823 24 HOUR PER DAY.



CERTIFICATE OF DISPOSAL

This certificate is to verify the wastes specified on Manifest # MT 9348127 have been properly disposed of in accordance with all local, state and federal regulations.

"Disposed of" means either: 1) Burial or 2) Processed as specified in 40 CFR et seq.

FACILITY NAME:
(Please check one)

Michigan Disposal Waste Treatment Plant
(EPA I.D. # MDD00724831)

Wayne Disposal, Inc.
(EPA I.D. # MDD048090633)

ADDRESS:

49350 N. 1-94 Service Drive
Belleville, Michigan 48111

PHONE NUMBER:

1-800-592-5489

FAX NUMBER:

1-800-592-5329

Authorized Signature:

Shaw Schel

Department of Environmental Protection
Public Information Office
1356 Hansford Street
Charleston, West Virginia 25301
Telephone (304) 558-4253 OR TDD Numbers
(800) 422-5700 or 558-1236

COPY

**PUBLIC NOTICE OF VOLUNTARY REMEDIATION AND
REDEVELOPMENT ACT APPLICATION RECEIPT**

PUBLIC NOTICE NO. VCP-4506
PUBLIC NOTICE DATE: August 27, 2004

PAPER: Charleston Gazette
1001 Virginia Street, East
Charleston, W. Va. 25301

Pennzoil-Quaker State Co. submitted an application for agency review involving the Voluntary Remediation and Redevelopment Act. The application was approved on January 3, 2002.

Pennzoil submitted the application for the Pennzoil-Quaker State Co. No. 5117 (Etowah Terminal), located at 1015 Barlow Dr., Charleston. Current operations at the site are a bulk storage terminal for freeze conditioning agents, including ethylene glycol and calcium carbonate solutions.

Chemicals of potential concern (COPC's) include petroleum hydrocarbons associated with gasoline and diesel fuel (i.e., benzene, toluene, ethylbenzene, xylene, total petroleum hydrocarbons-gasoline range and diesel range organics) and leaded paint used on above ground storage tanks.

Application No. VCP-4506

Applicant: Pennzoil-Quaker State Company
700 Milam
P. O. Box 2967
Houston, Texas 77252-2967

Location: Etowah Terminal
1015 Barlow Drive
Charleston, W.Va. - Kanawha County

Site Activity: Prior to 1938, the site was used for agricultural purposes until being purchased by Elk Refining Co. Elk Refining operated the site from Dec. 28, 1938, to Jan. 1, 1970, for bulk storage and distribution of petroleum fuels. Pennzoil-Quaker State Co. operated the site from Jan. 1, 1970, to Nov. 30, 2001, and then it became the Etowah River Terminal.

Suspected Impacts: Potential chemicals of concern at the site include petroleum hydrocarbons associated with gasoline and diesel fuel (i.e., benzene, toluene, ethylbenzene, xylene, total petroleum hydrocarbons-gasoline range and diesel range organics) and leaded paint used on above ground storage tanks.

Clean-up Method: The proposed cleanup method is to excavate and remove lead contaminated soils from the site until the site meets a non-residential cleanup standard.

Agency Action: OER has negotiated a voluntary remediation agreement with the company based on previous and future site assessment and remediation work.

Intended future use(s): The site is expected to remain a bulk storage terminal for freeze conditioning agents, including ethylene glycol and calcium carbonate solutions.

Application Availability: Interested individuals may review and/or copy the Voluntary Remediation and Redevelopment Act application at the following locations:

Kanawha County Commission
407 Virginia St. E.
Charleston, W.Va. 25301
or
Office of Environmental Remediation
1356 Hansford St.
Charleston, W.Va. 25301
Anne Howell
(304) 558-4253

Questions: Questions regarding the VRRRA or this application may be directed to either David Hight, Office of Environmental Remediation, 1356 Hansford St., Charleston, W.Va. 25301, (304) 558-2508; or George A. Robertson, IT Corporation, 1400 B Ohio Ave., Dunbar, W. Va. 25064, (304) 768-2600.

APPENDIX D

**REMEDIAL ACTION WORK PLAN
(POST CERTIFICATE-OF-COMPLETION MONITORING
PROGRAM)**

Remedial Action Work Plan
(Post Certificate-of-Completion Groundwater Monitoring Program)
Former Pennzoil-Quaker State Etowah Terminal
1015 Barlow Drive
Charleston, West Virginia
VCP No. 04506

Background

The WVDEP accepted the Revised Human Health and Ecological Risk Assessment dated November 2004 and requested the installation of a new monitoring well in the vicinity of TMW/SB-16 and TMW/SB-17 and quarterly groundwater monitoring to verify that lead concentrations in groundwater do not pose a threat to ecological receptors in the Elk River. In a telephone conversation on December 3, 2004, Pete Costello of the WVDEP stated that it would be acceptable to collect quarterly groundwater samples from the referenced new monitoring well and monitoring wells MW-2 and MW-3 for the analyses of dissolved lead only. Monitoring wells MW-2 and MW-3 are located upstream and downstream of the referenced new monitoring well adjacent to the Elk River. The referenced new monitoring well will be MW-9.

Monitoring Well Installation and Development

A two-inch diameter monitoring well will be installed approximately half way between the locations of former temporary monitoring wells TMW/SB-16 and TMW/SB-17 adjacent to the Elk River (**Figure 2**). Based on lithological and groundwater data from the referenced temporary monitoring wells, MW-9 will be installed to a total depth approximately 20 feet below ground surface (b.g.s.) with a screen interval from approximately 10 to 20 feet b.g.s.

Prior to drilling, underground utility locating services (MISS Utility) will be contacted to mark-out possible utility locations in the test area. Prior to the start of drilling and following the completion of each boring, the drill, drill bit, drill rods, and drilling equipment will be cleaned using a pressure washer. Monitoring well MW-9 will be drilled and installed by a West Virginia certified driller using conventional hollow stem auger (HSA) rotary drilling methods in accordance with West Virginia Title 47, Series 59 and 60 (Monitoring Well Regulations and Monitoring Well Design Standards, respectively). The monitoring wells will be constructed using 2-inch diameter Schedule 40 PVC with 0.010-inch slotted screen.

The borehole diameter will be 4-inches larger than the diameter of the casing. The bottom of the monitoring well will be fitted with a 2-inch diameter PVC pointed plug. The monitoring well will be installed using the above referenced length of screen and the appropriate length of riser sufficient to allow for approximately three feet of stickup. An expandable locking well cap will be placed on top of the solid riser pipe to prevent objects falling into the well.

After installation of the well screen and riser pipe, a No. 5 silica sand pack (sized such that a minimum of 90 percent of the filter pack is retained by the screen) will be installed using a tremie

pipe in the annular space of the borehole and brought to an elevation approximately 2-feet above the top of the well screen. A minimum 2-foot thick seal composed of hydrated bentonite pellets will be placed on top of the quartz sand filter pack. After the bentonite pellets are hydrated with potable water and allowed to set for a minimum of 30 minutes, the remaining annular space will be grouted to the ground surface using a cement mixture with approximately 3.0 percent powdered bentonite. A typical cement-based grout consists of about 7.0 gallons of water per 94 pound bag of Type I Portland cement with approximately 5.0 pounds of bentonite powder.

Following completion of the well, the stickup portion of the PVC riser will be painted a highly visible yellow and labeled with the well number. A lock will be placed on the expandable well cap for security. Well installation details will be recorded on a drilling log.

Following completion, sand and silt will be removed from the bottom of the monitoring well using a stainless steel well bailer. The monitoring well will be developed by pumping and periodically surging. Prior to use, the pump and stainless steel bailer used for developing the wells will be decontaminated. New polypropylene rope will be as used with the stainless steel bailer. New tubing will be used with the pump. Well development will continue until the groundwater return is relatively free of suspended solids and the temperature, pH and conductivity stabilize. Well development water will be treated through granular activated carbon and broadcast on the surface in the vicinity of the monitoring well.

Well development data including the depth to water, start/stop time, purge volume, temperature, pH, conductivity and visual condition of purged water will be recorded on a Field Well Development Log. Prior to purging, depth to water will be measured with an electronic water level indicator. Water level measurements will be measured from the north side of the well casing. The top of casing well elevation will be surveyed relative to the top of casing of surrounding monitoring wells.

Groundwater Monitoring Program

On a quarterly basis, MW-2, MW-3 and MW-9 will be purged and groundwater samples will be collected for the analysis of dissolved lead in accordance with EPA Method 6010B. Prior to purging and sampling, depth to groundwater will be measured and recorded in each monitoring well or temporary monitoring well. Purging will be accomplished by bailing or pumping. The pump and stainless steel bailer used for evacuating the wells will be decontaminated in accordance with the procedure outlined in 3.8 prior to beginning.

Purge water will be collected in a polyethylene vessel and temperature, pH, conductivity, and dissolved oxygen will be immediately measured using a calibrated water quality meter. Purging will be complete when a minimum of three (3) well volumes has been removed and water quality parameters stabilize over two (2) successive well volumes.

Within 24-hours of purging each monitoring well, groundwater samples will be collected using new disposable polyethylene bailers with new polypropylene rope. Sample containers will be prepared by the laboratory with the proper preservatives and proper labels. Upon collection, the sample containers will be labeled with the monitoring well number and placed in a clean cooler containing ice and cooled to a temperature of 4°C. The sample identification number, matrix, preservation method, sampling date, sampling time and analysis requested will be recorded on the chain-of-custody form. The groundwater samples will be packed in a sealed shuttle (cooler) with ice and chain-of-custody and shipped to a West Virginia certified laboratory. Purging and sampling data will be recorded on in field notes and groundwater sampling logs.

Quality Assurance/Quality Control

The precision and accuracy of the field sampling procedures will be checked through the preparation, collection, submission and analysis of a duplicate sample per event. Field duplicates will be used to assess sample representativeness and analytical precision. Field duplicates will be prepared by collecting two samples independently at the same location during a single act of sampling.

Additionally, temperature blanks will be provided by the laboratory for more accurate measurement of sample shuttle temperatures taken upon receipt at the laboratory. A temperature blank consisting of a sample container filled with potable water, will accompany each cooler shipped to the laboratory.

Reporting

Quarterly analytical results for dissolved lead from MW-2, MW-3 and MW-9 will be reported to the WVDEP on an annual basis. Reports will include a brief description of field activities, an analytical results table and a Site map. If analytical data indicate the dissolved lead concentrations are stable or declining, a request to discontinue the groundwater monitoring program will be submitted to the WVDEP.

Schedule

Quarterly groundwater sampling will be conducted at the Site during February, May, July and November, 2005. An annual groundwater monitoring report will be submitted to the WVDEP by December 31, 2005.

Groundwater Monitoring Program Costs

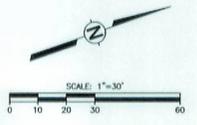
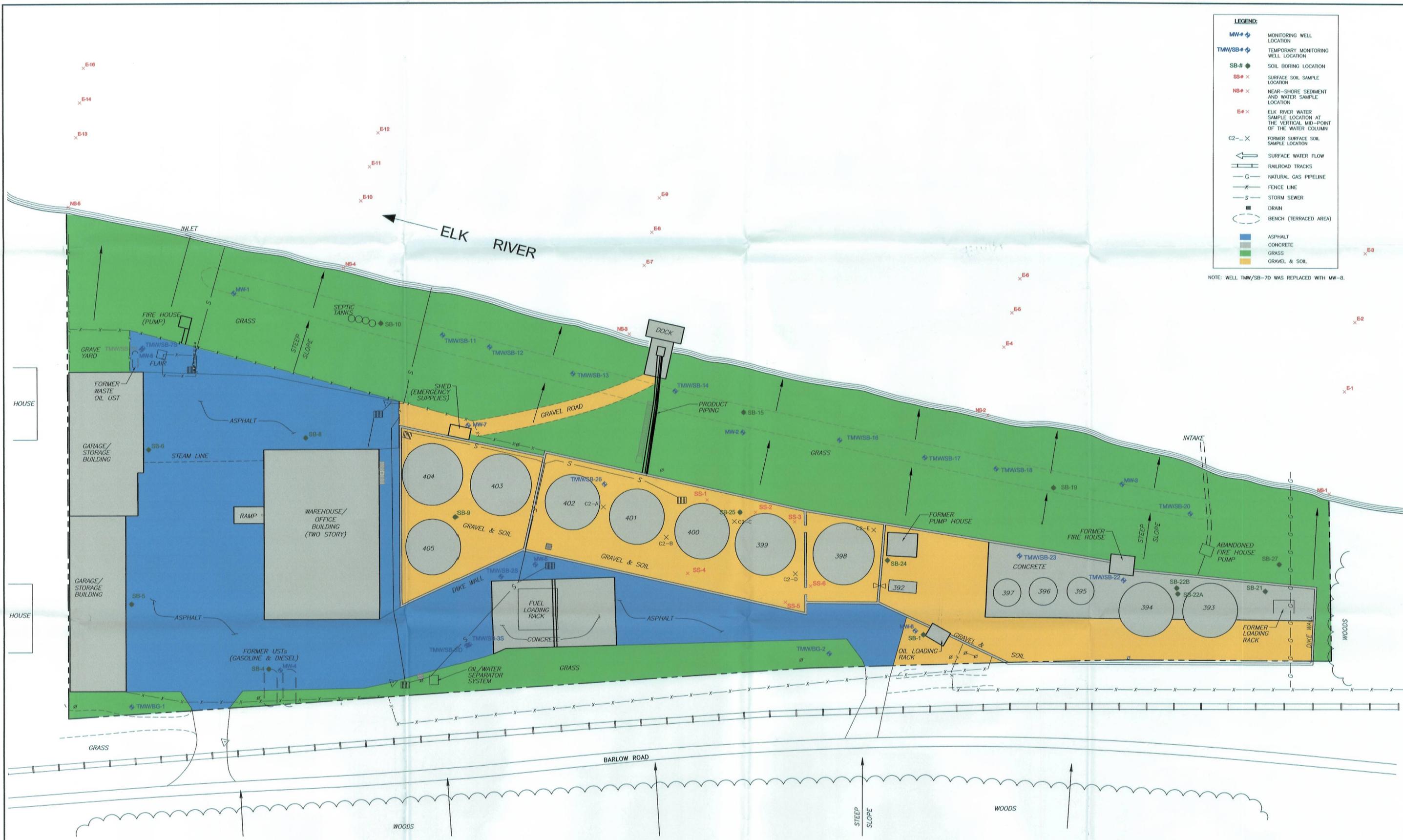
PQS dba SOPUS Products will be responsible for the costs for groundwater monitoring and for WVDEP oversight. Shaw Environmental will provide groundwater monitoring and reporting services for PQS dba SOPUS Products. Prior to the initiation of the monitoring program, the WVDEP and Shaw Environmental will provide PQS dba SOPUS Products with acceptable estimated costs.

Image: #IMAGENAME
 Xref: #XREFNAME

LEGEND:

- MW-# ◊ MONITORING WELL LOCATION
- TMW/SB-# ◊ TEMPORARY MONITORING WELL LOCATION
- SB-# ◊ SOIL BORING LOCATION
- SB-# x SURFACE SOIL SAMPLE LOCATION
- NS-# x NEAR-SHORE SEDIMENT AND WATER SAMPLE LOCATION
- E-# x ELK RIVER WATER SAMPLE LOCATION AT THE VERTICAL MID-POINT OF THE WATER COLUMN
- C2-# x FORMER SURFACE SOIL SAMPLE LOCATION
- ← SURFACE WATER FLOW
- ▬ RAILROAD TRACKS
- G — NATURAL GAS PIPELINE
- X — FENCE LINE
- S — STORM SEWER
- DRAIN
- BENCH (TERRACED AREA)
- ASPHALT
- CONCRETE
- GRASS
- GRAVEL & SOIL

NOTE: WELL TMW/SB-7D WAS REPLACED WITH MW-8.



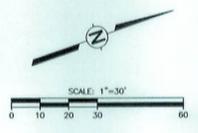
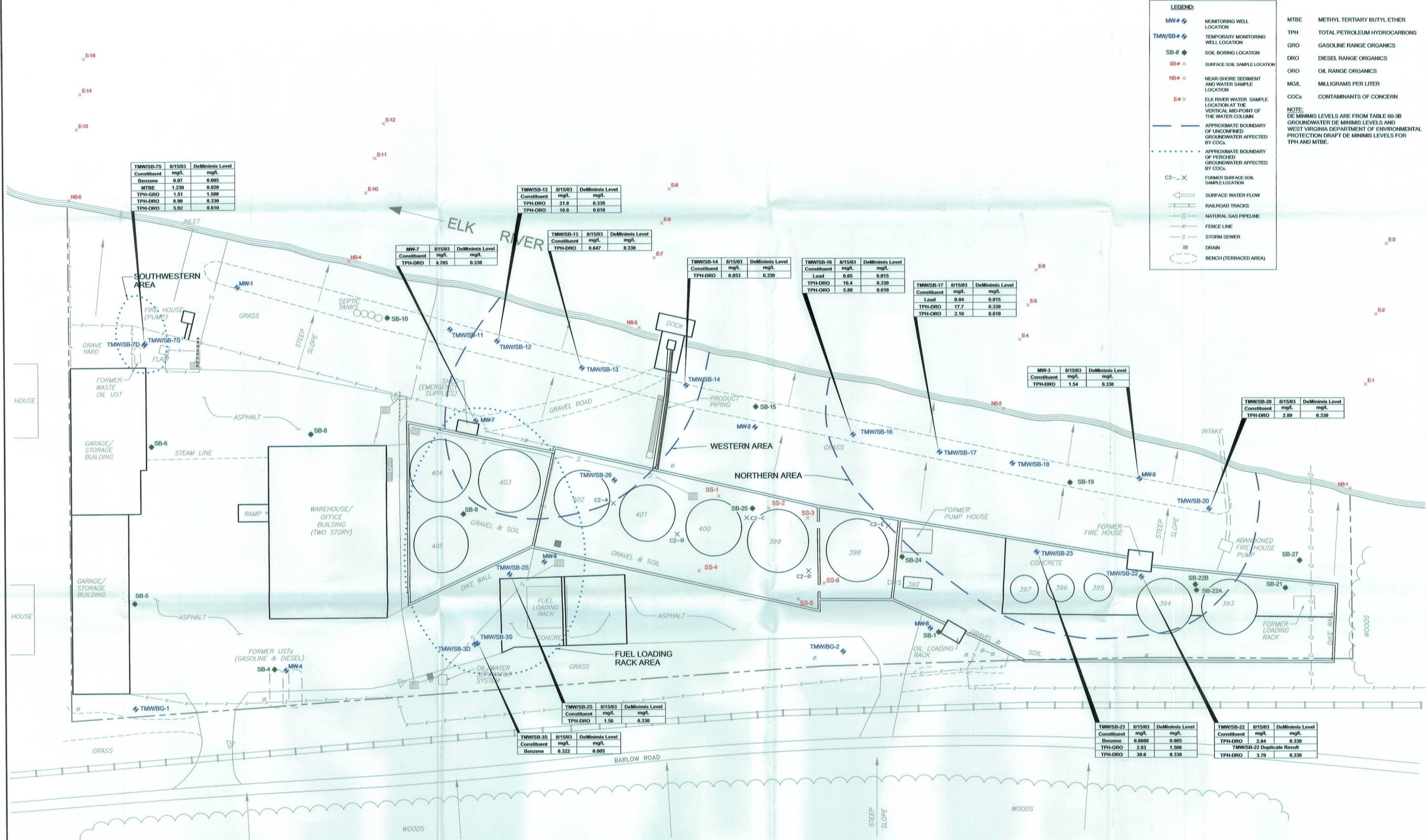
						SHELL OIL PRODUCTS, U.S. FIGURE 2 LAND SURFACE PLAN FORMER PQS ETOWAH TERMINAL 1015 BARLOW DRIVE CHARLESTON, WEST VIRGINIA					
DATE	DESIGNED BY	---	CHECKED BY	G. Robertson	9/30/04	FIGURE NO.					
11/11/03	DRAWN BY	M. Nojar	APPROVED BY	D. Carpenter	9/30/04						
SCALE:	PROJECT NO.	845335	DRAWING NO.	2002 57-15	REVISION NO.	0					
1" = 30'							2				

LEGEND:

- MW-# MONITORING WELL LOCATION
- TMW/SB-# TEMPORARY MONITORING WELL LOCATION
- SB-# SOIL BORING LOCATION
- SS-# SURFACE SOIL SAMPLE LOCATION
- NS-# NEAR-SHORE SEDIMENT AND WATER SAMPLE LOCATION
- E-# ELK RIVER WATER SAMPLE LOCATION AT THE VERTICAL MID-POINT OF THE WATER COLUMN
- APPROXIMATE BOUNDARY OF UNCONFINED GROUNDWATER AFFECTED BY COCs
- APPROXIMATE BOUNDARY OF PERCHED GROUNDWATER AFFECTED BY COCs
- C2-# FORMER SURFACE SOIL SAMPLE LOCATION
- ← SURFACE WATER FLOW
- RAILROAD TRACKS
- NATURAL GAS PIPELINE
- FENCE LINE
- STORM SEWER
- DRAIN
- BENCH (TERRACED AREA)

MTBE METHYL TERTIARY BUTYL ETHER
 TPH TOTAL PETROLEUM HYDROCARBONS
 GRO GASOLINE RANGE ORGANICS
 DRO DIESEL RANGE ORGANICS
 ORO OIL RANGE ORGANICS
 MGL MILLIGRAMS PER LITER
 COCs CONTAMINANTS OF CONCERN

NOTE:
 DE MINIMIS LEVELS ARE FROM TABLE 60-3B
 GROUNDWATER DE MINIMIS LEVELS AND
 WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL
 PROTECTION DRAFT DE MINIMIS LEVELS FOR
 TPH AND MTBE.



SHELL OIL PRODUCTS U.S.

FIGURE 4
AREAS OF GROUNDWATER IMPACT
 FORMER POS ETOWAH TERMINAL
 1015 BARLOW DRIVE
 CHARLESTON, WEST VIRGINIA

DATE	DESIGNED BY	CHECKED BY	G. Robertson	11/5/04	FIGURE NO.
11/5/04	DRAWN BY	APPROVED BY	D. Carpenter	11/5/04	
SCALE:	PROJECT NO.	DRAWING NO.	REVISION NO.		
1" = 30'	845335	2002 57-19	0		4