UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION III

STATEMENT OF BASIS

PENNZOIL-QUAKER STATE COMPANY - PLANT 1
ROUSEVILLE, PENNSYLVANIA
EPA ID# PAD 004 329 835

Prepared by
Office of Pennsylvania Remediation
Land and Chemicals Division
August 2014

I. Introduction

The United States Environmental Protection Agency (EPA) has prepared this Statement of Basis (SB) to solicit public comment on its proposed remedy for Plant 1 of the former Pennzoil-Quaker State Company (PQS) Rouseville Refinery located at 2 Main Street (State Route 8), Rouseville, PA 16344 (Facility). The Facility consists of Plant 1 and 2 which are bisected by both State Route 8 and Oil Creek. On March 27, 2013 EPA issued the Final Decision and Response to Comments for Plant 2. This SB applies to the portion of the Facility known as Plant 1.

EPA's proposed remedy consists of land and groundwater use restrictions and the maintenance of concrete retaining walls, a sheet pile wall, and permanent caps that are already in-place. This SB highlights key information relied upon by EPA in making its proposed remedy.

The former Pennzoil-Quaker State Plant 1 refinery is subject to EPA's Corrective Action Program under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA) of 1976, and the Hazardous and Solid Waste Amendments (HSWA) of 1984, 42 U.S.C. §§ 6901 et seq. (Corrective Action Program). The Corrective Action Program is designed to ensure that certain facilities subject to RCRA have investigated and cleaned up any releases of hazardous waste and hazardous constituents that have occurred at their property. The Commonwealth of Pennsylvania (Commonwealth) is not authorized for the Corrective Action Program under Section 3006 of RCRA. Therefore, EPA retains primary authority in the Commonwealth for the Corrective Action Program.

The Administrative Record (AR) for the Facility contains all documents, including data and quality assurance information, on which EPA's proposed remedy is based. An index to the Administrative Record is included at the end of this SB. See *Section IX, Public Participation*, for information on how the public may review the AR.

II. Facility Background

The Facility is located at 2 Main Street (State Route 8), Rouseville, Venango County, Pennsylvania. The Facility is currently zoned for industrial use and it is expected to retain this zoning designation in the future. The Facility is bound on the east by State Route 8, with residential properties east and up-gradient of State Route 8. The Facility is bound on the west by Oil Creek. The northern portion is divided by Cherry Run, a tributary of Oil Creek. Commercial businesses are located south of the Facility. Plant 1 occupies approximately 44 acres. A location map and a Facility layout are attached, hereto as Figures 1 and 2, respectively.

The Facility began as a petroleum refinery in the late 1800s and operated as such for more than a century. It is located along the banks of Oil Creek, so named because of the natural oil seeps known since pre-Colonial times. The first drilling for oil in the United States occurred just north of the Facility in Titusville, PA. The surrounding area is steeped in a rich history of oil production. For hundreds of years, people had known about oil seeps in western Pennsylvania. In fact, there is evidence that Native Americans had been harvesting the oil by digging small pits around active seeps and lining them with wood.

This area was the leading oil-producing region in the United States through 1904. During that time, there was a rush of prospectors who dug oil production wells everywhere and abandoned these wells improperly. This history has made Facility investigations complex and difficult, as these former production areas continue to release crude oil to the environment.

PQS operated the Plant 1 until April 2000 when Plant 1 was sold to Calumet Lubricants Co., L.P. (Calumet). Calumet continued refinery operations until 2002 when Calumet ceased operations, and subsequently decommissioned and demolished existing structures. PQS had retained the environmental liability. Environmental liability for Plant 1 is now held by Shell due to Shell's acquisition of PQS in 2002. In 2006, Plant 1 ownership was transferred from Calumet Lubricants Co., LP to the Borough of Rouseville under a Consent Order & Agreement (CO&A) between the Pennsylvania Department of Environmental Protection (PADEP); Calumet Lubricants Co., L.P.; Calumet Pennsylvania, LLC; and the Borough of Rouseville. Plant 1 was subdivided and parcels were sold by the Borough and are currently occupied by Fluid Recovery Services, LLC; Pennewell Sandblasting and Painting; GOC Property Holdings, LLC; Oil Valley Development, LLC; and the Borough of Rouseville. The Facility is zoned for current and future industrial use.

III. Summary of Environmental History

A. Background

EPA issued a Corrective Action Permit on September 28, 1990 to PQS requiring it to investigate the Facility for releases to the environment.

In 1990, the Pennsylvania Department of Environmental Resources (PADER), which was subsequently renamed PADEP, Bureau of Water Quality entered into a Consent Order with PQS to investigate and cleanup petroleum releases (often referred to as "separate phase liquids" or "SPL") at the Facility (hereafter PA Consent Order). From 1990 to 2000, PQS's investigation and interim cleanup activities were primarily governed by this PA Consent Order. In 1994, EPA and PADEP agreed that the PA Consent Order should be the controlling framework for the investigation and cleanup of the Facility. This agreement was made part of Pennsylvania's annual 3011 RCRA grant in 1995, and was renewed annually with Pennsylvania until the work was completed in 2012.

In 2001, PQS initiated a comprehensive site characterization of Plant 1 in accordance with the requirements of the Pennsylvania Storage Tank and Spill Prevention Act (Storage Tank Act) and the Land Recycling and Environmental Remediation Standards Act (Act 2), 35 P.S. § 6026.101 (collectively, the Acts). The Facility was entered into the Act 2 Program on June 5, 2002. Furthermore, the Facility was subject to the requirements of the 2006 CO&A. The CO&A required PQS and Calumet to remediate the Facility to achieve a combination of Site-Specific Standards and Statewide Health Standards in accordance with the Acts and the regulations promulgated pursuant to the Acts. In 2012, PADEP determined that Shell completed the work required by the 2006 CO&A.

B. Interim Measures

PQS performed a variety of Interim Measures at the Facility starting in 1986 under PADEP oversight. These measures included installation and operation of a total fluids recovery system (a pump & treat system), operation of a vacuum-enhanced skimming system, manual separate phase liquid (SPL) recovery, remote/portable skimming, enhanced fluid recovery, excavation of SPL interceptor trenches, installation of a sheet pile wall and hydraulic control wells, installation of a Propone Deresining Unit cover, a Cherry Run Bridge Concrete Cap, and targeted soil and SPL excavation. In addition to these activities, PQS personnel routinely inspected the banks along Oil Creek and Cherry Run for any petroleum seeps. Each measure is fully documented in the following reports found in the AR:

- Site Characterization Report/Remedial Investigation Report (TolTest, February 2006)
- Request for Continuation of Groundwater Pump and Treat Remediation System Shutdown (URS September 30, 2009)
- Remedial Action Plan Addendum Request for Termination of Remedial Activities Remediation Units 2.1, 3.1, and 3.2 (URS October 2009)
- Remedial Action Plan (URS August 31, 2010)
- Supplementary Remedial Action Plan/Cleanup Plan (URS May 2011)
- Quarterly Interim Remedial Action Progress Reports (1980 through 2012)
- Final Report (URS September 2012)

Based on diminished recovery rates, and the demonstrated ability for new remedial approaches to prevent migration of SPL, the total fluids recovery system was shut down in 2010. EPA has reviewed the 2009 Continuation of Groundwater Pump and Treat Remediation System Shutdown Request and has determined that the SPL recovery operations have reached their practical technical limit of effectiveness. EPA does not propose further active recovery operations in this proposed remedy.

C. Risk Assessments

On June 5, 2002, PQS was entered into the Act 2 Program via submission of a Notice of Intent to Remediate approved by PADEP. Act 2 Site Specific Standards (SSSs) were chosen as the cleanup levels to be achieved for all media (surface and subsurface soil, sediment, and groundwater) at the Facility.

Shell submitted a human health risk assessment (HHRA) for the Facility in 2006 to EPA and PADEP as part of the Site Characterization Report/Remedial Investigation Report. Shell then submitted an updated HHRA in 2012 to EPA and PADEP to assist with demonstrating attainment of the SSSs. PADEP approved the updated HHRA on December 26, 2012.

The following assumptions on future use were used to develop the HHRA:

- Land use restrictions will be established to restrict use to non-residential use in the future;

- Groundwater use restrictions will be established to prohibit the use of the groundwater for drinking or any other purpose;
- A construction restriction will be established to prevent the construction of structures with basements.

The HHRA evaluated exposures to soil, groundwater, vapor, sediment, and surface water for future outdoor and indoor workers, construction workers, and current and future recreational visitor (adults and children) as potential receptors. Exposures and cleanup levels were based on comparison of the most recent analytical results to EPA industrial regional screening levels (IRSLs), PADEP medium specific concentrations (MSCs) for vapor intrusion, and PADEP Water Quality Criteria (WQC) for surface water. PADEP approved the HHRA on June 2, 2006.

EPA has reviewed the HHRA and updated HHRA and the resulting cleanup levels. EPA has determined that the risk assessments were conducted in accordance with EPA guidance and that the cleanup levels are protective of human health and the environment for non-residential land use. Appendix A contains a summary of the sampling results, the appropriate screening levels, and the resulting calculated cleanup levels for soils, groundwater, indoor & ambient air, sediments, and surface water.

Shell also completed an ecological screening risk assessment (ERA) for the Facility to evaluate the potential for adverse ecological impacts. Based on the ERA, there are no unacceptable ecological risks with the exception of potential SPL impacts to Oil Creek and Cherry Run. PADEP approved the ERA on June 2, 2006. EPA has reviewed the ecological risk assessment and agrees with its conclusions. EPA is proposing that no further action is needed to address ecological risks.

D. Final Report

In September 2012, Shell submitted an Act 2 Final Report (Final Report), which summarized site characterization and risk assessment information, described the completion of remedial activities, and demonstrated attainment of the cleanup levels. The Final Report demonstrated that the SSSs have been achieved for the Facility for all media.

The Final Report also details Shell's excavation program which focused on removing additional SPL and soil from select areas and backfilling with clean fill. A total of 13,444-cubic yards of soil were excavated from targeted excavations and remedial installations. Additionally, a total of approximately 609 gallons of SPL were recovered from open excavations and historic, relic manmade structures during the soil excavation program. The success of this excavation program is demonstrated in the monitoring results. The most recent apparent SPL thickness map from June 18, 2012 shows the SPL thickness measurements have been reduced from 8 feet to .67 feet. Therefore, there are no longer recoverable quantities of SPL in the soil.

Shell also proposed a post-remediation care plan in the Final Report. The Post-Remediation Care Plan contains proposed land and groundwater use restrictions to ensure assumptions made in the risk assessments are maintained at the Facility to ensure the long term protection of human

health and the environment. These restrictions prohibit, among other things; 1) the withdraw or use of groundwater for any purpose; 2) residential use (including but not limited to, single family homes, day care facilities, nursing homes, and playgrounds); 3) construction of buildings with basements; and 4) subsurface soil disturbance. The land and groundwater use restrictions are described in Section IV below. The post-remediation care plan includes an annual inspection and maintenance schedule that focuses on verifying the integrity of the concrete retaining walls and sheet pile wall, the maintenance of the Cherry Run railroad bridge concrete cap, maintenance of the Resin Area cap, and maintenance of a phytoremediation barrier. The concrete retaining walls, sheet pile wall, and the Cherry Run railroad bridge concrete cap are physical barriers that prevent any residual SPL remaining at Plant 1 from entering Oil Creek or Cherry Run. The phytoremediation barrier is a combination of poplar and willow trees that depress groundwater levels to prevent dissolved phase contaminants from entering Oil Creek or Cherry Run. The phytoremediation barrier will be inspected on an annual basis to document the tree survival rate. Inspections will be performed during the third quarter of each year with the findings of the inspections reported by October 15 of each year. If the survivability of the phytoremediation barrier drops below 70 percent, replacement trees will be planted at the Facility.

IV. Corrective Action Objectives

EPA's Corrective Action Objectives for the Facility are the following:

1. Soils

EPA has determined that the SSS cleanup levels calculated for soils are protective of human health and the environment for individual contaminants at this Facility provided that the Facility is not used for residential purposes. Therefore, EPA's Corrective Action Objective for the Facility soils is long term control of exposure to soils by requiring the compliance with and maintenance of land use restrictions at the Facility.

2. Groundwater

EPA expects final remedies to return usable groundwater to its maximum beneficial use within a timeframe that is reasonable given the particular circumstances of the project. For projects where aquifers are either currently used for water supply or have the potential to be used for water supply, EPA will use the National Primary Drinking Water Standard Maximum Contaminant Levels promulgated pursuant to Section 42 U.S.C. §§ 300f et seq. of the Safe Drinking Water Act and codified at 40 CFR Part 141).

Groundwater at Plant 1 is found at an average depth of less than 10 feet below the ground surface and is located almost completely within the Oil Creek 100-year floodplain. EPA has determined that, in accordance with best practices, the shallow aquifer at Plant 1 is not suitable for drinking purposes. Consequently, the aquifer is not a current source or a potential future source of drinking water. Therefore, EPA has determined that maximum beneficial use of the shallow groundwater is recharge flow to Oil Creek and Cherry Run. Under this proposed remedy, EPA is establishing the cleanup levels listed in Appendix A to protect Oil Creek and Cherry Run from

groundwater discharging from the Facility.

EPA has determined that the SSS cleanup standards calculated for groundwater are protective of human health and the environment for individual contaminants at this Facility provided that consumptive uses of groundwater are prohibited. As such, EPA's Corrective Action Objective for Facility groundwater is to control exposure to the hazardous constituents remaining in the groundwater by requiring compliance with and maintenance of groundwater use restrictions at the Facility.

3. Separate Phase Liquids (SPL)

EPA's Corrective Action Objective for SPL and residual petroleum constituents is to eliminate the sources and prevent migration of SPL to surface water. EPA has determined that Shell has removed the source areas (pipelines, tanks, and contaminated soil) to the maximum feasible extent. Shell excavated and disposed of over 13,444 cubic yards of petroleum contaminated material and approximately 3650 gallons of SPL. Shell has prevented SPL migration to Oil Creek and Cherry Run through the construction and maintenance of retaining walls and the planting of a phytoremediation barrier.

4. Vapors

EPA's Corrective Action Objective for the Facility vapors is to control exposure to this hazard by requiring the compliance with and maintenance of land use restrictions at the Facility.

5. Surface Water and Sediment

EPA has determined that the SSS cleanup standards calculated for surface water and sediment are protective of human health and the environment for individual contaminants at this Facility. The potential exists for residual SPL migration to Oil Creek and Cherry Run. Therefore, EPA's Corrective Action Objectives for surface water and sediments are to control migration to Oil Creek and Cherry Run with a combination of land and groundwater use restrictions as well as requiring the maintenance of the retaining walls.

V. Proposed Remedy

EPA's proposed remedy for Plant 1 consists of the following components which have already been implemented under PADEP oversight and are required to be maintained pursuant to the PADEP Consent Order:

1. Soils

EPA's proposed remedy for Soils at Plant 1 consists of the continued maintenance of the Propone Deresining Unit cover and Cherry Run Bridge Concrete Cap in accordance with the PADEP-approved Post-Remedial Care Plan (PRCP) submitted within the Act 2 Final Report approved by PADEP in 2012 and the implementation of and compliance with land use

restrictions to prohibit residential uses of Plant 1 property.

2. Groundwater

EPA's proposed remedy for groundwater at Plant 1 consists of the implementation of and compliance with groundwater use restrictions to prohibit any use of the groundwater at the Plant 1.

3. SPL

For SPL, EPA's proposed remedy consists of the continued maintenance of the integrity of the concrete retaining walls and a sheet pile wall in accordance with the PADEP-approved operation and maintenance plan in the Final Report.

4. Vapor

For vapor, EPA's proposed remedy consists of the implementation of and compliance with land use restrictions to prohibit any use of buildings that may result in exposure to soil vapor intrusion above IRSLs.

5. Surface Water and Sediment

For surface water and sediment, EPA's proposed remedy consists of the operation and maintenance of the phytoremediation barrier in accordance with the PADEP-approved operation and maintenance plan in the Final Report.

6. Institutional Controls

The above listed components of EPA's proposed remedy include the following land and groundwater use restrictions:

- The Plant 1 property shall be used for non-residential purposes only.
- No person shall withdraw or make use of any groundwater underneath Plant 1 for any purpose.
- No person shall construct any building within Plant 1 which contains a basement.
- The integrity of the concrete retaining walls along Oil Creek will be maintained intact or an alternate replacement barrier will be installed in accordance with the PRCP.
- The integrity of the sheet pile wall, the Cherry Run Bridge concrete cap, and the Propone Deresining Unit cover shall be maintained in accordance with the PRCP.
- The phytoremediation barrier will be maintained in accordance with the PRCP and if the survival rate of the trees drops below 70 percent, replacement trees will be planted.

EPA's preferred instrument to require compliance with EPA's final remedy is an Environmental Covenant executed pursuant to, and enforceable against current and future owners under Pennsylvania's Uniform Environmental Covenants Act, 27 Pa. C.S. § 6501 et seq. (UECA). The Plant 1 property consisting of 44 acres has been subdivided into several parcels. Land and groundwater use restrictions have been executed and recorded in the chain of title for some of these parcels.[1] EPA anticipates that land and groundwater use restrictions will be executed in connection with the remaining parcel currently owned by the Fluid Recovery Services, LLC in the near term. However, land and groundwater use restrictions may be imposed by any enforceable method such as through a permit or order and EPA will use its enforcement authority to impose the components of the final remedy.

VI. Evaluation of EPA's Proposed Remedy

This section provides a description of the criteria EPA used to evaluate the proposed remedy consistent with EPA guidance. The criteria are applied in two phases. In the first phase, EPA evaluates three remedy threshold criteria as general goals. In the second phase, for those remedies which meet the threshold criteria, EPA then evaluates seven balancing criteria to determine which proposed remedy alternative provides the best relative combination of attributes.

A. Threshold Criteria

1. Protect Human Health and the Environment

During operational activities and early in the environmental history, protective measures to protect human health and the environment focused on preventing SPL from migrating into Oil Creek and Cherry Run through the use of a total fluids recovery system. As part of the closure and decommissioning of the Facility, SPL and their source materials were excavated and disposed of off-site.

Land and groundwater use restrictions will be implemented to control human exposure to contaminants from soils, groundwater, sediments, surface water and vapor intrusion. The Facility property may only be used for non-residential purposes and groundwater beneath the Facility may not be used for any purpose. These conditions will be enforceable against the current and future owners and provide long-term assurance that the exposure assumptions used in developing EPA's proposed remedy are not changed without approval.

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[1] Environmental Covenants have been executed for the parcels owned by Jeffery Pennewell, (County Parcel Identification No.25-03-01 and 07-16-12), GOC Property Holdings, LLC, (County Parcel Identification No. 25-03-01C and 25-03-01D); Oil Valley Development, LLC (County Parcel Identification No. 25-03-01E, 25-03-01F and 25-03-01G); and Borough of Rouseville (County Parcel Identification No.25-03-01).

2. Achieve Media Cleanup Objectives

Plant 1 has achieved the calculated cleanup levels for soils, groundwater, vapor, sediments, and surface water listed in Appendix A. These standards meet EPA risk guidelines for human health and the environment at the Facility. EPA's proposed remedy requires land and groundwater use restrictions to ensure that Plant 1 is not used for residential purposes and groundwater beneath the Plant 1 is not used for any purpose.

3. Remediating the Source of Releases

In all proposed remedy decisions, EPA seeks to eliminate or reduce further releases of hazardous wastes or hazardous constituents that may pose a threat to human health and the environment. As described in the Summary of Environmental History section above, PQS has remediated the sources of releases. There are no remaining large, discrete sources of waste from which constituents would be released to the environment. Therefore, EPA has determined that this criterion has been met.

B. Balancing/Evaluation Criteria

1. Long-Term Effectiveness

EPA's proposed remedy requires compliance with and maintenance of land and groundwater use restrictions at Plant 1. The proposed land and groundwater use restrictions will maintain protection of human health and the environment over time by controlling exposure to the residual hazardous constituents remaining at Plant 1. The land use and groundwater use restrictions will be implemented through an enforceable mechanism.

2. Reduction of Toxicity, Mobility, or Volume of the Hazardous Constituents

The reduction of toxicity and volume of hazardous constituents at Plant 1 has already been achieved by the decommissioning of structures and soil excavation. The reduction of mobility of hazardous constituents at Plant 1 has been, and will continue to be, achieved by the concrete retaining walls, the sheet pile wall, and the Cherry Run Bridge Concrete Cap utilized as engineering controls to prevent migration of contaminants through environmental media at Plant 1 to Oil Creek and Cherry Run. Additionally, the reduction of mobility will be assisted by the phytoremediation barrier.

3. Short-Term Effectiveness

EPA's proposed remedy does not involve any additional activities, such as construction or excavation that would pose short-term risks to workers, residents, and the environment.

4. Implementability

EPA's proposed remedy is readily implementable. Land and groundwater use restrictions will be implemented and maintained. The implementation of the use restrictions is the only remaining requirement to be completed as part of the proposed remedy. Therefore, EPA does not anticipate

anticipate any regulatory constraints in implementing its proposed remedy.

5. Cost

Implementation of land and groundwater use restrictions is the only remaining requirement as part of the proposed remedy. The future costs associated with this proposed remedy are operation and maintenance of caps and retaining walls already in place. Therefore, EPA has determined that the proposed remedy is cost effective.

6. Community Acceptance

EPA will evaluate Community acceptance of the proposed remedy during the public comment period and will be described in the Final Decision and Response to Comments (FDRTC).

7. State/Support Agency Acceptance

PADEP approved the Act 2 Final Report for remedial activities at the Facility on December 26, 2012. EPA will evaluate further State acceptance based on any comments received from PADEP during the public comment period and will be described in the FDRTC.

VII. Environmental Indicators

EPA sets national goals to measure progress toward meeting the nation's major environmental goals. For Corrective Action, EPA evaluates two key environmental indicators for each facility: (1) current human exposures under control and (2) migration of contaminated groundwater under control. EPA determined that the Facility met these indicators on April 19, 1996.

VIII. Financial Assurance

EPA has evaluated whether financial assurance for corrective action is necessary to implement EPA's proposed remedy at the Facility. Given that EPA's proposed remedy does require maintaining the integrity of the concrete retaining walls and sheet pile wall along Oil Creek and the concrete retaining walls and railroad bridge cap along Cherry Run, or installing alternate replacement barriers, EPA is proposing that financial assurance be required. Financial assurance documentation will be submitted and approved by EPA to satisfy this requirement.

IX. Public Participation

Before EPA makes a final decision on its proposed remedy for Plant 1, the public may participate in the remedy selection process by reviewing this SB and documents contained in the AR for Plant 1. The AR contains all information considered by EPA in reaching this proposed remedy. It is available for public review during normal business hours at:

U.S. EPA Region III
1650 Arch Street
Philadelphia, PA 19103
Contact: Mr. Kevin Bilash (3LC30)
Phone: (215) 814-2796
Fax: (215) 814 - 3113
Email: bilash.kevin@epa.gov

Interested parties are encouraged to review the AR and comment on EPA's proposed remedy. The public comment period will last thirty calendar days from the date that notice is published in a local newspaper. You may submit comments by mail, fax, or e-mail to Mr. Kevin Bilash. EPA will hold a public meeting to discuss this proposed remedy upon request. Requests for a public meeting should be made to Mr. Kevin Bilash.

EPA will respond to all relevant comments received during the comment period. If EPA determines that new information warrants a modification to the proposed remedy, EPA will modify the proposed remedy or select other alternatives based on such new information and/or public comments. EPA will announce its final decision and explain the rationale for any changes in the FDRTC. All persons who comment on this proposed remedy will receive a copy of the FDRTC. Others may obtain a copy by contacting Mr. Kevin Bilash at the address listed above.

Date:
8-13-14

Catherine A. Libertz for

John A. Armstead, Director
Land and Chemicals Division
US EPA, Region III

Figure 1 – Location Map
Figure 2 – Plant 1 Map

Index to Administrative Record

Consent Order and Agreement, Commonwealth of Pennsylvania, Department of Environmental Resources, and Pennzoil Products Company, Rouseville Refinery, April 28, 1990.

Handbook of Groundwater Protection and Cleanup Policies for RCRA Corrective Action, United States Environmental Protection Agency, Solid Waste and Emergency Response (5303W), EPA530-R-04-030, April 2004

Pennzoil-Quaker State Company Site Characterization Report/Remedial Investigation Report, Former PQS Rouseville Refinery Plant 1, prepared by TolTest, Inc., February 2006

Request for Continuation of Groundwater Pump and Treat Remediation System Shutdown, prepared by URS, September 30, 2009

Remedial Action Plan Addendum Request for Termination of Remedial Activities Remediation Units 2.2, 3.1, and 3.2, prepared by URS, October 2009

Remedial Action Plan, Former PQS Rouseville Refinery Plant 1, prepared by URS Corporation, April 2010

Supplementary Remedial Action Plan/Cleanup Plan, PQS Former Rouseville Refinery - Plant 1, prepared by URS Corporation, April 2011

Final Report, Former PQS Refinery Plant I, prepared by URS Corporation, September 2012

Final Report approval letter, prepared by PADEP, December 26, 2012

Quarterly Interim Remedial Action Progress Reports, prepared by various consulting companies, 1980 through 2012

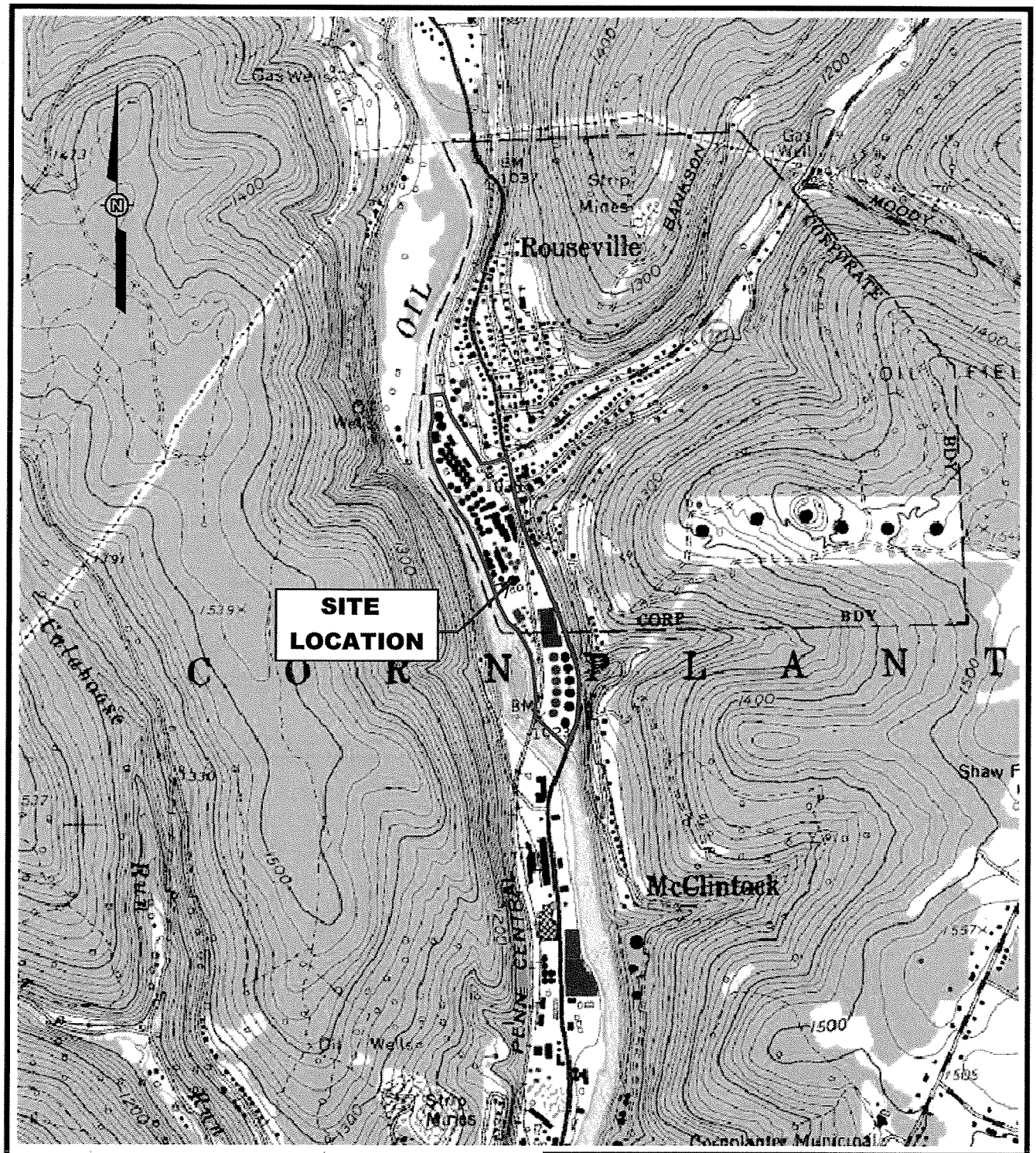
Bell, Herbert C. "The History of Venango County." Web. 4 Jan. 2013. http://www.oilcitypa.net/

Environmental Covenant, GOC Property Holdings, LLC, approved by PADEP August 9, 2013

Environmental Covenant, Borough of Rouseville, LLC, approved by PADEP October 16, 2013

Environmental Covenant, Oil Valley Development, LLC, approved by PADEP December 27, 2013, recorded January 10, 2014

Environmental Covenant, Jeffrey Pennewell, approved by PADEP March 24, 2014



SOURCE: USGS 7.5 MIN. TOPOGRAPHIC QUADRANGLE: OIL CITY, PENNSYLVANIA, 1963, PHOTOREVISED 1972.

0 0.3 0.6 0.9 1.2 1.5 km

0 0.1 0.2 0.3 0.4 0.5 mi

41° 27' 55"N, 79° 41' 28"W (NAD83/WGS84)
USGS Oil City (PA) Quadrangle
Projection is UTM Zone 17 NAD83 Datum

FORMER PQS REFINERY PLANT #1
ROUSEVILLE, PENNSYLVANIA

SITE LOCATION MAP

URS
FOSTER PLAZA 4
501 HOLIDAY DRIVE
SUITE 300
PITTSBURGH, PA 15220
PHONE: (412) 503-4700 FAX: (412) 503-4701

FIGURE
1

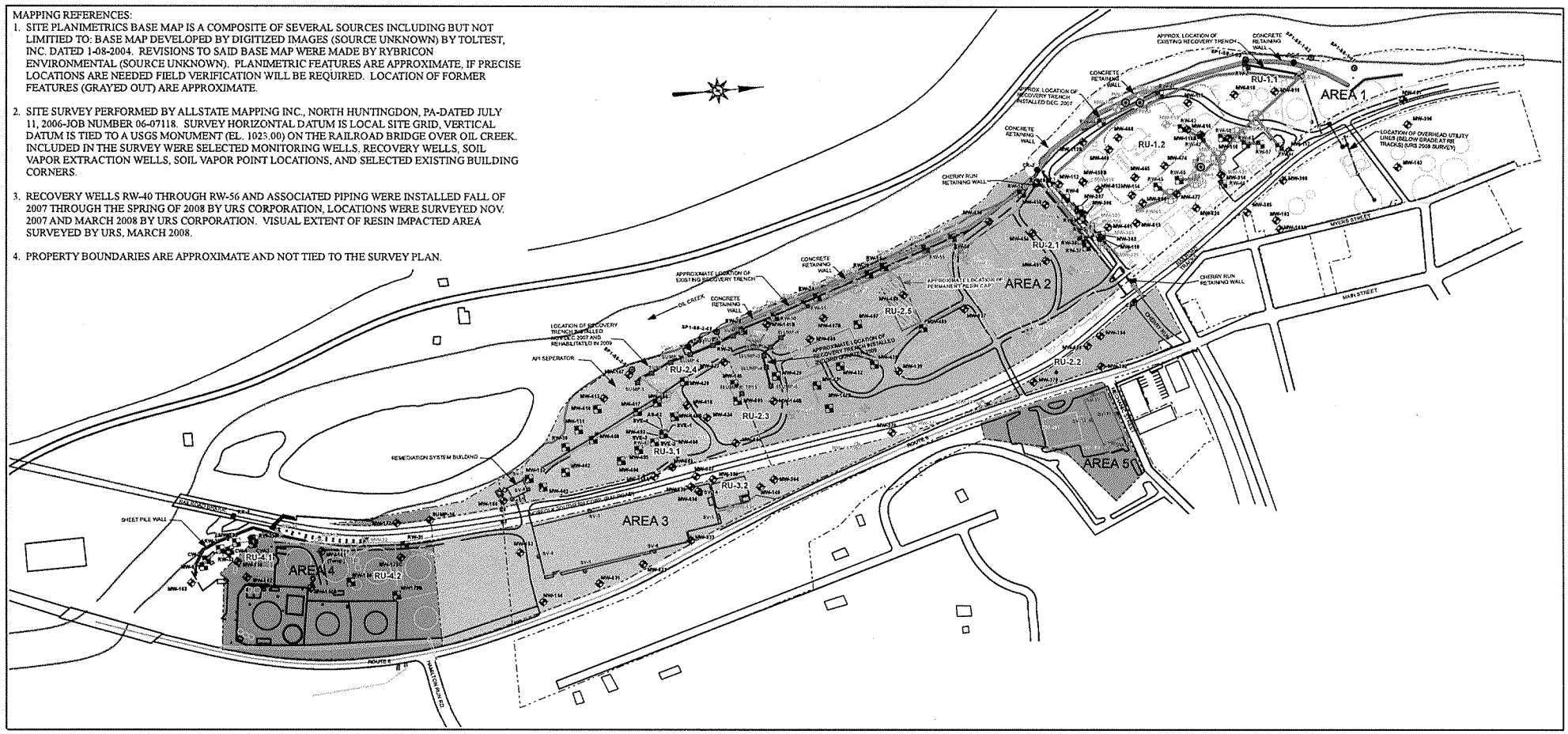
MAPPING REFERENCES:

1. SITE PLANIMETRICS BASE MAP IS A COMPOSITE OF SEVERAL SOURCES INCLUDING BUT NOT LIMITIED TO: BASE MAP DEVELOPED BY DIGITIZED IMAGES (SOURCE UNKNOWN) BY TOLTEST, INC. DATED 1-08-2004. REVISIONS TO SAID BASE MAP WERE MADE BY RYBRICON ENVIRONMENTAL (SOURCE UNKNOWN). PLANIMETRIC FEATURES ARE APPROXIMATE, IF PRECISE LOCATIONS ARE NEEDED FIELD VERIFICATION WILL BE REQUIRED. LOCATION OF FORMER FEATURES (GRAYED OUT) ARE APPROXIMATE.

2. SITE SURVEY PERFORMED BY ALLSTATE MAPPING INC., NORTH HUNTINGDON, PA-DATED JULY 11, 2006-JOB NUMBER 06-07118. SURVEY HORIZONTAL DATUM IS LOCAL SITE GRID, VERTICAL DATUM IS TIED TO A USGS MONUMENT (EL. 1025.00) ON THE RAILROAD BRIDGE OVER OIL CREEK. INCLUDED IN THE SURVEY WERE SELECTED MONITORING WELLS, RECOVERY WELLS, SOIL VAPOR EXTRACTION WELLS, SOIL VAPOR POINT LOCATIONS, AND SELECTED EXISTING BUILDING CORNERS.

3. RECOVERY WELLS RW-40 THROUGH RW-56 AND ASSOCIATED PIPING WERE INSTALLED FALL OF 2007 THROUGH THE SPRING OF 2008 BY URS CORPORATION, LOCATIONS WERE SURVEYED NOV. 2007 AND MARCH 2008 BY URS CORPORATION. VISUAL EXTENT OF RESIN IMPACTED AREA SURVEYED BY URS, MARCH 2008.

4. PROPERTY BOUNDARIES ARE APPROXIMATE AND NOT TIED TO THE SURVEY PLAN.



275 0 275 550'

1 " = 275 '

Legend

- MONITORING WELL
- DEEP UNCONSOLIDATED MONITORING WELL
- RECOVERY WELL
- RECOVERY SUMP
- TOTAL FLUIDS RECOVERY WELL
- RECOVERY WELLS INSTALLED BY URS (NOVEMBER 2008)
- SOIL VAPOR EXTRACTION WELL
- SOIL VAPOR POINT LOCATIONS
- MONITORING WELL DESTROYED OR ABANDONED
- RECOVERY WELL DESTROYED OR ABANDONED
- VAULT
- CRUDE PRODUCTION WELL
- SURFACE WATER GAUGE
- PROPERTY LINE
- APPROX. LIMIT OF PONDED WATER (URS MAR. 2008 SURVEY)
- APPROX. LOCATION OF REMEDIATION SYSTEM PIPING
- LOCATION OF REMEDIATION SYSTEM PIPING INSTALLED BY URS 2007/2008
- SHEET PILE WALL
- CONCRETE RETAINING WALL
- RECOVERY TRENCH
- CHERRY RUN RETAINING WALL
- SECONDARY CONTAINMENT WALL

GOC Property Holdings, LLC

Parcels by Owner

- Borough of Rouseville
- GOC Property Holdings, LLC
- Oil Valley Development, LLC
- Pennewell Sandblasting and Painting
- Fluid Recovery Services, LLC

FILE
G:\Projects\Shell\Station_171284\MXD\Final\ParcelMap_revised.mxd 8/28/2012

FORMER PQS REFINERY PLANT #1
ROUSEVILLE, PENNSYLVANIA

Property Owner Boundary Map

PREPARED BY:

URS 12420 Milestone Center Drive Germantown, MD 20876

FIGURE

2

Appendix A

Table a: Soil SSS's compared to EPA RSLs and Facility highest and average concentrations

Table b: Groundwater SSS's compared to EPA RSLs and Facility highest and average concentrations

Table c: Sediment SSS's compared to EPA Residential Soil RSLs and Facility highest and average concentrations

Table d: Surface water SSS's compared to PADEP WQCs and Facility highest and average concentrations

Table e: Derived Indoor Air SSS's compared to EPA Target Indoor Air Concentration

Table f: Derived Ambient Air SSS's compared to EPA RSLs

Table a:

Soil (mg/kg)				
Constituent Sample	Highest	Average	EPA RSL	SSS
Volatile Organics				
1,2,4-trimethylbenzene	340	2.93	260	11.6
Benzene	11	0.9	5.4	0.39
Naphthalene	2.81	2.54	18	2.72
Toluene	13	0.29	4500	0.50
Semi-Volatile Organics				
benz(a)anthracene	13	0.37	2.1	0.53
benzo(a)pyrene	12	0.3	0.21	0.51
benzo(b)fluoranthene	7	0.3	2.1	0.42
Dibenz(a,h)anthracene	0.45	0.11	0.21	0.17
Indeno(1,2,3-cd)pyrene	4.1	0.17	2.1	0.23
Inorganics				
Aluminum	44000	10454	990000	11665
Antimony	252	19.4	410	33.7
Arsenic	145	23.7	1.6	26.1
Cobalt	33.7	6.14	300	6.64
iron	140000	28536	720000	35764
lead	449	53.1	800	53.1
Manganese	21400	834	23000	1676
Mercury	9.38	0.38	43	0.92
Thallium	92.5	13.8	10	20.3

Table b:

Groundwater (ug/L)				
Constituent Sample	Highest	Average	EPA RSL	SSS
Volatile Organics				
1,2,4-trichlorobenzene	98.4	NA	70	98.4
1,2,4-trimethylbenzene	22.6	1.72	1.5	2.065
1,3,5-trimethylbenzene	12.2	1.26	37	1.44
2-butanone	580000	4703	4900	26129
2-hexanone	36	12.2	4.7	12.5
Acetone	13000	107	12000	233
Benzene	360	7.17	0.41	11
ethylbenzene	12	1.3	1.5	1.48
Toluene	320000	8898	230	28052
Xylenes, total	52	3.27	20	4.31
Semi-Volatile Organics				
2-methylnaphthalene	230	13.8	15	
2-methylphenol	340	21.7	720	27
3&4-methylphenol	15	6.25	720	6.62
4-methylphenol	450	23	72	30
benz(a)anthracene	20	0.93	0.029	2.56
benzo(a)pyrene	25	1.018	0.0029	2.053
benzo(k)fluoranthene	0.70	NA	0.29	0.70
Bis(2-Cholroethyl)ether	5450	43.3	0.012	211
Bis(2-Cholroisopropyl)ether	4	2.71	0.31	2.73
Bis(2-ethylhexyl)phthalate	1100	13.9	4.8	25.5
Chrysene	22	2.11	2.9	2.31
Dibenz(a,h)anthracene	1.10	NA	0.0029	1.10
Dibenzofuran	12	3.05	3.7	3.15
Indeno(1,2,3-cd)pyrene	0.70	NA	0.029	0.70
Naphthalene	59	3.65	0.14	4.49
Phenanthrene	140	3.45	1100	4.96
Pyrene	32	2.73	110	2.99
Dissolved Inorganics				
Aluminum	4400	141		444
Antimony	20	0.51	1.5	1.78
Arsenic	220	15.3	0.045	32
Barium	3450	411	730	633
Boron	1500	128	3100	215
Cadmium	1.75	0.029	6.9	0.079
Copper	70	20.6	620	21.2
Iron	83900	10166	2600	16219
Manganese	7800	975	88	1538

Mercury	0.10	0.0017	0.057	0.0081
Nickel	100	8.16	760	16
Selenium	90	1.24	18	5.08
Silver	20	0.11	71	0.92
Thallium	1.0	0.048	0.16	0.16
Total Inorganics				
Lead	160	24.5	15	24.5

Table c:

Sediment (ug/L)				
Constituent Sample	Highest	Average	EPA RSL	SSS
Semi-Volatile Organics				
benz(a)anthracene	0.47	0.21	0.15	0.26
benzo(a)pyrene	0.33	0.17	0.015	0.22
benzo(b)fluoranthene	0.41	0.21	0.15	0.25

Table d:

Surface Water (ug/L)				
Constituent Sample	Highest	Average	PADEP WQC	SSS
Semi-Volatile Organics				
benz(a)anthracene	0.014	0.012	0.0038	0.013
benzo(a)pyrene	0.028	0.023	0.0038	0.028
benzo(b)fluoranthene	0.019	0.018	0.0038	0.019
benzo(k)fluoranthene	0.021	0.018	0.0038	0.021
chrysene	0.014	0.012	0.0038	0.014
Dibenz(a,h)anthracene	0.038	0.035	0.0038	0.038
Indeno(1,2,3-cd)pyrene	0.05	NA	0.0038	0.05
Naphthalene	0.4	0.05	N/A	0.17

Table e:

Indoor Air (mg/m^3)		
Constituent Sample	EPA Target Indoor Air Concentration	Derived SSS based on PADEP Soil Gas EPC
Volatile Organics		
1,2,4-trichlorobenzene	2.0E-01	2.88E-04
Benzene	3.1E-02	6.38E-03
Semi-Volatile Organics		
Bis(2-Cholroethyl)ether	7.4E-04	2.84E-04

Table f:

Ambient Air (mg/m^3)		
Constituent Sample	EPA RSL	Derived SSS based on Groundwater EPC
Volatile Organics		
1,2,4-trichlorobenzene	8.8E-03	3.24E-05
1,2,4-trimethylbenzene (TMB)	3.1E-02	6.77E-06
1,3,5-trimethylbenzene	NA	4.47E-06
2-butanone	22	1.36E-03
2-hexanone	1.3E-01	1.08E-06
acetone	140	1.38E-05
benzene	1.6E-03	6.34E-05
ethylbenzene	4.9E-03	8.70E-06
Toluene	22	1.76E-01
Xylenes, total	4.4E-01	2.51E-05
Semi-Volatile Organics		
2-methylnaphthalene	NA	3.51E-06
Bis(2-Cholroethyl)ether	3.7E-05	1.97E-06
Chrysene	1.1E-03	1.66E-08
Dibenzofuran	NA	4.27E-11
Fluorene	NA	3.50E-08
Naphthalene	3.6E-04	1.02E-06
Pyrene	NA	3.76E-09