



UNITED STATES

ENVIRONMENTAL PROTECTION AGENCY

REGION III

STATEMENT OF BASIS

CALUMET PENRECO

KARNS CITY, PENNSYLVANIA

PAD 065 626 822

## **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 the Calumet Penreco facility located at 138 Petrolia Street in Karns City, PA 16041 (Facility). EPA's proposed remedy consists of a combination of engineering controls (ECs) and institutional controls (ICs) designed to minimize the potential for human exposure to contamination. This SB highlights key information relied upon by EPA in making its proposed remedy.

The Facility 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 is not authorized for the Corrective Action Program under Section 3006 of RCRA, 42 U.S.C. § 6906. Therefore, EPA retains primary authority for implementing the Corrective Action Program in the Commonwealth.

The Administrative Record (AR) for the Facility contains all documents, including data and quality assurance information, on which EPA's proposed remedy is based. See Section IX, Public Participation, for information on how you may review the AR.

## **II. Facility Background**

The Facility property consists of approximately 288 acres and is primarily surrounded by undeveloped land to the north and west. A mix of residential and commercial properties is located to both the south and east of the Facility. A railroad right-of-way traverses the Facility diagonally from the southwest to the northeast. A location map and Facility diagram are attached as Figures 1 and 2, respectively.

The Facility began operations in 1878 as the Pennsylvania Refining Company, which processed local crude oil. Pennzoil Co. purchased the Facility in 1972 and began producing specialty and high purity petroleum products. Starting in 1997, the Facility was owned by a partnership between Conoco Inc. and Pennzoil Company. Between 2001 until 2008, the Facility was owned by a partnership between ConocoPhillips Co. and M.E. Zukerman & Co. Inc. until the Facility was sold to Calumet Specialty Products Partners L.P., which is the current owner. The Facility continues to manufacture high-purity petroleum products such as mineral oils, petrolatums, solvents, sulfonates, and hydrocarbon gels that are used primarily in cosmetics, pharmaceuticals, and personal care and food-grade products.

The Facility submitted a Notification of Hazardous Waste Activity and a Part A application in November 1980. The Facility disposed of oil/water separator sludge (K051), heat exchanger bundle cleaning sludge (K050), and filter cake (D001) into the Upper Disposal Area,

which is described below. Each of these wastes were either delisted (K050, K051) or removed (when tested, the filter cake did not meet the ignitability characteristic) by July 1982. The Facility operated under interim status until November 1985, when interim status was terminated. At that time, the Facility ceased disposal operations and has operated only as a generator up to the present.

### **III. Summary of Environmental Investigation**

In April 1986, EPA conducted a Preliminary Assessment at the Facility. Eight solid waste management units (SWMUs) were identified at the Facility, several of which (Upper and Lower Disposal areas, Spill Retention Basin, and various aboveground storage tanks) were suspected to be sources of releases of contaminants at the Facility. The Facility's oil/water separator was a known source of releases to the South Branch of Bear Creek due to periodic overflowing after heavy rain events and a flooding event in 1985 in which the South Branch of Bear Creek backed up into the oil/water separator. In addition, small increases of in-stream concentrations of chloroform, toluene, and ethyl benzene had been detected in 1983 by the Pennsylvania Department of Environmental Protection (PADEP) directly downstream of the Facility. EPA's Preliminary Assessment report recommended that other potential SWMUs be evaluated, in addition to evaluating the effectiveness of the existing groundwater monitoring network and the technical feasibility of recently submitted closure plans by the Facility for the Upper and Lower Disposal areas.

The Lower Disposal Area (LDA), which was approximately 0.75 acre in size and had been inactive since 1955, was comprised of an acid sludge pit formerly used to dispose of spent oleum waste and a tar pit formerly used to dispose of hardened wax residue. Material disposed in the LDA was removed between 1987 and 1988. Most of this material was placed in the Upper Disposal Area, described below; the remainder of the material was blended with fuel oil and used as fuel at the Facility. Two feet of cover soil was placed over the LDA, which was then graded and seeded.

The Upper Disposal Area (UDA), which was approximately 18 acres in size, was used from 1935 to 1985 to dispose of sludge from the oil/water separator, fly ash, filter cake, bauxite, spent oleum, construction debris, and miscellaneous refuse. The Facility closed the UDA in coordination with PADEP from 1988 to 1990. The UDA was capped with a soil cover and a collection drain was placed along the lower slope to intercept groundwater discharge and leachate and re-route it to the wastewater treatment system. The effluent from the UDA is treated for acidity and discharged under a National Pollutant Discharge Elimination System (NPDES) permit to the South Branch of Bear Creek.

The Facility conducted environmental investigations from 1993 to 1996 in an effort to evaluate subsurface conditions at the Facility. The Facility was divided into four areas of investigation: Phase I focused on the Storage and Kerosene Unloading Area, Phase II focused on the Main Processing Area, Phase III focused on the Blending/Storage and Wastewater Treatment Area, and Phase IV involved the Storage Processing and Rail Car Unloading Area (Figure 2). Elevated concentrations of total petroleum hydrocarbons (TPH) were detected in several soil samples in each of the four areas of investigation; however, the hazardous fractions of TPH

(primarily benzene) were only detected in soil in isolated locations of the Main Processing Area at concentrations below Pennsylvania's Act 2 Statewide Health Standards (SHS). Analysis of groundwater beneath the Facility revealed concentrations of benzene above the Maximum Contaminant Levels (MCLs) in three monitoring wells. In addition, Floating Separate Phase Hydrocarbons (FSPH) were detected on top of groundwater in several wells in the Storage and Kerosene Unloading Area and the Main Processing Area. Analysis of the FSPH indicated that it was primarily kerosene with a small percentage of white oil and traces of naphtha and crude oil. The Facility submitted a Corrective Action Plan to PADEP in 1998 to address the FSPH since FSPH detections were more numerous and widespread than benzene detections and the proposed cleanup of FSPH would also remove the hazardous constituents (i.e., benzene) in groundwater. A Revised Corrective Action Plan that addressed several PADEP comments was submitted in 1999.

The 1999 Revised Corrective Action Plan discussed several remedial options for addressing the FSPH. After assessing these options, the Facility installed a dual-phase recovery system (Recovery System) along the South Branch of Bear Creek to collect and treat FSPH and groundwater and prevent FSPH from migrating to and causing sheens on the South Branch of Bear Creek. The Recovery System included nineteen (19) collection wells to recover FSPH and groundwater, which was then routed to an oil/water separator where it was treated at the wastewater treatment plant and then discharged into the South Branch of Bear Creek. The Recovery System became operational in November 1999. Performance monitoring included quarterly measurements of FSPH thickness in affected monitoring wells. As specified in the 1999 Revised Corrective Action Plan, monitoring wells with 0.01 feet or less of FSPH thickness through four consecutive quarters of measurements could be removed from the quarterly monitoring program.

In June 2000, EPA performed an Environmental Indicator Inspection at the Facility. At this inspection, updated information on previously identified SWMUs was provided to EPA, such as the addition of coalescing plates to the lower oil/water separator in order to adequately handle peak stormwater events to prevent contamination due to overflow. Additional SWMUs were identified and assessed, including the Wastewater Treatment Plant, Flyash Storage Impoundment, Fire Training Area, and Less Than 90-day Storage Area. No evidence of spills or releases was observed in these areas during the inspection.

PADEP has designated a 60-square-mile area encompassing three industrial facilities and twenty known disposal areas as the Bear Creek Area Chemical Site (BCACS). The Facility is located within the BCACS. The groundwater under BCACS had been impacted by contamination from the multiple industries and disposal areas located in it. PADEP is overseeing the cleanup these sites, primarily through source control, but the large area and complex geology make it unlikely that full restoration of the groundwater is possible within a reasonable time within the BCACS. Accordingly, PADEP ordered parties responsible for the contamination to contribute to a public water system to serve BCACS. The initial size of the now completed water system encompasses approximately 10 square miles, and PADEP has made provisions by which the public water system can be expanded into other areas within the 60-square-mile BCACS, if necessary. PADEP has also prohibited domestic use of the groundwater within the BCACS and the municipalities within the BCACS have adopted mandatory hook up ordinances to protect public health. On December 12, 2005, the Borough of

Karns City enacted Ordinance 122 pursuant to Article XXIV, Section 2461 of the Karns City Borough Code. Ordinance 122 requires, among other things, mandatory connections to the public water supply by properties abutting a public water main and needing potable water, the abandonment of groundwater supply wells for potable use, and sets forth procedures and penalties for non-compliance with the ordinance. Since the Facility is within the BCACS boundary, the groundwater beneath it will not be used for domestic purposes as a result of the Ordinance and the development of the public water supply.

In the summer of 2010, the Facility began a temporary shutdown of the Recovery System in order to determine whether operation of the system was still necessary considering that all but four wells had reached the removal criteria specified in the 1999 Revised Corrective Action Plan. During the temporary shutdown, quarterly monitoring of FSPH thickness was continued but showed little change in thickness or migration. To confirm that residual amounts of FSPH were not reaching or impacting the South Branch of Bear Creek via groundwater discharge to surface water, EPA requested that the Facility sample surface water in locations upstream, downstream, and midstream of the Facility. In July 2012, no volatile organic compounds or heavy metals were detected in the surface water samples collected during low-flow conditions at that time. As a result, in September 2012, EPA approved the permanent shutdown of the Recovery System.

As of July 2014, two of the 30 wells initially included in the quarterly monitoring program contain amounts of FSPH greater than 0.01 feet thickness, the criteria for removal, and will continue to be monitored until the removal criteria have been met. The amounts of FSPH remaining in these two wells range from non-detect to 0.09 feet thickness, are easily collected by absorbent socks that have been installed in these wells, and are not expected to impact the South Branch of Bear Creek.

#### **IV. Corrective Action Objectives**

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

##### **A. Soils**

EPA has determined that the Commonwealth of Pennsylvania's Residential Statewide Health Standards (SHS) for direct contact with soils are protective of human health and the environment for individual contaminants at this Facility. The Residential SHS meet or are more conservative than EPA's acceptable risk range for residential use. Contaminants remaining in Facility soils meet the Residential SHS; therefore, no land use restrictions are required other than the requirement to maintain the UDA cap. Since all waste material was removed from the LDA, no restrictions are required in this area.

##### **B. 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 facilities associated with aquifers that are either currently used for water supply or have the potential to be used for water supply, EPA will require the groundwater be remediated to National Primary Drinking Water Standard Maximum Contaminant Levels (MCLs) promulgated

pursuant to Section 42 U.S.C. §§ 300f et seq. of the Safe Drinking Water Act and codified at 40 CFR Part 141, unless EPA determines it is technically impracticable to do so.

EPA has determined that given the large scale regional groundwater contamination within BCACS, remediation of Facility groundwater would require corrective measures of such magnitude and complexity that it is technically impracticable to do so. In addition, remediation of Facility groundwater would provide no significant reduction in risk to actual or potential receptors given that PADEP has required a public water supply system serve BCACS and domestic uses of groundwater in BCACS has been prohibited.

Therefore, EPA's Corrective Action Objectives for Facility groundwater are to 1) control exposure to the hazardous constituents remaining in the groundwater; 2) ensure that the separate phase liquids beneath the Facility are recovered and will not migrate beyond the extent of the current groundwater plume and 3) ensure that no groundwater discharge concentrations would result in surface water concentrations that are above the Pennsylvania's water quality criteria for Bear Creek.

## **V. Proposed Remedy**

EPA's proposed remedy for the Facility is comprised of Engineering Controls (ECs) and an Institutional Controls (ICs) for the UDA and groundwater. ECs are engineered and constructed physical barriers, structures, or systems designed to contain and/or prevent exposure to contamination. ICs are non-engineered instruments such as administrative and/or legal instruments that impose restrictions on use of contaminated property or resources to minimize the potential for human exposure to contamination and protect the integrity of a remedy.

### **A. Soils**

EPA's proposed remedy for Facility soils is the following:

1. Engineering Control
  - a. The Facility shall have a continuing duty to operate and maintain the cap on the UDA in accordance with the December 1985 Closure Plan.
2. Institutional Control
  - a. The Facility shall have a continuing duty to maintain the integrity of the cap on the UDA, to include prohibitions of intrusive operations into or the construction of any structure over the UDA cap without prior notification to and approval by EPA.

### **B. Groundwater**

EPA's proposed remedy for Facility groundwater is the following:

1. Engineering Controls

- a. The Facility shall continue to monitor and remove FSPH from remaining impacted groundwater wells in accordance with the 1999 Revised Corrective Action Plan.
- b. The Facility shall have a continuing duty to operate and maintain the leachate collection system in accordance with the December 1985 Closure Plan.

## 2. Institutional Control

- a. Groundwater at the Facility shall not be used for any purpose other than industrial usage and to conduct the operation, maintenance, and monitoring activities required by EPA, unless it is, (a) demonstrated to EPA, in consultation with PADEP, that such use will not pose a threat to human health or the environment or adversely affect or interfere with the selected remedy and, (b) EPA provides prior written approval for such use. The proposed use restriction will be implemented through an IC such as an enforceable permit, order and/or an Environmental Covenant pursuant to the Pennsylvania Uniform Environmental Covenants Act, 27 Pa. C.S. Sections 6501-6517 (UECA) to be recorded with the deed for the Facility property.

## **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 decision 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 decision alternative provides the best relative combination of attributes.

### A. Threshold Criteria

#### **1. Protect Human Health and the Environment**

Exposure pathways to waste material left in place at the Facility have been mitigated through the proper use and maintenance of a cap and leachate collection system in the UDA. Requiring the continued operation and maintenance of the cap and leachate collection system will ensure human health and the environment remain protected in the area of the UDA where waste remains. Soils at the Facility meet standards for unrestricted use. As a result of the development of the public water system in the BCACS and the implementation of Ordinance 122, groundwater is not used as a potable water source in the surrounding area and within the Facility property. Implementation of the proposed groundwater use restrictions will further minimize the potential for exposure to contaminants in the groundwater. Surface water results from 2012 demonstrate that groundwater discharge to surface water is not impacting the South Branch of Bear Creek above surface water quality criteria.

#### **2. Achieve Media Cleanup Objectives**

EPA's proposed remedy meets the cleanup objectives based on assumptions regarding current and reasonably anticipated land and water resource use(s). Facility soils meet the residential SHS for direct contact. FSPH in the remaining two wells will continue to be removed until all wells meet the removal criteria. Infiltration of Facility groundwater into the South Branch of Bear Creek is not impacting the Creek above levels considered protective of human health and the environment. The cap prevents human and environmental exposure to any hazardous constituents remaining in the UDA.

### **3. Remediating the Source of Releases**

In all proposed 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. Waste material was consolidated and disposed in the UDA, which was closed and monitored from 1988 to 1990. Leachate collection and treatment for acidity continues and is monitored via NPDES permit. As described in the 1999 Revised Corrective Action Plan, the Facility installed the Recovery System to collect and treat FSPH and groundwater and to prevent sheens on the South Branch of Bear Creek. 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**

The proposed ECs and ICs will maintain protection of human health and the environment over time by controlling exposure to the waste material in the UDA and hazardous constituents of FSPH in groundwater. EPA's proposed decision requires the compliance with and maintenance of land use and groundwater use restrictions at the Facility. EPA anticipates that the land and groundwater use restrictions will be implemented through an enforceable permit, order or an environmental covenant to be recorded with the deed for the Facility property. Such environmental covenant will run with the land.

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

The reduction of toxicity, mobility and volume of hazardous constituents at the Facility has already been achieved by the removal, containment, and treatment of FSPH and groundwater by the Recovery System, which operated successfully for over ten years. In addition, the mobility of any potentially hazardous constituents remaining in the UDA has been reduced through the interception and treatment of groundwater discharge and leachate via the leachate collection system.

##### **3. Short-Term Effectiveness**

EPA's proposed decision does not involve any activities such as construction or excavation that would pose short-term risks to workers, residents, and/or the environment. In addition, EPA anticipates that the land use and groundwater use restrictions will be fully implemented shortly after the issuance of the Final Decision and Response to Comments

(FDRTC).

#### **4. Implementability**

EPA's proposed decision is readily implementable. EPA does not anticipate any regulatory constraints in requiring the Facility to implement the engineering and institutional controls described above.

#### **5. Cost**

EPA's proposed decision is cost effective. Long-term operation and maintenance of the ECs above are already occurring, and the costs associated with recording and enforcing a permit, order, and/or Environmental Covenant are anticipated to be minimal.

#### **6. Community Acceptance**

EPA will evaluate Community acceptance of the proposed decision during the public comment period and will be described in the FDRTC.

#### **7. State/Support Agency Acceptance**

EPA will evaluate State acceptance based on 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. On July 31, 2008, the EPA determined that the Facility met these indicators.

### **VIII. Financial Assurance**

EPA has evaluated whether financial assurance for corrective action is necessary to implement EPA's proposed decision at the Facility. Given that EPA's proposed decision does not require any further engineering actions to remediate soil or groundwater at this time and given that the costs of implementing institutional and engineering controls at the Facility are anticipated to be below \$100,000/year, EPA is proposing that no financial assurance be required.

### **IX. Public Participation**

Before EPA makes a final decision on its proposal for the Facility, the public may participate in the decision selection process by reviewing this SB and documents contained in the Administrative Record (AR) for the Facility. The AR contains all information considered by EPA in reaching this proposed decision. It is available for public review during normal business

hours at:

U.S. EPA Region III  
1650 Arch Street  
Philadelphia, PA 19103  
Contact: Griff Miller  
Phone: (215) 814-3407  
Fax: (215) 814-3113  
Email: [miller.griff@epa.gov](mailto:miller.griff@epa.gov)

Interested parties are encouraged to review the AR and comment on EPA's proposed decision. The public comment period will last thirty (30) 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. Griff Miller. EPA will hold a public meeting to discuss this proposed decision upon request. Requests for a public meeting should be made in writing to Mr. Miller.

EPA will respond to all relevant comments received during the comment period. If EPA determines that new information warrant a modification to the proposed decision, EPA will modify the proposed decision 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 a document entitled the Final Decision and Response to Comments (FDRTC). All persons who comment on this proposed decision will receive a copy of the FDRTC. Others may obtain a copy by contacting Mr. Miller at the address listed above.

Date: 8/25/14

/John A. Armstead/

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

## **INDEX TO CALUMET PENRECO ADMINISTRATIVE RECORD**

Revised Closure Plan for the Lower and Upper Residual Waste Disposal Sites, SSS Company, December 1985.

Revised Corrective Action Plan for Penreco Karns City Facility, September 1999

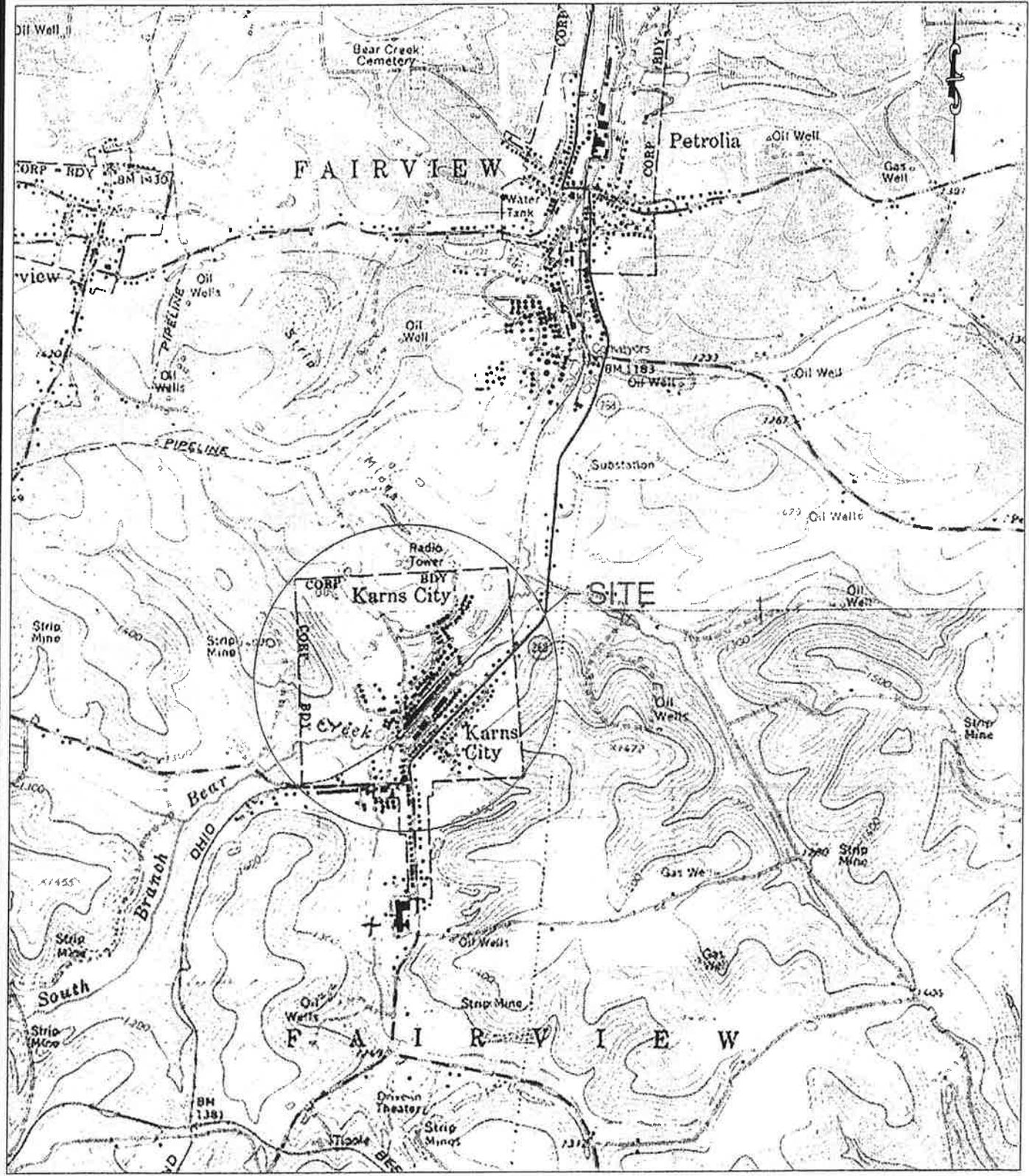
Environmental Indicator Inspection Report for Penreco, US Army Corps of Engineers, April 2001

Karns City Borough Ordinance 122, requiring connection to public water supplied by the Petroleum Valley Regional Water Authority and the abandonment of private wells, December 12, 2005

Quarterly Project Status Report, Calumet Penreco, October 2012

Description of the construction and extent of the public water supply for the Bear Creek Area Chemical Site, documented under Section 1.1 (Regulatory Setting) of the Remedial Investigation Report for the Beazer/INDSPEC Properties, Langan Engineering, June 2013

Quarterly Project Status Report, Calumet Penreco, July 2014



SOURCE: PARKER, PA.  
 TOPOGRAPHIC MAP, 1963, PHOTOREVISED  
 1979 AND CHICORA, PA. TOPOGRAPHIC  
 MAP, 1964, PHOTOREVISED 1972

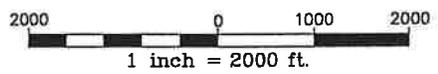
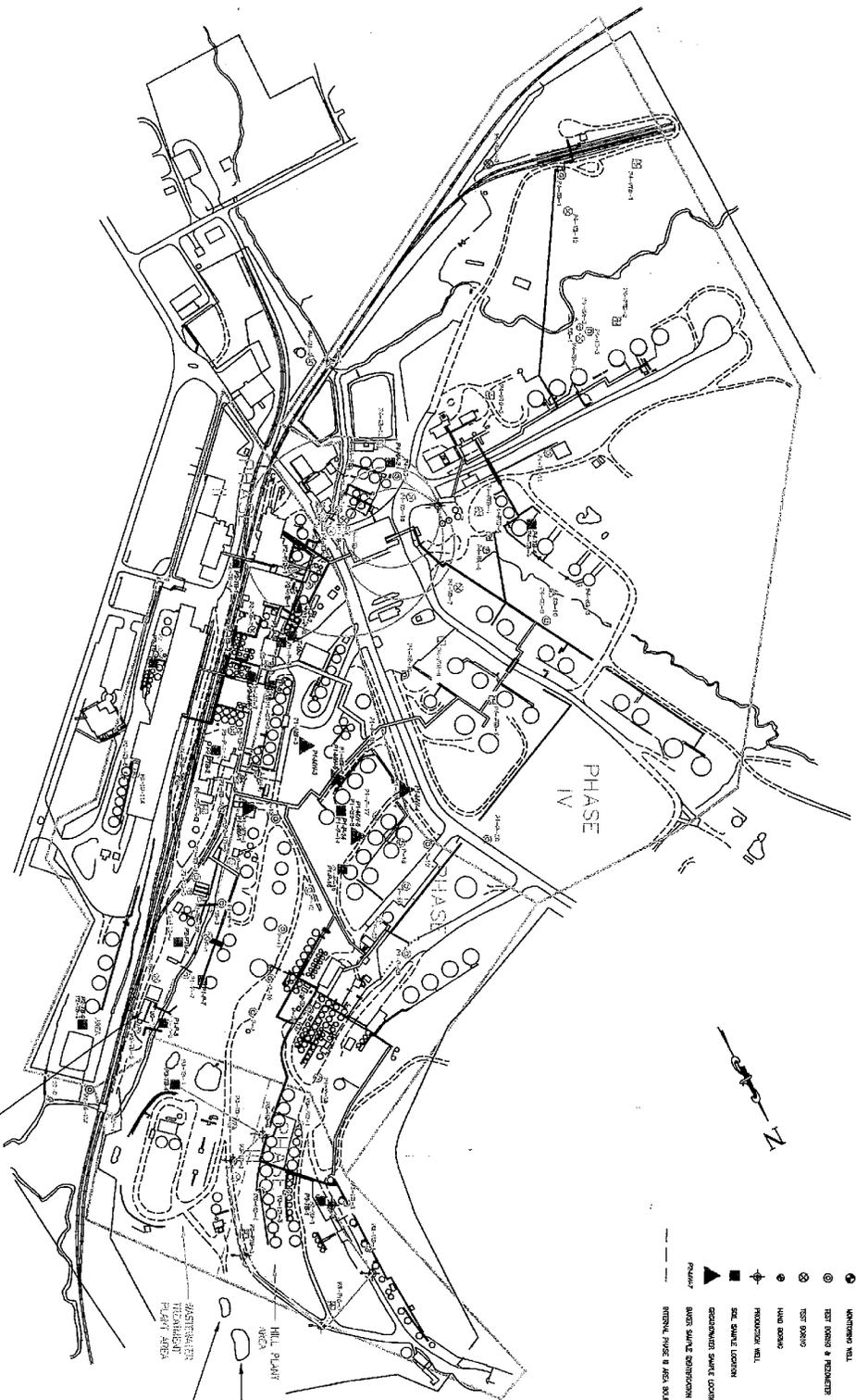
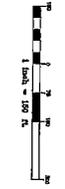


FIGURE 1  
 SITE LOCATION MAP  
 PENRECO  
 KARNS CITY, PENNSYLVANIA



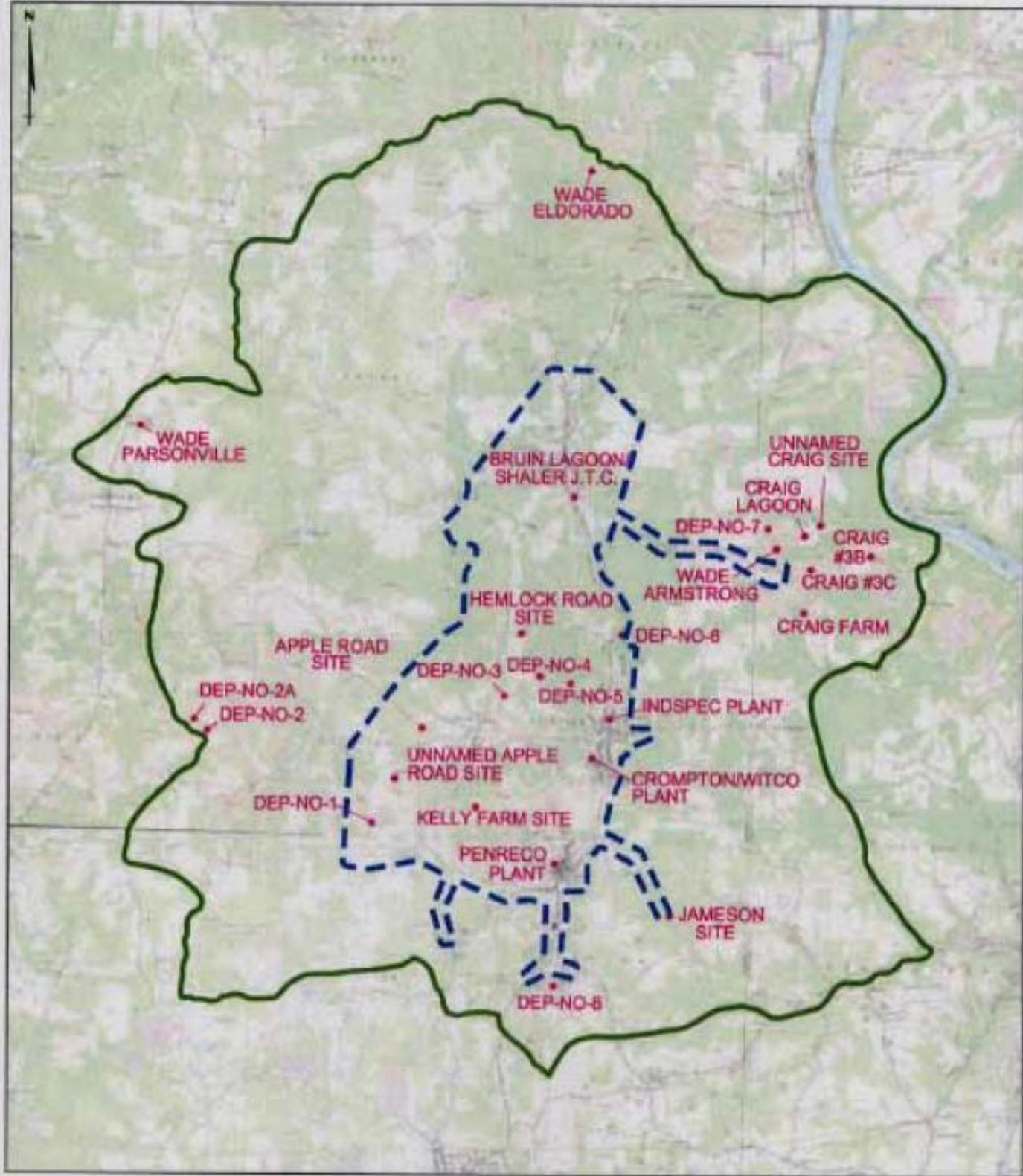
- LEGEND**
- ▲ STAFF GAUGE
  - ▣ PRELIMINARY TEST BASIN
  - ⊙ WASTEWATER TANK
  - ⊙ TEST BASIN & PIPING
  - ⊙ TEST BASIN
  - ⊙ HAND BASIN
  - ⊙ PRODUCTION WELL
  - ⊙ S&P SHAPE LOCATION
  - ⊙ GEOTECHNICAL SHAPE LOCATION
  - ▲ BASES SHAPE IDENTIFICATION NUMBERS
  - INTERNAL PHASE B AREA BOUNDARY



REVISIONS	DRAWN S.O.J.	J.A.M.	NORTH	PENRECO Karris City, Pennsylvania 23080106-EPA	SCALE 1" = 150'	DATE 4/11/01	SHEET NO. 1 OF 1
	REVIEWED S.O.J.						

Attachment 2

SITE PLAN  
SHOWING S.W.M.U.



**LEGEND**

- DISPOSAL AREAS
- BEAR CREEK AREA CHEMICAL SITE
- - - OU2 PUBLIC WATER SUPPLY REMEDIAL RESPONSE AREA

