SUPERFUND PRELIMINARY CLOSE OUT REPORT
UGI Columbia Gas Plant Superfund Site
Columbia, Lancaster County, Pennsylvania
EPA ID# PAD980539126

I. INTRODUCTION

This Preliminary Close Out Report (PCOR) documents that the construction activities for the UGI Columbia Gas Plant Superfund Site (Site) has been completed. This determination was conducted in accordance with Close Out Procedures for National Priorities List Sites (OSWER Directive 9320.2-09A-P, January 2000).

The U.S. Environmental Protection Agency (EPA) and the Pennsylvania Department of Environmental Protection (PADEP), conducted a pre-final inspection on September 19, 2007 and determined that the potentially responsible parties (PRPs), constructed the remedy in accordance with approved design plans and specifications. No additional construction activities are anticipated. The PRPs have initiated activities necessary to achieve performance standards and site completion.

II. SUMMARY OF SITE CONDITIONS

Background

The UGI Columbia Gas Plant Superfund Site (Site) is located in Columbia Borough, Lancaster County, Pennsylvania, approximately four hundred feet northeast of the Susquehanna River in a predominately industrial area. The Site includes a former manufactured gas plant (MGP; hereinafter the plant property shall be referred to as the MGP Facility) which occupies approximately two acres; the Borough of Columbia's (Borough) municipal garage; the Lancaster Water Authority (LWA) pumping station; property owned by Pennsylvania Lines LLC; and a pedestrian tunnel which extends underneath the railroad tracks on the northern side of the Site. The Shawnee Creek, a tributary to the Susquehanna River, and the Municipal Authority of Columbia's wastewater treatment plant are also located in the vicinity of the Site (Figure 1).

Starting in 1851, the Columbia Gas Company used the MGP Facility for manufacturing gas for distribution in the City of Columbia. Columbia Gas Company later became Lancaster Light Gas and Fuel Company. In 1935, the Pennsylvania Power and Light Company (PP&L Co.) (now known as PPL Electric Utilities Corp.) acquired Lancaster Light, Gas and Fuel Company by merger. PP&L Co. continued to manufacture gas at the MGP Facility until 1949 when the MGP Facility was sold to Lancaster County Gas Company (Lancaster Gas), which merged into United Gas Improvement Company (UGI Company) in 1953. From 1949 to 1950, Lancaster Gas used the MGP Facility to produce a propane/air mixture which was used as a substitute for gas manufactured from coal. Lancaster Gas decommissioned the propane/air plant at an undocumented time in 1950. At that time, aboveground structures were demolished and

removed, and the gas relief holder foundations and tar/waste separator were backfilled.

Through a series of corporate name changes and corporate restructuring, PP&L Co. is now PPL Electric Utilities Corp. (PPL), a subsidiary of the PPL Corporation, a holding company, has repurchased the property and is the current owner.

MGP Facility Operation

Gas was historically produced at the Site through a coal gasification process which included reacting steam with hot coal, coke and wood. The gas went from two gas generating sets through a washbox, condenser, washer cooler, and then was stored in a gas holder. From the gas holder, the gas went through a coal tar separator and a purifier and finally to a relief holder for distribution in the City of Columbia.

The primary waste streams generated during the coal gasification process were liquid coal tar, boiler ash and spent gas purifying materials. Coal tar is a mixture of volatile organic compounds (VOCs) including benzene, toluene, and xylene (BTEX); semi-volatile organic compounds (SVOCs) including polycyclic aromatic hydrocarbons (PAHs) and inorganics including metals and cyanide (hereinafter collectively referred to as "MGP-related wastes"). Coal tars were generated from the coal tar separator which separated coal tar from liquid waste. The coal tar separator received liquids from the washer cooler, drip pumps and overflows from the gas holder. Coal tars generated from the tar separator were stored in the relief holder pit, which had a 46,000 cubic foot capacity, to allow for separation of the tar/water emulsion. The relief holder pit was constructed of riveted steel plates and was held within a pit that was approximately 30 feet deep. The relief holder pit failed in 1947, and its foundation was used, thereafter, for tar separation. Marketable coal tar was removed for sale and below-grade tar was left in the pit. Overflows of the tar separator, which occurred during periods of heavy rainfall and in the winter, were discharged to an open ditch that led to the Susquehanna River.

The purifier wastes were generated from iron-oxide treated wood chips arranged on wooden racks. When the wood chips could no longer be regenerated, they were removed from the purifier. The wood chips were subsequently disposed of on Site as paving and dust control material. The wood chips contained cyanide which is a contaminant of concern at the Site.

Environmental Studies and Previous Actions

Results of environmental investigations in the late 1980's and early 1990's revealed that MGP operations at the Site resulted in the release of VOCs, PAHs, heavy metals, and cyanide into soil, groundwater and surface water at the Site. EPA proposed the Site for inclusion on the Superfund National Priorities List (NPL) on June 23, 1993 (58 FR 34018), and added the Site to the NPL on May 31, 1994 (59 FR 27989).

In April 1996, PPL entered into a Consent Order and Agreement with the Pennsylvania Department of Environmental Resources (PADER) (now named the Pennsylvania Department of Environmental Protection (PADEP)) to conduct a Remedial Investigation/Feasibility Study

(RI/FS) to determine the nature and extent of contamination at the Site, to characterize the risks to human health and the environment, to evaluate alternatives to clean up the contamination at the Site, and to initiate interim actions on the gas and relief holders and the Susquehanna River.

In 1997, PPL applied steam and hot water injection to the two gas and relief holders. In addition, approximately 3,350 gallons of coal tar were extracted from the two holders and taken for off-site thermal treatment and disposal. Following the tar extraction, coal tar remained in subsurface soils below the holders. The holders were then injected with over 760 cubic yards of a grout and cement mixture to stabilize and solidify them. In addition, in 1998, approximately 700 tons of contaminated sediments were removed from the Susquehanna River and shipped off-site for thermal treatment and disposal. A sheet pile wall was installed along the river bank in the area adjacent to the sediments. The area was re-graded and covered with a geosynthetic cloth, rock, and stone.

In April 1998, PADEP approved the RI and in June 1998, it approved a Human Health Risk Assessment Report (HHRA). The RI identified approximately 15,000 cubic yards of contaminated surface and subsurface soil on-Site. The RI also identified contamination in on-Site groundwater that had migrated off-Site and was detected in deep groundwater near the Susquehanna River. In 2002, PADEP approved PPL's FS Report which determined options for addressing the remaining contamination at the Site.

In October 2006, EPA approved a detailed Groundwater Engineering Analysis Report (Groundwater Report) for the Site. In the Groundwater Report, PPL provided documentation for a request for a technical impracticability (TI) waiver (TI Waiver) for the applicable or relevant and appropriate requirements (ARARs) for groundwater due to the presence of DNAPL in the fractured bedrock under the MGP Facility. The MGP-related wastes form the DNAPL under the Site.

RI Findings:

The RI conducted at the Site and surrounding areas identified MGP-related wastes in groundwater, soil and sediments in a nearby area of the Susquehanna River. Site related contamination was not present in Sediments and Surface water.

A. Groundwater

Based upon the information gathered during the RI, it is estimated that between 345 and 34,500 gallons of DNAPL are contained within the fractured bedrock under the MGP Facility and under surrounding land parcels at the Site. DNAPL is composed of tar-like liquids resulting from the former MGP operations which do not easily dissolve in water (i.e., low solubility). The DNAPL was found primarily in two distinct fracture zones which are oriented in an east-west direction and extend an estimated 880 feet away from the location of the former holding tanks (holder areas), the likely source area.

A dissolved phase plume has been identified in the immediate vicinity of the DNAPL.

Since the DNAPL has a low solubility and, thus, does not mix well with groundwater, the plume area is relatively small and is found in the area immediately adjacent to the DNAPL. The DNAPL and the portion of the dissolved phase plume which is immediately adjacent to the DNAPL is hereinafter referred to as the "DNAPL Zone." All of the DNAPL is believed to be located in the DNAPL Zone illustrated on Figure 2. The DNAPL Zone has a spatial extent of approximately seven (7) acres and a depth of 160 feet below ground surface.

B. Soils

The RI identified approximately 15,000 cubic yards of remaining contaminated surface and subsurface soils at the Site containing PAHs and inorganics.

PRP Removal Response Action

On November 02, 2006, EPA issued an Action Memorandum to address the threats posed by site related contamination in subsurface soils and DNAPL groundwater contamination.

On November 29, 2006, PPL, UGI and EPA entered into an Administrative Settlement and Order on Consent (2006 Settlement Agreement), Docket No. CERC-03-2007-0006DC, pursuant to Sections 104, 106(a) and 122(a) of CERLCA, 42 U.S.C. §§ 9604, 9606(a) and 9622(a). Under the Settlement Agreement, PPL and UGI, among other things, installed caps over two (2) areas where MGP-related wastes remained on-Site; excavated and disposed of soil and MGP-related wastes as necessary, and installed four (4) monitoring wells.

On March 16, 2007, EPA approved the Building Demolition and bedrock well installation components of the Response Action Plan (RAP) and accepted the Site Specific Health and Safety Plan (HSAP). EPA issued notice to proceed on March 16 2007.

The PRP contractors mobilized to the site during the week of March 19, 2007. On March 20, 2007 the asbestos survey on the former buildings was conducted and an on-site well MW-03D was abandoned. On March 21, 2007 the installation of four additional groundwater monitoring wells began. Bore hole geophysics and packer testing was utilized during the installation process. The installation of the wells were completed on May 7, 2007. A bedrock groundwater sampling event took place on May 28, 2007. Groundwater monitoring from these bedrock wells placed near the perimeter of the DNAPL Zone TI waiver area will assist EPA and PADEP to confirm that contaminants of concern are not present outside the limits of the DNAPL Zone at concentrations exceeding ARARs. The PRP sent fifty three 55-gallon drums of well cuttings and 9,818 gallons of purge water off-site for treatment at Environmental Recovery Corp in Lancaster, PA.

An asbestos abatement on the two on-site buildings occurred during the week of April 2, 2007. Approximately 19.27 tons of Asbestos Containing Materials (ACM) contained in the building's roofing and siding was removed and managed in accordance with applicable regulations and properly disposed of at Frey Farm Landfill, Lancaster, PA. Approximately 1,742.87 tons of construction and demolition (C&D) debris from the building demolition and vegetation was also

disposed of at the same facility The demolition of the buildings were completed on April 09, 2007.

On May 30, 2007 EPA approved the remaining portions of the RAP and issued notice to proceed for the construction and installation of the caps and storm water management system at the Site. During the week of June 11, 2007, the PRP's contractor started the installation of the asphalt and concrete caps and storm water management system. Approximately eight (8) tons of MGP-related contaminated soils were properly disposed of off-site. The construction was completed on September 18, 2007. The PRP's contractor plans to demob from the Site on September 24, 2007.

The construction performed for the removal action is documented in the documents: Draft Removal Action Summary Report, September, 2007 and in the September 2007 EPA POLREP 2 & Final, Site Work Completion The removal construction activity has been completed in accordance with the approved RAP, Design and specifications.

Proposed Remedial Action Plan (PRAP)

On June 27, 2007 EPA issued a Proposed Remedial Action Plan (PRAP), regarding the cleanup of groundwater and soils at the Site, for public review and comment.

Record of Decision (ROD) Findings

Based primarily on the information collected during the RI/FS, and the completion of the removal action's well installation, capping and storm water management construction, EPA Region III issued a Record of Decision (ROD) for the Site on September 24, 2007. The selected remedy was No Further Action for site soils, long-term groundwater monitoring, operation and maintenance of caps constructed pursuant to the removal action, and institutional controls (ICS).

The ROD selected remedy consisted of the following components:

The Selected remedy includes the following major components for Soil and Groundwater:

1. Soils:

No Further Action and ICS. EPA selected this remedy in the ROD because it is protective of human health and the environment, provides for the continued safe management of the remaining materials under the caps, includes institutional controls to control future use of the Site, can be implemented quickly, and has negligible impacts to the surrounding community. Periodic maintenance will ensure that the integrity of the caps and that the storm water management system is maintained. Additionally, this alternative allows for the possible future reuse of the Site consistent with the current zoning classification.

For soils, EPA has determined that the following remedial components are necessary:

- No further remediation of on-Site soils because those areas where MGP-related waste remains in the soil have been capped.

- Long-term maintenance of cap and storm water management facilities

- Implementation of institutional controls. Institutional controls consist of non-engineering measures including administrative and/or legal controls that help to minimize the potential for human exposure to contaminated groundwater. The institutional control components of the soil remedy include deed notices, easements and/or restrictive covenants, to prohibit current and future Site property owners from using Site property for residential use or in any manner that would interfere with or adversely affect the integrity or protectiveness of the remedial actions performed at the Site.

2. Groundwater

As noted previously, a number of Site-related contaminants have impacted the groundwater as DNAPL and as dissolved contaminants. In addition, groundwater studies done during the RI indicate that groundwater from the Site discharges to the Susquehanna River; however, Site-related contamination is not detected in the surface water at measurable concentrations. A small amount of groundwater that is used as cooling water by the Lancaster Water Authority (LWA) is contaminated by the Site and is mixed in with the large volume of river water. The cooling water wells contribute one tenth of one percent of the total water supply. The LWA treats both the source water from the Susquehanna River and the cooling water wells to make it potable. After treatment, this water is tested to confirm it is potable in accordance with PADEP requirements and is distributed through the public water supply system.

As part of the remedy review process, EPA evaluated MCLs and RBCs for MGP-related wastes in the DNAPL and the dissolved phase plume. EPA judged these requirements to be "relevant and appropriate" standards for remedy selection at the Site. However, conditions at the Site preclude the actual ability to clean the groundwater in the DNAPL Zone to drinking water standards.

EPA's selected remedy waived ARARs, both MCLs and RBCs, for 27 contaminants that were found within and above the DNAPL in the DNAPL Zone, pursuant to CERCLA Section 121(d)(4)(c), because aquifer restoration to drinking water quality is technically impracticable using currently available or new and innovative methods or technologies within a reasonable or foreseeable time frame. As long as the DNAPL source zones are not removed or contained, aquifer restoration in and downgradient of the source zone cannot be achieved. DNAPL containment, removal, and treatment methods were evaluated for the Site. Removal and in-situ treatment of DNAPL is technically impracticable because the DNAPL is trapped within the fractured bedrock. The DNAPL has extremely low solubility and high viscosity. Any

technology capable of removing the DNAPL would first need to mobilize the DNAPL. No known technologies are capable of doing this under these Site conditions. Moreover, any attempt to mobilize the DNAPL would disturb the DNAPL, thereby increasing potential contaminant migration and potentially creating human health risks, which do not currently exist, at the Site.

With respect to the dissolved phase plume, the dissolved phase plume is in the immediate vicinity of the DNAPL and discharges to the Susquehanna River, where it is diluted below levels which can be detected. The proximity of the Site to the Susquehanna River limits the continued migration of the dissolved phase plume emanating from the DNAPL. While there is a small lobe (LWA lobe) of the dissolved phase plume migrating toward the LWA and contamination is captured by their cooling water wells and ultimately mixed into the LWA water supply (cooling water wells represent 0.1% total volume), the LWA's treatment process is capable of removing the groundwater contaminants prior to distribution to the LWA clients. These current unique Site circumstances preclude the feasibility of restoring the downgradient dissolved plume to meet drinking water standards. However, if the cooling water wells were ever abandoned, alternative remedial methods would be examined to determine if remediation of the LWA lobe is necessary.

For groundwater, EPA determined that the following remedial components are necessary:

- Monitored natural gradient flushing to dilute, disperse, and biodegrade dissolved MGP constituents.

- EPA has chosen to invoke a TI waiver of ARARs, both the Maximum Contaminant Levels (MCLs) promulgated at 40 C.F.R. Part 141 pursuant to Section 1412 of the Safe Drinking Water Act, 42 U.S.C. Section 300g-1, and EPA Region III Risk-Based Concentrations (RBCs), for 27 contaminants that were found within and above the Dense Non-Aqueous Phase Liquid (DNAPL) in the DNAPL Zone, pursuant to CERCLA Section 121(d)(4)(c)), because aquifer restoration to drinking water quality is technically impracticable from an engineering perspective using currently available or new and innovative methods or technologies within a reasonable or foreseeable time frame. The alternative remedial strategy is monitored natural gradient flushing of the dissolved plume and institutional controls.

- Long-term groundwater sampling to confirm that contaminants of concern are not present outside the limits of the DNAPL Zone at concentrations exceeding ARARs.

- Institutional controls restricting the installation and use of groundwater wells and prohibiting any use of the Site that would interfere with the protectiveness or integrity of the selected remedy.

Design Criteria

Not applicable to the no further action remedy selected by the ROD.

Remedial Construction Activities

Not applicable to the no further action remedy selected by the ROD.

Community Involvement Activities

On April 26, 2007 EPA issued an information fact sheet describing the removal action and in that notice informed the public of the availability of the Site's administrative record.

A thirty-day public comment period on EPA's Proposed Plan for the Site began on June 27, 2007. An advertisement announcing the issuance of the Proposed Plan and a public meeting to discuss the Plan was placed in the Lancaster New Era. The public meeting was held on July 19, 2007 at the Columbia Borough Hall, 308 Locust Street, Columbia, PA.

The community appears to fully support EPA's findings and preferred alternative. All attendees at the public meeting appeared to agree with EPA's preferred alternative. No one objected to EPA's preferred alternative, nor did anyone recommend an alternative approach. A copy of the transcript of the public meeting is included in the Administrative Record. Written comments were received during the public comment period. The comments and EPA's responses are provided in the Responsiveness Summary section of the ROD.

Redevelopment Potential

As a result of the work conducted by PPL and UGI pursuant to 2006 Settlement Agreement, no buildings remain on the Site. There is a concrete cap over each former holder and the remainder of the Site is capped with asphalt and a storm water management system was constructed to manage the runoff of precipitation from the surfaces.

The area surrounding the Site is predominantly a light industrial area. The Site is, however, bordered on the southeast by residential property. The Site is located in an area recently zoned as a "conservation district." The Borough implemented this zoning classification to minimize development near the Susquehanna River. Under this zoning classification, residential and groundwater well development are not allowed. In addition, the Borough requires all water supply outlets within the Borough to be connected to either a public water system or a PADEP- approved private water system. The LWA, which supplies drinking water to the Borough, draws water from the Susquehanna River about 2,500 feet upstream of the Site.

EPA's selected remedy prohibits residential use of the Site. However, commercial or industrial uses of the Site are permitted so long as the integrity and protectiveness of EPA's selected remedy are maintained. Columbia Borough and PPL are in discussion on the sale of the site property. Columbia Borough has expressed and interest on reusing the property for the Borough's vehicle parking, vehicle maintenance garage and for the storage of road salt. The removal actions conducted by PRPs included design and construction features in anticipation of this reuse.

III. DEMONSTRATION OF CLEANUP ACTIVITY QUALITY ASSURANCE AND QUALITY CONTROL

Not applicable to the no further action remedy selected by the ROD.

IV. ACTIVITIES AND SCHEDULE FOR SITE COMPLETION

Construction completion at the Site shall be documented by the signature of this Preliminary Close Out Report. All preliminary construction completion requirements for the Site have been met as specified in OSWER Directive 9320.2-09A-P. The following activities will be completed according to the schedule below:

The following activities remain for the UGI Columbia Superfund Site:

Table 3. Site Task Estimated Time-frames

Task	Estimated Completion	Responsible Organization
Approve Final Removal Action Summary Report	October 2007	EPA
Consent Decree (for Monitoring, ICS, O&M)	July 2008	EPA/ PRPs
Approve O&M Plan	September 2008	EPA/ PADEP
Approve Groundwater Monitoring Plan	September 2008	EPA/ PADEP
First Five Year Report	March 2012	EPA
Final Close Out Report Review	When ICS are implemented	EPA/ PRPs
Deletion from NPL	When ICS are implemented	EPA/ PRPs

Institutional Controls

The ROD included the establishment of deed restrictions, to prohibit excavation or disturbance of the Site.

Soils:

If the Site were ever developed for residential use, Site soils (surface and subsurface) would pose an unacceptable risk for potential future residents. While EPA does not consider residential use to be a reasonably anticipated future use of the MGP Facility, EPA's final remedy requires institutional controls, in the form of deed notices,

easements and/or restrictive covenants, to prohibit current and future Site property owners from using Site property for residential use or in any manner that would interfere with or adversely affect the integrity or protectiveness of the remedial actions performed at the Site.

With respect to Site property other than the MGP Facility, PPL and UGI are required, as part of the final remedy, to obtain easements from other Site property owners, such as the LWA, Columbia Borough, PennDOT and Pennsylvania Lines LLC, which will prohibit residential use of the properties, well installation and groundwater use, and any uses that would interfere with or adversely affect the integrity or protectiveness of the remedial actions performed at the Site.

Groundwater:
Institutional controls restricting the installation and use of groundwater wells and prohibiting any use of the Site that would interfere with the protectiveness or integrity of the selected remedy is required.

Groundwater Monitoring
As part of EPA's selected remedy, a regimen of long-term groundwater sampling will be established as part of the Remedial Design. The monitoring will determine whether contaminants of concern are present outside the limits of the DNAPL Zone at concentrations exceeding ARARs

V. SUMMARY OF REMEDIATION COSTS

The estimated costs associated with the ROD are contained in Table 1 below. More information is contained in the Feasibility Study, Groundwater Engineering Analysis and Soils Engineering Analysis Reports.

Table 4 : ROD Summary of Estimated Costs for Soil and Groundwater Alternatives

Alternative Number	Capital Cost	Annual O&M Cost	Present Worth Cost
Soil Alternative	$0	$13,500	$167,522
Groundwater Alternative	$90,000	$51,300	$796,000

VI. FIVE-YEAR REVIEW

Hazardous substances will remain at the site above levels that allow unlimited use and unrestricted exposure after the completion of the removal action. Pursuant to CERCLA Section 121(c) and as provided in the current guidance on Five Year Reviews [OSWER Directive 9355.7-02, Structure and Components of Five-Year Reviews, May 23, 1991, OSWER Directive 9355.702A, Supplemental Five-Year Review Guidance, July 26, 1994, and the Second Supplemental Five-Year Review Guidance, December 21, 1995], EPA must conduct a statutory five-year review. Therefore, the Five-Year review will be completed prior to March 2012 (five years after Removal Action on-site mobilization).

James J. Burke

James J. Burke, Director
Hazardous Site Cleanup Division
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9/24/07
Date

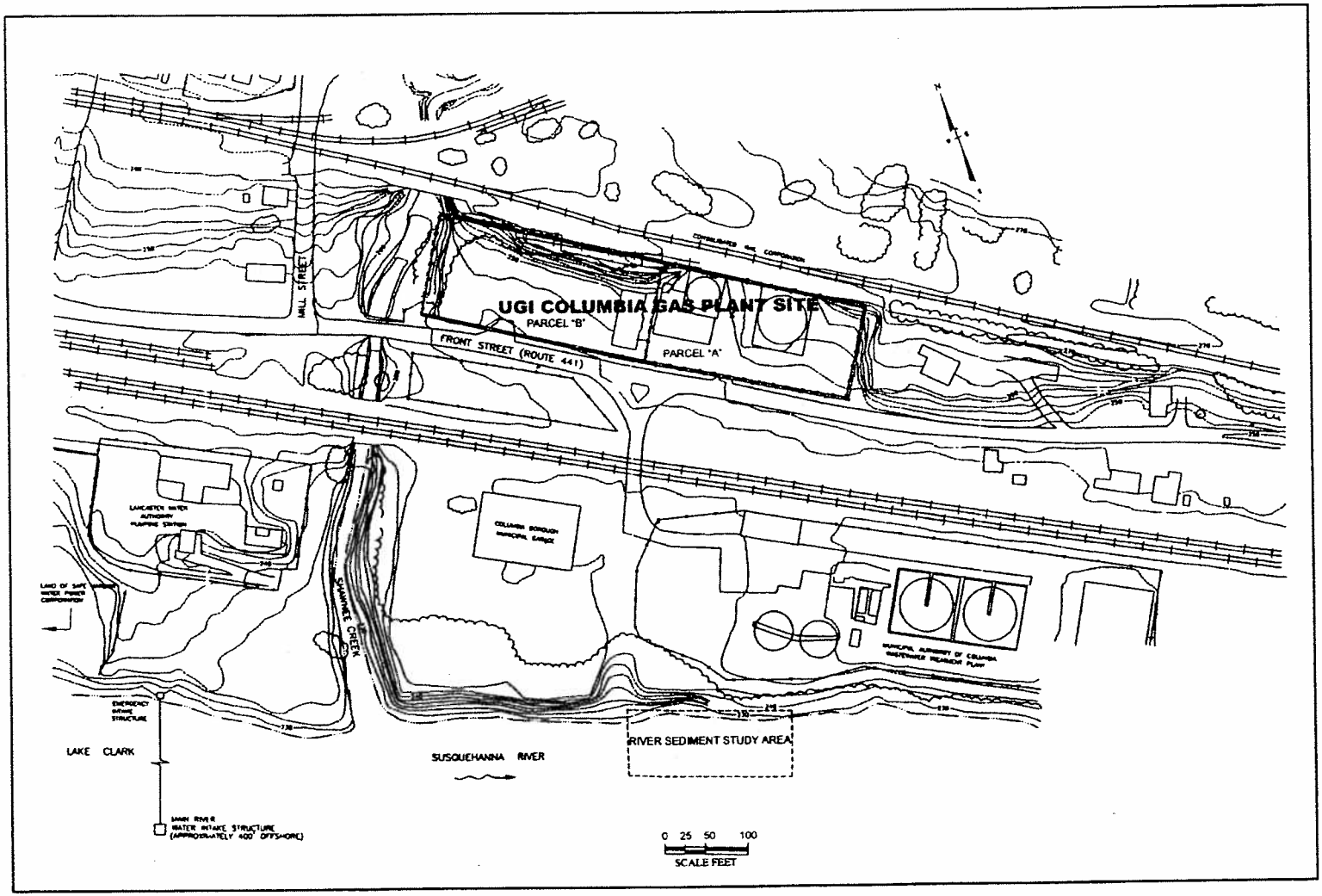

FIGURE 1: UGI Columbia Gas Plant Superfund Site Property Location

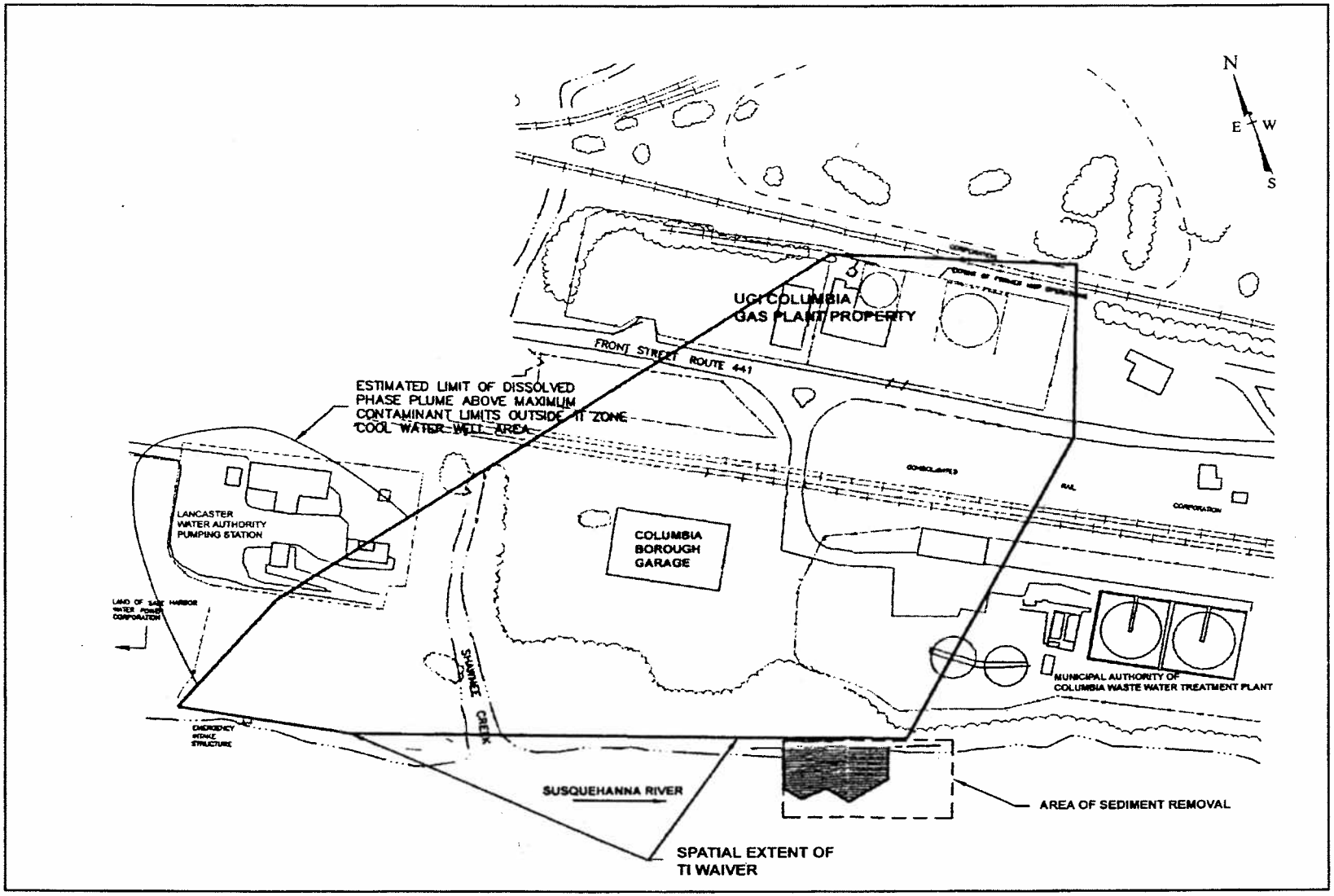

FIGURE 2: UGI Columbia Gas Plant Superfund Site : Spatial Extent of the DNAPL ZONE