FINAL PLAN OF REMEDIAL ACTION

200 South Market Street Site
Wilmington, DE

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Delaware Department of Natural Resources and Environmental Control
Division of Air and Waste Management
Site Investigation & Restoration Branch
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1.0 INTRODUCTION

The 200 S. Market Street Site (site) is located on the southern bank of the Christina River in Wilmington, Delaware, New Castle County and occupies 4.66 acres. The site is generally bounded by A Street to the South, the Christina River Club Restaurant to the east, Market Street to the west, and the Christina River to the north (Figure 1). In order to determine the potential for environmental liability prior to the purchase of the site, the Riverfront Development Corporation (RDC) entered into the Department of Natural Resources and Environmental Control (DNREC's) Voluntary Cleanup Program (VCP) under the provisions of the Delaware Hazardous Substance Cleanup Act, 7 Del. C. Chapter 91 (HSCA). Through a VCP Agreement, the RDC agreed to investigate the potential risks the site posed to the public health, welfare, and the environment. RDC contracted EA Engineering, Science and Technology, Inc. (EA) to perform a remedial investigation (RI) of the site.

The purpose of the RI was to: 1) collect additional information from the site and combine information from previous environmental investigations; 2) delineate and determine the vertical and horizontal extent of petroleum contamination, and its possible migration and environmental impacts; 3) determine the level of risk posed by the contaminants, and, based upon this analysis, evaluate remedial alternatives.

The proposed plan of remedial action (proposed plan) for the 200 S. Market Street site was issued for public comment on Monday, December 17, 2001. The public comment period ended on Monday, January 7, 2002. No comments were received by DNREC. Because the owner of the site changed the intended future use of the property after the proposed plan was issued, DNREC determined that it was necessary to issue an amended proposed plan of remedial action (amended proposed plan) to account for this change in the use of the site. The public comment period for the amended proposed plan began on November 25, 2002, and ended at the close of business on December 16, 2002. No comments were received.

In August 2002, RDC approached DNREC with a request to change the proposed development of the property from commercial/industrial to urban residential (i.e., apartment/condominium). At DNREC's request, RDC agreed to perform an updated risk assessment of the property to take into account the proposed change in land use. The updated risk assessment concluded that elevated risks to human health are posed by soil contamination at the site. DNREC has determined that the initial proposed remedy, which consisted of "hot spot" excavation and removal and containment of residual petroleum-impacted soils underneath structures and a parking lot, would still be protective of human health and the environment provided that no areas of contaminated soil would remain exposed, such as for yards or vegetative buffers.

This document is the DNREC's final plan of remedial action (final plan) for the site. It is based on the results of the previous investigations performed at the site. This final plan is issued under the provisions of the HSCA and the Regulations Governing Hazardous Substance Cleanup (Regulations). It presents DNREC's assessment of the potential health and environmental risks posed by the site.

As described in Section 12 of the Regulations, DNREC provided notice to the public and an opportunity for the public to comment on the proposed plan and amended proposed plan. No comments were received. Therefore, the amended proposed plan has been adopted as the final plan. All previous investigations of the site, the proposed plan, the amended proposed plan, any comments

received from the public, DNREC's responses to those comments, and the final plan constitute the remedial decision record for the site.

Section 2.0 presents a summary of the site description and history. Section 3.0 provides a description of the remedial investigation results. Section 4.0 presents a discussion of the remedial action objectives. Section 5.0 presents the final plan. Section 6.0 presents the Director's declaration.

2.0 SITE DESCRIPTION AND HISTORY

2.1 Site Setting

The site is located along the southern bank of the Christina River in Wilmington, Delaware (Figures 1 & 2). The site is generally bounded by A Street to the south, the Christina River Club restaurant to the east, Market Street to the west, and the Christina River to the north. The site encompasses 4.66 acres and consists of parcel #26-050.00-006 on the tax maps of New Castle County, Delaware. Currently, the site is paved and serves as a commercial parking lot operated by Colonial Parking. The surrounding land use is generally light industrial and commercial.

2.2 Site and Project History

EA, through a review of aerial photographs, United States Geologic Survey (USGS) topographic maps (Figure 1), historical fire insurance maps and city directories, investigated the historical use of the site. The 1887 and 1893 maps indicated that the site was used as a coal and lime yard, and as a carriage works. By the 1920s, the site was used as a sand and gravel yard, and an International Harvester Company garage and warehouse. Additionally, several railroad sidings were present on site. By the 1920s, the site was occupied by the American Oil Company, and contained an aboveground storage tank (AST) farm, several small buildings and railroad sidings. The American Oil Company continued to operate on the site into the 1980s.

The RDC entered into a VCP Agreement in March 2001 with DNREC to perform a RI. The objectives of the RI were to evaluate potential risks to human health, welfare and the environment posed by the site.

3.0 INVESTIGATION RESULTS

In January 2000, EA conducted a Phase II investigation, which consisted of direct push soil and groundwater sampling. Subsurface soil samples were collected from five direct push soil borings (B-1, B-2, B-3, B-5 and B-9) within the site. The groundwater samples were collected from temporary wells constructed in four of the five direct push soil borings located throughout the site (W-1, W-2, W-3, and W-4). In accordance with Subsection 8.3 of the Regulations, DNREC accepted the January 2000 Phase II investigation as part of the RI. In April 2001, EA collected soil samples from a total of five subsurface soil borings (GP-1, GP-2, GP-3, GP-4, and GP-5) with groundwater samples collected from monitoring wells constructed in three of the five soil boring locations (MW-1, MW-2 and MW-3) along with one shallow surface soil sample (SS-1) and three sediment samples (SD-1, SD-2 and SD-3) from the Christina River, adjacent to the site. The following summarizes the findings of both the Phase II investigation and the RI. (See Figure 2 for sample locations)

3.1 Subsurface Soil

Based upon the definition provided in the Remediation Standards Guidance under HSCA, the site is set in a non-critical water resource area. Comparisons with the DNREC Uniform Risk-Based Remediation Standards (URS) are for unrestricted use in a non-critical water resource area. All subsurface soil samples contained arsenic and iron in concentrations in excess of the unrestricted URS values. Complete analytical results from the RI are available in Appendix A. Manganese was detected at concentrations above the unrestricted URS value in the soil samples collected from B-1, B-2, B-3, and B-5. Lead exceeded the unrestricted URS value in subsurface soil samples from GP-3 and B-3. Aluminum was detected above the unrestricted URS value in subsurface soil samples collected from B-2, B-3, B-5 and B-9. Copper exceeded the unrestricted URS value in the subsurface soil sample from B-3. Subsurface soil sample GP-3 exceeded the unrestricted URS value for antimony.

Subsurface soil samples from B-3, B-9, GP-2 and GP-3 contained benzo(a)anthracene in excess of the unrestricted URS values. Subsurface soil samples from GP-2, GP-3, GP-4, GP-5, B-2, B-3, B-5 and B-9 exceeded the unrestricted URS value for benzo(a)pyrene. The unrestricted URS value for benzo(b)fluoranthene was exceeded in samples B-3, B-9, GP-2 and GP-3. Indeno(1,2,3-cd)pyrene was detected above the unrestricted URS value in subsurface soil samples collected from GP-2 and GP-3. Subsurface soil samples GP-2, GP-3, GP-4, B-2, B-3, B-5 and B-9 exceeded the unrestricted URS value for dibenzo(a,h)anthracene. Subsurface soil sample GP-3 exceeded the unrestricted URS value for benzo(k)fluoranthene.

No volatile organic compounds (VOCs), pesticides, or polychlorinated biphenyls (PCBs) were detected at concentrations exceeding the respective DNREC unrestricted URS values in the subsurface soil samples collected during the RI.

3.2 Surface Soil

The site is almost completely covered with asphalt paving, with a small grassy strip on the northern portion of the site. Based upon site conditions, only one surface soil sample was collected and submitted for laboratory analysis. Based on the analytical results, iron and arsenic exceeded their respective unrestricted URS values. No VOCs, semivolatile organic compounds (SVOCs), pesticides, or PCBs were detected at concentrations exceeding the unrestricted URS values in the surface soil sample collected during the RI.

3.3 Groundwater

The results of the RI identified several metals and polynuclear aromatic hydrocarbons (PAHs) at concentrations exceeding their respective groundwater URS values. However, the results may have been biased high due to the sampling method used. The original groundwater samples were collected using a Geoprobe® and were noted as turbid during sampling. Therefore, permanent monitoring wells were constructed.

Groundwater samples from MW-1, MW-3, W-1, W-2, W-3 and W-4 exceeded the arsenic URS value for a non-critical water resource area and for protection of human health. Barium was detected at concentrations greater than the groundwater URS values in the samples collected from MW-2, W-1, W-2, W-3, and W-4. Manganese was detected at concentrations greater than the groundwater URS value in samples collected from MW-1, MW-2, MW-3, W-1, W-2, and W-4. Samples collected from

MW-1, MW-2, MW-3, W-1, W-2, and W-4 exceeded the groundwater URS value for iron. Aluminum and lead were detected at concentrations greater than the respective groundwater URS values in the sample collected from W-3. Benzo(a)anthracene, benzo(b)fluoranthene, and benzo(a)pyrene were detected above the respective groundwater URS values in MW-1 and W-1. Dibenzofuran and carbazole exceeded the respective groundwater URS values in samples collected from MW-3 and W-1. Bis(2-ethylhexyl)phthalate was detected above the groundwater URS value in the samples from MW-1 and MW-2. Benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, and dibenzo(a,h)anthracene were only detected above the respective groundwater URS values in the sample from W-1. No other analyte for VOCs, SVOCs, pesticides, PCBs, and/or metals were detected at concentrations exceeding the respective groundwater URS values in any of the seven groundwater samples.

3.4 Sediment

Sediment samples collected as part of the RI served to characterize the sediment conditions in the Christina River adjacent to the site. The samples were analyzed for contaminants listed on the Target Analyte List and the Target Compound List (TAL/TCL). The analytical results were first compared to the URS values in a non-critical water resource area, using the unrestricted use risk scenario as a screening mechanism in order to determine potential contaminants of concern (COCs). Those chemicals whose concentrations exceeded the unrestricted use URS value were selected as COCs and included in a human health risk assessment.

Barium, cadmium, copper, lead, mercury and zinc exceeded the respective URS values for the Protection of the Environment in all three sediment samples. Nickel and chromium were detected above the respective URS values in sample SD-1. Arsenic exceeded the URS value in samples SD-1 and SD-2. Naphthalene, phenanthrene, anthracene, fluoranthene, benzo(a)anthracene, bis(2-ethylhexyl)phthalate, chrysene, and benzo(a)pyrene exceeded the respective URS for the Protection of the Environment in all 3 sediment samples. Only sample SD-1 exceeded the respective URS values for fluorene, bis(2-ethylhexyl)phthalate, benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene. No other analytes from the three sediment samples were detected at concentrations exceeding the URS values.

3.5 Results and Relative Risk

The results of the January 2000 Phase II investigation identified several metals and PAH compounds at concentrations exceeding their respective groundwater URS values. However, due to the sampling method utilized, these groundwater samples contained a high level of suspended fine sediment. The RI utilized permanent monitoring wells. The groundwater results of the permanent monitoring wells indicated that several metals and SVOCs were elevated above the respective URS values. However, public water is available in this area, and a Groundwater Management Zone (GMZ) restricting use of groundwater in Wilmington is presently in place, both of which prevent exposure to site groundwater.

In the initial proposed plan, a human health risk assessment was performed assuming a restricted use risk setting, and development of the site into a multi-story office building. The risk assessment was performed in order to evaluate the cumulative risk associated with the exposure to soil and ingestion of groundwater on the site. Contaminants identified as COCs and retained for inclusion in the human health risk assessment include: benzo(b)fluoranthene, benzo(a)pyrene, dibenzo(a,h)anthracene, benzo(a)anthracene, iron, manganese and arsenic. The calculations were conducted using the DNREC Site-Specific Calculator for Multiple Analytes (DNREC May 2000 version). The only completed

exposure pathway consisted of incidental soil ingestion. Based on the assessment of noncancer risks to construction workers from the incidental ingestion of chemicals in total soil and dermal contact with total soil, the risk was found to be acceptable. The soil noncancer risk or Hazard Index was calculated to be 0.436, which is below the HSCA action level of 1.0. The soil cancer risk was calculated to be $1.3X10^{-5}$, which is above the HSCA action level of $1X10^{-5}$. However, COCs were found at appreciably higher concentrations in one soil sample collected from GP-3 (0-2 ft. below ground surface) during the RI. This is indicative of a potential localized "hot spot" as a representative number of soil samples were collected. Soil removal of the hot spot would reduce the soil cancer risk to an acceptable level. Therefore, it was concluded that the soil did not pose an unacceptable risk to human health, given a commercial/industrial risk setting.

Based upon the request to change the proposed development at the site from commercial/industrial to urban residential, a second risk assessment was performed, at DNREC's request, to take into account the proposed change in land use. The results of the second risk assessment were similar to those of the first one. The exposure pathway evaluation determined that the only potential completed pathway is to construction workers. At the present time, there are no other completed pathways as the site is covered by an asphalt parking lot. After development of the site, exposure pathways will also be closed as the site will be covered by buildings, landscape, hardscape, and paving. In each case, the analysis led to the result that there were no unacceptable risks for these compounds, with the possible exception of construction workers exposed to direct contact with subsurface soil. The potential for migration of COCs into present or future onsite structures is considered to be insignificant. The COCs identified at the site have low vapor pressures and do not volatilize under normal pressure and temperature conditions.

The contaminants identified as COCs and retained for inclusion in the human health risk assessment are: arsenic, aluminum, iron, manganese, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenzo(a,h)anthracene. The only completed exposure pathway consisted of incidental soil ingestion. Based on the assessment of noncancer risks to construction workers from the incidental ingestion of chemicals in total soil and dermal contact with total soil, the risk is acceptable. The soil noncancer risk or Hazard Index (HI) was calculated to be 0.68, which is below the HSCA action level of 1.0. The soil cancer risk was calculated to be $1.3X10^{-5}$, which is above the HSCA action level of $1X10^{-5}$. However, COCs were found at appreciably higher concentrations in one soil sample collected from GP-3 (0-2 ft. below ground surface) during the RI. This is indicative of a potential localized "hot spot" as a representative number of sol samples were collected. Soil removal of the hot spot will reduce the soil cancer risk to an acceptable level.

Due to the site's location along the Christina River, it was necessary to assess what potential impacts, if any, the site could pose to the environmental health of the river. At the present time, as well as in future site plans, the site will remain paved and developed. The existing bulkhead will be maintained, thus precluding erosion of site soils into the river. Groundwater loading values were also calculated to evaluate the possible effects of groundwater discharge into the Christina River. Loading values for all organic and inorganic analytes detected in groundwater during both the Phase II and RI investigations were calculated based upon the measured groundwater flow rate at the site and the flow rate of the Christina River. Based upon these calculations, and the tidal components of the Christina River, the resulting concentrations entering into the river would be below the Delaware Surface Water Quality Standards (DSWQSs). Therefore, there are no unacceptable risks to the Christina River based on current site use or future plans for the site.

4.0 REMEDIAL ACTION OBJECTIVES

According to Section 8.4 (1) of the Regulations, site-specific remedial action objectives (RAOs) must be established for all plans of remedial action. Remedial options were evaluated utilizing the qualitative and quantitative objectives and the following considerations:

- The site will be redeveloped into an urban residential building with a parking lot and sidewalks;
- The surrounding land use is to remain commercial and industrial;
- The site is bordered by the Christina River with a bulkhead acting as a physical barrier between the site and the river;
- The risk posed to future construction workers through exposure to contaminated soil; and
- The risk posed to human health through the ingestion of contaminated groundwater and exposure to contaminated soils.

The qualitative objectives are as follows:

- Prevent residential exposure to impacted media;
- Minimize potential exposure to site contaminants of concern for construction workers at the site;
- Prevent environmental impacts, specifically to the Christina River, due to impacted media at the site; and
- Continue the use of public water for all purposes to the surrounding community.

Based on the qualitative objectives, the quantitative objectives are:

1. Prevent human exposure to contaminated soils and groundwater contaminated by PAHs and metals that would result in a carcinogenic risk exceeding $1X10^{-5}$ noncarcinogenic risks exceeding a HI of 1.0.

2. Prevent erosion and discharge of soils contaminated by VOCs, PAHs, and metals into the Christina River.

5.0 FINAL PLAN OF REMEDIAL ACTION

Based on DNREC's evaluation of the site information and the above remedial action objectives, the recommended action for the site will include the following:

1. Delineate, excavate and properly dispose off-site, within two years and in accordance with a DNREC-approved remedial action workplan, the soils around GP-3 and other areas that contain high concentrations of PAHs. Remedial action objectives include removal of soils containing elevated levels of the following PAH compounds above the $1x10^{-4}$ risk concentration noted in parentheses: benzo(b)fluoranthene (9,000 μg/kg), benzo(a)pyrene (900 μg/kg), dibenzo(a,h)anthracene (900 μg/kg), benzo(a)anthracene (9,000 μg/kg).

2. Cap any impacted soils containing the aforementioned constituents at concentrations between the noted $1x10^{-4}$ levels (above) and 1×10^{-5} levels. The proposed cap would be constructed in

accordance with a DNREC-approved remedial action workplan, and in conjunction with development of the property and will include containment of the soils underneath proposed structures and asphalt parking lots and any clean fill needed to bring the site up to grade. A geotextile fabric will be installed immediately above the residual contaminated soil as a marker boundary to identify the presence of the contaminated layer.

3. Maintain the existing bulkhead along the Christina River, and contain the existing soils at the site so as to prevent their erosion into the Christina River.

4. Placement of a deed restriction on the property: a) prohibiting any digging, drilling, excavating, grading, constructing, earth moving, or any other land disturbing activities on the property (including the removal or modification of the bulkhead) without the prior written approval of the DNREC; b) requiring written approval from DNREC prior to any repair, renovation or demolition of the existing structures on the property, or any paved surfaces; and c) noting that the site is included in the GMZ for the City of Wilmington and prohibiting the installation of any water well on, or use of groundwater at, the site without the prior written approval of DNREC.

5. Inclusion of the site as part of the City of Wilmington GMZ.

6. Prepare and implement an Operation and Maintenance (O&M) Plan within two years to be approved by DNREC to maintain the integrity of the site structures and asphalt cap.

The Department actively solicited public comments and suggestions on the amended proposed plan of remedial action. No comments were received. The comment period began on November 25, 2002, and ended at the close of business on December 16, 2002.

6.0 DECLARATION

This final plan of remedial action for the 200 S. Market Street Site is protective of human health, welfare and the environment, and is consistent with the requirements of the Delaware Hazardous Substance Cleanup Act.

John Blevins

1/9/03
Date

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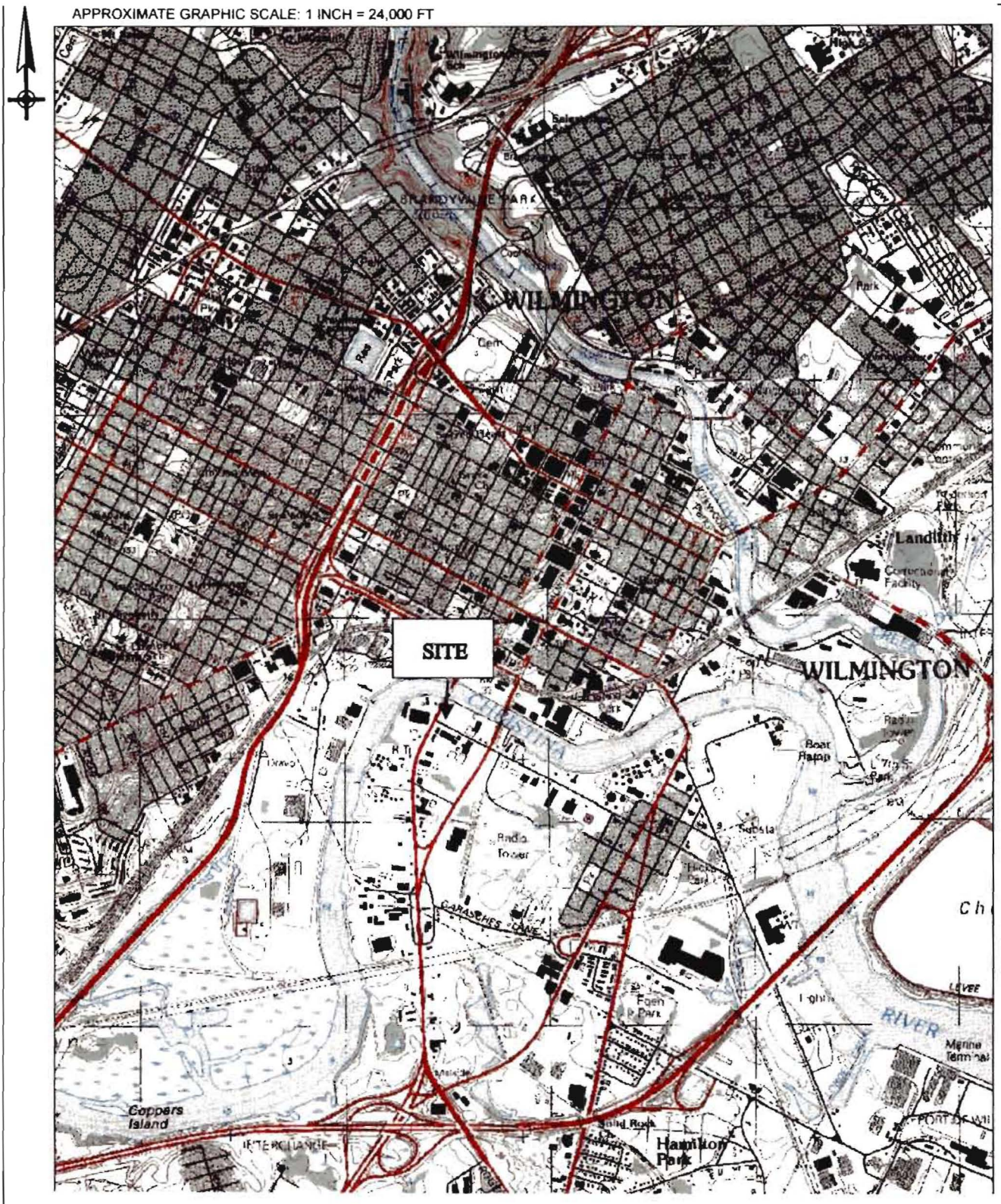

Figure 1-1. Site location map, 200 South Market Street, Wilmington, Delaware. (Source: USGS 7.5 Minute Series Topographic Map, Wilmington South Quadrangle, DE)

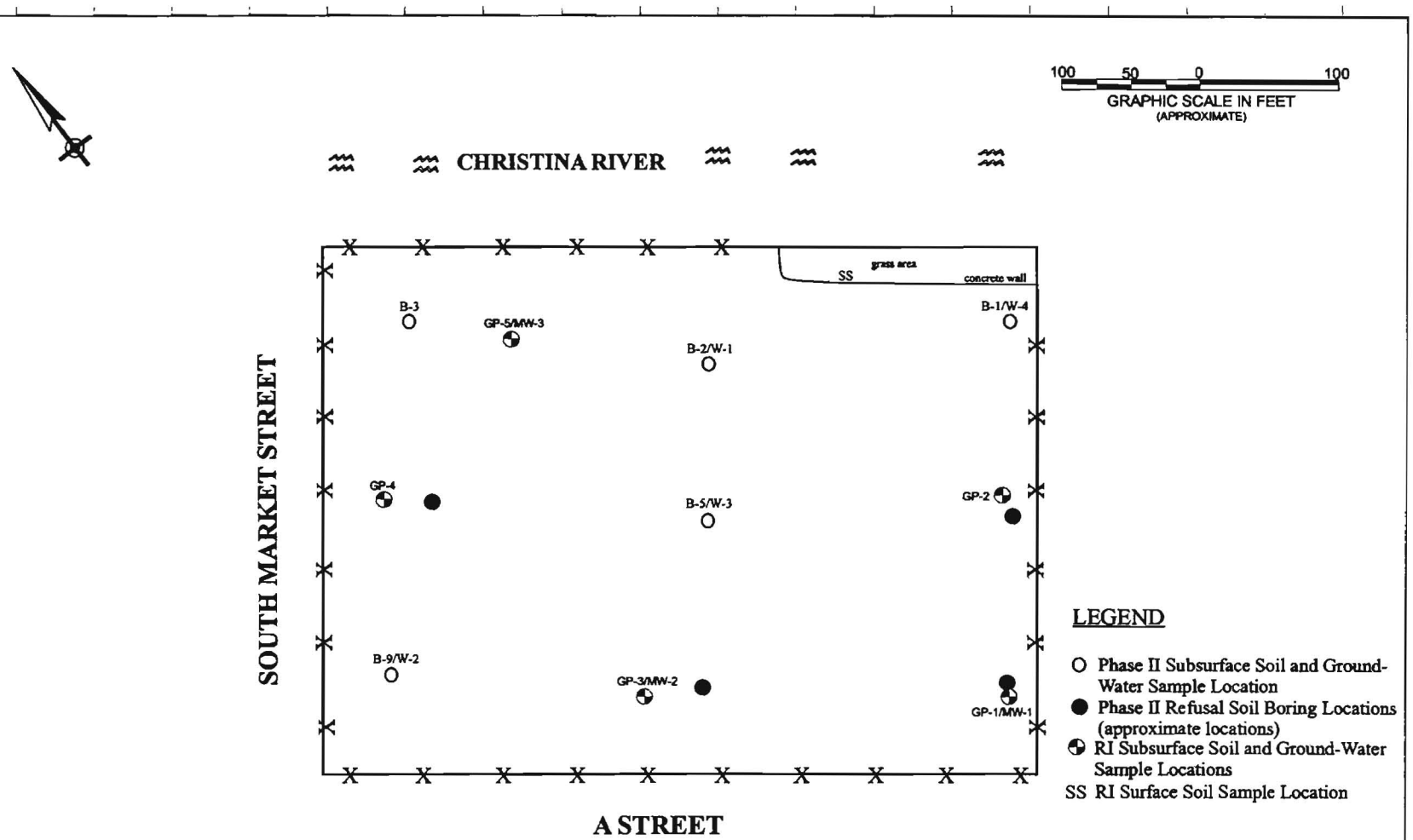

Figure 1-2. Site sketch of 200 South Market Street, Wilmington, DE showing approximate locations of the Phase II sample locations, and the RI sample locations.

Appendix A: Laboratory Analytical Results

Subsurface Soil Analytical Results from the 7 January 2000 Phase II Investigation
TAL Metals

Concentration in mg/kg

Elements	URS	B-1 3-4 ft	B-2 4-5 ft	B-3 5-6 ft	B-5 4-5 ft	B-9 6-7 ft
Aluminum	**7800**	3350	**11600**	**9320**	**10600**	**29800**
Antimony	**3**	<2.37	<2.27	<2.36	<2.37	<2.49
Arsenic	**0.40**	**3.88**	**9.8**	**9.9**	**21.3**	**19**
Barium	**550**	21.7	57.7	156	95.6	123
Beryllium	**16**	<0.474	0.666	1.02	0.506	0.581
Cadmium	**4**	<0.474	0.685	0.716	<0.474	<0.497
Calcium	**NC**	19100	10700	87300	23300	10700
Chromium	**12000**	5.98	48.6	14.1	28.1	28.4
Cobalt	**470**	2.1	7.27	12.7	8.03	10.6
Copper	**310**	6.78	21.9	**400**	30.9	51.2
Iron	**2300**	**4840**	**31600**	**19200**	**16000**	**18200**
Lead	**400**	29.1	46.4	**439**	108	136
Magnesium	**NC**	939	2590	38000	2080	1930
Manganese	**160**	**163**	**400**	**806**	**208**	120
Mercury	**10**	<0.119	0.696	0.289	0.307	0.259
Nickel	**160**	4.07	13.6	25.6	11.5	15.8
Potassium	**NC**	442	855	679	633	751
Selenium	**39**	<2.37	<2.27	<2.36	<2.37	<2.49
Silver	**39**	<1.18	<1.13	<1.18	<1.18	<1.24
Sodium	**NC**	210	<113	134	<118	<124
Thallium	**18**	<1.18	<1.13	<1.18	<1.18	<1.24
Vanadium	**55**	8.18	33.6	14.4	22.4	29.9
Zinc	**2300**	22.9	59	239	101	165

< = Below Laboratory Detection Limit
Delaware Uniform Risk-Based Remediation Standards, URS for Protection of Human Health, Unrestricted Reuse in a Non-Critical Resource Area for Subsurface Soil, February 1998, Revised December 1999
The URS value for Arsenic is the carcinogen value
Concentrations in bold/highlighted exceeded the URS value

Subsurface Soil Analytical Results from the 7 January 2000 Phase II Investigation
TCL SVOC by EPA Method 8270C
Concentration, µg/Kg

Constituent	URS	B-1 3-4 ft	B-2 4-5 ft	B-3 5-6 ft	B-6 4-5 ft	B-9 6-7 ft
Phenol	1,000,000	<400	<380	<400	<400	<420
bis(2-Chloroethyl)ether	200	<400	<380	<400	<400	<420
2-Chlorophenol	39,000	<400	<380	<400	<400	<420
1,3-Dichlorobenzene	230,000	<400	<380	<400	<400	<420
1-4,Dichlorobenzene	27,000	<400	<380	<400	<400	<420
1,2-Dichlorobenzene	560,000	<400	<380	<400	<400	<420
2-Methylphenol	390,000	<400	<380	<400	<400	<420
bis(2-chloroisopropyl) ether	9,000	<400	<380	<400	<400	<420
4-Methylphenol	39,000	<400	<380	<400	<400	<420
N-Nitrosodi-n-propylamine	90	<400	<380	<400	<400	<420
Hexachloroethane	46,000	<400	<380	<400	<400	<420
Nitrobenzene	4,000	<400	<380	<400	<400	<420
Isophorone	670,000	<400	<380	<400	<400	<420
2-Nitrophenol	NC	<400	<380	<400	<400	<420
2,4-Dimethylphenol	160,000	<400	<380	<400	<400	<420
bis(2-Chloroethoxy)methane	NC	<400	<380	<400	<400	<420
2,4-Dichlorophenol	23,000	<400	<380	<400	<400	<420
1,2,4-Trichlorobenzene	78,000	<400	<380	<400	<400	<420
Naphthalene	160,000	<400	<380 J	94 J	250 J	190 J
4-Chloroaniline	31,000	<400	<380	<400	<400	<420
Hexachlorobutadiene	8,000	<400	<380	<400	<400	<420
4-Chloro-3-methylphenol	NC	<400	<380	<400	<400	<420
2-Methylnaphthalene	160,000	<400	<380	55 J	64 J	89 J
Hexachlorocyclopentadiene	10,000	<400	<380	<400	<400	<420
2,4,6-Trichlorophenol	58,000	<400	<380	<400	<400	<420
2,4,5-Trichlorophenol	780,000	<1000	<960	<990	<990	<1000
2-Chloronaphthalene	NC	<400	<380	<400	<400	<420
2-Nitroaniline	500	<1000	<960	<990	<990	<1000
Dimethylphthalate	1,000,000	<400	<380	<400	<400	<420
2,6-Dinitrotoluene	8,000	<400	<380	<400	<400	<420
Acenaphthylene	NC	<400	120 J	140 J	<400	150 J
3-Nitroaniline	NC	<1000	<960	<990	<990	<1000
Acenaphthene	470,000	<400	100 J	47 J	81 J	300 J
2,4-Dinitrophenol	16,000	<1000	<960	<990	<990	<1000
4-Nitrophenol	63,000	<1000	<960	<990	<990	<1000
Dibenzofuran	31,000	<400	49 J	130 J	86 J	210 J
2,4-Dinitrotoluene	16,000	<400	<380	<400	<400	<420
Diethylphthalate	1,000,000	<400	<380	<400	<400	<420
4-Chlorophenyl phenylether	NC	<400	<380	<400	<400	<420
Fluorene	310,000	<400	140 J	<400	150 J	380 J
4-Nitroaniline	NC	<1000	<960	<990	<990	<1000
4,6-Dinitro-2-methylphenol	80	<1000	<960	<990	<990	<1000
N-Nitrosodiphenylamine	130,000	<400	<380	<400	<400	<420
4-Bromophenyl phenylether	NC	<400	<380	<400	<400	<420
Hexachlorobenzene	400	<400	<380	<400	<400	<420
Pentachlorophenol	6,000	<1000	<960	<990	<990	<1000
Phenanthrene	1,000,000	<400	1200	1300	1000	2300
Anthracene	1,000,000	<400	340 J	220 J	260 J	730
Carbazole	32,000	<400	<380	130 J	100 J	350 J
Di-n-butyl phthalate	NC	<400	<380	<400	<400	<420
Fluroanthene	310,000	63 J	2100	2100	1400	2800
Pyrene	230,000	50 J	1400	1400	1000	2100
Butylbenzylphthalate	930,000	<400	<380	<400	<400	<420
3,3'-Dichlorobenzidine	1,000	<800	<770	<790	<790	<830
Benzo(a)anthracene	900	<400	890	**1000**	600	**1700**
Bis(2-Ethylhexyl)phthalate	46,000	52 JB	58 JB	51 JB	50 JB	51 JB
Chrysene	87,000	40 J	920	1200	650	1700
Di-n-octyl phthalate	160,000	<400	<380	<400	<400	<420
Benzo(b)fluoranthene	900	<400	860	**1000**	480	**1600**
Benzo(k)fluoranthene	9,000	<400	740	1100	620	1300
Benzo(a)pyrene	90	41 J	**810**	**960**	**560**	**1600**
Indeno(1,2,3-cd)pyrene	900	<400	410	500	290 J	740
Dibenz(a,h)anthracene	90	<400	**170 J**	**190 J**	**92 J**	**350 J**
Benzo(g,h,i)perylene	NC	<400	400	500	280 J	660
Total PAHs		194 JB	10,649 JB	12,066 JB	7,963 JB	19,249 JB

J = Estimated Value, Below Laboratory Detection Limit
< = Below Laboratory Detection Limit
B = Less than the reporting limit but greater than the method detection limit
NC = No criteria
Delaware Uniform Risk-Based Remediation Standards, URS for Protection of Human Health, Unrestricted Reuse in a Non-Critical Resource Area for Subsurface Soil, February 1996, Revised December 1999
Concentrations in bold/highlighted exceeded the URS value

Subsurface Soil Analytical Results from the 10 and 11 April 2001 Remedial Investigation
TCL VOC

Concentration, µg/Kg

Constituent	URS	GP-1 2-4 ft	GP-2 1.5-3.5 ft	GP-3 0-2 ft	GP-4 4-6 ft	GP-5 2-4 ft
Methylene Chloride	**13,000**	<340	<310	<310	97 JB	<320
Benzene	**800**	<340	<310	<310	<320	<320
Toluene	**650,000**	<340	<310	<310	<320	<320
Ethylbenzene	**400,000**	<340	<310	85 J	<320	<320
Total Xylenes	**420,000**	<340	<310	370	<320	330

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Delaware Uniform Risk-Based Remediation Standards, URS for Protection of Human Health, Unrestricted Reuse in a Non-Critical Resource Area for Subsurface Soil, December 1999
Concentrations in bold highlighted exceeded the URS value

Soil Analytical Results from the 10 and 11 April 2001 Remedial Investigation
TAL Metals

Concentration in mg/kg

Elements	URS	GP-1 2-4 ft		GP-2 1.5-3.5 ft		GP-3 0-2 ft		GP-4 4-6 ft		GP-5 2-4 ft	Surface Soil
Aluminum	**7800**	2460		1930		3640		1960		4600	2200
Antimony	**3**	1.1		0.63		**3.2**		0.37	B	<0.25	<0.25
Arsenic	**0.40**	**2.8**		**6.4**		**94**		**9.7**		**3.7**	**2.1**
Barium	**550**	145		33.5		187		39.8		33.5	16.5 B
Beryllium	**16**	0.34	B	0.24	B	0.37	B	0.14	B	0.19 B	0.17 B
Cadmium	**4**	0.32	B	0.84		1.5		0.51		0.43 B	0.45 B
Calcium	**NC**	3630		43800		17200		104000		13600	1290
Chromium	**12000**	4.8		8.9		40.2		4.5		8.4	6.6
Cobalt	**470**	2.8	B	2.8	B	3.6	B	4.9	B	3.1 B	3.2 B
Copper	**310**	140		16.8		78.8		14.8		8.5	6.4
Iron	**2300**	**3380**		**12800**		**8700**		**6920**		**9960**	**6620**
Lead	**400**	224		30.7		**467**		301		17.5	13.8
Magnesium	**NC**	161	B	14300		2040		970		1010	970
Manganese	**160**	29.1		143		103		94.9		115	143
Mercury	**10**	0.19		0.072	B	0.70		0.21		0.27	0.054 B
Nickel	**160**	5.6		5.8		11.6		8.3		5.1	5.7
Potassium	**NC**	590		607		373	B	284	B	386 B	320 B
Selenium	**39**	0.42	B	0.25	B	1.4		1.3		0.25 B	<0.16
Silver	**39**	<0.27		<0.27		<0.27		<0.27		<0.27	<0.27
Sodium	**NC**	343	B	290	B	317	B	926		137 B	135 B
Thallium	**18**	<0.31		<0.019		<0.31		<0.019		<0.019	<0.31
Vanadium	**55**	16.9		10.2		17.2		6.7		14.9	7.1
Zinc	**2300**	197		62.3		243		57		18.6	51.1

< = Below Laboratory Detection Limit
B = Reported value is less than the method detection limit
Delaware Uniform Risk-Based Remediation Standards, URS for Protection of Human Health, Unrestricted Reuse in a Non-Critical Resource Area for Subsurface Soil, February 1998, Revised December 1999
The URS value for Arsenic is the carcinogen value
Concentrations in bold/highlighted exceeded the URS value

Subsurface Soil Analytical Results from the 10 and 11 April 2001 Remedial Investigation
TCL SVOC by EPA Method 8270C
Concentration, µg/Kg

Constituent	URS	GP-1 2-4 ft	GP-2 1.5-3.5 ft	GP-3 0-2 ft	GP-4 4-6 ft	GP-5 2-4 ft
henol	1,000,000	<430	<4000	250 J	<420	<420
bis(2-Chloroethyl)ether	200	<430	<4000	<2000	<420	<420
2-Chlorophenol	39,000	<430	<4000	<2000	<420	<420
3-Dichlorobenzene	230,000	<430	<4000	<2000	<420	<420
-4,Dichlorobenzene	27,000	<430	<4000	<2000	<420	<420
1,2-Dichlorobenzene	560,000	<430	<4000	<2000	<420	<420
2-Methylphenol	390,000	<430	<4000	<2000	<420	<420
2'-oxybis(1-Chloropropane)	9,000	<430	<4000	<2000	<420	<420
Methylphenol	39,000	<430	<4000	1,500 JD	<420	<420
N-Nitrosodi-n-propylamine	90	<430	<4000	<2000	<420	<420
exachloroethane	46,000	<430	<4000	<2000	<420	<420
itrobenzene	4,000	<430	<4000	<2000	<420	<420
ophorone	670,000	<430	<4000	<2000	<420	<420
2-Nitrophenol	NC	<430	<4000	<2000	<420	<420
4-Dimethylphenol	160,000	<430	<4000	<2000	<420	<420
s(2-Chloroethoxy)methane	NC	<430	<4000	<2000	<420	<420
2,4-Dichlorophenol	23,000	<430	<4000	<2000	<420	<420
1,2,4-Trichlorobenzene	78,000	<430	<4000	<2000	<420	<420
aphthalene	160,000	<430	610 JD	5,600 JD	55 J	<420
Chloroaniline	31,000	<430	<4000	<2000	<420	<420
Hexachlorobutadiene	8,000	<430	<4000	<2000	<420	<420
4-Chloro-3-methylphenol	NC	<430	<4000	<2000	<420	<420
Methylnaphthalene	160,000	<430	<4000	18,000 D	<420	51 J
exachlorocyclopentadiene	10,000	<430	<4000	<2000	<420	<420
2,4,6-Trichlorophenol	58,000	<430	<4000	<2000	<420	<420
4,5-Trichlorophenol	780,000	<2200	<20000	<10000	<2100	<2100
Chloronaphthalene	NC	<430	<4000	<2000	<420	<420
-Nitroaniline	500	<2200	<20000	<10000	<2100	<2100
Dimethylphthalate	1,000,000	<430	<4000	<2000	<420	<420
6-Dinitrotoluene	8,000	<430	<4000	<2000	<420	<420
cenaphthylene	NC	<430	1,300 JD	360 J	47 J	<420
3-Nitroaniline	NC	<2200	<20000	<10000	<2100	<2100
Acenaphthene	470,000	<430	670 JD	8,400 D	<420	<420
4-Dinitrophenol	16,000	<2200	<20000	<10000	<2100	<2100

J = Estimated Value; Below Laboratory Detection Limit
< = Below Laboratory Detection Limit
D = Sample was diluted

Subsurface Soil Analytical Results from the 10 and 11 April 2001 Remedial Investigation
TCL SVOC by EPA Method 8270C
Concentration, µg/Kg

Constituent	URS	GP-1 2-4 ft	GP-2 1.5-3.5 ft	GP-3 0-2 ft	GP-4 4-6 ft	GP-5 2-4 ft
Nitrophenol	**63,000**	<2200	<20000	<10000	<2100	<2100
benzofuran	**31,000**	<430	970 JD	5,100 JD	51 J	<420
2,4-Dinitrotoluene	**16,000**	<430	<4000	<2000	<420	<420
Diethylphthalate	**1,000,000**	<430	<4000	<2000	<420	<420
Chlorophenyl phenylether	**NC**	<430	<4000	<2000	<420	<420
uorene	**310,000**	<430	2,100 JD	10,000 D	56 J	<420
4-Nitroaniline	**NC**	<2200	<20000	<10000	<2100	<2100
4,6-Dinitro-2-methylphenol	**80**	<2200	<20000	<10000	<2100	<2100
Nitrosodiphenylamine	**130,000**	<430	<4000	<2000	<420	<420
Bromophenyl phenylether	**NC**	<430	<4000	<2000	<420	<420
Hexachlorobenzene	**400**	<430	<4000	<2000	<420	<420
ntachlorophenol	**5,000**	<2200	<20000	<10000	<2100	<2100
enanthrene	**1,000,000**	99 J	19,000 D	68,000 D	520	310 J
nthracene	**1,000,000**	<430	1,900 JD	15,000 D	120 J	<420
Carbazole	**32,000**	<430	840 JD	7,600 JD	60 J	<420
-n-butyl phthalate	**NC**	74 J	<4000	<2000	55 J	54 J
uroanthene	**310,000**	98 J	31,000 D	62,000 D	870	300 J
Pyrene	**230,000**	94 J	28,000 D	53,000 D	820	290 J
Butylbenzylphthalate	**930,000**	<430	<4000	<2000	<420	<420
3'-Dichlorobenzidine	**1,000**	<430	<4000	<2000	<420	<420
nzo(a)anthracene	**900**	56 J	**11,000 D**	**25,000 D**	450	140 J
Bis(2-Ethylhexyl)phthalate	**46,000**	48 JB	<4000	240 JB	83 JB	160 JB
Chrysene	**87,000**	61 J	14,000 D	27,000 D	500	240 J
-n-octyl phthalate	**160,000**	<430	<4000	<2000	<420	<420
nzo(b)fluoranthene	**900**	58 J	**16,000 D**	**28,000 D**	640	200 J
Benzo(k)fluoranthene	**9,000**	<430	5,300 D	**9,800 D**	230 J	75 J
nzo(a)pyrene	**90**	<430	**12,000 D**	**22,000 D**	**480**	**140 J**
deno(1,2,3-cd)pyrene	**900**	<430	**7,400 D**	**12,000 D**	310 J	97 J
ibenz(a,h)anthracene	**90**	<430	**2,100 JD**	**4,500 JD**	**95 J**	<420
Benzo(g,h,i)perylene	**NC**	<430	7,700 D	13,000 D	270 J	85 J
tal PAHs		466 JB	161,890 JD	392,360 JBD	5,574 JB	1,928 JB

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< = Below Laboratory Detection Limit
B = Less than the reporting limit but greater than the method detection limit
D = Sample was diluted
NC = No criteria
Delaware Uniform Risk-Based Remediation Standards, URS for Protection of Human Health, Unrestricted Reuse in a Non-Critical Resource Area for Subsurface Soil, February 1998, Revised December 1999
Concentrations in bold/highlighted exceeded the URS value

Ground-Water Analytical Results from the 7 January 2000 Phase II Investigation
TCL SVOC by EPA Method 8270C
Concentration, µg/L

Constituent	URS	W-1	W-2	W-3	W-4
Phenol	4,000	<10	<10	<10	<10
bis(2-Chloroethyl)ether	0.01	<10	<10	<10	<10
2-Chlorophenol	40	<10	<10	<10	<10
1,3-Dichlorobenzene	0.5	<10	<10	<10	<10
1-4,Dichlorobenzene	0.4	<10	<10	<10	<10
1,2-Dichlorobenzene	64	<10	<10	<10	<10
2-Methylphenol	180	<10	<10	<10	<10
bis(2-chloroisopropyl) ether	0.3	<10	<10	<10	<10
4-Methylphenol	18	<10	<10	<10	<10
N-Nitrosodi-n-propylamine	0.01	<10	<10	<10	<10
Hexachloroethane	1	<10	<10	<10	<10
Nitrobenzene	0.4	<10	<10	<10	<10
Isophorone	71	<10	<10	<10	<10
2-Nitrophenol	NC	<10	<10	<10	<10
2,4-Dimethylphenol	73	<10	<10	<10	<10
bis(2-Chloroethoxy)methane	NC	<10	<10	<10	<10
2,4-Dichlorophenol	20	<10	<10	<10	<10
1,2,4-Trichlorobenzene	70	<10	<10	<10	<10
Naphthalene	20	11	<10	3 J	<10 J
4-Chloroaniline	15	<10	<10	<10	<10
Hexachlorobutadiene	0.4	<10	<10	<10	<10
4-Chloro-3-methylphenol	NC	<10	<10	<10	<10
2-Methylnaphthalene	12	2 J	<10	<10	<10
Hexachlorocyclopentadiene	26	<10	<10	<10	<10
2,4,6-Trichlorophenol	6	<10	<10	<10	<10
2,4,5-Trichlorophenol	370	<25	<25	<25	<25
2-Chloronaphthalene	NC	<10	<10	<10	<10
2-Nitroaniline	0.2	<25	<25	<25	<25
Dimethylphthalate	37,000	<10	<10	<10	<10
2,6-Dinitrotoluene	4	<10	<10	<10	<10
Acenaphthylene	NC	<10	<10	<10	<10
3-Nitroaniline	NC	<25	<25	<25	<25
Acenaphthene	37	6 J	<10	2 J	<10
2,4-Dinitrophenol	7	<25	<25	<25	<25
4-Nitrophenol	60	<25	<25	<25	<25
Dibenzofuran	2	5 J	<10	<10	<10
2,4-Dinitrotoluene	7	<10	<10	<10	<10
Diethylphthalate	5,000	<10	<10	<10	<10
4-Chlorophenyl phenylether	NC	<10	<10	<10	<10
Fluorene	24	7 J	<10	<10	<10
4-Nitroaniline	NC	<25	<25	<25	<25
4,6-Dinitro-2-methylphenol	0.4	<25	<25	<25	<25
N-Nitrosodiphenylamine	14	<10	<10	<10	<10
4-Bromophenyl phenylether	NC	<10	<10	<10	<10
Hexachlorobenzene	0.04	<10	<10	<10	<10
Pentachlorophenol	0.6	<25	<25	<25	<25

< = Below Laboratory Detection Limit

Ground-Water Analytical Results from the 7 January 2000 Phase II Investigation
TCL SVOC by EPA Method 8270C
Concentration, µg/L

Constituent	URS	W-1		W-2	W-3		W-4	
Phenanthrene	**120**	21		<10	<10		1	J
Anthracene	**180**	6	J	<10	<10		<10	
Carbazole	**3**	**5**	**J**	<10	<10		<10	
Di-n-butyl phthalate	**NC**	<10		<10	<10		<10	
Fluroanthene	**150**	15		<10	<10		1	J
Pyrene	**18**	10		<10	<10		<10	
Butylbenzylphthalate	**730**	<10		<10	<10		<10	
3,3'-Dichlorobenzidine	**0.2**	<20		<20	<20		<20	
Benzo(a)anthracene	**0.09**	**5**	**J**	<10	<10		<10	
Bis(2-Ethylhexyl)phthalate	**5**	<10		<10	<10		<10	
Chrysene	**9**	6	J	<10	<10		<10	
Di-n-octyl phthalate	**73**	<10		<10	<10		<10	
Benzo(b)fluoranthene	**0.09**	**5**	**J**	<10	<10		<10	
Benzo(k)fluoranthene	**0.9**	**5**	**J**	<10	<10		<10	
Benzo(a)pyrene	**0.01**	**5**	**J**	<10	<10		<10	
Indeno(1,2,3-cd)pyrene	**0.09**	**3**	**J**	<10	<10		<10	
Dibenz(a,h)anthracene	**0.01**	**2**	**J**	<10	<10		<10	
Benzo(g,h,i)perylene	**NC**	3	J	<10	<10		<10	
Total PAHs		122	J	0	5	J	2	J

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NC = No criteria
Delaware Uniform Risk-Based Remediation Standards, URS for Protection of Human Health, Ground-Water, February 1998, Revised December 1999
Concentrations in bold/highlighted exceeded the URS value

Ground-Water Analytical Results from the 7 January 2000 Phase II Investigation
TAL Metals

Concentration in mg/L

Elements	URS	W-1	W-2	W-3	W-4
Aluminum	**0.2**	<0.10	<0.10	**0.517**	<0.10
Antimony	**0.006**	<0.020	<0.020	<0.020	<0.020
Arsenic	**0.0005**	**0.0501**	**0.0152**	**0.281**	**0.013**
Barium	**0.26**	**0.74**	**0.83**	**0.441**	**1**
Beryllium	**0.004**	<0.0040	<0.0040	<0.0040	<0.0040
Cadmium	**0.005**	<0.0040	<0.0040	<0.0040	<0.0040
Calcium	**NC**	137	98	49	300
Chromium	**0.10**	<0.010	<0.010	<0.010	<0.010
Cobalt	**0.22**	<0.010	<0.010	<0.010	<0.010
Copper	**1.3**	<0.020	<0.020	<0.020	<0.020
Iron	**0.30***	**7.301**	**12**	<0.10	**3.7**
Lead	**0.015**	<0.010	0.015	**0.018**	<0.010
Magnesium	**NC**	25	58	16	28
Manganese	**0.05**	**0.663**	**0.204**	<0.015	**1.5**
Mercury	**0.002**	<0.00020	<0.00020	<0.00020	<0.00020
Nickel	**0.10**	<0.020	<0.020	<0.020	<0.020
Potassium	**NC**	16	17	3.8	82
Selenium	**0.05**	<0.020	<0.020	<0.020	<0.020
Silver	**0.10**	<0.010	<0.010	<0.010	<0.010
Sodium	**NC**	20	50	26	910
Thallium	**0.002**	<0.010	<0.010	<0.010	<0.010
Vanadium	**0.026**	<0.010	<0.010	<0.010	<0.010
Zinc	**2**	0.156	0.126	0.029	<0.020

< = Below Laboratory Detection Limit
B = Reported value is less than the method detection limit
Delaware Uniform Risk-Based Remediation Standards, URS for Protection of Human Health, Ground-Water, February 1998, Revised December 1999
The URS value for Arsenic is the carcinogen value
* = This value is a secondary maximum contaminant level (aesthetic limit; taste,odor).
Concentrations in bold/highlighted exceeded the URS value

Ground-Water Analytical Results from the 27 April 2001 Remedial Investigation
TCL VOC

Concentration, µg/L

Constituent	URS	MW-1	MW-2	MW-3
Acetone	**61**	2 JB	2 JB	3 JB
Methylene Chloride	**4**	0.3 JB	0.2 JB	0.2 JB
Benzene	**0.4**	0.2 J	<5	<5
Total Xylenes	**1,200**	<2	<5	0.5 J

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B = Less than the reporting limit but greater than the method detection limit
< = Below Laboratory Detection Limit
Delaware Uniform Risk-Based Remediation Standards, URS for Protection of Human Health, Ground-Water, December 1999

Concentrations in bold/highlighted exceeded the URS value

Ground-Water Analytical Results from the 27 April 2001 Remedial Investigation
TAL Metals

Concentration in µg/L

Elements	URS	MW-1	MW-2	MW-3
Aluminum	**200***	68.6 B	72.7 B	72.7 B
Antimony	**6**	<1.4	<1.4	<1.4
Arsenic	**0.5**	**5.6 B**	<1.7	**5.8 B**
Barium	**260**	226	**323**	249
Beryllium	**4**	<0.087	<0.087	<0.087
Cadmium	**5**	<0.54	<0.54	<0.54
Calcium	**NC**	66200	39000	66900
Chromium	**100**	<0.89	<0.89	<0.89
Cobalt	**220**	<4.2	<4.2	<4.2
Copper	**1300**	<1.4	<1.4	<1.4
Iron	**300***	**28600**	**7010**	**29400**
Lead	**15**	<1.1	<1.1	<1.1
Magnesium	**NC**	11400	7630	11700
Manganese	**50***	**422**	**225**	**432**
Mercury	**2**	<0.011	<0.011	<0.011
Nickel	**100**	<2.4	<2.4	<2.4
Potassium	**NC**	23000	4740 B	25000
Selenium	**50**	<2.3	<2.3	<2.3
Silver	**100**	<2.2	<2.2	<2.2
Sodium	**NC**	66100	30100	70300
Thallium	**2**	<3.8	<3.8	<3.8
Vanadium	**26**	<3.4	<3.4	<3.4
Zinc	**2000**	<8.6	24.7	<8.6

< = Below Laboratory Detection Limit
B = Reported value is less than the method detection limit
Delaware Uniform Risk-Based Remediation Standards, URS for Protection of Human Health, Ground-Water, February 1998, Revised December 1999
The URS value for Arsenic is the carcinogen value
* = This value is a secondary maximum contaminant level (aesthetic limit, taste,odor).
Concentrations in bold/highlighted exceeded the URS value

Ground-Water Analytical Results from the 27 April 2001 Remedial Investigation
TCL SVOC by EPA Method 8270C
Concentration, µg/L

Constituent	URS	MW-1	MW-2	MW-3
Phenol	4,000	<10	<10	<10
bis(2-Chloroethyl)ether	0.01	<10	<10	<10
2-Chlorophenol	40	<10	<10	<10
1,3-Dichlorobenzene	0.5	<10	<10	<10
1-4,Dichlorobenzene	0.4	<10	<10	<10
1,2-Dichlorobenzene	64	<10	<10	<10
2-Methylphenol	180	<10	<10	1.9 J
bis(2-chloroisopropyl) ether	0.3	<10	<10	<10
4-Methylphenol	18	<10	<10	1.5 J
N-Nitrosodi-n-propylamine	0.01	<10	<10	<10
Hexachloroethane	1	<10	<10	<10
Nitrobenzene	0.4	<10	<10	<10
Isophorone	71	<10	<10	<10
2-Nitrophenol	NC	<10	<10	<10
2,4-Dimethylphenol	73	<10	<10	6.8 J
bis(2-Chloroethoxy)methane	NC	<10	<10	<10
2,4-Dichlorophenol	20	<10	<10	<10
1,2,4-Trichlorobenzene	70	<10	<10	<10
Naphthalene	20	<10	<10	14
4-Chloroaniline	15	<10	<10	<10
Hexachlorobutadiene	0.4	<10	<10	<10
4-Chloro-3-methylphenol	NC	<10	<10	<10
2-Methylnaphthalene	12	<10	<10	4.8 J
Hexachlorocyclopentadiene	26	<10	<10	<10
2,4,6-Trichlorophenol	6	<10	<10	<10
2,4,5-Trichlorophenol	370	<50	<50	<50
2-Chloronaphthalene	NC	<10	<10	<10
2-Nitroaniline	0.2	<50	<50	<50
Dimethylphthalate	37,000	<10	<10	<10
2,6-Dinitrotoluene	4	<10	<10	<10
Acenaphthylene	NC	<10	<10	<10
3-Nitroaniline	NC	<50	<50	<50
Acenaphthene	37	<10	1.1 J	12
2,4-Dinitrophenol	7	<50	<50	<50
4-Nitrophenol	60	<50	<50	<50
Dibenzofuran	2	<10	<10	4.7 J
2,4-Dinitrotoluene	7	<10	<10	<10
Diethylphthalate	5,000	<10	<10	<10
4-Chlorophenyl phenylether	NC	<10	<10	<10
Fluorene	24	<10	<10	7.6 J
4-Nitroaniline	NC	<50	<50	<50
4,6-Dinitro-2-methylphenol	0.4	<50	<50	<50
N-Nitrosodiphenylamine	14	<10	<10	<10
4-Bromophenyl phenylether	NC	<10	<10	<10
Hexachlorobenzene	0.04	<10	<10	<10
Pentachlorophenol	0.6	<50	<50	<50

< = Below Laboratory Detection Limit

Ground-Water Analytical Results from the 27 April 2001 Remedial Investigation
TCL SVOC by EPA Method 8270C
Concentration, µg/L

Constituent	URS	MW-1		MW-2	MW-3	
Phenanthrene	**120**	3.4	J	<10	15	
Anthracene	**180**	1.1	J	<10	3.1	J
Carbazole	**3**	<10		<10	**8.7**	**J**
Di-n-butyl phthalate	**NC**	<10		<10	<10	
Fluroanthene	**150**	3.8	J	<10	2	J
Pyrene	**18**	2.8	J	<10	1.2	J
Butylbenzylphthalate	**730**	<10		<10	<10	
3,3'-Dichlorobenzidine	**0.2**	<10		<10	<10	
Benzo(a)anthracene	**0.09**	**1.6**	**J**	<10	<10	
Bis(2-Ethylhexyl)phthalate	**5**	**6.7**	**J**	**19**	<10	
Chrysene	**9**	1.4	J	<10	<10	
Di-n-octyl phthalate	**73**	<10		<10	<10	
Benzo(b)fluoranthene	**0.09**	**1.7**	**J**	<10	<10	
Benzo(k)fluoranthene	**0.9**	<10		<10	<10	
Benzo(a)pyrene	**0.01**	**1.2**	**J**	<10	<10	
Indeno(1,2,3-cd)pyrene	**0.09**	<10		<10	<10	
Dibenz(a,h)anthracene	**0.01**	<10		<10	<10	
Benzo(g,h,i)perylene	**NC**	<10		<10	<10	
Total PAHs		17	J	1.1	73.1	J

J = Estimated Value, Below Laboratory Detection Limit
< = Below Laboratory Detection Limit
NC = No criteria
Delaware Uniform Risk-Based Remediation Standards, URS for Protection of Human Health, Ground-Water, February 1998, Revised December 1999
Concentrations in bold/highlighted exceeded the URS value

Sediment Analytical Results from the 26 April 2001 Remedial Investigation
TAL Metals

Concentration in mg/kg

Elements	URS	SD-1	SD-2	SD-3
Aluminum	NC	23600	14800	12900
Antimony	2	<1.4	<0.60	<0.51
Arsenic	8	**36.6**	**12**	8
Barium	20	**680**	**435**	**675**
Beryllium	NC	2 B	0.99 B	0.80 B
Cadmium	1	**19.7**	**8**	**6.3**
Calcium	NC	7540	2960	2080
Chromium	81	**156**	56.4	55.3
Cobalt	NC	34.3	12.5	12.1
Copper	34	**193**	**57.8**	**72.8**
Iron	NC	53200	29600	25700
Lead	47	**222**	**69.8**	**65.8**
Magnesium	NC	7950	4730	4490
Manganese	NC	3070	885	548
Mercury	0.2	**1.6**	**0.53**	**1.1**
Nickel	21	**46.7**	20.7	18.8
Potassium	NC	5370	3570	3770
Selenium	NC	4.2	1.6	0.97 B
Silver	1	<1.5	<0.65	<0.55
Sodium	NC	931 B	378 B	279 B
Thallium	NC	<1.7	<0.74	<0.63
Vanadium	NC	104	51.4	45.8
Zinc	150	**2550**	**700**	**697**

< = Below Laboratory Detection Limit
B = Reported value is less than the method detection limit
Delaware Uniform Risk-Based Remediation Standards, URS for Protection of the Environment, February 1998, Revised December 1999
The URS value for Arsenic is the carcinogen value
Concentrations in bold/highlighted exceeded the URS value

Sediment Analytical Results from the 26 April 2001 Remedial Investigation
TCL SVOC by EPA Method 8270C
Concentration, µg/kg

Constituent	URS	SD-1	SD-2	SD-3
Phenol	30	<9300	<4000	<3400
bis(2-Chloroethyl)ether	NC	<9300	<4000	<3400
2-Chlorophenol	NC	<9300	<4000	<3400
1,3-Dichlorobenzene	1,700	<9300	<4000	<3400
1-4,Dichlorobenzene	400	<9300	<4000	<3400
1,2-Dichlorobenzene	300	<9300	<4000	<3400
2-Methylphenol	10	<9300	<4000	<3400
bis(2-chloroisopropyl) ether	NC	<9300	<4000	<3400
4-Methylphenol	NC	1,200 JD	<4000	<3400
N-Nitrosodi-n-propylamine	NC	<9300	<4000	<3400
Hexachloroethane	1,000	<9300	<4000	<3400
Nitrobenzene	NC	<9300	<4000	<3400
Isophorone	NC	<9300	<4000	<3400
2-Nitrophenol	NC	<9300	<4000	<3400
2,4-Dimethylphenol	300	<9300	<4000	<3400
bis(2-Chloroethoxy)methane	NC	<9300	<4000	<3400
2,4-Dichlorophenol	NC	<9300	<4000	<3400
1,2,4-Trichlorobenzene	9,000	<9300	<4000	<3400
Naphthalene	400	2,000 JD	410 JD	580 JD
4-Chloroaniline	NC	<9300	<4000	<3400
Hexachlorobutadiene	NC	<9300	<4000	<3400
4-Chloro-3-methylphenol	NC	<9300	<4000	<3400
2-Methylnaphthalene	NC	<9300	<4000	<3400
Hexachlorocyclopentadiene	NC	<9300	<4000	<3400
2,4,6-Trichlorophenol	NC	<9300	<4000	<3400
2,4,5-Trichlorophenol	NC	<46000	<20000	<17000
2-Chloronaphthalene	NC	<9300	<4000	<3400
2-Nitroaniline	NC	<46000	<20000	<17000
Dimethylphthalate	NC	<9300	<4000	<3400
2,6-Dinitrotoluene	NC	<9300	<4000	<3400
Acenaphthylene	NC	<9300	<4000	<3400
3-Nitroaniline	NC	<46000	<20000	<17000
Acenaphthene	90	<9300	<4000	<3400
2,4-Dinitrophenol	NC	<46000	<20000	<17000
4-Nitrophenol	NC	<46000	<20000	<17000
Dibenzofuran	400	<9300	<4000	<3400
2,4-Dinitrotoluene	NC	<9300	<4000	<3400
Diethylphthalate	600	<9300	<4000	<3400
4-Chlorophenyl phenylether	NC	<9300	<4000	<3400
Fluorene	100	970 JD	<4000	<3400
4-Nitroaniline	NC	<46000	<20000	<17000
4,6-Dinitro-2-methylphenol	NC	<46000	<20000	<17000
N-Nitrosodiphenylamine	NC	<9300	<4000	<3400
4-Bromophenyl phenylether	NC	<9300	<4000	<3400
Hexachlorobenzene	NC	<9300	<4000	<3400
Pentachlorophenol	400	<46000	<20000	<17000

< = Below Laboratory Detection Limit