

**SECOND FINAL PLAN OF REMEDIAL ACTION
210 GREENHILL AVENUE SITE
WILMINGTON, DELAWARE
DE-1080**



OCTOBER 2002

**Department of Natural Resources and Environmental Control
Division of Air and Waste Management
Site Investigation and Restoration Branch
391 Lukens Drive
New Castle, Delaware 19720**

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1.0 INTRODUCTION

The 210 Greenhill Avenue Site (site) is located on the northeast corner of Second Street and Greenhill Avenue in Wilmington, Delaware. The site occupies 1.16 acres and is generally bounded by 3rd Street to the North, Greenhill Avenue to the West, 2nd Street to the South, and Webb Street to the East (Figure 1). A final plan of remedial action was issued for the site in 1998. However, in order to address additional environmental concerns at the site, Diver Greenhill Properties, L.L.C. (DGP) entered into the Department of Natural Resources and Environmental Control's (DNREC) Voluntary Cleanup Program (VCP) under the authority of the State of Delaware's Hazardous Substance Cleanup Act (HSCA), 7 Del. C. Chapter 91. Through a VCP Agreement, DGP agreed to investigate the potential risks posed to the public health, welfare, and the environment. DGP contracted Duffield Associates, Inc. to perform a Remedial Investigation (RI) of the site.

The purpose of the RI was to: 1) investigate and collect information about groundwater from the site; 2) re-address a section of the soil cap where fire-damaged vehicles were stored; 3) determine the level of risk posed by the contaminants, and based upon this analysis, evaluate remedial alternatives.

DNREC issued the original proposed plan of remedial action (proposed plan) for the site in June 1998. This proposed plan addressed site soils only. A groundwater investigation was not part of the original proposed plan. DNREC invited written comments from the public. During the public comment period, DNREC received written comments from the Wilmington Waterfront Watch. In July 1998, DNREC adopted the proposed plan as the final plan of remedial action (final plan) for soils at the site. The final plan for soils at the site recommended the same remedial action as contained in the proposed plan for the site.

The purpose of the second proposed plan of remedial action (second proposed plan) for the site was to address the investigation of groundwater that was not addressed in the original proposed and final plan for the site as well as to re-address a section of the soil cap where fire-damaged vehicles were stored. These vehicles were damaged in a fire that occurred on June 10, 2000. Therefore, DNREC believed that further investigation of the site was necessary to ensure that the original remedy was still protective of human health and the environment.

This document is the Department's second final plan for the site. This document is based on the results of the RI performed for groundwater at the site. This second final plan is issued under the authority of the HSCA and the Delaware Regulations Governing Hazardous Substance Cleanup (Regulations). It presents the Department's assessment of the potential health and environmental risk 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 second proposed plan. The public comment period concluded on October 7, 2002. DNREC did not receive any verbal or written comments on the second proposed plan. DNREC is now issuing the second final plan of remedial action. The second final plan designates the final selected remedy for the site and will constitute the remedial decision record.

Section II presents a summary of the site description, site history and previous investigations of the site. Section III provides a description of the RI results. Section IV presents a discussion of the remedial action objectives. Section V presents the second final plan of remedial action. Section VI discusses public participation requirements.

2.0 SITE DESCRIPTION AND HISTORY

2.1 *Site Setting*

The site is referred to as the 210 Greenhill Avenue site and is located on the northeast corner of Second Street and Greenhill Avenue in Wilmington, Delaware (Figure 1). The site occupies 1.16 acres and is generally bounded by 3rd Street to the north, Greenhill Avenue to the west, 2nd Street to the south, and Webb Street to the east. On the tax maps of New Castle County, Delaware, the site is tax parcel number 26-026.10-012. Currently, the site is paved and has a car showroom building located on it. The site is owned and operated by DGP, and is zoned for commercial use. Land use in the area immediately surrounding the site is predominantly commercial.

2.2 *Site History*

The site was first developed by the Wilmington Leather Company between 1900 and 1910. A fire during the 1920s brought the Wilmington Leather Company to ruins. During the 1930s, the site was re-developed and the building on the site was used as a warehouse until 1994. The warehouse and site remained vacant for three years. The existing warehouse was demolished in May 1997.

2.3 *Previous Investigations*

In a Phase I Environmental Site Assessment Report dated March 6, 1996, prepared by WIK Associates, Inc. (WIK) for the Breckstone Group, Inc., several areas of concern were identified. These areas of concern included an underground storage tank (UST), asbestos containing material (ACM), and polychlorinated biphenyl (PCB) containing equipment. The assessment recommended that further investigation be performed.

WIK prepared a Phase II Soil Investigation Report dated January 3, 1997 on behalf of another potential purchaser of the property known as the Ventresca Group, LLC. Analytical results for soil were compared to Delaware's Uniform Risk-Based Standards (URS) for an industrial, non-critical water resource area as well as EPA Region III Risk-Based Concentrations (RBCs). The investigation revealed that arsenic, barium, and chromium exceeded URS as well as RBC values for metals in subsurface soils. The report also revealed that the following semivolatile compounds (SVOCs) exceeded URS and RBC values for SVOCs in soil: benzo(a)pyrene, benzo(b)fluoranthene, benzo(a)anthracene, carbazole, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

On January 16, 1997, at the request of DNREC, WIK submitted additional information in the form of an addendum to the Phase II Soil Investigation. The addendum was prepared to clarify the selection process for analytical parameters and methods for the December 1996 soil samples

as well as report results from two additional soil samples that were analyzed for SVOCs. The two additional samples confirmed that SVOC contamination was not as widespread as originally suspected.

Based on the results of the Phase I and Phase II reports, the Ventresca Group formally entered into the VCP with DNREC by signing an agreement letter in January 1997.

In April 1997, Plymouth Environmental removed ACM from the site. The asbestos removal addressed pipe insulation, boiler insulation, and transite material.

Three transformers and one drum of solid debris were removed from the Site by SD Myers, Inc. on May 27, 1997 and were transported to the SD Myers facility in Ohio for disposal.

In compliance with the City of Wilmington's building demolition codes, the Ventresca Group imported 2,703 tons of select fill to the site. Over a two-day period, November 10-11, 1997, the select fill was placed across the entire 1.16 acre site to serve as a soil cover material. The average soil cover thickness was thirteen (13) inches.

On December 1, 1997 a 2,000-gallon UST was removed from the site. J&M Industries of Wilmington, Delaware removed the tank.

A Feasibility Study (FS) was prepared by Tetra Tech Inc. in July 1998 to evaluate remedial alternatives. The above-mentioned areas of concern were also included in the evaluation of remedial alternatives. The FS concluded that the preferred remedy was a combination of remedial measures which included construction of a soil cover, removal of transformers, removal of the UST, asbestos abatement, building demolition, and deed restrictions.

The original proposed plan for the site was advertised on June 25, 1998. The public comment period began on Friday, June 26, 1998 and ended on July 17, 1998. On July 27, 1998 the final plan was issued. The remedial actions that were contained in the final plan were the construction of a soil cap, a declaration of restrictions, and the establishment of a GMZ. A certification of completion of remedy (COCR) was issued on August 6, 1998 for soils only. Groundwater was not investigated and was not included in the COCR.

3.0 INVESTIGATION RESULTS

As a result of the fire-damaged vehicles being stored on the site as well as the absence of a groundwater investigation, DNREC determined that further investigation at the site was necessary. DGP formally entered into the VCP by signing an agreement with DNREC on September 13, 2000. DGP agreed to conduct a RI of the groundwater and take shallow soil samples of the soil cap. Shallow soil samples had to be retaken because fire-damaged vehicles were transported to the site and stored on top of the protective soil cap. This was a violation of the original final plan.

On September 11, 2000, Duffield Associates conducted a RI of the groundwater and shallow soils of the existing soil cap. The RI was conducted in accordance with a DNREC approved work plan dated September 2000.

Five surface soil samples (S-1, S-2, S-3, S-4, and S-5) were collected. Two groundwater samples (GB-1 and GB-2) were collected from temporary wells constructed by direct-push soil borings on the site. These sampling locations are shown in Figure 2.

3.1 Shallow Soil

Shallow soil samples were analyzed exclusively for ethylene glycol and extractable petroleum hydrocarbons (EPH). These two analyses were requested exclusively because they included the chemicals of concern in relation to the fire-damaged vehicles. EPH concentrations for C₁₉ through C₃₆ aliphatic hydrocarbons exceeded the 5,000 milligrams per kilogram (mg/kg) URS value for protection of human health in samples S-1 and S-2 in a restricted use, non-critical water resources area (Table 1). EPH concentrations for C₁₉ through C₃₆ aliphatic hydrocarbons were reported as 9,400 mg/kg in sample S-1 and 12,000 mg/kg in sample S-2. Ethylene glycol was not detected in the soil samples.

3.2 Groundwater

The results of the RI identified arsenic, iron, and manganese at concentrations exceeding their respective URS values for a restricted use, non-critical water resources area as well as the Federal Drinking Water standards known as the Secondary Maximum Contaminant Levels (SMCL) (Table 2).

Concentrations for arsenic, iron, and manganese in groundwater sample GB-1 were 0.09 milligrams per liter (mg/L), 1.65 mg/L, and 1.86 mg/L respectively. Concentrations of iron and manganese exceeded their respective URS values and SMCL of 0.30 mg/L and 0.05 mg/L for protection of human health. Arsenic in groundwater exceeded its respective Maximum Contaminant Value (MCL) of 0.05 mg/L. Groundwater sample GB-2 exceeded the URS and SMCL values for protection of human health for manganese with a concentration of 0.94 mg/L. No volatile organic compounds (VOCs), SVOCs, pesticides, or PCBs were detected at concentrations that exceeded URS values.

3.3 Results

The results of the RI identified metals in groundwater and EPH in soil that exceeded their respective URS values. Arsenic in groundwater exceeded its respective MCL value of 0.05 mg/L and state action level of 0.01 mg/L. The iron and manganese values are based upon drinking water SMCL standards of 0.30 mg/L and 0.05 mg/L, respectively, and represent non-enforceable aesthetic standards. However, public water is available in this area, and a Groundwater Management Zone (GMZ) restricting the use of groundwater in the city of Wilmington is presently in place, both of which prevent human exposure to site groundwater.

The highest concentration of arsenic in groundwater, 90 ug/L, does not exceed the Delaware surface water quality standard criteria of 360 ug/L (acute) and 190 ug/L (chronic) for arsenic. Since the Christina River is approximately 1.5 miles southeast of the site and the surface water quality criteria for arsenic is not exceeded, it is concluded that there are no impacts to the Christina River that can be attributed to this site.

EPHs in the shallow soil samples were detected at concentrations that exceeded their URS value of 5,000 mg/kg.

4.0 REMEDIAL ACTION OBJECTIVES

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

- The surrounding land use is to remain predominantly commercial.
- The risk posed to future construction workers through exposure to contaminated soil.
- The risk posed to human health through the ingestion of contaminated groundwater.
- The site will remain commercial with a car showroom and a parking lot.

Qualitative Remedial Objectives:

Based on the above considerations, the following qualitative objectives were developed:

- Restrict human contact (dermal and ingestion) with contaminated soil; and
- Include the site in the City of Wilmington GMZ (August 2001), which will restrict the placement of wells and use of groundwater at the site.

Quantitative Remedial Objectives:

Based on the above qualitative remedial action objectives, the following quantitative remedial action objective was developed:

- Prevent human contact with contaminants that exceed the URS.

The RAO for this site is to minimize or eliminate exposure of humans to groundwater and shallow soils.

5.0 SECOND FINAL PLAN OF REMEDIAL ACTION

DNREC is proposing that the three following remedial actions be performed:

Action #1: Installation of an asphalt cap to prevent contact with contaminated soil as well as the submission and implementation of an operations and maintenance (O&M) plan to ensure that the integrity of the asphalt cap is maintained.

Action #2: Including the site as part of the GMZ established for the City of Wilmington to

prevent the use of groundwater for drinking purposes.

Action #3: Implementing a deed restriction that requires excavation approval and demolition approval from DNREC and restricts the property to commercial land use only.

In combination, these remedial actions meet DNREC requirements for an appropriate remedy for this site. These remedial actions will constitute the remedial decision record for this site.

6.0 ORIGINAL FINAL PLAN OF REMEDIAL ACTION

It is important to note that not all of the details contained in the original final plan (July 1998) were included in this second final plan. The original remedy for the site, as addressed in the original final plan, remains in effect. That original remedy included construction of a soil cap, a declaration of restrictions, and the establishment of a GMZ. This original GMZ will now be incorporated as part of the City of Wilmington GMZ. The preferred remedy in this second final plan, in addition to the remedy in the original final plan, will be more protective of human health and the environment. The total remedial action for the site is contained in both the original final plan and this second final plan. The original final plan as well as this second final plan of remedial action can be viewed at DNREC's office located at:

391 Lukens Drive
New Castle, DE 19720

7.0 PUBLIC PARTICIPATION

DNREC actively solicited public comments or suggestions on the second proposed plan and welcomed opportunities to answer questions. The public comment period for the second proposed plan began on Wednesday, September 18, 2002, and concluded at the close of business Monday, October 7, 2002. No written comments or requests for a public hearing were received by DNREC.

8.0 DECLARATION

This second final plan of remedial action for the 210 Greenhill Avenue 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
Director, Division of Air and Waste Management

10/30/02

Date

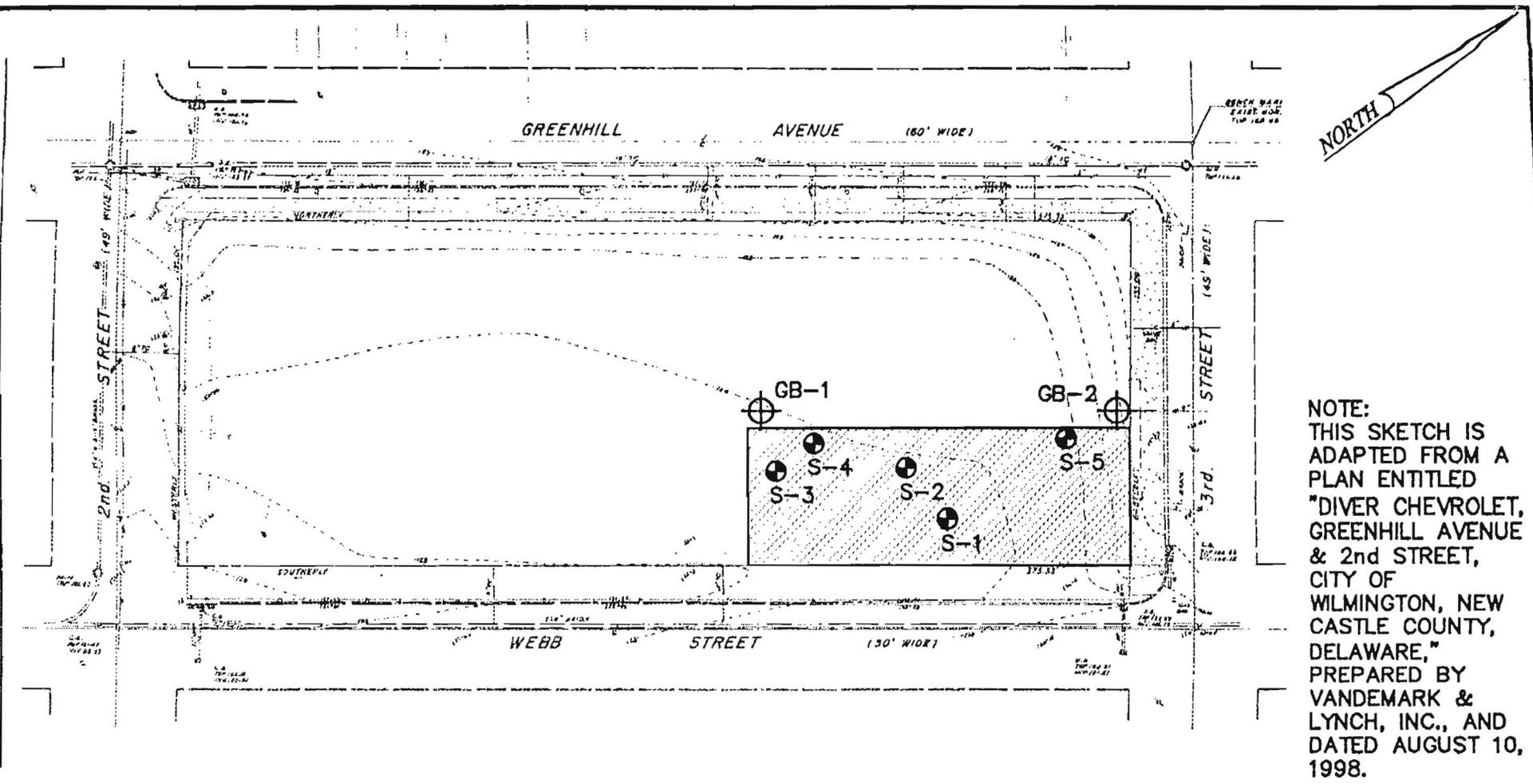
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FIGURES



Figure 1: 210 Greenhill Avenue, City of Wilmington, New Castle County, Delaware

Figure 2: Groundwater and Surface Soil Sampling Locations
 210 Greenhill Avenue, City of Wilmington,
 New Castle County, Delaware



NOTE:
 THIS SKETCH IS
 ADAPTED FROM A
 PLAN ENTITLED
 "DIVER CHEVROLET,
 GREENHILL AVENUE
 & 2nd STREET,
 CITY OF
 WILMINGTON, NEW
 CASTLE COUNTY,
 DELAWARE,"
 PREPARED BY
 VANDEMARK &
 LYNCH, INC., AND
 DATED AUGUST 10,
 1998.

LEGEND:

-  APPROXIMATE LOCATION OF GROUNDWATER SAMPLE
-  APPROXIMATE LOCATION OF SURFACE SOIL SAMPLE
-  APPROXIMATE AREA WHERE FIRE-DAMAGED AUTOMOBILES FORMERLY WERE STORED

**SAMPLE LOCATION SKETCH
 REMEDIAL INVESTIGATION
 210 GREENHILL AVENUE
 WILMINGTON
 NEW CASTLE COUNTY ~ DELAWARE**

DUFFIELD ASSOCIATES CONSULTANTS IN THE GEOSCIENCES		5400 LIMESTONE ROAD WILMINGTON, DE 19808-1232 TEL. (302)239-6634 FAX (302)239-8485
		1528 WALNUT STREET, SUITE 725 PHILADELPHIA, PA 19102 E-MAIL: DUFFIELD@DUFFNET.COM
Drawn: JGE	Chk'd: KJL	Date: 12 SEPTEMBER 2000
Scale: 1" = 60'		W.O.: 3464.EE
Drawing No: A3464EE01		FIGURE 2

TABLES

Table 2

SUMMARY OF LABORATORY ANALYSIS DETECTIONS - GROUNDWATER

210 GREENHILL AVENUE
WILMINGTON, DELAWARE

Sample Identification	Uniform Risk-Based Standards (mg/L)	GB-1	GB-2	Trip Blank
Lab Sample Number		228513	228515	228516
Sampling Date (month/day/year)		9/11/00	9/11/00	9/11/00
Matrix		Water	Water	Water
Units		mg/L	mg/L	mg/L
TCLs: VOLATILE ORGANIC COMPOUNDS				
cis-1,2-Dichloroethene	0.07	0.011	ND	ND
TCLs: SEMI-VOLATILE ORGANIC COMPOUNDS				
bis(2-Ethylhexyl)phthalate	0.006	0.0015	ND	NA
TCLs: SOLIDS/POLYCHLORINATED BIPHENYLS				
- No Compounds Detected -				
TAL METALS				
Arsenic	0.05	0.0888	ND	NA
Barium	2.0	0.152	0.0517	NA
Calcium	NL	91.2	62.2	NA
Cobalt	0.22	0.0027	0.0038	NA
Iron	0.3	1.65	0.12	NA
Magnesium	NL	93.3	39.9	NA
Manganese	0.05	1.86	0.938	NA
Nickel	0.1	ND	0.0038	NA
Potassium	NL	9.27	2.52	NA
Sodium	NL	122	60.3	NA
Vanadium	0.026	0.0027	ND	NA
Zinc	2.0	0.0062	ND	NA

Notes:

- Uniform Risk-Based Standards for groundwater are published in the State of Delaware, Department of Natural Resources and Environmental Control's "Remediation Standards Guidance Under the Delaware Hazardous Substance Cleanup Act," December 1999.
- TCL = Target Compound List
- TAL = Target Analyte List
- ND = Not Detected
- NL = Not Listed
- NA = Not Applicable
- mg/L = milligrams per liter

Table 2: Summary of Groundwater Sample Results; 210 Greenhill Avenue,
City of Wilmington, New Castle County, Delaware.

Table 1

SUMMARY OF LABORATORY ANALYSIS DETECTIONS - SOIL

210 GREENHILL AVENUE
WILMINGTON, DELAWARE

Sample Identification	URS for	S-1	S-2	S-3	S-4	S-5
Lab Sample Number	Restricted Use,	228508	228509	228510	228511	228512
Sampling Date (month/day/year)	Non-critical	9/11/00	9/11/00	9/11/00	9/11/00	9/11/00
Matrix	Water Resource	Soil	Soil	Soil	Soil	Soil
Units	Area (mg/kg)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EXTRACTABLE PETROLEUM HYDROCARBONS (Massachusetts Method)						
C9-C18 Aliphatic Hydrocarbons	2,500	900	790	ND	ND	ND
C11-C22 Aromatic Hydrocarbons	2,000	53	1,000	27	ND	ND
C19-C36 Aliphatic Hydrocarbons	5,000	9,400	12,000	ND	ND	ND
ETHYLENE GLYCOL						
	5,000	ND	ND	ND	ND	ND

Notes:

1. URS = State of Delaware Uniform Risk-Based Standards. The URSs are published in the State of Delaware, Department of Natural Resources and Environmental Control's "Remediation Standards Guidance Under the Delaware Hazardous Substance Cleanup Act," revised December 1999.
2. mg/kg = milligrams per kilogram
3. ND = Not Detected

Table 1: Summary of Shallow Soil Sample Results; 210 Greenhill Avenue, City of Wilmington, New Castle County, Delaware.