

STATE OF DELAWARE

DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
SITE INVESTIGATION AND RESTORATION BRANCH

PROPOSED PLAN OF REMEDIAL ACTION



SCANNED

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101 Beech Street Site
Wilmington, Delaware

DNREC Project No.: DE-1364

This Proposed Plan of Remedial Action (Proposed Plan) presents the Department of Natural Resources and Environmental Control's (DNREC's) proposed cleanup alternative for the remediation of the 101 Beech Street (Site). The Site is currently in commercial/industrial use and it will remain in commercial/industrial use. For Site-related reports and more information, please see the public participation section of this document.

The purpose of the Proposed Plan is to provide specific information about the soil and groundwater quality and the cleanup alternatives DNREC has considered for the Site and specifically the presumptive remedy DNREC is proposing as the remedial action for the Site. A presumptive remedy is the preferred and established remedial alternative for common categories of releases or facilities and the remedy being proposed falls into this category. In addition, as described in Section 12 of the Delaware Regulations Governing Hazardous Substance Cleanup (Regulations), DNREC will provide notice to the public and an opportunity for the public to comment on the Proposed Plan. At the comment period's conclusion, DNREC will review and consider all of the comments received and then will issue a Final Plan of Remedial Action (Final Plan). The Final Plan shall designate the selected remedy, if required, for the Site. All investigations of the Site, the Proposed Plan, comments received from the public, DNREC's responses to the comments, and the Final Plan will constitute the Remedial Decision Record. This Proposed Plan summarizes the 2004, 2005, and 2006 Remedial Investigation (RI) Studies and the administrative record upon which this Proposed Plan is based. Copies of the Site-related documents can be obtained or viewed at locations listed at the end of this document.

DNREC's proposed remedy is preliminary and a final decision will not be made until all of the comments are considered. The final remedy selected could differ from the proposed remedy based on DNREC's responses to comments.

INTRODUCTION

The Site is approximately 13.7 acres and consists of two areas, one on the east side and one on the west side of Beech Street, north of the elevated Amtrak rail lines, in Wilmington, Delaware as shown in Figure 1, (attached). The surrounding land is a mix of commercial, industrial and residential use.

The area to the east of Beech Street is approximately 9.7 acres and contains the Wilmington Shops, Building 16, the Power House, other associated buildings and parking lots. This area is bordered by Maryland Avenue to the northwest, South Street to the northeast, the elevated Amtrak rail line to the southeast and Beech Street to the southwest.

The area to the west of Beech Street is approximately 4 acres and contains Buildings 17, 18, and 19 and associated parking lots. This area is bordered by Anchorage Street to the northwest, Beech Street to the northeast, the Browntown truck route to the southeast and Oak Street to the southwest.

BrightFields, Inc. (BrightFields), a HSCA certified environmental consultant, was retained by The Delaware Department of Transportation (DelDOT) to conduct a Supplemental Remedial Investigation of the 101 Beech Street Site, located in Wilmington, Delaware as shown in Figure 1 (attached). On November 23, 2005, DelDOT and E.I. DuPont de Nemours & Company (DuPont), collectively entered the Voluntary Cleanup Program (VCP), under the provisions of the Delaware Hazardous Substance Cleanup Act (HSCA), 7 Del. C. Chapter 91. Further, collectively DelDOT and DuPont entered into a Consent Decree, which the Secretary of DNREC signed on January 30, 2006. DelDOT plans to purchase the property and utilize a portion of the property as office space for the Delaware Transit Corporation. Future use of the property is planned to be limited to commercial/industrial use by a Uniform Environmental Covenant (UECA).

SITE HISTORY

The Site's historical operations have included foundries, machine shops, mechanical design, precision machining, robotics, chemical process design and many other engineering functions. Review of historical maps of the property showed that a machine company, rail lines, and a culvertized stream were located on the property. This stream (Clements Run) has been covered and is now part of the City of Wilmington sewer system. The property was utilized by DuPont from 1917 until March 2006 as an engineering laboratory.

INVESTIGATION HISTORY AND RESULTS

Extensive environmental investigations and remediation were required and have previously been performed by URS Diamond (URS) and others on behalf of DuPont. These investigations are summarized in the Site Wide Phase I & II Environmental Site Assessment (ESA) Report for the DuPont Beech Street Site, dated September 2005. DNREC reviewed these reports and based the Proposed Plan on this and previous reports.

Prior to entering the HSCA Consent Decree in January 2006, DuPont voluntarily and individually, performed a series of interim response removal actions consistent with HSCA and other applicable laws and regulations at the Site, these are detailed below:

- Asbestos: The regulated substances, both friable and un-friable, were collected and removed properly, and then disposed of properly from October 2004 through March 2005, as per the applicable laws and regulations.
- Lead Acid Batteries (Lead): The regulated substances were removed and disposed of properly off-site, from September 2004 through October 2004, as per the applicable laws and regulations.
- PCB Ballasts (PCB): The regulated substances were removed and disposed of properly off-site, from September 2004 through October 2004, as per the applicable laws and regulations.
- Floor Wood Block (TCE and PCB): The regulated substances were removed and disposed of properly off-site, from September 2004 through January 2005, as per the applicable laws and regulations.
- Thermostats (Mercury): The regulated substances were removed and disposed of properly off-site, in August 2005, as per the applicable laws and regulations.
- Electrical Transformers (PCBs): The regulated substances were removed and disposed of properly off-site, in October 2005, as per the applicable laws and regulations.
- Lead Paint (Lead): The suspected regulated substances were collected, properly stored, and analyzed. The analysis reported below regulatory levels for lead and the materials were disposed of properly off-site, as construction waste, as per the applicable laws and regulations.
- PCB Contaminated Soil (PBCs): The contaminated soils were removed and disposed of properly off-site, starting in April 2005 and completed in December 2005, as per the applicable laws and regulations.

After review by DNREC of these studies and removal actions, these studies were deemed to constitute a large portion of an RI. However, DNREC regulations required that the groundwater also be assessed and that the data be used to perform a risk assessment to evaluate whether remedial actions were required. Therefore, DNREC requested that more current groundwater information be collected and analyzed and that a site-specific risk assessment be performed. A supplemental RI was prepared addressing these concerns. The Supplemental RI Report was

submitted to DNREC in February 2006. The report summarized the existing data, presented the results of a groundwater investigation, presented an evaluation of the environmental findings, presented a risk assessment for the soil and groundwater, and developed remedial recommendations. The Supplemental RI and the following documents were found by DNREC to be the equivalent of a HSCA RI for the Site:

- Beech Street Site Work Plan, December 2005,
- Site Wide Phase I and II – Environment Site Assessment Report, September 2005,
- Supplemental Remedial Investigation Report, February 2006, as Amended, April 2006,
and
- PCB Removal Completion Report, 101 Beech Street Site, March 2006.

SOIL

In surface soil (0-2 feet below ground surface), the following compounds were detected at concentrations above the DNREC's Uniform Risk-Based Remediation Standards (URS) values for restricted (commercial/industrial) use.

Surface soil:

- metals: antimony, arsenic, copper, iron, lead, and
- polycyclic aromatic hydrocarbons (PAHs): benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, dibenz(a,h)anthracene

In subsurface soil (greater than 2 feet below ground surface), the following compounds were detected at concentrations which exceeded DNREC's URS for restricted (commercial/industrial) use.

Subsurface soil:

- metals: arsenic, iron, and lead,
- polycyclic aromatic hydrocarbons (PAHs): benzo(a)pyrene, and dibenz(a,h)anthracene.

The contaminants of concern appear to be related to the placement of fill, which ranges in thickness from approximately 0 to 12 feet on the site and is predominately a loose black slag with some areas of ash, cinders, or coal fines, brick and wood. A complete summary of all soil boring locations is shown on Figure 2, (attached).

GROUNDWATER

Groundwater beneath the site occurs under unconfined conditions in the clayey silt and sandy clay unit, in the saprolite, and occasionally occurs within the manmade fill. Depth to groundwater, as measured in the monitoring wells, ranged from approximately 4.6 feet to 9 feet below ground surface (bgs). In the three groundwater level monitoring events, groundwater

elevations ranged from approximately 3.9 feet North American Vertical Datum 1988 (NAVD88) in the southern portion of the site (GW-4 and GW-8) to 19.7 feet NAVD88 at the northeastern edge (GW-6). A complete summary of groundwater monitoring well locations is shown on Figure 2, (attached).

In groundwater, the following compounds were detected at concentrations that exceed their respective URS values for protection of human health and the environment.

Groundwater:

- metals: aluminum, beryllium, chromium, cobalt, iron, manganese, nickel,
- volatile organic compounds (VOCs): tetrachloroethene, trichloroethene, vinyl chloride, and
- semi volatile organic compound (SVOC): 1,1-biphenyl, dibenzofuran.

SITE RISK EVALUATION

A site specific risk assessment was performed to evaluate the possible effects on human health and the environment by the contaminants of concern found at the Site.

Soil

Based on the results of the risk assessment, exposure to site surface soil may pose an unacceptable carcinogenic risk under a restricted use (commercial) scenario. Based on the risk assessment, benzo(a)pyrene and arsenic are surface soil contaminants of concern for a restricted use of the property. However, because the site is currently capped with asphalt and/or buildings, there is no complete exposure pathway, and therefore, there is no current risk to site workers. However, in the event that the current capped conditions are removed or disturbed, the areas shown in Figure 3, (attached), must be properly managed.

Based on the risk assessment, subsurface soil is within DNREC's acceptable commercial industrial use risk guidelines.

Risk to vapor intrusion into indoor buildings for the area of trichloroethene contaminated soil was performed using a conservative model, (Johnson and Ettinger Model). Although the vapor intrusion evaluations did not indicate unacceptable risk over the Site, redevelopment may substantially alter subsurface conditions including vapor migration. Therefore, the results indicated that the contamination may be at concentrations where vapor intrusion may need to be addressed if a building were to be constructed over the area in the future, as shown in Figure 4 (attached).

Groundwater

Organic compounds were identified as contaminants of concern in groundwater from several of the wells. Trichloroethene was identified as a contaminant of concern in wells GW-9 and GW-10. Tetrachloroethene was identified as a contaminant of concern in GW-2. Although not identified as contaminants of concern, both components of DowTherm (1,1 biphenyl and diphenyl ether) were also detected in groundwater from wells GW-9 and GW-10 as shown in Figure 4 (attached).

Inorganic contaminants of concern (e.g., cobalt, and nickel) were identified in groundwater located west of Beech Street. Cobalt was identified as a contaminant of concern in the vicinity of GW-3; and nickel was identified as a contaminant of concern in the vicinity of GW-4 as shown in Figure 4.

Routinely ingesting shallow groundwater at the Beech Street site may pose both unacceptable carcinogenic and non-carcinogenic risks. However, existing water supply wells are located further than 2 miles from the 101 Beech Street site. The Beech Street Site is located within a Groundwater Management Zone (GMZ) where the use of groundwater is controlled by DNREC. No new public or domestic water supply wells are allowed or permitted in the area. Therefore, no complete pathway exists for groundwater ingestion.

REMEDIAL ACTION OBJECTIVES

According to Section 8.4(1) of the HSCA Regulations, site-specific remedial action objectives (RAOs) must be established for all plans of remedial action. The Regulations provide that DNREC will set objectives for land use, resource use, and cleanup levels that are protective of human health and the environment. The following qualitative objectives have been determined to be appropriate for the Site:

- Prevent human exposure (dermal, inhalation and ingestion) to impacted soil under future restricted land use;
- Prevent the use of groundwater for all purposes at the Site; and
- Minimize potential exposure to Site contaminants of concern in impacted soil by construction workers during future Site redevelopment.

These objectives are consistent with the current use of the Site and its setting, City of Wilmington zoning policies, state regulations governing water supply, and worker health and safety.

Based on the above qualitative remedial action objectives, the proposed quantitative remedial action objectives based on a restricted Site use are proposed:

1. Prevent human exposure to soil contaminated with arsenic and benzo(a)pyrene that would result in a cumulative carcinogenic risk factor greater than 1×10^{-5} and a non-carcinogenic risk greater than a Hazard Index of 1.0.
2. Prevent contact with groundwater, the future use of groundwater for drinking water purposes, and the installation of drinking water wells;
3. Prevent the accumulation of vapors in any building later erected on the site.

EVALUATION OF POTENTIAL REMEDIAL ALTERNATIVES

A presumptive remedy is the preferred and established remedial alternative for common categories of releases or facilities. The presumptive remedy considered for the Site is Maintenance of the Existing Cap and Implementation of Institutional Controls (ICs) and subsequent monitoring to confirm that the remedy has achieved the remedial objectives.

According to Subsection 8.5(3) of the HSCA Regulations, "The Department may consider and approve any presumptive remedy that is determined to satisfy the requirements contained in Subsection 8.6". Maintenance of the existing cap and implementation of institutional control was determined to meet the requirements of Subsection 8.6, which include:

- Protective of public health, welfare and the environment.
- In compliance with regulations
- Acceptable to the community
- Technically Practical
- Meets short-term and long-term effectiveness

DNREC has accepted maintenance of the existing cap, implementation of institutional controls and subsequent monitoring as the preferred remedial action for the Site since the remedy meets the criteria presented above.

The presumptive remedy is the preferred remedy; however, the presumptive remedy was compared to a No Action Alternative which is detailed below.

Alternative 1: No Action

Alternative 2: Presumptive Remedy - Maintenance of the Existing Cap and Implementation of Institutional Controls (ICs). Maintain the existing cap (buildings, pavement and hardscaped areas) at the Site. Place an environmental covenant on the Site consistent with Delaware's UECA which limits the site to non-residential uses; prohibits any demolition of or land-disturbing activities on the Site without the prior written approval of DNREC; and prohibits the installation of any water well on, or use of groundwater at the Site without the prior written approval of DNREC. In addition, the Site will remain a part of the Wilmington GMZ.

Alternative 1 (No Action) is not a viable alternative because it is not protective of human health or the environment nor does it comply with current laws.

Alternative 2 (Maintenance of the Existing Cap and ICs) is considered to be protective and effective. Alternative 2 (Maintenance of the Existing Cap and ICs) is not costly to implement because the existing building, pavement and hardscaped areas of the Site serve as a cap. Analysis of potential exposure pathways to Site contaminants indicated that at present, the Site poses minimal threat to human health and the environment because the Site is completely covered with buildings and pavement, which eliminates direct contact with surface soils. A Material Management Plan will be required and approved by DNREC prior to any disturbance of the existing cap. The Beech Street Site is located within a Groundwater Management Zone (GMZ) where the use of groundwater is controlled by DNREC and existing water supply wells are located further than 2 miles from the property. No new public or domestic water supply wells are allowed or permitted in the area. Therefore, no complete pathway exists for groundwater ingestion.

DNREC has selected Alternative 2 (Maintenance of the Existing Cap and ICs), which is the presumptive remedy, as the proposed remedial action for the Site based on cost effectiveness and appropriateness to meeting remedy selection criteria found in HSCA regulations.

PROPOSED PLAN OF REMEDIAL ACTION

The site currently consists of commercial buildings and parking lots and is expected to remain under the same land use for the foreseeable future. Assuming future commercial use of this site, the four areas designated as soil areas of concern remain capped, unless remediation is performed. Under current site conditions, these areas are either covered with asphalt paving, concrete or buildings. The Proposed Plan for the Site calls for continued maintenance of the existing capping and containment system (building, parking lot, hardscaped areas) in conjunction with institutional controls.

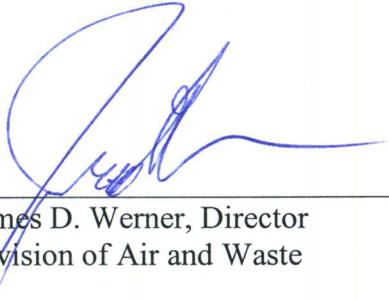
Based on DNREC's evaluation of the Site information, which includes current and past environmental investigations, historical information, the limited contamination present at the Site, and the above remedial action objectives, DNREC proposes the following remedial actions be implemented at the Site:

1. Placement of an environmental covenant on the Site, consistent with Delaware's Uniform Environmental Covenants Act (UECA), within ninety (90) days following DNREC's adoption of the Final Plan;
2. A DNREC-approved Operations and Maintenance (O & M) Plan will be established by the Site owner and implemented within ninety (90) days following DNREC's adoption of the Final Plan. The O & M plan will detail the procedures and practices, including regular inspections, to minimize the potential for disturbing the cap and containment system and to promote the long term integrity of the system. The Site also will be incorporated into DNREC's Long-Term Site Stewardship program as it develops;

3. Annual groundwater monitoring of five monitoring wells to assess trends in groundwater conditions at the site over a five year period, or a different time period, based on the results, at the discretion of the Department;
4. Limit the property to non-residential uses that would maintain the degree of surface cover comparable with current conditions;
5. Prohibit any demolition of existing buildings, parking lots or land-disturbing activities that requires excavation of the paved and covered areas in areas of the property that are identified as requiring capping, without the prior written approval by DNREC of a Contaminated Materials Management Plan and an evaluation of potential for vapor intrusion into any proposed buildings;
6. Prohibit the installation of any water well on, or use of groundwater at, the site without the prior written approval of DNREC; and Identify the site as being located within the GMZ, which is already in place for the City of Wilmington (August 2001). The site is located within the City of Wilmington boundary limits. The GMZ will prohibit the installation of any water wells on, or groundwater usage at the site without prior written approval of DNREC. In addition, the City of Wilmington municipal law prohibits potable consumption of groundwater within the City limits.

PUBLIC PARTICIPATION

The Department is actively soliciting written public comments and suggestions on the Proposed Plan of remedial action. The comment period begins April 12, 2006, and ends at the close of business on May 1, 2006. If you have any questions or concerns regarding the 101 Beech Street Site, or if you would like to review the reports or other information regarding the Site, please contact the project manager, Jane Biggs Sanger, 391 Lukens Drive, New Castle, Delaware 19720 or at 302.395.2600.



James D. Werner, Director
Division of Air and Waste

11 April 2006
Date of Review

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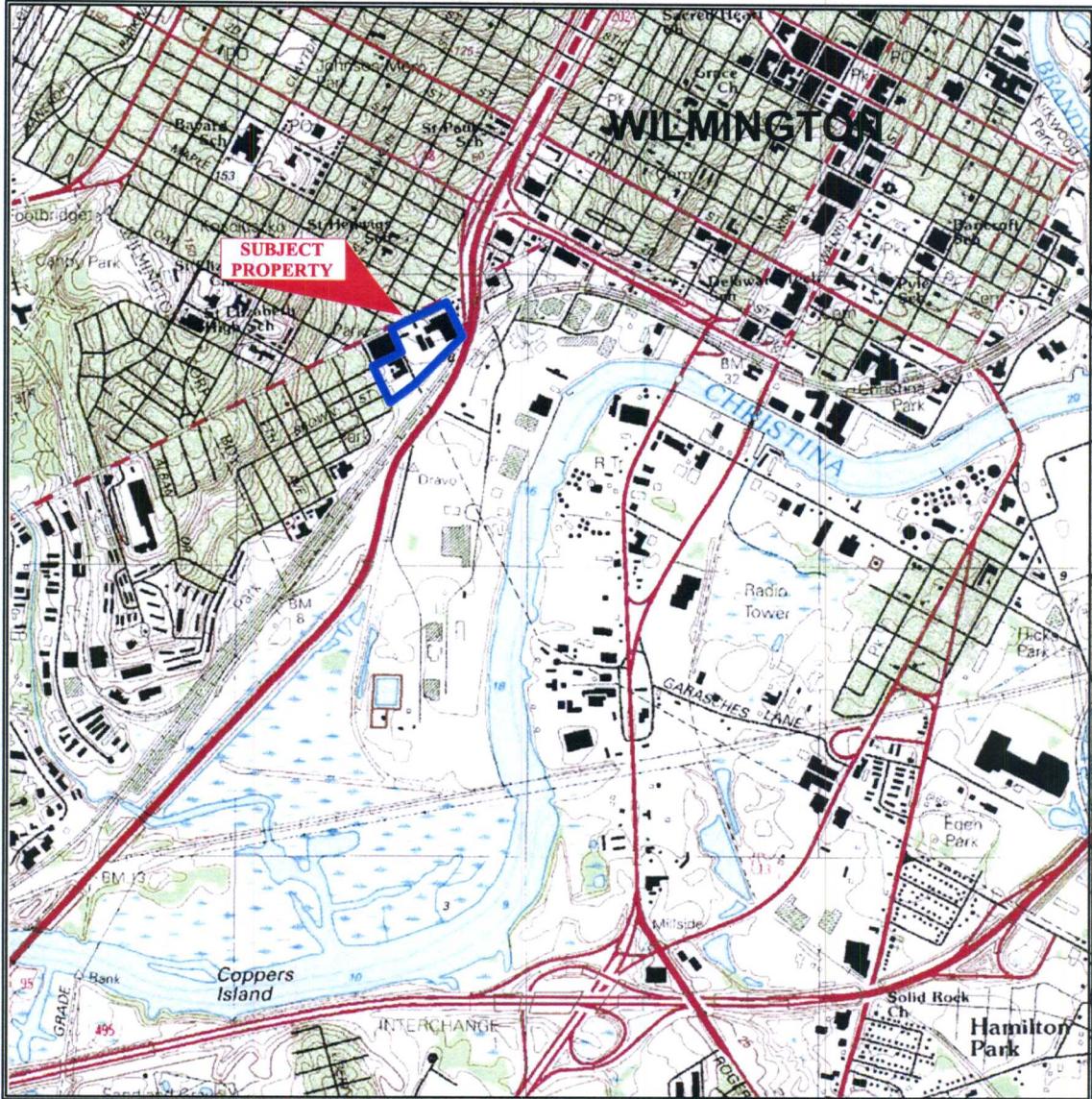
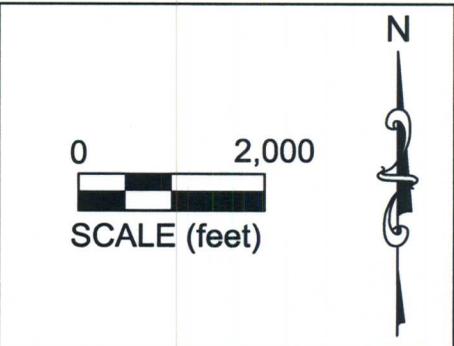


FIGURE 1 - Site Location Map
 From USGS Wilmington South Quadrangle
 Wilmington Del - N.J.
 7.5 minute series, 1993

101 Beech St. Site
 Wilmington, Delaware

File No. 1133.29.51



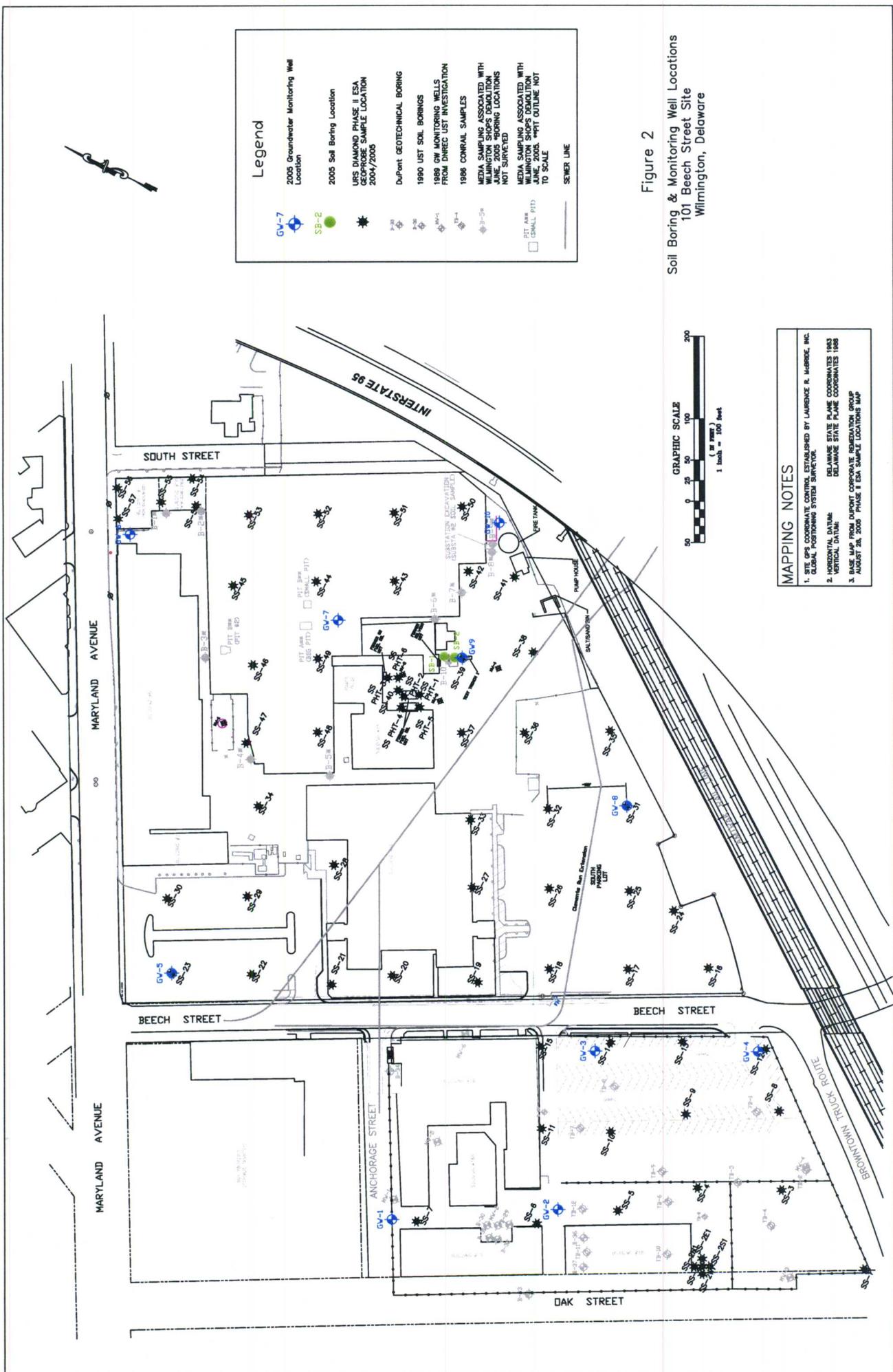
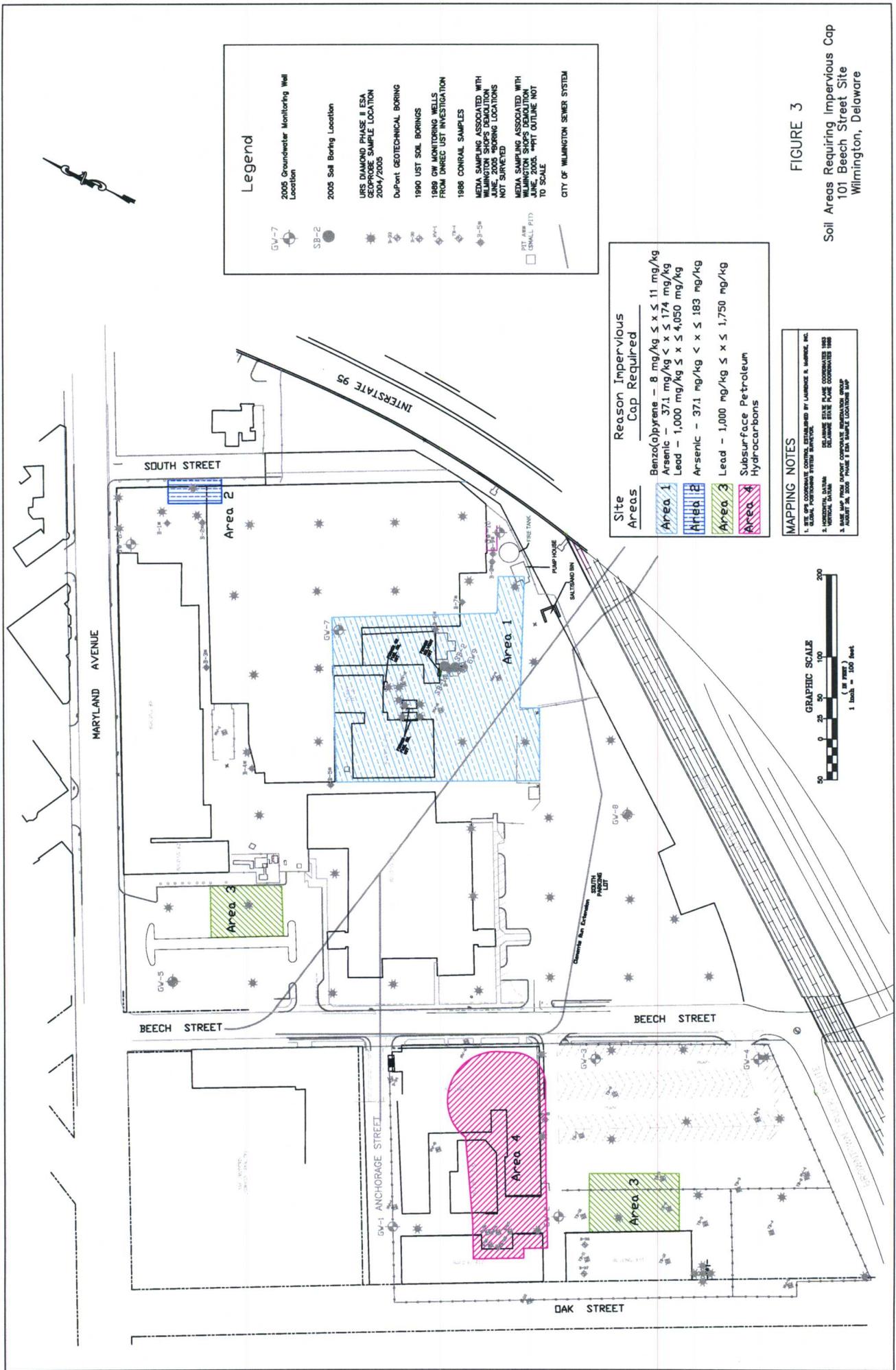


Figure 2
 Soil Boring & Monitoring Well Locations
 101 Beech Street Site
 Wilmington, Delaware



Legend

- GV-7 2005 Groundwater Monitoring Well Location
- SB-2 2005 Soil Boring Location
- URS DIAMOND PHASE II ESA GEOPROBE SAMPLE LOCATION 2004/2005
- DuPont GEOTECHNICAL BORING
- 1980 UST SOIL BORINGS
- 1989 GW MONITORING WELLS FROM DWI REC UST INVESTIGATION
- 1986 CONRAIL SAMPLES
- MEDIA SAMPLING ASSOCIATED WITH UST INVESTIGATION FROM JUNE 2005 BORING LOCATIONS NOT SURVEYED
- MEDIA SAMPLING ASSOCIATED WITH WILMINGTON SHOPS DEMOLITION JUNE, 2005. *PIT OUTLINE NOT TO SCALE
- CITY OF WILMINGTON SEWER SYSTEM

Site Areas	Reason Impervious Cap Required
	Benzo(a)pyrene - 8 mg/kg ≤ x ≤ 11 mg/kg
	Arsenic - 37.1 mg/kg < x ≤ 174 mg/kg
	Lead - 1,000 mg/kg ≤ x ≤ 4,050 mg/kg
	Arsenic - 37.1 mg/kg < x ≤ 183 mg/kg
	Lead - 1,000 mg/kg ≤ x ≤ 1,750 mg/kg
	Subsurface Petroleum Hydrocarbons

MAPPING NOTES

- U.S. GCS COORDINATE SYSTEM ESTABLISHED BY LAMORSE R. HARRIS, INC. 1983
- VERTICAL DATUM: DELAWARE STATE PLANE COORDINATED 1983
- DATE MAP PRODUCED: COASTAL INVESTIGATION GROUP, AUGUST 24, 2005. *PIT & UST SAMPLE LOCATION MAP

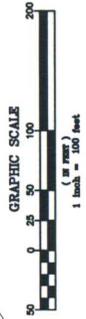


FIGURE 3

Soil Areas Requiring Impervious Cap
101 Beech Street Site
Wilmington, Delaware

MAPPING NOTES

- 1. SEE GPS COORDINATE CONTROL ESTABLISHED BY LAWRENCE & WARRICK, INC.
- 2. EQUAL PROJECTION SYSTEM: NAD 83
- 3. HORIZONTAL DATUM: DELAWARE STATE PLANE COORDINATES 1983
- 4. VERTICAL DATUM: DELAWARE STATE PLANE COORDINATES 1983
- 5. ANNOTATED: 2008
- 6. DATE OF FIELD WORK: 2008
- 7. DATE OF MAP: 2008
- 8. PROJECT: 101 BEECH STREET VAPOR RISK ASSESSMENT

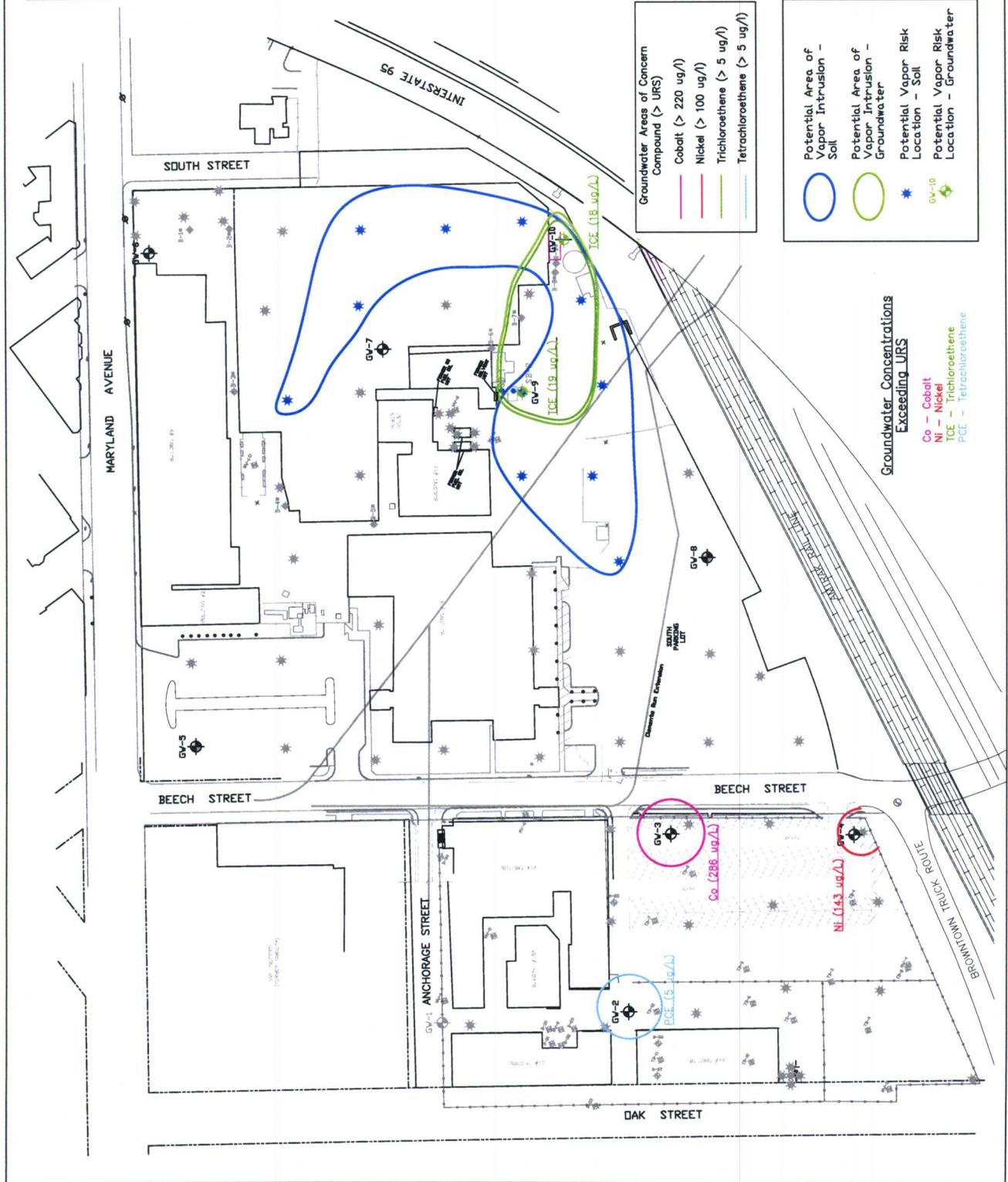


Legend

- GV-7 2005 Groundwater Monitoring Well Location
- SB-2 2005 Soil Boring Location
- URS DIAMOND PHASE II ESA GEOPROBE SAMPLE LOCATION 2004/2005
- DuPont GEOTECHNICAL BORING
- 1990 UST SOIL BORINGS
- 1988 GW MONITORING WELLS FROM DNREC UST INVESTIGATION
- 1988 CONREAL SAMPLES
- MEDIA SAMPLES ASSOCIATED WITH WILMINGTON SHOPS DEMOLITION JUNE, 2005 WORKING LOCATIONS NOT SURVEYED
- MEDIA SAMPLING ASSOCIATED WITH WILMINGTON SHOPS DEMOLITION JUNE, 2005. WHPT OUTLINE NOT TO SCALE
- CITY OF WILMINGTON SEWER SYSTEM

FIGURE 4

Groundwater Areas of Concern & Potential Vapor Risk Areas
101 Beech Street Site
Wilmington, Delaware



- Groundwater Areas of Concern Compound (> URS)**
- Cobalt (> 220 ug/l)
 - Nickel (> 100 ug/l)
 - Trichloroethene (> 5 ug/l)
 - Tetrachloroethene (> 5 ug/l)

- Potential Areas of Vapor Intrusion - Soil**
- Potential Area of Vapor Intrusion - Groundwater
 - Potential Vapor Risk Location - Soil
 - Potential Vapor Risk Location - Groundwater

Groundwater Concentrations Exceeding URS

- Co - Cobalt
- Ni - Nickel
- TCE - Trichloroethene
- PCE - Tetrachloroethene

