

PCB Mass Loading
Peninsula Park
SIRB ID: DE-1147
Wilmington, Delaware



BrightFields, Inc.

Appendix 21

PENINSULA PARK WILMINGTON, DELAWARE

SIRB ID: DE-1147

GENERAL SITE INFORMATION

Site Name: Peninsula Park

SIRB ID Number: DE-1147

Site Location and Description: The Peninsula Park site consists of approximately 12 acres and is located on the E. 7th Street Peninsula in Wilmington, Delaware. The 12-acre property is part of a 15-acre parcel formerly known as the Julian property. The current property is made up of three parcels; the Verizon (formerly Bell Atlantic) switching station (Lot #2, 6.5 acres), the Tri-State property (Lot #3, 2.92 acres) and the Drywall Associates (proposed Vet's Welding) property (Lot #4, 2.22 acres). Another entity retains ownership of the approximately 3-acre parcel referred to as Lot #1.

The Brandywine Creek borders the site to the north and east, Industrial Street to the south, and vacant land to the west. Peninsula Park, LLC currently owns and leases Lot #2 to Verizon (formerly Bell Atlantic), which operates the parcel as a switching station. Lot #3 was sold to Tri-State Carpet and Lot #4 was sold to Drywall Associates. Surrounding land is generally commercial and/or industrial.

Previous Site Uses: The site, along with much of the peninsula, was reportedly used by the City of Wilmington as a municipal landfill from the 1940's through 1960's. The peninsula was then overlain with varying depths of ash from Wilmington's incinerators. Portions of the peninsula were also filled with various construction debris and fill material.

Site Regulatory Status: This section briefly summarizes previous investigations performed on the site through the SIRB program. A current SIRB regulatory status is also included.

Fall 1998 – The DNREC Site Investigation and Restoration Branch (SIRB) conducted a Brownfield Preliminary Assessment (BPA) II for the E. 7th Street Peninsula-North Side. DNREC prepared a summary report in January 1999 for the 15 acres of the Julian property, which was included in the North Side BPA II project area. The report for the entire BPA II was issued in September 1999.

The investigation on the Julian property consisted of the installation of one monitoring well and excavation of 7 test pits to facilitate the collection of 14 soil samples (7 shallow (< 2 feet) and 7 deep (>2 feet)), one surface water sample, two sediment samples and one groundwater sample. The soil and sediment samples were screened in the SIRB mobile laboratory for volatile organic

compounds (VOCs), pesticides, carcinogenic polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) and metals.

Four of these soil samples and one groundwater sample were submitted to a HSCA-certified lab for analysis. All four samples were analyzed for semi-volatile organic compounds (SVOCs), two samples were analyzed for metals and one sample was analyzed for pesticides/PCBs. Arsenic, lead, PAHs, pesticides and PCBs were detected in the soil above the U. S. Environmental Protection Agency (EPA) Region III Risk Based Concentration (RBC) level and arsenic, iron, manganese and thallium were detected in the groundwater above EPA Region III Tap Water RBCs. The sediment samples were not sent for confirmatory HSCA analysis due to relatively low concentrations in the screening samples.

Test pit and well boring logs indicated that the site is extensively filled with municipal garbage (up to 18 feet thick) and underlain by marsh deposits.

March 1999 –VCP Agreement was signed between Peninsula Park, LLC and DNREC-SIRB. Peninsula Park, LLC planned to develop a portion of the Julian property and wished to obtain a Certificate of Completion of Remedy on the 12-acre property.

April 1999 – EA Engineering submitted a Focused Feasibility Study for the former Julian property on behalf of Peninsula Park, LLC in order to evaluate remedial alternatives for the site.

April 1999 - Proposed Plan of Remedial Action for operable unit 1 (OU 1) advertised. It addresses soil and subsoil on the 12-acre property only. Groundwater, surface water, and sediment were to be addressed as a second operable unit (OU 2). The remedial action objectives were to be accomplished by permanent capping with buildings, paved parking lots, and a combination of geotextile and clean fill.

April 1999 - DNREC requested a Work Plan for OU 2.

January 2000 – The Project Closeout Report (for the Bell Atlantic parcel) was submitted to DNREC (prepared by EA Engineering).

February 2000 - Final Plan of Remedial Action for OU 1 was advertised.

March 2000 - Peninsula Park, LLC met with DNREC-SIRB representatives and presented development plans for the Tri-State lot (Lot #3). DNREC-SIRB felt additional characterization of the shallow and deep soil on Lot #3 was necessary in order to support the completed and approved Final Plan for the entire 12 acres.

May 2000 - Pennoni submitted a Groundwater Investigation Work Plan to DNREC.

June 2000 - DNREC commented on the Work Plan.

July 2000 - Pennoni submitted a Revised Groundwater and Sediment Investigation Work Plan.

October 2000 - DNREC performed additional soil and sediment sampling. DNREC advanced 12 Geoprobe[®] borings and collected 24 samples (12 shallow and 12 deep) and 4 sediment samples from Lot #3. The samples were screened at DNREC-SIRB's laboratory for organics, inorganics, pesticides and PCBs. The results indicated that there were no exceedances of contaminants above EPA Region III industrial RBC values. Six soil samples and three sediment samples were sent for confirmatory analysis at DNREC's HSCA laboratory.

November/December 2000 - DNREC conducted an additional groundwater investigation. DNREC installed and sampled three monitoring wells. One well was installed on each lot. These further characterization activities were required in order to prepare the Proposed Plan of Remedial Action for OU 2.

December 2000 - DNREC issued a letter to Peninsula Park, LLC summarizing the sampling activities and preliminary results.

Based on the additional characterization, DNREC-SIRB required no further action in relation to the soil at Lot #3. The Final Plan of Remedial Action issued in February 2000 will remain in effect.

February 2001 - DNREC provided validated results of the groundwater sampling. The chlorobenzene and 1,4-dichlorobenzene concentrations detected in the groundwater from the well located on Lot #4 (Vet's Welding) exceed their respective DNREC URSs for groundwater. The iron and manganese concentrations detected in all three wells and lead detected in one well exceed the respective DNREC URS for groundwater.

March 2001 - DNREC requested further groundwater investigation on all three parcels to evaluate VOC contamination, and required Peninsula Park, LLC to perform stream bank sediment sampling and a mass loading analysis.

November 2001 - DNREC excavated seven test pits on the Vets Welding parcel and collected a shallow and a deep sample from each test pit. The samples were screened at DNREC's New Castle Laboratory and then one shallow and two deep samples were submitted to STL Edison for HSCA confirmatory analysis of VOCs, SVOCs, metals, pesticides, and PCBs. The data validation reports summarizing the HSCA data are included in Appendix A.

July 2002 – WIK submitted a Groundwater and Sediment Investigation Report to DNREC-SIRB in order to further characterize the site. Four groundwater samples were collected from three previous installed wells and one newly installed well for this investigation. In addition, BrightFields collected four sediment samples.

Conclusions of this investigation are presented below:

- Chlorobenzene, iron, and manganese were detected in site groundwater. However, the property is located in 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 and all existing water supply wells are located greater than 2 miles from the site.
- The mass loading calculations performed indicated that groundwater at the site is not a significant source of contamination to the Christina River.
- Because there is no complete pathway for groundwater ingestion the site groundwater does not appear to pose a risk to human health or the environment under current and anticipated future use scenarios.
- Metals and SVOCs were detected in site sediment samples. However, these compounds were also detected in upstream and adjacent sediment samples at similar concentrations, indicating that the site is not the sole contributor of these contaminants.

Current Regulatory Status:

The Final Plan of Remedial Action issued in February 2000 for Operable Unit 1 (soil) consisted of:

- 1) capping of the soil under building footprints, asphalt or clean fill in landscaped areas,
- 2) a deed restriction to commercial use, and
- 3) development and implementation of an Operations and Maintenance (O&M) Plan to ensure that the integrity of the cap is maintained.

The Final Plan of Remedial Action issued by DNREC (January 2003) for Operable Unit 2 (groundwater and sediment) consisted of:

- 1) semi-annual groundwater monitoring for a period of no less than 3 years for contaminants of concern (COCs) that have exceeded their respective URS in groundwater (COCs include VOCs, iron, and manganese)

- 2) placement of a deed restriction on the properties.

Surface inspections on all three parcels and groundwater sampling, as outlined in the O&M Plan, are now being performed.

SUMMARY OF SITE PCB INFORMATION

Site Investigation PCB Findings:

One area of surficial soil was identified to contain PCBs. The area is located on the eastern portion of the site in the vicinity of N7TP-24. Observed concentrations of 2.5 mg/kg were reported from this location. PCBs were detected in subsurface unsaturated soil at three distinct locations ranging from 1.0 mg/kg to 6.4 mg/kg of total PCBs concentration, which are all equal to or above the URS criteria for total PCBs of 1.0 mg/kg. There were no distinct detections of PCBs in the saturated soil.

Due to the fact that there was one detection in the surface soil that detected value was used in the overland flow calculations instead of calculating the 95% UCL of the mean across the site. There were no PCBs detected in groundwater or in the saturated soil that is in contact with the groundwater table.

Concentrations of PCBs on Site			
Sample Matrix	Corresponding Figure	Analytical Methods	Range of Total PCBs
Surface Soil	Figure 2	Method 8082 and Immunoassay	Not detected to 2.5 mg/kg
Subsurface Soil (unsaturated)	Figure 3	Method 8082 and Immunoassay	Not detected to 7.4 mg/kg
Subsurface Soil (saturated)	Figure 4	Method 8082 and Immunoassay	Not detected
Groundwater	Figure 5	Method 8082	Not detected

A summary of all samples collected for PCBs are presented in the attached Tables 1 through 4.

Acreage where PCBs detected:

Estimated surface soil area impacted by PCBs is 2.14 acres (Figure 2). Estimated subsurface non-saturated area impacted by PCBs is 2.71 acres (Figure 4). The review of historical reports did not indicate that there were any subsurface saturated soils or groundwater impacted by PCBs.

PCB Remediation Status:

As outlined in the Final Plans of Remedial Action for Operable Units 1 and 2, the site has been capped with either an impervious surface or two feet of clean fill, a deed restriction to ensure the property is maintained as commercial, implementation of an O&M Plan, and semi-annual groundwater monitoring is in place. No PCB remediation was required.

PCB MASS LOADING SUMMARY

The PCB mass loading rate to surface water via overland flow transport was estimated for the Peninsula Park property. The review of historical reports did not indicate that there were any subsurface saturated soils or groundwater impacted by PCBs, so groundwater is not anticipated to be a mechanism of transport. A summary of the results is included below and the details of the calculations are included as attachments to this Appendix.

OVERLAND FLOW:

Overland flow has been determined on this site by using the Revised Universal Soil Loss Equation (RUSLE). The RUSLE predicts the long term average annual rate of erosion on an area based on rainfall patterns, soil type, topography, cover/canopy factors and support management practices. These factors are site-specific and require information pertaining directly to the site. A breakdown of the individual factors is presented below with a brief explanation of their selection.

Ground Cover and Canopy:

A site inspection was performed to estimate the current site ground cover and canopy on July 31, 2008. The evaluation incorporated the use of aerial photography as well as the site visit due to the limited access to the site. A specific cover/management factor (C) was assigned to the area in vicinity of S7TP-24. This area was assigned a value of 0.016, which corresponds to 80% surface cover with the cover at the surface consisting primarily of grass, grass-like plants, decaying compacted duff, or litter at least 2 inches deep.

Site Sediment and Erosion Control Practices:

During the site inspection there were no sediment and erosion controls in place.

Input Factors and Results:

A breakdown of the individual factors is presented below with a brief explanation of their choice.

Peninsula Park (Eastern portion of the site)

RUSLE Factors	Values	Explanation of Selection
R = rainfall-runoff erosivity index (10 ² ft-tonf-in/ac-hr)	170	An appropriate value for R for the site was determined from plots of Rainfall patterns for the Eastern U.S. (Wischmeier and Smith, 1978).

RUSLE Factors	Values	Explanation of Selection
K = soil erodibility (0.01 tonf acre hr/acre ft-ton in)	0.23	The soil erodibility factor was chosen based on the information provided on the native soils. This information was collected from the boring logs of the Brownfield Preliminary Assessment II of the E. 7 th Street Peninsula (Northside) (DNREC 1999). The USGS model selected the value based on generalized soil type.
LS = topographic factor (dimensionless)	0.230	The slope length was estimated to be 53 feet, which is the distance between the centroid and the Brandywine Creek along the overland flow path. The assumed slope (1.89 %) and slope length were used to calculate a topographic factor of 0.230.
C = cover/management factor (dimensionless)	0.016	The cover/management factor C was assigned to the site and associated flow path by the USGS windows based application was 0.016, which corresponds to 80% surface cover with the cover consisting of grass, grass-like plants, decaying compacted duff, or litter at least 2 inches deep.
P = support practice factor (dimensionless)	1.0	There are currently no sediment and erosion controls in place at the Peninsula Park Property.

The average annual erosion rate is based on the windows based RUSLE2 program (RUSLE2 License, version 2006-Jul-24).

Based on the calculations performed, the total PCB loading from the Peninsula Park property to the Brandywine Creek via overland flow under current site conditions is 0.1 grams per year.

Uncertainty Evaluation:

Specific Areas and Degree of Uncertainty for the Peninsula Park Property

	Samples Per Acre (site)	Chemical Data Quality*	Topography	Soil Type	Site Coverage	Map Quality	Distance to Discharge Points
Site Specific Information	1.6	Immunoassay	Estimated using topography	Logs that are located within the areas of concern	Based on a limited site assessment.	Scaled Map	726 feet 53 feet
Degree of Uncertainty	Moderate to High	High	Moderate	Moderate	Moderate to High	Moderate	High

* Primary analysis used in the historical samples

Sources of uncertainty for the Peninsula Park Property include the following: Due to lack of access on one property (Verizon; restricted access with fencing), a thorough assessment of



portions of the property could not be conducted. Assumptions were made from aerial photography to assess the land cover in these areas. Figures associated with the property did not provide adequate detail and in some cases were not scanned properly, which led to assumptions being made during the geo-referencing process. Assumptions were based on site details that could be adequately distinguished from the figures to reference the points. Based on these evaluations the overall level of uncertainty associated with PCB mass loading from the Peninsula Park Property is **moderate to high**.

Site References:

Delaware Department of Natural Resources and Environmental Control (DNREC), 1999, Brownfield Preliminary Assessment II Wilmington, Delaware E. Seventh Street Peninsula – “Northside”. June 1999.

DNREC, 1999, Proposed Plan of Remedial Action for Operable Unit 1 (OU 1) Peninsula Park. April 1999.

DNREC, 2000, Soil and Sediment Sampling Study for 7th Street Peninsula. October, 2000.

DNREC, 2000, Groundwater Investigation Summary at Peninsula Park. December 2000.

DNREC 2001, Vets Welding Soil Investigation. November 2001.

EA Engineering, 1999, Focused Feasibility Study for the Former Julian Property. April 1999.

EA Engineering, 2000, Closure Report for the Bell Atlantic Parcel. January 2000.

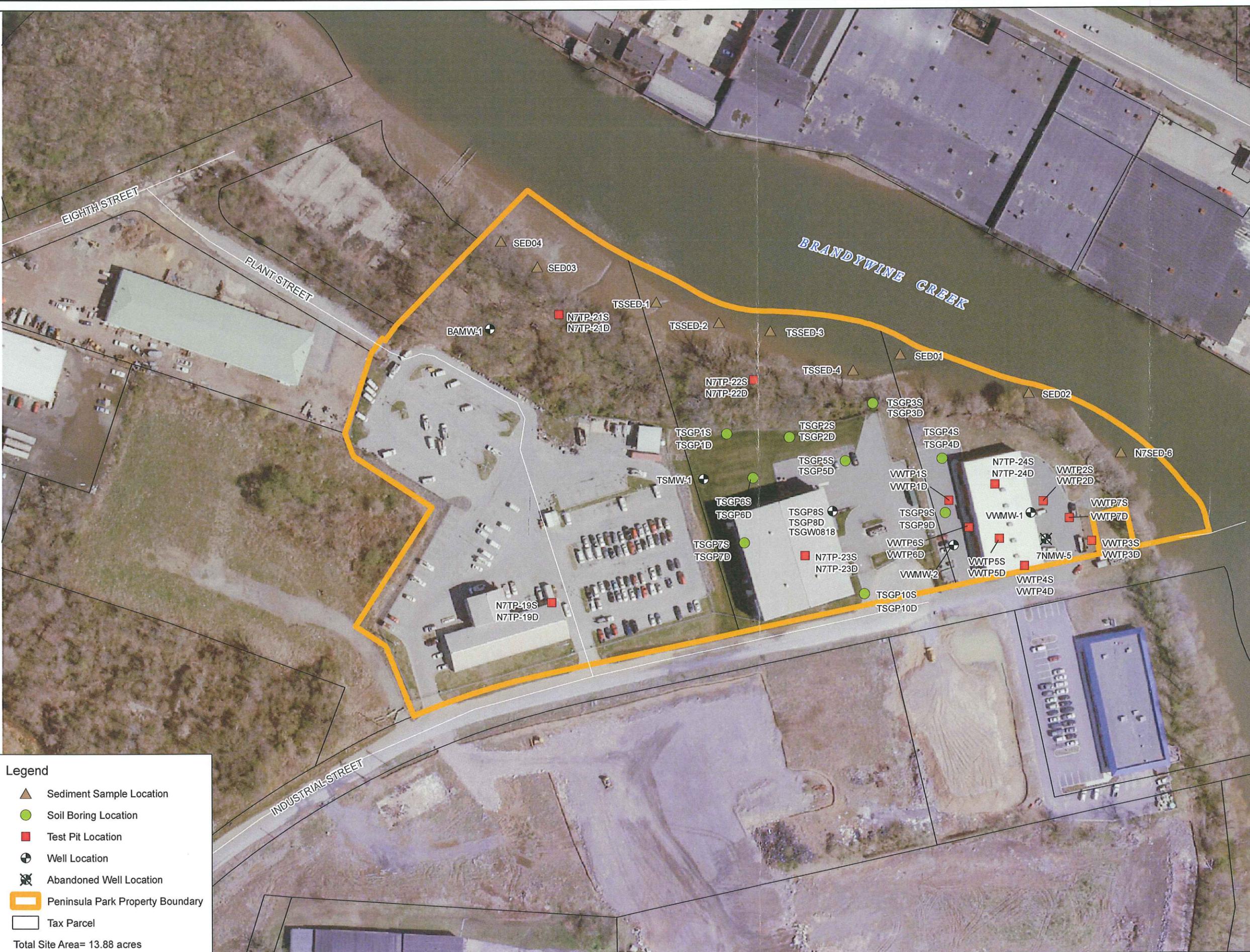
WIK, Inc., 2002, Groundwater and Sediment Investigation Report of the Peninsula Park Property. July 2002.

PCB Mass Loading
Peninsula Park
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BrightFields, Inc.

Figures



Legend

- ▲ Sediment Sample Location
- Soil Boring Location
- Test Pit Location
- ⊕ Well Location
- ⊗ Abandoned Well Location
- ▭ Peninsula Park Property Boundary
- ▭ Tax Parcel

Total Site Area= 13.88 acres

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 Investigation, and Remediation

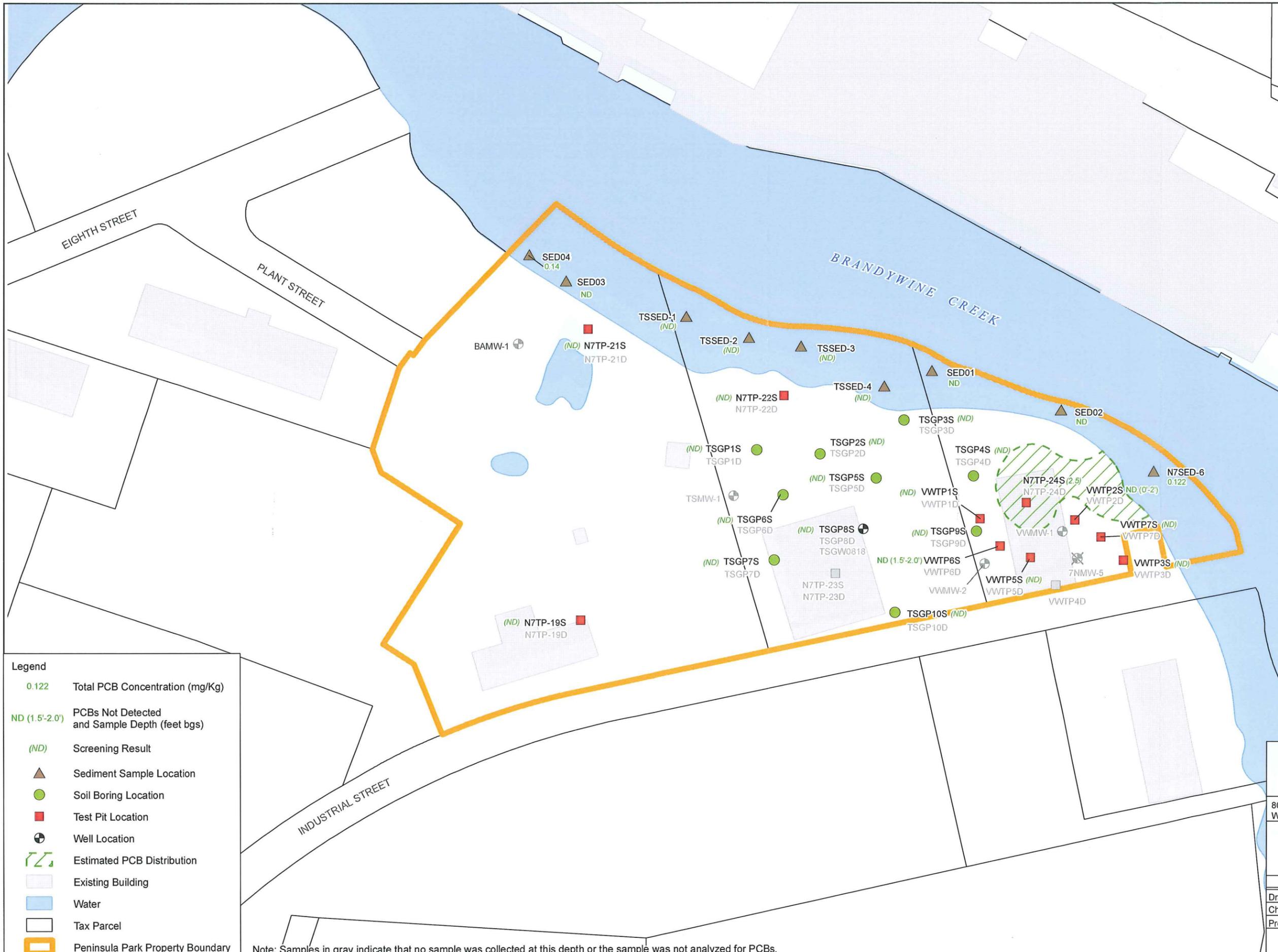
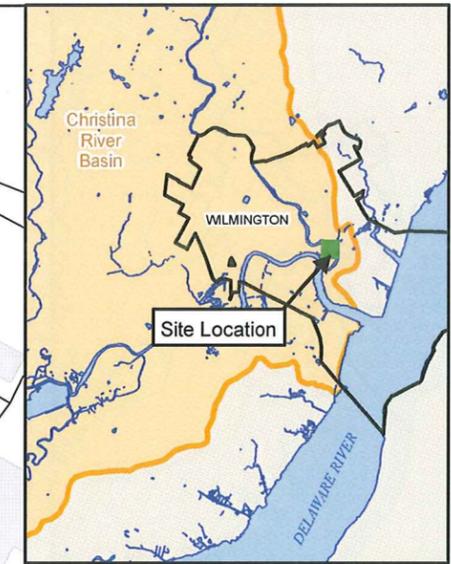
801 Industrial Street, Suite 1
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302-656-9600
 302-656-9700 fax

Historic Sample Locations and
 Aerial Photograph (2007)
 Peninsula Park Property
 Wilmington, Delaware

By	Date	Scale:	File Name:
Drawn SMD	5/1/09	1:1500	pp_aerial.mxd
Checked JPR	5/1/09	Fig. No.	
Project #	0985.26.51	Figure 1	

0 62.5 125 Feet



Legend

- 0.122 Total PCB Concentration (mg/Kg)
- ND (1.5'-2.0') PCBs Not Detected and Sample Depth (feet bgs)
- (ND) Screening Result
- ▲ Sediment Sample Location
- Soil Boring Location
- Test Pit Location
- ⊕ Well Location
- ▨ Estimated PCB Distribution
- ▭ Existing Building
- Water
- ▭ Tax Parcel
- ▭ Peninsula Park Property Boundary

Note: Samples in gray indicate that no sample was collected at this depth or the sample was not analyzed for PCBs.

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**PCB Distribution in Surface Soil
 Peninsula Park Property
 Wilmington, Delaware**

By	Date	Scale:	File Name:
SMD	5/1/09	1:1500	pp_0-2.mxd
Checked	JPR	5/1/09	Fig. No.
Project #	0985.26.51	Figure 2	

0 62.5 125 Feet



Legend

- ND PCBs Not Detected
- ⊕ Well Location
- Existing Building
- Water
- Tax Parcel
- Peninsula Park Property Boundary

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 Wilmington, Delaware 19801

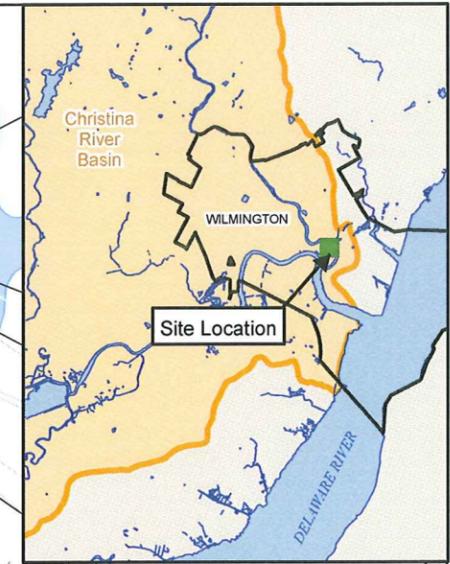
302-656-9600
 302-656-9700 fax

**PCB Distribution in Groundwater
 Peninsula Park Property
 Wilmington, Delaware**

	By	Date	Scale:	File Name:
Drawn	SMD	5/1/09	1:1500	pp_gw.mxd
Checked	JPR	5/1/09	Fig. No.	
Project #	0985.26.51		Figure 5	

0 62.5 125 Feet

- Legend**
- 0.122 Total PCB Concentration (mg/Kg)
 - ND (1.5'-2.0') PCBs Not Detected and Sample Depth (feet)
 - (ND) Screening Result
 - x Contour Elevation (feet)
 - Centroid of PCB Distribution
 - ▲ Sediment Sample Location
 - Soil Boring Location
 - Test Pit Location
 - ⊕ Well Location
 - ➔ Overland Flow Direction
 - Estimated PCB Distribution
 - Existing Building
 - Water
 - Tax Parcel
 - Peninsula Park Property Boundary



Note: Samples in gray indicate that no sample was collected at this depth or the sample was not analyzed for PCBs. Samples with posted PCB data above the reporting limit that are not included in a PCB distribution area are considered to be under an impervious surface.

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 Environmental Evaluation
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 302-656-9700 fax

**Overland Flow Map
 Peninsula Park Property
 Wilmington, Delaware**

By	Date	Scale:	File Name:
Drawn SMD	5/1/09	1:1500	pp_topo.mxd
Checked JPR	5/1/09	Fig. No.	Figure 6
Project #	0985.26.51		

0 62.5 125 Feet

PCB Mass Loading
Peninsula Park
SIRB ID: DE-1147
Wilmington, Delaware



BrightFields, Inc.

Tables

Table 1
 PCB Analytical Results For Soil
 Peninsula Park Property
 Wilmington, DE
 SIRB ID: DE-1147

Sample ID Sampling Depth (feet bgs) Sampling Date Units Report Issued	DNREC URS for Protection of Human Health Non-critical Water Resource Area mg/Kg		N77P-23S 3.0 mg/Kg DNREC (1999)	VWTP6S 1.5-2.0 10/17/01 mg/Kg DNREC (2001)	VWTP4D 9.5-10 10/17/01 mg/Kg DNREC (2001)	VWTP7D 10-10.5 10/17/01 mg/Kg DNREC (2001)	VWTP2S 0-2 10/17/01 mg/Kg DNREC (2001)
	Unrestricted Use	Restricted Use					
PCBs							
Aroclor-1016	5	82	0.039 U	0.075 U	0.081 U	0.090 U	0.075 U
Aroclor-1221	0.3	3	0.078 U	0.075 U	0.081 U	0.090 U	0.075 U
Aroclor-1232	0.3	3	0.039 U	0.075 U	0.081 U	0.090 U	0.075 U
Aroclor-1242	0.3	3	0.039 U	0.075 U	0.081 U	0.090 U	0.075 U
Aroclor-1248	0.3	3	0.039 U	0.075 U	0.081 U	0.090 U	0.075 U
Aroclor-1254	0.3	3	1.1	0.075 U	0.081 U	0.090 U	0.075 U
Aroclor-1260	0.3	3	0.95	0.075 U	0.081 U	1.0	0.075 U
Aroclor-1262	nca	nca	NR	0.075 U	0.081 U	0.090 U	0.075 U
Aroclor-1268	nca	nca	NR	0.075 U	0.081 U	0.090 U	0.075 U

DNREC (1999) - E. 7th Street BPA II. DNREC, September 1999.
 DNREC (2001) - DNREC Test Pits from Vet's Welding. DNREC, October 2001.

Qualifiers

- U - The compound was not detected above the indicated laboratory detection limit
- NR - Not analyzed
- nca - no criteria available
- bold - concentration is above DNREC URS unrestricted use criteria
- shaded - concentration is above DNREC URS restricted use criteria

Table 2
 DNREC PCB Screening Data
 Peninsula Park Property
 Wilmington, DE
 SIRB ID: DE-1147

Sample ID	Sample Depth	Investigation Report	Sample Date	DNREC URS for Protection of Human Health (Non-critical Unrestricted Use (mg/kg))	Total PCBs (mg/kg)
N7TP-24S	1.5'	DNREC (1999)	N/A	1	2.5
N7TP-19S	2'	DNREC (1999)	N/A	1	ND
N7TP-17S	2'	DNREC (1999)	N/A	1	ND
N7TP-18S	2'	DNREC (1999)	N/A	1	5.4
N7TP-21S	2'	DNREC (1999)	N/A	1	ND
TSGP4S	shallow	DNREC (2000)	10/00	1	ND
TSGP3S	shallow	DNREC (2000)	10/00	1	ND
TSGP2S	shallow	DNREC (2000)	10/00	1	ND
TSGP1S	shallow	DNREC (2000)	10/00	1	ND
N7TP-23D	12'	DNREC (1999)	N/A	1	3.1
N7TP-24D	deep	DNREC (1999)	N/A	1	7.4
N7TP-19D	11'	DNREC (1999)	N/A	1	ND
N7TP-17D	11'	DNREC (1999)	N/A	1	ND
N7TP-18D	8'	DNREC (1999)	N/A	1	6.4
N7TP-21D	11'	DNREC (1999)	N/A	1	ND
N7TP-22D	13'	DNREC (1999)	N/A	1	ND
TSGP4D	deep	DNREC (2000)	10/00	1	ND
TSGP3D	deep	DNREC (2000)	10/00	1	ND
TSGP2D	deep	DNREC (2000)	10/00	1	ND
TSGP1D	deep	DNREC (2000)	10/00	1	ND
TSGP5S	shallow	DNREC (2000)	10/00	1	ND
TSGP6S	shallow	DNREC (2000)	10/00	1	ND
TSGP7S	shallow	DNREC (2000)	10/00	1	ND
TSGP8S/TSGW0818	shallow	DNREC (2000)	10/00	1	ND
TSGP9S	shallow	DNREC (2000)	10/00	1	ND
TSGP10S	shallow	DNREC (2000)	10/1/00	1	ND
TSGP5D	deep	DNREC (2000)	10/1/00	1	ND
TSGP6D	deep	DNREC (2000)	10/1/00	1	ND
TSGP7D	deep	DNREC (2000)	10/00	1	ND
TSGP8D/TSGW0818	deep	DNREC (2000)	10/00	1	ND
TSGP9D	deep	DNREC (2000)	10/00	1	ND
TSGP10D	deep	DNREC (2000)	10/00	1	ND
VWTP1S	0'-1.3'	DNREC (2001)	10/17/01	1	ND
VWTP1D	9.5'-10'	DNREC (2001)	10/17/01	1	ND
VWTP6D	9.5'-10'	DNREC (2001)	10/17/01	1	ND
VWTP2D	11'-12'	DNREC (2001)	10/17/01	1	ND
VWTP3S	1.5'-2.0'	DNREC (2001)	N/A	1	ND
VWTP4D	9.5'-10'	DNREC (2001)	10/17/01	1	ND
VWTP3D	11'-12'	DNREC (2001)	N/A	1	ND
VWTP5D	8.5'-9.0'	DNREC (2001)	N/A	1	ND
VWTP5S	1.5'-2.0'	DNREC (2001)	N/A	1	ND
VWTP7S	1.3'-2.0'	DNREC (2001)	10/17/01	1	ND

DNREC (1999) - E. 7th Street BPA II. DNREC, September 1999.

DNREC (2000) - Additional Soil and Sediment Sampling Event. DNREC, October 2000.

DNREC (2001) - Vets Welding additional investigation. DNREC, November 2001

Qualifiers:

ND - compound was not detected

Bold - concentration exceeds URS

Table 3
 PCB Analytical Results For Groundwater
 Peninsula Park Property
 Wilmington, DE
 SIRB ID: DE-1147

Sample ID Sampling Date Report Issued	DNREC URS for Protection of Human Health ug/L	BAMW1-W001 3/28/02 ug/L BrightFields (2002)	TSMW-W001 3/28/02 ug/L BrightFields (2002)	VMMW1-W001 3/28/02 ug/L BrightFields (2002)	VMMW2-W001 3/28/02 ug/L BrightFields (2002)
PCBs					
Atoclor-1016	0.1	0.54	0.52	0.51	0.52
Atoclor-1221	0.03	0.54	0.52	0.51	0.52
Atoclor-1232	0.03	0.54	0.52	0.51	0.52
Atoclor-1242	0.03	0.54	0.52	0.51	0.52
Atoclor-1248	0.03	0.54	0.52	0.51	0.52
Atoclor-1254	0.03	0.54	0.52	0.51	0.52
Atoclor-1260	0.03	0.54	0.52	0.51	0.52

DNREC (1999) - E. 7th Street BPA II. DNREC, September 1999.
 DNREC (2000) - DNREC additional groundwater sampling event,
 DNREC, 2000

BrightFields (2002) - Groundwater and Sediment Investigation
 Report, BrightFields, 2002.

Qualifiers
 U - The compound was not detected above the indicated laboratory detect
 ND - Not detected above laboratory detection limits, but quantified values
 NR - Not analyzed
 nca - no criteria available
 bold - concentration is above DNREC URS unrestricted use criteria
 shaded - concentration is above DNREC URS restricted use criteria

PCB Mass Loading
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BrightFields, Inc.

Site Photographs



**PCB Mass Loading Evaluation
Peninsula Park**



Sloping area down to river associated erosion.



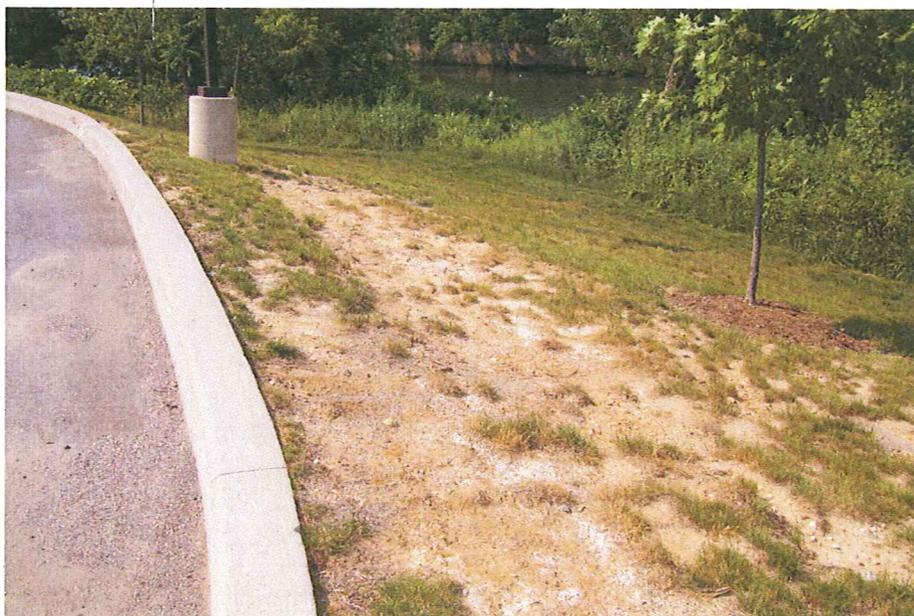
Cover behind carpet distributor along industrial street.
Area is implementing two feet clean fill.



**PCB Mass Loading Evaluation
Peninsula Park**



Cover factors associated with eastern portion of the site.



Signs of erosion on eastern portion of the site.

PCB Mass Loading
Peninsula Park
SIRB ID: DE-1147
Wilmington, Delaware



BrightFields, Inc.

Overland Flow Calculations

**PCB Loading Calculations from the Universal Soil Loss Equation
 Peninsula Park (Area 2)
 Wilmington, DE
 DE-1147**

Surface PCB Concentration 2.5 mg/kg

Symbol	Factor	Value	Units
R	Rainfall/Runoff Erosivity Index	170	10 ² ft-tonf in/acre hr
K	Soil Erodibility	0.23	0.01 tonf acre hr/ac ft-ton in
	Estimated Slope Length	53	Feet
	Estimated Elevation Difference	1	Feet
	Slope	1.89	Percent
	Erodeable Area	0.18	Acres
LS	Topographic Factor	0.230	Dimensionless
C	Cover and Management Factor	0.016	Dimensionless
P	Support Practice Factor	1	Dimensionless
	Average Annual Soil Loss	0.23	ton/ac/yr

PCB Loading via Overland Flow 0.094 **grams/year - PCBs**

Peninsula Park Overland Flow Calculations

Location: USA\Delaware\New Castle County

Net C factor: 0.016
 Net LS factor: 0.23
 Net K factor: 0.36
 Net contour factor: 1.0
 Net ridge factor: 1.0
 Net ponding factor: 1.0

Rock cover, %: 0
 Adjust rock cover: open
 General yield level: Set by user
 Surf. res. cov. values: Surf. cover
 Adjust res. burial level: Normal res. burial

Soil conditioning index: open

Add break | Erase break

Avg. slope steepness, %: 1.9 | Slope length (horiz), ft: 53 | Crit. slope length, ft: []
 Detachment on slope, t/ac/yr: 0.23 | Soil loss erod. portion, t/ac/yr: 0.23
 Sediment delivery, t/ac/yr: 0.23 | Soil loss for cons. plan, t/ac/yr: 0.233
 T value, t/ac/yr: 3.0

Fuel type for entire run: [none]

Energy use for entire simulation, BTU/ac: 0.00555

Equiv. diesel use for entire simulation, gal/ac: ...0000040
 Fuel cost for entire simulation, US\$/ac: ...0000120

Align of oper on segments | General composite segment info | Biomass by layer | Biomass summary | C. subfactor by day | C. subfactor by period | C. subfactor by operation
 Ridges_contour by day | Erosion by day | Erosion by period | Erosion by operation | Erosion by year | Extra C, L, crit. length values | Hydrology | Management output by day
 Management output by period | Residue values | Roughness | STRIPS_AND_BARRIERS | MANAGEMENT_STRIP_BUILDER | Runoff / Sediment overall results
 Runoff / Sediment results by day | Sediment results by flow path | Sediment by segment | Sediment by segment by day | Soil output by day | Yield values | Visuals | Info

Soil | MISC_CALCULATIONS1 | Topography | Management | Strips / Barriers | Irrigation / Subsurface drainage | Division/terrace, sediment basin

Slope Soils

Segment	Soil	Seg length (horiz), ft	Soil loss, t/ac/yr	Sed. del., t/ac/yr	Consolidation time, yr
+	Generic Soils\sltt loam (In DM)	53	0.23	0.23	7