BrightFields, Inc.

Appendix 1

1600 BOWERS STREET

(ATLAS SANITATION)

WILMINGTON, DELAWARE

SIRS ID: DE-0280

BrightFields, Inc.

GENERAL SITE INFORMATION

Site Name: 1600 Bowers Street (Atlas Sanitation)

SIRS ID Number: DE-0280

Site Location and Description:

The 1610/0 Bowers Street Site (site) is a portion of the former Atlas Sanitation site, which was used as a landfill from approximately 1937 until the 1970s and reportedly operated for one year as a solid waste landfill. From the 1970s to 1990 the site was undeveloped and vegetated. The former Atlas Sanitation property is now divided into four parcels of land and includes four DNREC sites. The 1600 Bowers Street site is currently owned by Diamond State Recycling and is still tracked under DE-0280. The other sites are 1620 Bowers Street, also known as Pure Green Industries (DE-1054), the Wilmington Asphalt Plant (DE-1448), and 1610/0 Bowers Street, also known as the Diffley Property (DE-1440). One additional parcel, also owned by the Diffleys is not currently a DNREC site.

The 1600 Bowers Street site is located at 1600 Bowers Street in Wilmington, Delaware (Figure 1). The site is approximately 8.2 acres in size and is comprised of one tax parcel (#2603700008), located south of the intersection of Bowers Street and Vandever Avenue in Wilmington. The property is bounded to the northwest by Bowers Street, beyond which is an AMTRAK railroad viaduct; to the west by Marsh Road, beyond which are residential properties; to the south by the Howard R. Young Correctional Facility (also known as Gander Hill Prison), to the southeast by the 1610/0 Bowers Street site (DE-1054) (also known as the Diffley Property), and to the northeast by the Wilmington Asphalt Plant (DE-1448), also known as the Pure Green Industries site (DE-1440). The surrounding land is generally industrial and residential.

The 2011 Subsurface Exploration Report states that stormwater from the Site flows from the perimeter berm at the southern site boundary into a lined sediment pond which discharges into a ditch. The ditch is a part of the combined sewer system for the City of Wilmington and ultimately discharges to the Brandywine River.

Currently, Diamond State Recycling operates as a metal recycling plant on the site. A single 16,000 square foot warehouse is located along the northwest boundary of the property. The majority of the property is bare soil disturbed by the recycling operations. The current facility

was built in the early 1990s. At present, there are three active above ground storage tanks on site for storage of diesel fuel and hydraulic/motor oil. Prior to the 1990s, the site was maintained as vacant land and intermittently used for disposal of construction debris, municipal waste, and potentially industrial waste.

Previous Site Uses:

The site previously was maintained as an illegal storage area for solid waste. Previous environmental investigations suggested that the site was also used as a municipal landfill, which was later filled and covered with construction debris.

Historical records reviewed during previous investigations indicate the following: Between the 1800s and 1980s, the majority of the site was owned by various railroad companies that eventually consolidated to form the Penn Central Corporation. The property was subsequently sold to Atlas Sanitation in 1988, during which time solid waste was illegally stored on the property. The 1600 Bowers Street property was then purchased by Herbert Scherr in 1989, and then conveyed to Diamond State Recycling in 1994. A note on the property deed during the period of Penn Central's ownership indicated the lease of a portion of the land to the City of Wilmington. It is believed that the City utilized this property as a municipal landfill during a period between 1940 and 1970. A review of historic aerial photos indicates that trenching was occurring on the property in 1962. By 1968, the site appeared backfilled and vegetated.

Site Regulatory Status:

This section briefly summarizes previous investigations performed on the site through the SIRS program. A current SIRS regulatory status is also included.

Environmental Audit (PMT & Associates, 1989)

In May 1989, PMT & Associates prepared an Environmental Audit for the property for a prospective purchaser. A site visit, electromagnetic survey, and records search were performed to assess the environmental liabilities associated with the site. The audit found that the Property was vacant and contained indicators of historic filling and dumping. Wet areas containing marsh grasses appeared to be the result of poorly filled/low areas, and construction debris and small amounts of domestic refuse were present throughout. A significant portion of the site was heavily vegetated. The electromagnetic transect survey indicated numerous metallic anomalies; historic allegations of land filling operations (municipal or otherwise) were supported by the size

and quantity of the anomalies and the aerial photograph from 1962. The property is also adjacent to the Amtrak Wilmington Rail Yard, which has known environmental impacts related to PCB use and disposal. The audit also recommended a groundwater investigation, investigation of the fill, and confirmation of the status of the Amtrak site.

Phase II/III Environmental Audit (PMT & Associates, 1990)

PMT & Associates (PMT) excavated nine test pits across the property to depths of approximately 15 feet. Excavation of the test pits revealed a significant fill layer across that site composed of construction debris and household waste. Rubber hoses were also discovered, possibly industrial waste from a former hose and rubber plant located nearby.

Test pit samples were collected and analyzed for PCBs from two locations (TP-2 and TP-4) at indeterminate depths. Based on laboratory analysis, PCBs were not detected in either soil sample. Due to poor map quality and no detections for PCBs, soil results from this report are excluded from the PCB mass loading evaluation. During the excavation of the test pits, groundwater was sampled in two locations (TP-5 and TP-8) and no PCBs were detected in either sample.

Three monitoring wells were installed, developed, and sampled at the site. No samples were analyzed for PCBs. Based on the water level measurements, groundwater under the site appeared to flow in a westerly direction.

Based upon the completed Phase II/III Environmental Audit and the earlier Environmental Audit, PMT concluded that a "substantial" domestic landfill had been located on the site. They also concluded that use of the site under an industrial scenario was not of great concern; however the presence of an adjacent Superfund Site (Amtrak Wilmington Railyard) and the possibility of continued leachate generation by the buried refuse was cause to suggest yearly monitoring of the site groundwater.

Preliminary Assessment (DNREC, 1994)

DNREC completed a Preliminary Assessment of the full extent of the property, including the additional parcels now listed under separate DE numbers. The assessment was prompted by the discovery of an apparent landfill on an adjoining parcel while excavating test pits for a proposed septic system. In addition, environmental audits of the subject property and surrounding property gave cause for concern that environmental impacts existed across most of the property.

Based on the results of previous investigations and their own research, DNREC theorized that the overland flow and groundwater passing under the site were contaminating adjacent tributaries. DNREC agreed with prior investigations that the site appeared to be historically filled. DNREC recommended that the site be subject to a Site Investigation, to fully characterize conditions across the site.

Subsurface Exploration Report (Ten Bears Environmental, 2011)

Diamond State Recycling retained Ten Bears Environmental to perform an investigation of the site prior to possible sale of the property. Soil, sediment, and groundwater samples were collected as part of the investigation.

Out of the 37 soil samples submitted for non-HSCA analysis, PCB concentrations exceeded uniform risk-based standard (URS) in six samples, ranging from 4.5 to 21 mg/kg. For the HSCA analysis, 13 soil samples were submitted and two had PCB concentrations that exceeded the URS. Three sediment samples were also submitted and PCBs were present in all of them, but not above the URS.

A second round of sampling (PCB delineation) was conducted and a total of 32 soil samples were submitted for confirmatory PCB analysis. The confirmatory PCB analysis indicated that PCBs were present in most soil and sediment samples at concentrations ranging from 0.0091 mg/kg to 28 mg/kg. Detections were located throughout the soil strata, from the surface to the saturated subsurface zone of the site. The highest PCB concentrations were located in the center of the site.

Five monitoring wells were also installed across the site and samples were collected from each well. The PCB analysis indicated that low levels of PCBs were detected in two samples (GW-2 and GW-4). Ten Bears re-sampled those wells including field-filtering in the sampling methodology and PCBs were not detected. Ten Bears also included laboratory data from an earlier storm water (collected from the onsite pond) sampling that was conducted in 1999. PCBs were not detected in the single grab sample collected.

Based on the findings of the Subsurface Exploration Report, Ten Bears suggested that the driving factor of site risk would likely be the elevated concentrations of PCBs. While no formal risk assessment was conducted, Ten Bears indicated that the cumulative risk for the site may exceed DNREC action levels and that a (limited) cleanup may be necessary to reduce cumulative

risk. Based on the sampling of ditch and pond sediments, the onsite storm water pond appears to reduce contaminant loading into offsite tributaries.

Current Regulatory Status:

The 1600 Bowers Street Property is currently occupied by Diamond State Recycling. The site was certified as a Brownfield by DNREC in October 2011. No remedial action to address PCB contamination has been required.

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SUMMARY OF SITE PCB INFORMATION

Site Investigation PCB Findings:

For purposes of the PCB loading estimates, surface soil is defined as 0 to 2 feet below ground surface (bgs). Samples collected from soil depths spanning 2 feet bgs were included in both the surface and subsurface data sets.

PCBs were detected in 26 surface soil samples, at concentrations ranging from 0.0091 mg/kg to 28 mg/kg. PCBs were detected in 30 subsurface unsaturated soil samples with concentrations ranging from 0.0091 mg/kg to 9.0 mg/kg. PCBs were detected in 11 subsurface saturated soil samples with concentrations ranging from 0.024 mg/kg to 2.6 mg/kg.

The calculated 95% upper confidence limit (UCL) of the mean of the concentration of total PCBs observed in the surface soil (for overland flow calculations) is 11.9 mg/kg.

PCBs were detected in groundwater samples GW-2 (screen depth of 4 feet to 14 feet) and GW-4 (screen depth of 6 feet to 16 feet) at concentrations of 0.50 µg/L and 0.37 µg/L, respectively.

Concentrations of PCBs on Site

Sample Matrix	Corresponding Figure	Analytical Methods	Range of Total PCBs
Surface Soil	Figure 2	Method 8082 and Screening Data	Not detected to 28 mg/kg
Subsurface Soil (unsaturated)	Figure 3	Method 8082	Not detected to 9.0 mg/kg
Subsurface Soil (saturated)	Figure 4	Method 8082	Not detected to 2.6 mg/kg
Groundwater	Figure 5	Method 8082	Not detected to 0.50 µg/L

A summary of all samples collected for PCB analyses are presented in Tables 1 through 3.

Acreage where PCBs detected:

The estimated surface area impacted by PCBs is 6.4 acres (Figure 2). The estimated subsurface non-saturated area impacted by PCBs is 6.8 acres (Figure 3) and the estimated subsurface saturated area is 7.7 (Figure 4). An estimated 2.7 acres of groundwater are impacted by PCBs (Figure 5).

PCB Remediation Status:

PCB remediation has not been performed on the 1600 Bowers Street Property.

PCB MASS LOADING SUMMARY

The PCB mass loading rate to surface water via overland flow and groundwater transport was estimated for the 1600 Bowers Street Property. 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 specific factors are site specific and rely on local information of the site. A breakdown of the individual factors is presented below with a brief explanation of their choice.

Ground Cover and Canopy:

The surface cover and flow paths were assessed through aerial photography and available contour mapping (Delaware Data Mil, 2013). The cover/management factor (C) assigned to the site and associated flow paths was 1.0, which corresponds to areas of bare ground.

Site Sediment and Erosion Control Practices:

Based on the aerial photography evaluation and review of site documents it appears that the Site contains a vegetative berm around the southern perimeter, which prevents the migration of sediment from departing the Site. The berm directs runoff to a lined stormwater retention basin in the southeastern corner. During high flow events, an overflow pipe allows water from the retention basin to discharge to a drainage ditch south of the Property. Based on these engineering controls, a support practice factor of 0.05 was calculated using the RUSLE2 program and utilized in the overland flow calculations.

Input Factors and Results:

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

1600 Bowers Street

RUSLE Factors	Values Provided	Explanation of choice
R = rainfall-runoff erosivity index (10^2 ft-tonf-in/ac-hr-yr)	175	An appropriate value for R for the Site was determined using the Isoerodent Map of the Eastern U.S. from the Stormwater Phase II Final Rule Construction Rainfall Erosivity Waiver (USEPA, 2012).
K = soil erodibility (0.01 ton-ac-hr/ac-ft-tonf-in)	0.20	The soil erodibility factor was selected from the National Resource Conservation Soil Survey Geographic Database (SSURGO).
ls = topographic factor (dimensionless)	0.23	The topographic factor was derived based on the slope and flow accumulation grids created in ArcGIS. An output LS grid was created and the average value for the grid is provided.
C = cover/management factor (dimensionless)	1	The cover/management factor C assigned to the erodible area was 1, which corresponds to bare ground with no vegetative cover.
P = support practice factor (dimensionless)	0.05	The support practice factor was calculated in the RUSLE2 program based on the vegetative berm and lined retention pond located onsite.
A = average annual soil loss estimate (ton/ac-yr)	0.4	The average soil loss estimate was generated by ArcGIS using the input factors listed above.
Erodible Area (acres)	6.0	The erodible area was calculated based on the pervious surfaces within the area of concern polygon for surface soil (Figure 6).

For factors that were not consistent across the site, rasters were used to characterize the variations. Due to the methodology utilized to derive the soil loss estimate, the numbers listed above cannot simply be multiplied.

The total estimated PCB loading via overland flow for 1600 Bowers Street is **28 grams per year**; however, the actual load attributed to overland runoff from the Site may vary based on the efficiency of the vegetative berm and surface water retention pond onsite. Please see attached table for specific variables.

Uncertainty Analysis Associated with Overland Flow:

Specific Areas and Degree of Uncertainty for 1600 Bowers Street

	Samples Per Acre (site)	Chemical Data Quality*	Soil Type	Site Coverage	Map Quality	Distance to Discharge Points
Site Specific Information	10.1	Lab Data	Soil Database	Based on a site assessment	Scaled Maps	Directly Adjacent
Degree of Uncertainty	Low to Moderate	Moderate	Low	Moderate	Moderate	Low

* Primary analysis used in the historical samples

Sources of uncertainty for the 1600 Bowers Street Property include: All sample locations were georeferenced utilizing scaled drawings; however, coordinates for the sample locations were not provided. Access to the site was limited, however the smaller size of the site allowed for a decent site coverage evaluation. If the vegetative berm and retention pond onsite are 100 percent effective at retaining sediment from overland flow, then less sediment would be expected to leave the Site. Based on this evaluation the level of uncertainty associated with overland flow PCB mass loading from the Salvation Army site is **Low to Moderate.**

Groundwater Discharge Analysis:

Groundwater discharge is based on the hydraulic conductivity of the soil, the groundwater gradient, and the cross-sectional area of the aquifer. A breakdown of the individual factors used in the Darcy equation is presented below. A groundwater discharge map is included as Figure 7.

Because PCBs were detected in saturated soil, and also in groundwater (although apparently not in the dissolved phase), the calculated concentration of PCBs in pore water, based on partitioning, was used to calculate the mass loading and also through groundwater transport (using non-filtered groundwater data).

The calculations are presented in Table B in the groundwater transport calculations attachment.

Input Factors:

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

Groundwater Transport Factors	Value Used		Justification/Derivation of Value Used
	min	max	
K = Hydraulic Conductivity (ft/day)	0.28	5.7	Drilling logs from Geoprobe® borings were used to evaluate the lithology beneath the site. Groundwater being monitored is within a fill unit that contains abundant debris. The matrix of the saturated unit is mostly silt with some areas of fine to medium sand. The hydraulic conductivity for coarse sandy silt ranges from approximately 1 x 10^{-4} cm/sec to 2 x 10^{-3} cm/sec (Cernica, 1995).
I = Horizontal Groundwater Gradient	0.0011	0.0011	Data supplied in the Phase 2/Phase 3 Environmental Audit by PMT & Associates was used to assess the groundwater flow direction and horizontal gradient at the site. Based on this data, the horizontal gradient is approximately 0.0011 ft/ft west-northwest.
Saturated Thickness (ft)	5.5	6.0	Based on the borings logs from Ten Bears, the saturated thickness between groundwater and refusal was 5.5 to 6 feet.
Lateral Discharge Distance (ft)	670	670	The lateral discharge distance was estimated to be equal to the length of the PCB impacted groundwater measured perpendicular to groundwater flow.
A= Cross-Sectional Area (ft2)	3,700	4,000	Calculated from the saturated thickness and lateral discharge distance.
Groundwater PCB Concentration (µg/L)	0.37	0.50	The concentrations measured in the unfiltered groundwater (0.37 µg/L to 0.50 µg/L) was used to assess discharge parameters.
Groundwater PCB Concentration (µg/L)	0.13	0.64	Calculated from the 95% UCL of PCB concentrations in soil taken north to south. The 95% UCL was 0.58 mg/kg
Distance to Discharge point (ft)	Directly adjacent		Discharge point is along the western property line.

Mass Loading Via Groundwater Transport Result:

The groundwater discharge is 32.3 to 710 L/day (see attached Tables A1 and A2). The detected PCB concentrations in groundwater were 0.37 µg/L (GW-2) and 0.5 µg/L (GW-4) (Table B1), and they were used to calculate the groundwater concentrations for the loading estimate (Table B2). The estimated minimum and maximum contaminant mass loading contributions shown in

Table C assume that there are no contaminant losses due to degradation, dispersion, sorption, volatilization, etc.

The total PCB loading via groundwater discharge using groundwater concentrations is estimated to be between **0.006** and **0.13 grams per year** (Table C1).

If the groundwater concentrations are representative of sorbed PCBs, the calculation was also performed using soil data. The total PCB loading via groundwater discharge using soil is estimated to be between **0.007** and **0.16 grams per year** (Table C2).

Uncertainty Analysis Associated with Groundwater Transport:

Specific Areas and Degree of Uncertainty for 1600 Bowers Street

	Groundwater PCB Concentration	Sampling Density	Hydraulic Conductivity	Horizontal Groundwater Gradient	Saturated Thickness	Lateral Discharge Distance	Distance to Discharge Point
Site Specific Information	Groundwater data and partitioning based on 95% UCL concentration measured in saturated soil	0.85 samples per acre, possible data gaps	Based on site logs. Debris and variable grain size complicate estimate	Three points and one round of measurements	Moderate quality borehole logs	Good groundwater gradient defined and a moderate number of samples collected on-site	Directly adjacent
Degree of Uncertainty	High	Moderate	Moderate	Low to Moderate	Moderate	Moderate	Low

Based on this evaluation the level of uncertainty associated with groundwater transport PCB mass loading from the 1600 Bowers Street Property is **Moderate.**

Site References:

Delaware Geological Survey, 2013, Delaware Data Mil, <http://datamil.delaware.gov/geonetwork/srv/en/main.home>, May 2013.

Delaware Department of Natural Resources and Environmental Control (DNREC), 1994, Preliminary Assessment of Atlas Sanitation Company Subdivision, March 1994.

PMT & Associates, Inc., 1989, Environmental Audit of the Vandever Avenue Site, May 1989.

PMT & Associates, Inc., 1990, Phase Two/Three Environmental Audit, Vandever Avenue, August 1990.

Ten Bears Environmental, L.L.C., 2011, Subsurface Exploration Report, Diamond State Recycling, July 2011.

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Figures

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Historic Sample Locations
and Aerial Photograph (2012)
1600 Bowers St
Wilmington, Delaware

	By	Date	Scale:	File Name:
Drawn	ADS	2/21/2014	1:780	Fig1SiteLoc.mxd
Checked	JPR	2/21/2014	Fig. No. Figure 1	
Project #	0985.69.51			

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PA
NJ
MD
DE
Delaware Bay
Site Location
AMTRAK RR
BOWERS ST
MARSH RD
E 14TH ST
DURE ST
TP-9 - ND (0' - 1')
TP-11 - 9.8 (0' - 2')
TP-8 - 6.3 (0' - 2')
GW-2 - ND (1' - 2.6')
GW-1 - 0.24 (0' - 2')
TP-7 - 8.7 (0' - 2')
4D-1 - 1.7 (0' - 2')
4D-2 - 3.3 (0' - 2')
4D-3 - 2.2 (0' - 2')
4A-1 - 20 (0' - 2')
4A-2 - 17 (0' - 2')
4B-1 - 13 (0' - 2')
4A-3 - 18 (0' - 2')
4C-1 - 3.8 (0' - 2')
4B-2 - 26 (0' - 2')
4C-3 - 6.4 (0' - 2')
TP-SB-4 - 25 (0' - 2')
4B-3 - 28 (0' - 2')
4C-2 - 14 (0' - 2')
SB-5 - 11 (0' - 1.5')
TP-10 - 6.7 (0' - 1')
TP-6 - 1.4 (0' - 2')
SB-1 - 0.0091 (1.6' - 2.6')
TP-5 - 0.87 (1.5' - 2.5')
SB-2 - (ND)
TP-12
SB-3 - 1.8 (0.4' - 1.4')
GW-3 - 0.58 (1' - 3')
GW-4 - 0.59 (0' - 2')
Soil Sample, No PCB data available
Soil Sample
Estimated PCB Distribution
1600 Bowers St Site Boundary
Tax Parcels
Buildings
Approximate Surface Water
Notes:
0.58 (0') - Total PCB Concentration (mg/kg) and Sample Depth.
ND - Not Detected
Screening data is in parentheses and italicized.
Surface water was derived from Aerial Imagery.
Source: Delaware DataMIL - Tax Parcels;
New Castle County - Buildings.
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PCB Distribution in Surface Soil (0' - 2' bgs)
1600 Bowers St
Wilmington, Delaware
By
Date
Scale:
File Name:
Drawn
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2/21/2014
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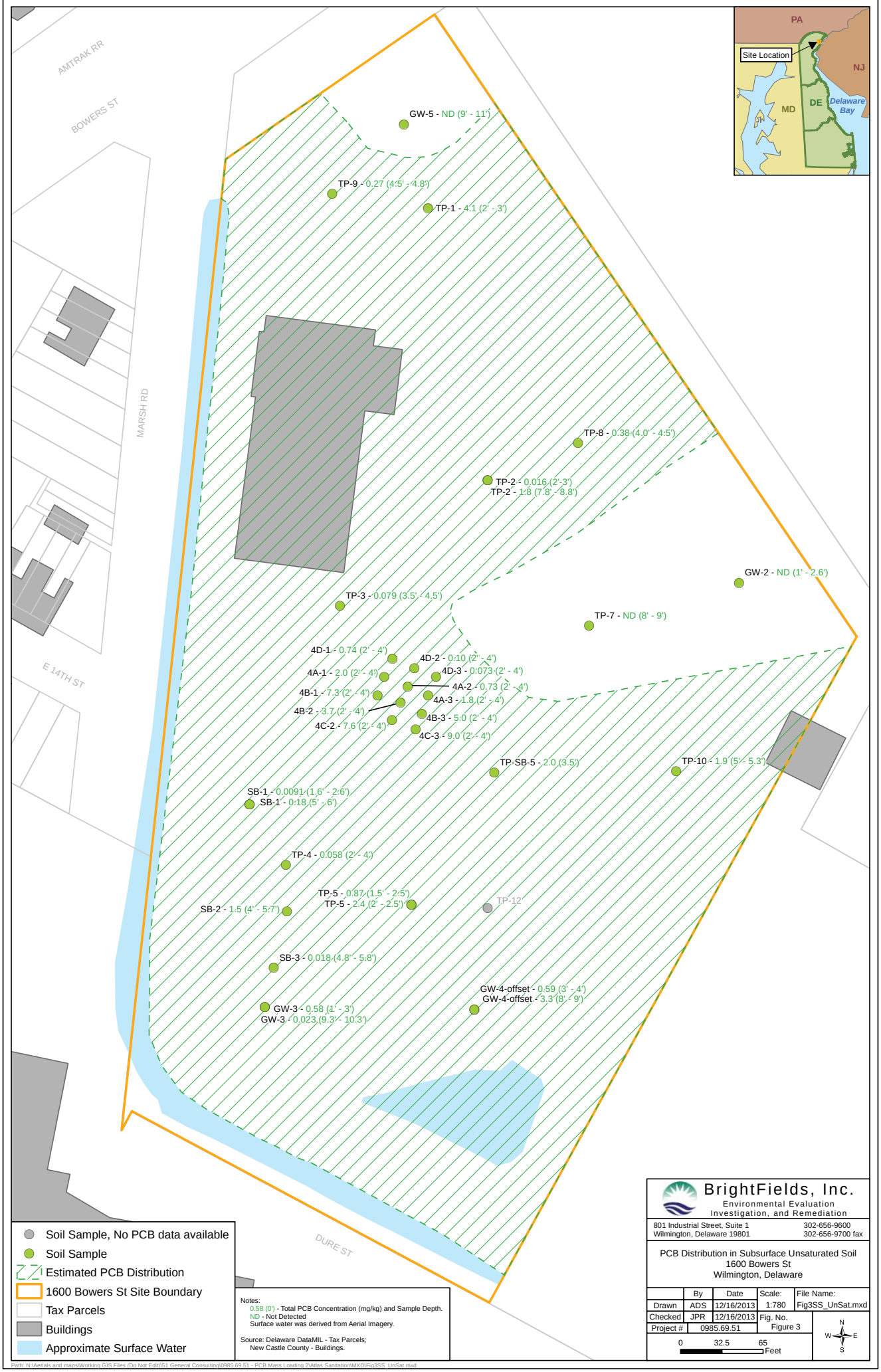

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PCB Distribution in Subsurface Unsaturated Soil
1600 Bowers St
Wilmington, Delaware

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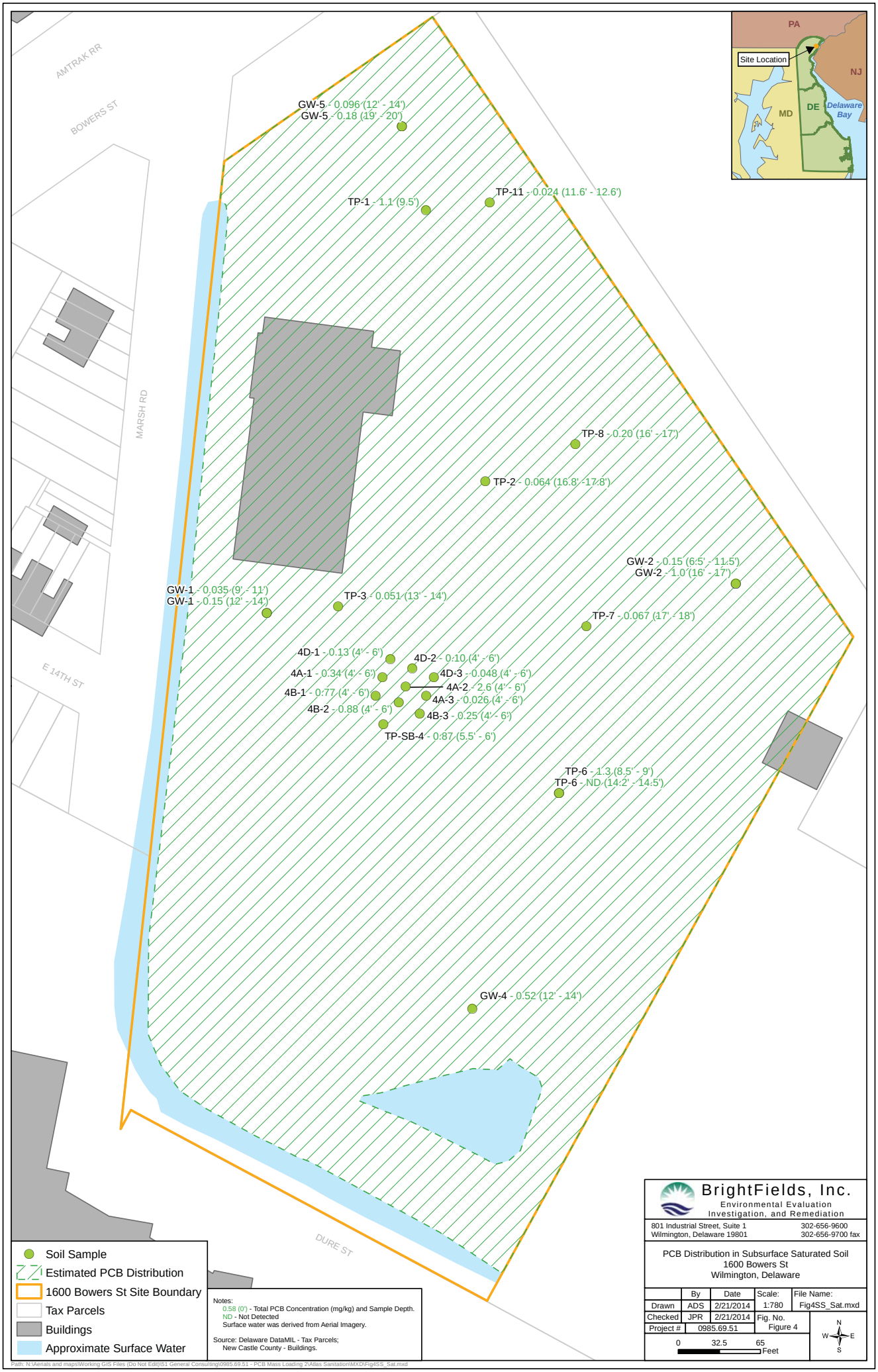
PA
NJ
MD
DE
Delaware Bay
Site Location
AMTRAK RR
BOWERS ST
MARSH RD
E 14TH ST
DURE ST
GW-5 - 0.096 (12' - 14')
GW-5 - 0.18 (19' - 20')
TP-1 - 1.1 (9.5')
TP-11 - 0.024 (11.6' - 12.6')
TP-8 - 0.20 (16' - 17')
TP-2 - 0.064 (16.8' - 17.8')
GW-2 - 0.15 (6.5' - 11.5')
GW-2 - 1.0 (16' - 17')
GW-1 - 0.035 (9' - 11')
GW-1 - 0.15 (12' - 14')
TP-3 - 0.051 (13' - 14')
TP-7 - 0.067 (17' - 18')
4D-1 - 0.13 (4' - 6')
4D-2 - 0.10 (4' - 6')
4A-1 - 0.34 (4' - 6')
4D-3 - 0.048 (4' - 6')
4A-2 - 2.6 (4' - 6')
4B-1 - 0.77 (4' - 6')
4A-3 - 0.026 (4' - 6')
4B-2 - 0.88 (4' - 6')
4B-3 - 0.25 (4' - 6')
TP-SB-4 - 0.87 (5.5' - 6')
TP-6 - 1.3 (8.5' - 9')
TP-6 - ND (14.2' - 14.5')
GW-4 - 0.52 (12' - 14')
Soil Sample
Estimated PCB Distribution
1600 Bowers St Site Boundary
Tax Parcels
Buildings
Approximate Surface Water
Notes:
0.58 (0') - Total PCB Concentration (mg/kg) and Sample Depth.
ND - Not Detected
Surface water was derived from Aerial Imagery.
Source: Delaware DataMIL - Tax Parcels;
New Castle County - Buildings.
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Wilmington, Delaware 19801
302-656-9600
302-656-9700 fax
PCB Distribution in Subsurface Saturated Soil
1600 Bowers St
Wilmington, Delaware
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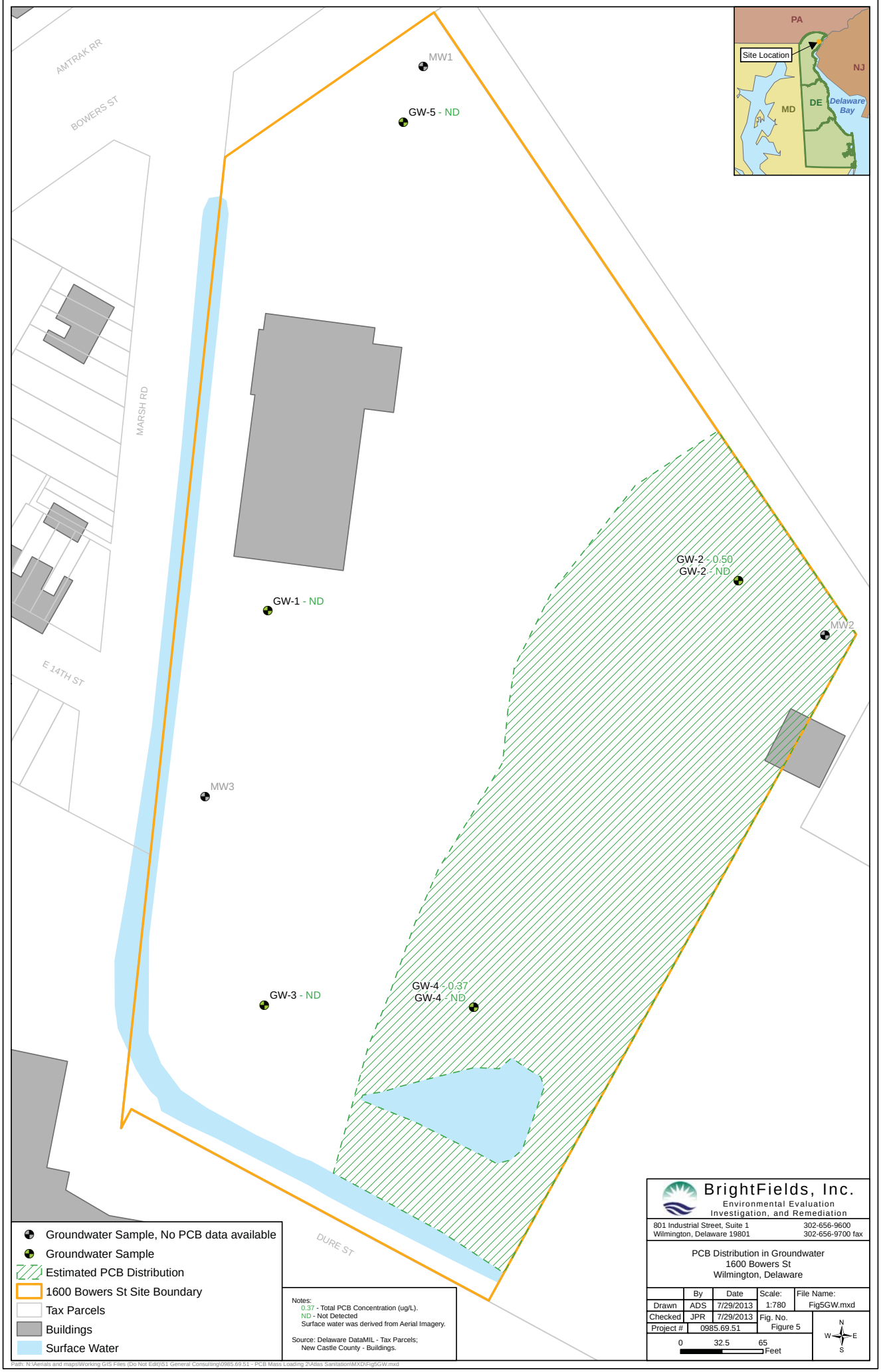
AMTRAK RR
BOWERS ST
MARSH RD
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MW1
GW-5 - ND
GW-1 - ND
GW-2 - 0.50
GW-2 - ND
MW2
MW3
GW-3 - ND
GW-4 - 0.37
GW-4 - ND
PA
NJ
MD
DE
Delaware Bay
Site Location
Groundwater Sample, No PCB data available
Groundwater Sample
Estimated PCB Distribution
1600 Bowers St Site Boundary
Tax Parcels
Buildings
Surface Water
Notes:
0.37 - Total PCB Concentration (ug/L).
ND - Not Detected
Surface water was derived from Aerial Imagery.
Source: Delaware DataMIL - Tax Parcels;
New Castle County - Buildings.
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Wilmington, Delaware
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Figure 5
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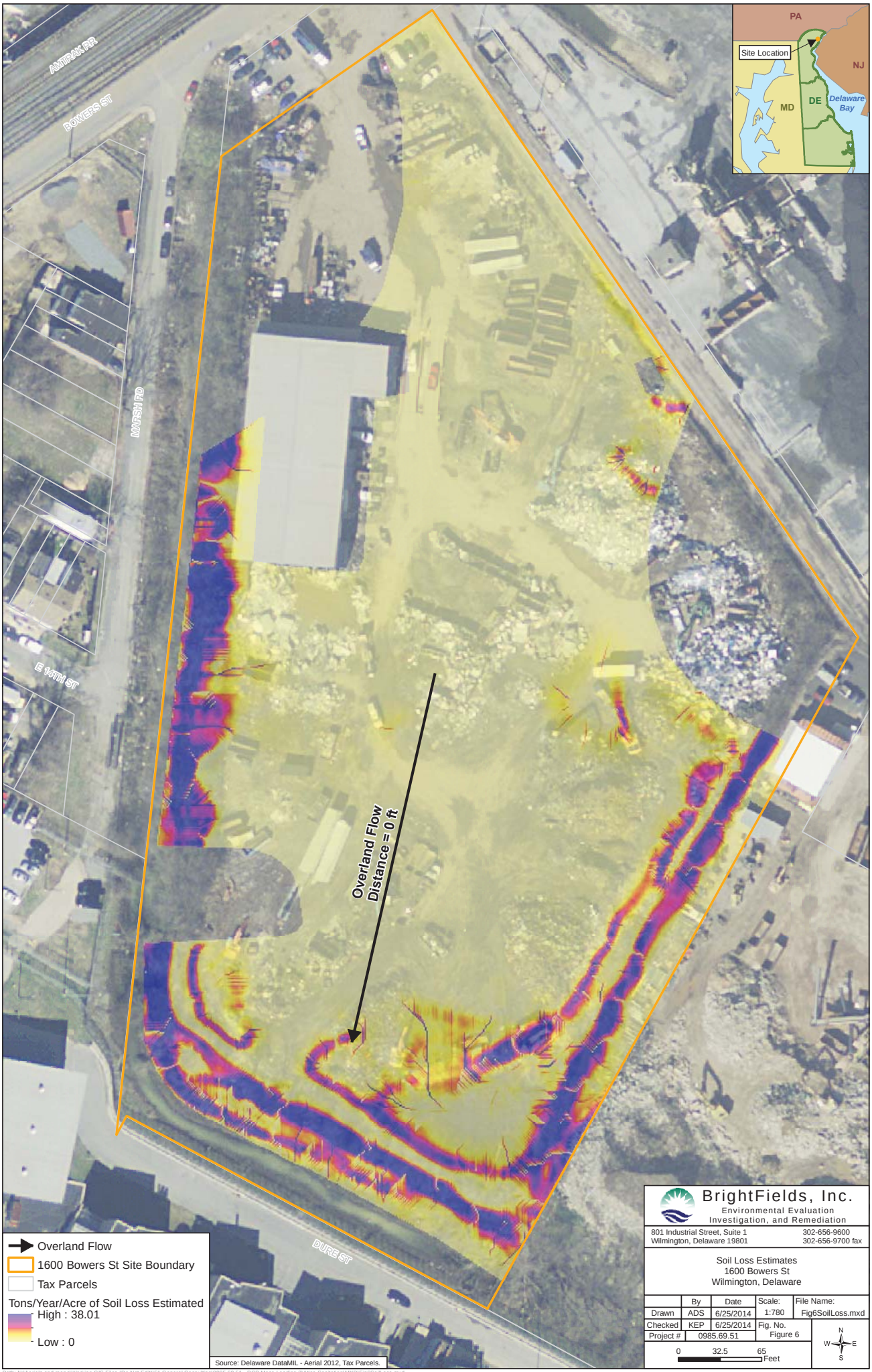

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Soil Loss Estimates
1600 Bowers St
Wilmington, Delaware

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Drawn	ADS	6/25/2014	1:780	Fig6SoilLoss.mxd
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Project #	0985.69.51			

0 32.5 65 Feet

N W E S

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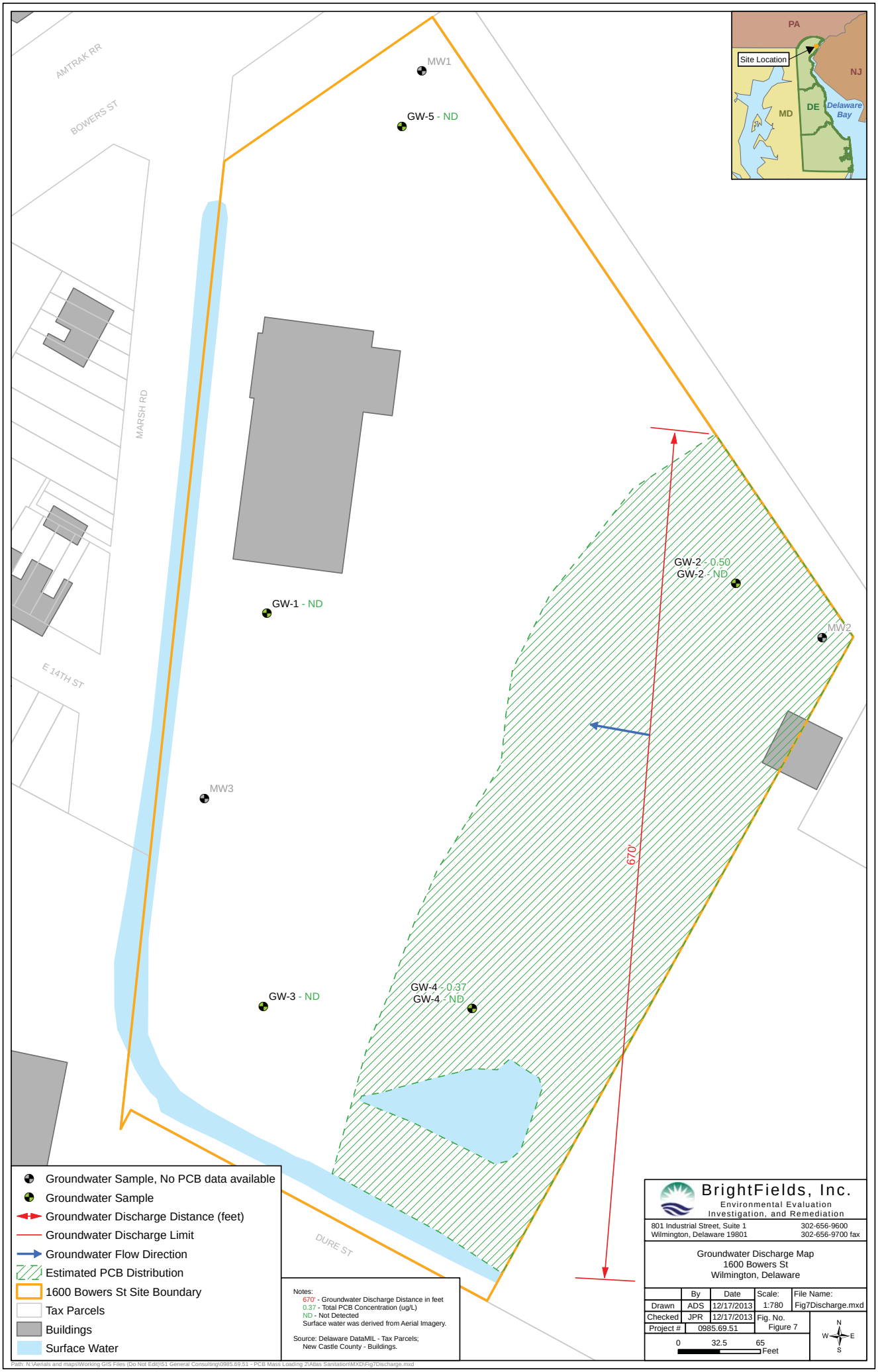

BrightFields, Inc.
Environmental Evaluation
Investigation, and Remediation
801 Industrial Street, Suite 1
Wilmington, Delaware 19801
302-656-9600
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Groundwater Discharge Map
1600 Bowers St
Wilmington, Delaware

	By	Date	Scale:	File Name:
Drawn	ADS	12/17/2013	1:780	Fig7Discharge.mxd
Checked	JPR	12/17/2013	Fig. No. Figure 7	
Project #	0985.69.51			

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BrightFields, Inc.

Tables

Table 1
PCB Screening Results For Soil
1600 Bowers Street (DE-0280)
Wilmington, DE

Sample Identification	Sample Depth (feet bgs)	Sampling Company	Report Name	Report Date	Total PCBs DNREC-SIRS Screening Level (January 2014) (mg/kg) NCA
GW-1	12' - 14'	Ten Bears	Subsurface Exploration Report	Jul-11	0.15
GW-1	0' - 2'	Ten Bears	Subsurface Exploration Report	Jul-11	0.24
GW-2	16' - 17'	Ten Bears	Subsurface Exploration Report	Jul-11	1
GW-2	1' - 2.6'	Ten Bears	Subsurface Exploration Report	Jul-11	ND
GW-2	6.5' - 11.5'	Ten Bears	Subsurface Exploration Report	Jul-11	0.15
GW-2	0' - 2'	Ten Bears	Subsurface Exploration Report	Jul-11	8.8
GW-3	9.3' - 10.3'	Ten Bears	Subsurface Exploration Report	Jul-11	0.023
GW-4-offset	3' - 4'	Ten Bears	Subsurface Exploration Report	Jul-11	0.59
GW-4-offset	12' - 14'	Ten Bears	Subsurface Exploration Report	Jul-11	0.52
GW-4-offset	8' - 9'	Ten Bears	Subsurface Exploration Report	Jul-11	3.3
GW-5	12' - 14'	Ten Bears	Subsurface Exploration Report	Jul-11	0.096
GW-5	19' - 20'	Ten Bears	Subsurface Exploration Report	Jul-11	0.18
SB-1	1.6' - 2.6'	Ten Bears	Subsurface Exploration Report	Jul-11	0.0091
SB-2	4' - 5.7'	Ten Bears	Subsurface Exploration Report	Jul-11	1.5
SB-3	4.8' - 5.8'	Ten Bears	Subsurface Exploration Report	Jul-11	0.018
SB-5	0' - 1.5'	Ten Bears	Subsurface Exploration Report	Jul-11	11.1
TP-1	2' - 3'	Ten Bears	Subsurface Exploration Report	Jul-11	4.1
TP-1	9.5'	Ten Bears	Subsurface Exploration Report	Jul-11	1.1
TP-10	5' - 5.3'	Ten Bears	Subsurface Exploration Report	Jul-11	1.9
TP-10	0' - 1'	Ten Bears	Subsurface Exploration Report	Jul-11	6.7
TP-11	0' - 2'	Ten Bears	Subsurface Exploration Report	Jul-11	9.8
TP-11	11.6' - 12.6'	Ten Bears	Subsurface Exploration Report	Jul-11	0.024
TP-2	2'-3'	Ten Bears	Subsurface Exploration Report	Jul-11	0.016
TP-2	7.8' - 8.8'	Ten Bears	Subsurface Exploration Report	Jul-11	1.8
TP-3	3.5' - 4.5'	Ten Bears	Subsurface Exploration Report	Jul-11	0.079
TP-5	2' - 2.5'	Ten Bears	Subsurface Exploration Report	Jul-11	2.4
TP-6	8.5' - 9'	Ten Bears	Subsurface Exploration Report	Jul-11	1.3
TP-6	0' - 2'	Ten Bears	Subsurface Exploration Report	Jul-11	1.4
TP-6	14.2' - 14.5'	Ten Bears	Subsurface Exploration Report	Jul-11	ND
TP-7	8' - 9'	Ten Bears	Subsurface Exploration Report	Jul-11	ND
TP-8	0' - 2'	Ten Bears	Subsurface Exploration Report	Jul-11	6.3
TP-9	0' - 1'	Ten Bears	Subsurface Exploration Report	Jul-11	ND
TP-9	4.5' - 4.8'	Ten Bears	Subsurface Exploration Report	Jul-11	0.27
TP-SB-4	5.5' - 6'	Ten Bears	Subsurface Exploration Report	Jul-11	0.87
TP-SB-4	0' - 2'	Ten Bears	Subsurface Exploration Report	Jul-11	25
TP-SB-5	3.5'	Ten Bears	Subsurface Exploration Report	Jul-11	2

Note: All results reported in mg/kg.

Qualifiers:
bgs - Below ground surface
NCA - No criteria available
ND - Not detected

Table 2
PCB Analytical Results For Soil
1600 Bowers Street (DE-0280)
Wilmington, DE

Sample Identification	Sample Depth (feet bgs)	Sampling Company	Report Name	Report Date	Aroclor-1016		Aroclor-1221		Aroclor-1232		Aroclor-1242		Aroclor-1248		Aroclor-1254		Aroclor-1260	
					DNREC-SIRS Screening Level (January 2014) (mg/kg) 0.39		DNREC-SIRS Screening Level (January 2014) (mg/kg) 0.14		DNREC-SIRS Screening Level (January 2014) (mg/kg) 0.14		DNREC-SIRS Screening Level (January 2014) (mg/kg) 0.22		DNREC-SIRS Screening Level (January 2014) (mg/kg) 0.22		DNREC-SIRS Screening Level (January 2014) (mg/kg) 0.11		DNREC-SIRS Screening Level (January 2014) (mg/kg) 0.22	
4A-1	0' - 2'	Ten Bears	Subsurface Exploration Report	Jul-11	0.99	U	1.3	U	2.2	U	**20**		0.91	U	0.91	U	1.4	U
4A-1	2' - 4'	Ten Bears	Subsurface Exploration Report	Jul-11	0.097	U	0.12	U	0.22	U	**2**		0.089	U	0.089	U	0.13	U
4A-1	4' - 6'	Ten Bears	Subsurface Exploration Report	Jul-11	0.04	U	0.051	U	0.089	U	**0.34**		0.037	U	0.037	U	0.054	U
4A-2	0' - 2'	Ten Bears	Subsurface Exploration Report	Jul-11	1	U	1.3	U	2.3	U	**17**		0.96	U	0.96	U	1.4	U
4A-2	2' - 4'	Ten Bears	Subsurface Exploration Report	Jul-11	0.02	U	0.025	U	0.044	U	**0.73**		0.018	U	0.018	U	0.027	U
4A-2	4' - 6'	Ten Bears	Subsurface Exploration Report	Jul-11	0.041	U	0.052	U	0.09	U	**2.6**		0.037	U	0.037	U	0.055	U
4A-3	0' - 2'	Ten Bears	Subsurface Exploration Report	Jul-11	0.41	U	0.53	U	0.92	U	**18**		0.38	U	0.38	U	0.56	U
4A-3	2' - 4'	Ten Bears	Subsurface Exploration Report	Jul-11	0.039	U	0.05	U	0.088	U	**1.8**		0.036	U	0.036	U	0.054	U
4A-3	4' - 6'	Ten Bears	Subsurface Exploration Report	Jul-11	0.0041	U	0.0053	U	0.0092	U	0.0074	J	0.0038	U	0.0038	U	0.019	J
4B-1	0' - 2'	Ten Bears	Subsurface Exploration Report	Jul-11	0.2	U	0.25	U	0.44	U	**13**		0.18	U	0.18	U	0.27	U
4B-1	2' - 4'	Ten Bears	Subsurface Exploration Report	Jul-11	0.08	U	0.1	U	0.18	U	**7.3**		0.073	U	0.073	U	0.11	U
4B-1	4' - 6'	Ten Bears	Subsurface Exploration Report	Jul-11	0.021	U	0.027	U	0.048	U	**0.77**		0.02	U	0.02	U	0.029	U
4B-2	0' - 2'	Ten Bears	Subsurface Exploration Report	Jul-11	1	U	1.3	U	2.3	U	**26**		0.94	U	0.94	U	1.4	U
4B-2	2' - 4'	Ten Bears	Subsurface Exploration Report	Jul-11	0.099	U	0.13	U	0.22	U	**3.7**		0.091	U	0.091	U	0.13	U
4B-2	4' - 6'	Ten Bears	Subsurface Exploration Report	Jul-11	0.021	U	0.027	U	0.047	U	**0.88**		0.019	U	0.019	U	0.029	U
4B-3	0' - 2'	Ten Bears	Subsurface Exploration Report	Jul-11	0.21	U	0.26	U	0.46	U	**28**		0.19	U	0.19	U	0.28	U
4B-3	2' - 4'	Ten Bears	Subsurface Exploration Report	Jul-11	0.04	U	0.051	U	0.089	U	**5**		0.037	U	0.037	U	0.055	U
4B-3	4' - 6'	Ten Bears	Subsurface Exploration Report	Jul-11	0.004	U	0.0051	U	0.0089	U	**0.25**		0.0037	U	0.0037	U	0.0054	U
4C-1	0' - 2'	Ten Bears	Subsurface Exploration Report	Jul-11	0.04	U	0.051	U	0.089	U	**3.8**		0.037	U	0.037	U	0.054	U
4C-2	0' - 2'	Ten Bears	Subsurface Exploration Report	Jul-11	0.2	U	0.25	U	0.44	U	**14**		0.18	U	0.18	U	0.27	U
4C-2	2' - 4'	Ten Bears	Subsurface Exploration Report	Jul-11	0.081	U	0.1	U	0.18	U	**7.6**		0.074	U	0.074	U	0.11	U
4C-3	0' - 2'	Ten Bears	Subsurface Exploration Report	Jul-11	0.077	U	0.099	U	0.17	U	**6.4**		0.071	U	0.071	U	0.11	U
4C-3	2' - 4'	Ten Bears	Subsurface Exploration Report	Jul-11	0.08	U	0.1	U	0.18	U	**9**		0.073	U	0.073	U	0.11	U
4D-1	0' - 2'	Ten Bears	Subsurface Exploration Report	Jul-11	0.019	U	0.025	U	0.043	U	**1.7**		0.018	U	0.018	U	0.026	U
4D-1	2' - 4'	Ten Bears	Subsurface Exploration Report	Jul-11	0.02	U	0.025	U	0.044	U	**0.74**		0.018	U	0.018	U	0.027	U
4D-1	4' - 6'	Ten Bears	Subsurface Exploration Report	Jul-11	0.004	U	0.0051	U	0.0089	U	0.13		0.0037	U	0.0037	U	0.0055	U
4D-2	0' - 2'	Ten Bears	Subsurface Exploration Report	Jul-11	0.04	U	0.052	U	0.09	U	**3.3**		0.037	U	0.037	U	0.055	U
4D-2	2' - 4'	Ten Bears	Subsurface Exploration Report	Jul-11	0.0038	U	0.0049	U	0.0084	U	0.1		0.0035	U	0.0035	U	0.0052	U
4D-2	4' - 6'	Ten Bears	Subsurface Exploration Report	Jul-11	0.004	U	0.0052	U	0.009	U	0.0037	U	0.0037	U	0.0037	U	0.1	
4D-3	0' - 2'	Ten Bears	Subsurface Exploration Report	Jul-11	0.022	U	0.028	U	0.048	U	**2.2**		0.02	U	0.02	U	0.03	U
4D-3	2' - 4'	Ten Bears	Subsurface Exploration Report	Jul-11	0.0039	U	0.005	U	0.0087	U	0.042		0.0036	U	0.031		0.0053	U
4D-3	4' - 6'	Ten Bears	Subsurface Exploration Report	Jul-11	0.0041	U	0.0052	U	0.0091	U	0.017	J	0.0037	U	0.0037	U	0.031	
GW-1	0' - 2'	Ten Bears	Subsurface Exploration Report	Jul-11	0.0041	U	0.0052	U	0.009	U	0.15		0.0037	U	0.085		0.0055	U
GW-1	12' - 14'	Ten Bears	Subsurface Exploration Report	Jul-11	0.043	U	0.055	U	0.095	U	0.039	U	0.039	U	0.039	U	0.15	J
GW-1	9' - 11'	Ten Bears	Subsurface Exploration Report	Jul-11	0.0046	U	0.0059	U	0.01	U	0.0042	U	0.0042	U	0.0042	U	0.035	
GW-2	0' - 2'	Ten Bears	Subsurface Exploration Report	Jul-11	0.081	U	0.1	U	0.18	U	0.074	U	**4.7**		**2.9**		**1.2**	
GW-2	1' - 2.6'	Ten Bears	Subsurface Exploration Report	Jul-11	0.021	U	0.026	U	0.046	U	0.019	U	0.019	U	0.019	U	0.028	U
GW-2	16' - 17'	Ten Bears	Subsurface Exploration Report	Jul-11	0.0057	U	0.0073	U	0.013	U	**0.66**		0.0052	U	**0.21**		0.13	
GW-2	6.5' - 11.5'	Ten Bears	Subsurface Exploration Report	Jul-11	0.0051	U	0.0065	U	0.011	U	0.0047	U	0.053		0.031		0.066	
GW-3	1' - 3'	Ten Bears	Subsurface Exploration Report	Jul-11	0.04	U	0.051	U	0.089	U	0.037	U	**0.37**		0.037	U	0.21	
GW-3	9.3' - 10.3'	Ten Bears	Subsurface Exploration Report	Jul-11	0.0041	U	0.0052	U	0.0091	U	0.0038	U	0.023		0.0038	U	0.0056	U
GW-4	0' - 2'	Ten Bears	Subsurface Exploration Report	Jul-11	0.2	U	0.25	U	0.44	U	**7**		0.18	U	0.18	U	0.27	U
GW-4	12' - 14'	Ten Bears	Subsurface Exploration Report	Jul-11	0.024	U	0.031	U	0.054	U	0.21		0.022	U	**0.31**		0.033	U
GW-4	3' - 4'	Ten Bears	Subsurface Exploration Report	Jul-11	0.02	U	0.026	U	0.045	U	0.019	U	**0.33**		**0.16**		0.1	
GW-4	8' - 9'	Ten Bears	Subsurface Exploration Report	Jul-11	0.022	U	0.028	U	0.048	U	0.02	U	**2.1**		**0.78**		**0.45**	
GW-5	12' - 14'	Ten Bears	Subsurface Exploration Report	Jul-11	0.0042	U	0.0054	U	0.0093	U	0.0039	U	0.042		0.0039	U	0.054	
GW-5	19' - 20'	Ten Bears	Subsurface Exploration Report	Jul-11	0.03	U	0.039	U	0.067	U	0.028	U	0.12	J	0.028	U	0.062	J
GW-5	9' - 11'	Ten Bears	Subsurface Exploration Report	Jul-11	0.0088	U	0.011	U	0.019	U	0.008	U	0.008	U	0.008	U	0.012	U

Table 2
PCB Analytical Results For Soil
1600 Bowers Street (DE-0280)
Wilmington, DE

Sample Identification	Sample Depth (feet bgs)	Sampling Company	Report Name	Report Date	Aroclor-1016 DNREC-SIRS Screening Level (January 2014) (mg/kg) 0.39		Aroclor-1221 DNREC-SIRS Screening Level (January 2014) (mg/kg) 0.14		Aroclor-1232 DNREC-SIRS Screening Level (January 2014) (mg/kg) 0.14		Aroclor-1242 DNREC-SIRS Screening Level (January 2014) (mg/kg) 0.22		Aroclor-1248 DNREC-SIRS Screening Level (January 2014) (mg/kg) 0.22		Aroclor-1254 DNREC-SIRS Screening Level (January 2014) (mg/kg) 0.11		Aroclor-1260 DNREC-SIRS Screening Level (January 2014) (mg/kg) 0.22	
SB-1	1.6' - 2.6'	Ten Bears	Subsurface Exploration Report	Jul-11	0.0044	U	0.0056	U	0.0097	U	0.004	U	0.004	U	0.004	U	0.0091	J
SB-1	5' - 6'	Ten Bears	Subsurface Exploration Report	Jul-11	0.0043	U	0.0055	U	0.0096	U	0.004	U	0.073		0.004	U	0.11	
SB-2	4' - 5.7'	Ten Bears	Subsurface Exploration Report	Jul-11	0.039	U	0.05	U	0.087	U	0.036	U	**1.4**		0.036	U	0.11	J
SB-3	0.4' - 1.4'	Ten Bears	Subsurface Exploration Report	Jul-11	0.039	U	0.05	U	0.087	U	0.036	U	**1.3**		**0.49**		0.53	U
SB-3	4.8' - 5.8'	Ten Bears	Subsurface Exploration Report	Jul-11	0.0043	U	0.0055	U	0.0096	U	0.004	U	0.018	J	0.004	U	0.0059	U
SB-5	0' - 1.5'	Ten Bears	Subsurface Exploration Report	Jul-11	0.21	U	0.26	U	0.46	U	0.19	U	**8.9**		**2.2**		0.28	U
TP-1	2' - 3'	Ten Bears	Subsurface Exploration Report	Jul-11	0.019	U	0.024	U	0.042	U	0.018	U	**2.9**		0.018	U	**1.2**	
TP-1	9.5'	Ten Bears	Subsurface Exploration Report	Jul-11	0.021	U	0.027	U	0.047	U	0.019	U	0.019	U	0.019	U	**1.1**	
TP-10	0' - 1'	Ten Bears	Subsurface Exploration Report	Jul-11	0.2	U	0.26	U	0.45	U	**6.7**		0.19	U	0.19	U	0.28	U
TP-10	5' - 5.3'	Ten Bears	Subsurface Exploration Report	Jul-11	0.021	U	0.027	U	0.046	U	**1.9**		0.019	U	0.019	U	0.028	U
TP-11	0' - 2'	Ten Bears	Subsurface Exploration Report	Jul-11	0.2	U	0.26	U	0.45	U	**7**		0.18	U	**2.8**		0.27	U
TP-11	11.6' - 12.6'	Ten Bears	Subsurface Exploration Report	Jul-11	0.005	U	0.0064	U	0.011	U	0.0046	U	0.0046	U	0.0046	U	0.024	
TP-2	16.8' -17.8'	Ten Bears	Subsurface Exploration Report	Jul-11	0.01	U	0.013	U	0.023	U	0.0095	U	0.0095	U	0.0095	U	0.064	
TP-2	2'-3'	Ten Bears	Subsurface Exploration Report	Jul-11	0.0039	U	0.005	U	0.0087	U	0.0036	U	0.0036	U	0.0036	U	0.016	J
TP-2	7.8' - 8.8'	Ten Bears	Subsurface Exploration Report	Jul-11	0.024	U	0.03	U	0.052	U	**1.1**		0.022	U	**0.4**		**0.3**	
TP-3	13' - 14'	Ten Bears	Subsurface Exploration Report	Jul-11	0.0053	U	0.0068	U	0.012	U	0.027		0.0049	U	0.0049	U	0.024	J
TP-3	3.5' - 4.5'	Ten Bears	Subsurface Exploration Report	Jul-11	0.0042	U	0.0053	U	0.0093	U	0.0038	U	0.0038	U	0.0038	U	0.079	
TP-4	2' - 4'	Ten Bears	Subsurface Exploration Report	Jul-11	0.0041	U	0.0053	U	0.0092	U	0.0038	U	0.058		0.0038	U	0.0056	U
TP-5	1.5' - 2.5'	Ten Bears	Subsurface Exploration Report	Jul-11	0.041	U	0.052	U	0.091	U	0.038	U	**0.77**		0.038	U	0.097	J
TP-5	2' - 2.5'	Ten Bears	Subsurface Exploration Report	Jul-11	0.02	U	0.026	U	0.045	U	0.019	U	**1.5**		**0.93**		0.028	U
TP-6	0' - 2'	Ten Bears	Subsurface Exploration Report	Jul-11	0.019	U	0.024	U	0.041	U	0.017	U	**1**		**0.38**		0.025	U
TP-6	14.2' - 14.5'	Ten Bears	Subsurface Exploration Report	Jul-11	0.036	U	0.046	U	0.081	U	0.033	U	0.033	U	0.033	U	0.049	U
TP-6	8.5' - 9'	Ten Bears	Subsurface Exploration Report	Jul-11	0.0044	U	0.0056	U	0.0098	U	0.004	U	0.085		0.049		0.006	U
TP-7	0' -2'	Ten Bears	Subsurface Exploration Report	Jul-11	0.2	U	0.25	U	0.44	U	0.18	U	**6.7**		**2**		0.27	U
TP-7	17' - 18'	Ten Bears	Subsurface Exploration Report	Jul-11	0.0044	U	0.0056	U	0.0098	U	0.004	U	0.033		0.004	U	0.034	
TP-7	8' - 9'	Ten Bears	Subsurface Exploration Report	Jul-11	0.021	U	0.027	U	0.048	U	0.02	U	0.02	U	0.02	U	0.029	U
TP-8	0' - 2'	Ten Bears	Subsurface Exploration Report	Jul-11	0.2	U	0.26	U	0.45	U	**4.5**		0.19	U	**1.8**		0.28	U
TP-8	16' - 17'	Ten Bears	Subsurface Exploration Report	Jul-11	0.0053	U	0.0068	U	0.012	U	0.0049	U	0.18		0.0049	U	0.023	J
TP-8	4.0' - 4.5'	Ten Bears	Subsurface Exploration Report	Jul-11	0.021	U	0.027	U	0.046	U	0.019	U	**0.32**		0.019	U	0.063	J
TP-9	0' - 1'	Ten Bears	Subsurface Exploration Report	Jul-11	0.02	U	0.026	U	0.045	U	0.018	U	0.018	U	0.018	U	0.027	U
TP-9	4.5' - 4.8'	Ten Bears	Subsurface Exploration Report	Jul-11	0.0043	U	0.0055	U	0.0095	U	0.0039	U	0.0039	U	0.0039	U	**0.27**	
TP-SB-4	0' - 2'	Ten Bears	Subsurface Exploration Report	Jul-11	0.41	U	0.52	U	0.9	U	**21**		0.37	U	**3.5**		0.55	U
TP-SB-4	5.5' - 6'	Ten Bears	Subsurface Exploration Report	Jul-11	0.02	U	0.026	U	0.045	U	0.019	U	**0.68**		**0.19**		0.028	U
TP-SB-5	3.5'	Ten Bears	Subsurface Exploration Report	Jul-11	0.088	U	0.11	U	0.19	U	0.08	U	0.08	U	**2**		0.12	U

Note: All results reported in mg/kg.

Qualifiers:
bgs - Below ground surface
U - Sample not detected above the laboratory method detection limit
J - Estimated value
Bold and shaded - Exceeds DNREC-SIRS January 2014 Screening Levels

Table 3
PCB Analytical Results For Groundwater
1600 Bowers Street (DE-0280)
Wilmington, DE

Sample Identification	Screen Depth (feet bgs)	Sampling Company	Report Name	Report Date	Aroclor-1016 DNREC-SIRS Screening Level (January 2014) (ug/L) 0.11		Aroclor-1221 DNREC-SIRS Screening Level (January 2014) (ug/L) 0.004*		Aroclor-1232 DNREC-SIRS Screening Level (January 2014) (ug/L) 0.004*		Aroclor-1242 DNREC-SIRS Screening Level (January 2014) (ug/L) 0.034*		Aroclor-1248 DNREC-SIRS Screening Level (January 2014) (ug/L) 0.034*		Aroclor-1254 DNREC-SIRS Screening Level (January 2014) (ug/L) 0.031*		Aroclor-1260 DNREC-SIRS Screening Level (January 2014) (ug/L) 0.034*		Aroclor-1262 DNREC-SIRS Screening Level (January 2014) (ug/L) NCA		Aroclor-1268 DNREC-SIRS Screening Level (January 2014) (ug/L) NCA	
GW-1	NA	Ten Bears	Subsurface Exploration Report	Jul-11	0.095	U	0.15	U	0.095	U	0.095	U	0.095	U	0.095	U	0.095	U	0.19	U	0.095	U
GW-2	NA	Ten Bears	Subsurface Exploration Report	Jul-11	0.096	U	0.096	U	0.19	U	0.096	U	0.096	U	0.096	U	0.096	U	NA		NA	
GW-2	NA	Ten Bears	Subsurface Exploration Report	Jul-11	0.096	U	0.15	U	0.096	U	**0.5**		0.096	U	0.096	U	0.096	U	0.19	U	0.096	U
GW-3	NA	Ten Bears	Subsurface Exploration Report	Jul-11	0.095	U	0.15	U	0.095	U	0.095	U	0.095	U	0.095	U	0.095	U	0.19	U	0.095	U
GW-4	NA	Ten Bears	Subsurface Exploration Report	Jul-11	0.095	U	0.15	U	0.095	U	**0.37**	**J**	0.095	U	0.095	U	0.095	U	0.19	U	0.095	U
GW-4	NA	Ten Bears	Subsurface Exploration Report	Jul-11	0.096	U	0.096	U	0.19	U	0.096	U	0.096	U	0.096	U	0.14	U	NA		NA	
GW-5	NA	Ten Bears	Subsurface Exploration Report	Jul-11	0.097	U	0.15	U	0.097	U	0.097	U	0.097	U	0.097	U	0.097	U	0.19	U	0.097	U

Note: All results reported in ug/L.

Qualifiers:
bgs - Below ground surface
* - Screening level likely below the routine method detection limit
NCA - No criteria available
NA - Not analyzed
U - Sample not detected above the laboratory method detection limit
J - Estimated value
Bold and shaded - Exceeds DNREC-SIRS January 2014 Screening Levels

BrightFields, Inc.

Site Photographs

BrightFields, Inc.

From the west of the site on Marsh Road, the land slopes down towards the river and is covered in weeds then has a steep slope up towards the site and is covered in trees.

Vegetation along the river to the west of the site.

Debris and weeds within the site along the gravel road.

Debris pile within the site with weeds and trees interspersed.

PCB Mass Loading Phase II
1600 Bowers Street
SIRS ID: DE-0280
Wilmington, Delaware

BrightFields, Inc.

Overland Flow Calculations

PCB Loading Calculations from the Revised Universal Soil Loss Equation (RUSLE)
1600 Bowers Street (DE-0280)
Wilmington, DE

Surface PCB Concentration | 11.9 | mg/kg

Symbol	Factor	Value	Units
R	Rainfall/Runoff Erosivity Index	175	10^2 ft-tonf-in/ac-hr-yr
K	Soil Erodibility	0.20	0.01 ton-ac-hr/ ac-ft-tonf-in
	Erodible Area	6.0	Acres
LS	Topographic Factor	0.23	Dimensionless
C	Cover and Management Factor	1	Dimensionless
P	Support Practice Factor	0.05	Dimensionless
A	Average Annual Soil Loss	0.4	ton/ac-yr

PCB Loading via Overland Flow | 28 | **grams/year - PCBs**

PCB Mass Loading Phase II
1600 Bowers Street
SIRS ID: DE-0280
Wilmington, Delaware

BrightFields, Inc.

Groundwater Transport Calculations

PCB Loading Calculations - Groundwater Discharge to Surface Water
1600 Bowers Street (DE-0280)
Wilmington, DE

TABLE A1
Groundwater Discharge Calculations -
Based on Groundwater Concentrations

	Hydraulic Conductivity (K) (ft/day)	Horizontal Gradient (i) (ft/ft)	Cross-sectional Area (A) (ft^2)	Groundwater Discharge*	
				Liters/day	Gallons/ day
Minimum	0.28	0.0011	3,700	32.3	8.5
Maximum	5.7	0.0011	4,000	710	190

* - Groundwater Discharge (Q) = KiA

TABLE B1
Groundwater PCB Concentrations

Detected Groundwater PCB Concentrations (µg/L)	
Maximum	Minimum
0.50	0.37

TABLE C1
Estimated Mass Loadings of PCBs in Groundwater to the Western Boundary Water Body

Estimated PCB Mass Loading (g/yr)	
Minimum	**Maximum**
0.006	0.13

PCB Loading Calculations - Groundwater Discharge to Surface Water
1600 Bowers Street (DE-0280)
Wilmington, DE

TABLE A2
Groundwater Discharge Calculations
Based on Soil Concentrations

	Hydraulic Conductivity (K) (ft/day)	Horizontal Gradient (i) (ft/ft)	Cross-sectional Area (A) (ft^2)	Groundwater Discharge*	
				Liters/day	Gallons/ day
Minimum	0.28	0.0011	3,700	32.3	8.5
Maximum	5.7	0.0011	4,000	710	190

* - Groundwater Discharge (Q) = KiA

TABLE B2
Potential Groundwater PCB Concentration Calculation

Maximum Soil PCB (µg/kg)	f_{oc} (fraction of organic carbon)		Pore Water PCB (µg/L)	
			Maximum	Minimum
580	0.01	0.05	0.64	0.13

TABLE C2
Estimated Mass Loadings of PCBs in Groundwater to the Christina River

Maximum Estimated Groundwater Concentration (µg/L)	Estimated PCB Mass Loading (g/yr)	
	Minimum	Maximum
0.64	0.007	0.16