

PCB Mass Loading Phase II
Capitol Scrapyard
SIRS ID: DE-1171
Dover, Delaware



BrightFields, Inc.

Appendix 5

CAPITOL SCRAPYARD

DOVER, DELAWARE

SIRS ID: DE-1171

GENERAL SITE INFORMATION

Site Name: Capitol Scrapyard

SIRS ID Number: DE-1171

Site Location and Description:

The Capitol Scrapyard site, also known as Gordon's Scrap Yard, is located along West Street between W Division Street and E Reed Street in Dover, Delaware (Figure 1). The site is approximately 1.5 acres in size and is comprised of seven tax parcels (ED05-076.08-06-02.00, ED05-076.08-06-03.00, ED05-076.08-06-04.00, ED05-076.08-06-05.00, ED05-076.08-06-06.00, ED05-076.08-06-07.00, and ED05-076.08-06-58.00). The property is bounded to the north by a residence and the Division Street Substation, to the east by residential properties and Kirkwood Street, to the south by the Indusco Building, and to the west by West Street. The surrounding land is generally commercial and residential.

The closest surface water body is the St. Jones River which is located 3,000 feet east of the Site. According to the 1999 Brownfield Preliminary Assessment (BPA) II, there is not a direct path to the St. Jones River but the storm drain system discharges to the River.

The site was previously used as a metal scrap and salvage yard. It initially contained a scale house, truck scale, and an office/warehouse building, all of which have been removed. The northern portion of the site contains a newly constructed auto parts store and the southern portion of the site is a vacant property where the city plans to build a cultural center.

Previous Site Uses:

Since at least the late 1800's, the site has been occupied. Review of Sanborn Fire Insurance maps show that in 1885 and 1891 Dana and Sons Fruit Evaporator occupied the property. In the maps from 1897 and 1904 the property was used by E.M. Stevenson Fruit Evaporator. In 1910 the building was used for wood sawing. The 1929 maps show Crew Levick Oil Co. on part of the property with three oil tanks, but the Sanborn Map from 1969 does not have evidence of the tanks. The property was purchased in 1968 by the Gordon Family and used as a scrap metal salvage yard from the approximate purchase date (the 1969 Sanborn Map shows an area of the site designated as "Scrap Storage") through the 1990s. In 1999, a fire destroyed the back half the office/warehouse building and damaged the remainder of it. Before the Remedial Investigation/Interim Action

(RI/IA) Work Plan was implemented, there was a significant amount of concrete, scrap metal, and other debris in the surface and subsurface soils.

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.

City of Dover, Downtown West-Side, Phase I Site Assessment (1999, Gannett Fleming)

The Phase I Site Assessment was performed to determine if past practices at the site had resulted in environmental contamination. During the assessment scrap metal, tire piles, wooden pallets, empty gas cylinders, plastic buckets, rebar, and concrete chunks were all noted throughout the property as well as several 55-gallon drums near the scale house.

Brownfield Preliminary Assessment II (DNREC, 2000)

This was the first investigation performed on the site; no BPA I was performed. The assessment included the excavation of eight test pits and the collection of 27 soil samples and 2 groundwater samples, plus QA/QC samples. Soil samples were collected from the eight test pits and from nine other shallow surface locations then screened for PCBs and PAHs. Out of the 12 soil samples that were submitted for confirmatory analysis, Risk-Based Concentration (RBC) benchmarks or DNREC Uniform Risk-Based Standards (URS) were exceeded for 10 of the samples, with Aroclor concentrations ranging from 0.300 mg/kg to 17 mg/kg. DNREC installed two groundwater monitoring wells and collected samples from both. PCBs were not detected in either groundwater sample.

Supplemental Soil and Groundwater Investigation (Brownfield Associates, 2006)

In the first and second quarters of 2006, Brownfield Associates, Inc. installed six monitoring wells, collected six soil samples, performed two rounds of groundwater sampling, and excavated test pits. In soil samples collected from the locations of MW-4, MW-7, and MW-8, Aroclor 1248 and 1254 were detected above the URS values. In groundwater sample MW-4, Aroclor 1242 was detected above the URS value.

Remedial Investigation and Interim Action Report (Brownfield Associates, 2008)

Interim remedial actions consisted of a lead-based paint inspection, an asbestos inspection and removal, and the removal of tires, vegetative debris, surface debris, empty articles, drums, contaminated soil, and buried debris. Eight test pits were excavated and sampled to determine the depth of scrap and identify the appropriate waste disposal options. Contaminated debris and soils were excavated and separated. PCB and Lead concentrations exceeded URS values in screened excavated soil so it was transported off-site for disposal. A total of 36 grab soil samples were collected after the excavation. Analysis revealed that two locations had contaminant concentrations exceeding URS values so those locations were over-excavated along with an additional location which had a PCE detection (however it was below the URS value so over-excavation was limited).

During excavation activities, additional issues were encountered on the site. A UST was discovered. The contents were removed and the tank was excavated and cleaned for future disposal. A soil sample was collected from beneath the UST and analytical results were below URS values. In addition, an estimated 2,300 yards of petroleum-impacted soil were discovered in the southern portion of the site. As a result, the shallow soil contamination was excavated and disposed of offsite while nutrient and oxygen addition was implemented for the deeper contaminated soils.

After all excavation activities were completed, the site was backfilled and restored with grass. Brownfield Associates recommended no further remedial action, continued monitoring and future use restrictions on the area affected by residual petroleum hydrocarbons.

Current Regulatory Status:

Remediation was completed in 2008. In 2009, DNREC placed a Groundwater Management Zone (GMZ) on the southern portion of the site to prohibit installation of wells and use of shallow groundwater without DNREC approval. The site was then issued a Certificate of Completion of Remedy by DNREC in December 2009. An Operations and Maintenance (O&M) plan was developed and approved by DNREC in 2008 to monitor groundwater; however, there is no evidence of inspections on DNREC's Environmental Navigator.

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.

Prior to site remediation and capping, PCBs were detected in 30 surface soil samples. A total of 20 of the 30 surface soil samples had laboratory analytical concentrations ranging from 0.0045 mg/kg to 18 mg/kg. The remaining ten surface soil samples were only screened and had concentrations ranging from <0.5 mg/kg to >1 mg/kg and <20 mg/kg. PCBs were detected in 11 unsaturated subsurface soil samples. Five of the 11 unsaturated subsurface soil samples had laboratory analytical PCB concentrations ranging from 0.16 mg/kg to 3.9 mg/kg. The remaining six samples were only screened, with concentrations ranging from <0.5 mg/kg to >0.5 mg/kg and <10 mg/kg. Based on the data reviewed by BrightFields, saturated soil samples were not analyzed for PCBs. PCBs were detected in groundwater samples at one location, MW-4, at a concentration of 0.21 µg/L.

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 >1 mg/kg and <20 mg/kg
Subsurface Soil (unsaturated)	Figure 3	Method 8082 and Screening Data	Not detected to >0.5 mg/kg and <10 mg/kg
Subsurface Soil (saturated)	Figure 4	Not Analyzed	Not Analyzed
Groundwater	Figure 5	Method 8082	Not detected to 0.21 µg/L

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

Acreage where PCBs detected:

Based on the data available and reviewed by BrightFields, the current surface soil is not impacted by PCBs, due the installation of a soil cap in 2008. The subsurface saturated soil could not be evaluated since samples were not analyzed for PCBs. The estimated subsurface unsaturated soil area impacted by PCBs is 0.58 acres (Figure 3). The estimated area of groundwater impacted by PCBs is 0.17 acres (Figure 5).

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Capitol Scrapyard
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Dover, Delaware



PCB Remediation Status:

The site was excavated and backfilled in 2008. No additional remediation for PCBs is required at the site.



PCB MASS LOADING SUMMARY

Since the contaminated surface soil has been excavated and backfilled, overland flow is not a likely mechanism of transport of PCB contamination at the Capitol Scrapyard site. The PCB mass loading rate to surface water via groundwater transport was estimated for the Capitol Scrapyard Property. A summary of the results is included below and the details of the calculations are included as attachments to this Appendix.

Overland Flow:

No overland flow analysis was performed for this site.

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 6.

The groundwater monitoring wells onsite were sampled in multiple rounds. Because PCBs were detected in groundwater, the concentration of PCBs detected was used to calculate the mass loading.

The amount of hydrogeologic data for the Site is very limited. However, BrightFields performed a Brownfield Investigation (BI) on the property at 680 Forest Street (DE-1451), which is located approximately 350 feet southwest of the Capital Scrapyard site. Therefore, hydrogeologic data from this site was used as inputs for the Capitol Scrapyard site.

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)	14	850	Drilling logs from Geoprobe [®] borings at 680 Forest St were used to evaluate the lithology beneath the site. Groundwater being monitored is within a fine to coarse-grained sand. Fine to coarse-grained sand ranges from approximately 5

Groundwater Transport Factors	Value Used		Justification/Derivation of Value Used
	min	max	
			$x 10^{-3}$ to $3 x 10^{-1}$ cm/sec (Cernica, 1995). This value is equivalent to $1 x 10^1$ to $9 x 10^2$ feet/day.
I = Horizontal Groundwater Gradient	0.0035	0.0035	Based on groundwater measurements from 680 Forest Street, GW flow is to the east southeast.
Saturated Thickness (ft)	7.6	9.0	Based on the borings logs from 680 Forest Street, the saturated thickness (as penetrated by the Geoprobe) ranged from 7.6 feet to 9 feet thick.
Lateral Discharge Distance (ft)	55	95	The lateral discharge distance was estimated to be equal to the length of the PCB impacted area measured perpendicular to the inferred groundwater flow direction.
A= Cross-Sectional Area (ft ²)	418	855	Calculated from the saturated thickness and lateral discharge distance.
Groundwater PCB Concentration (µg/L)	0.21	0.21	The maximum concentration detected in the groundwater.
Distance to Discharge point (ft)	4,200		Approximate distance from property boundary to closest surface water location.

Mass Loading Via Groundwater Transport Result:

The groundwater discharge is 580 to 72,000 L/day (see attached Table A). The maximum detected PCB concentration in groundwater (0.21 µg/L) was used to calculate the groundwater concentrations for the loading estimate (Table B). 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. (a very conservative assumption given the distance to discharge of 4,200 ft).

The total PCB loading via groundwater discharge is estimated to be between **0.04 and 5.5 grams per year** (Table C).

Uncertainty Analysis Associated with Groundwater Transport:

Specific Areas and Degree of Uncertainty for Capitol Scrapyard

	Groundwater PCB Concentration	Sampling Density	Hydraulic Conductivity	Horizontal Groundwater Gradient	Saturated Thickness	Lateral Discharge Distance	Distance to Discharge Point
Site Specific Information	Based on maximum (and only) groundwater concentration detected	12.2; Adequately defined PCB distribution	Based on nearby site logs	Groundwater measurements from a nearby site	Limited thickness data	Groundwater gradient from nearby site	Directly adjacent
Degree of Uncertainty	Moderate	Low	High	High	High	Moderate	Low

Based on this evaluation the level of uncertainty associated with groundwater transport PCB mass loading from the Capitol Scrapyard is **Moderate to High**.

Site References:

Brownfield Associates, Inc., Draft Letter to Conduct Additional Groundwater Characterization, February 2006.

Brownfield Associates, Inc., 2008, Remedial Investigation and Interim Action Report, Capitol Scrap Yard, July 2008.

Delaware Department of Natural Resources and Environmental Control (DNREC), 2000, Capitol Scrap Yard Brownfield Preliminary Assessment II, June 2000.

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

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Dover, Delaware



Figures

DIVISION STREET



- Soil Sample
- Groundwater Sample
- Capitol Scrapyard Site Boundary (1.47 ac)
- Tax Parcels

Source: Delaware DataMIL - Aerial 2012, Tax Parcels.



BrightFields, Inc.
Environmental Evaluation
Investigation, and Remediation

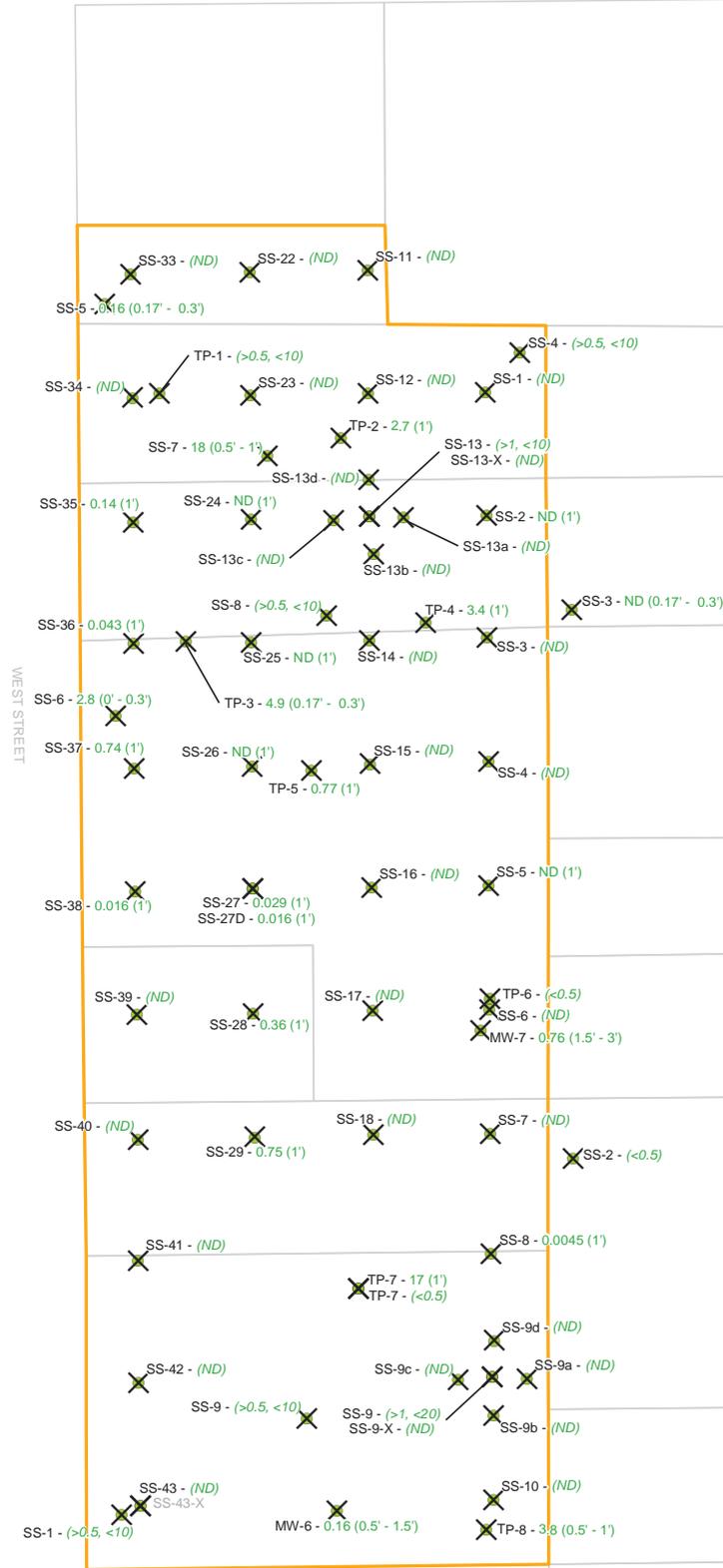
801 Industrial Street, Suite 1 302-656-9600
Wilmington, Delaware 19801 302-656-9700 fax

Historic Sample Locations
and Aerial Photograph (2012)
Capitol Scrapyard
Dover, Delaware

Drawn	By	Date	Scale:	File Name:
Checked	ADS	5/1/2014	1:480	Fig1SiteLoc.mxd
Project #	JEH	5/1/2014	Fig. No.	
	0985.69.51		Figure 1	

0 20 40
Feet





- ✕ Soil Excavated and Capped
- Soil Sample, No PCB data available
- Soil Sample
- ▭ Estimated PCB Distribution
- ▭ Capitol Scrapyard Site Boundary
- ▭ Tax Parcels

Notes:
 0.58 (0') - Total PCB Concentration (mg/kg) and Sample Depth.
 ND - Not Detected
 Screening data is in parentheses and italicized.
 PCB screening values of (<0.5) are treated as Not Detected.
 Source: Delaware DataMIL - Tax Parcels.

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PCB Distribution in Surface Soil (0' - 2' bgs)
 Capitol Scrapyard
 Dover, Delaware

Drawn	By	Date	Scale:	File Name:
ADS	ADS	5/1/2014	1:480	Fig2DistSurf.mxd
Checked	JEH	5/1/2014	Fig. No.	
Project #	0985.69.51	Figure 2		

0 20 40 Feet



- Soil Sample, No PCB data available
- Soil Sample
- Estimated PCB Distribution
- Capitol Scrapyard Site Boundary
- Tax Parcels

Notes:
 0.58 (0) - Total PCB Concentration (mg/kg) and Sample Depth.
 ND - Not Detected
 Screening data is in parentheses and italicized.
 PCB screening values of (<0.5) are treated as Not Detected.
 Source: Delaware DataMIL - Tax Parcels.

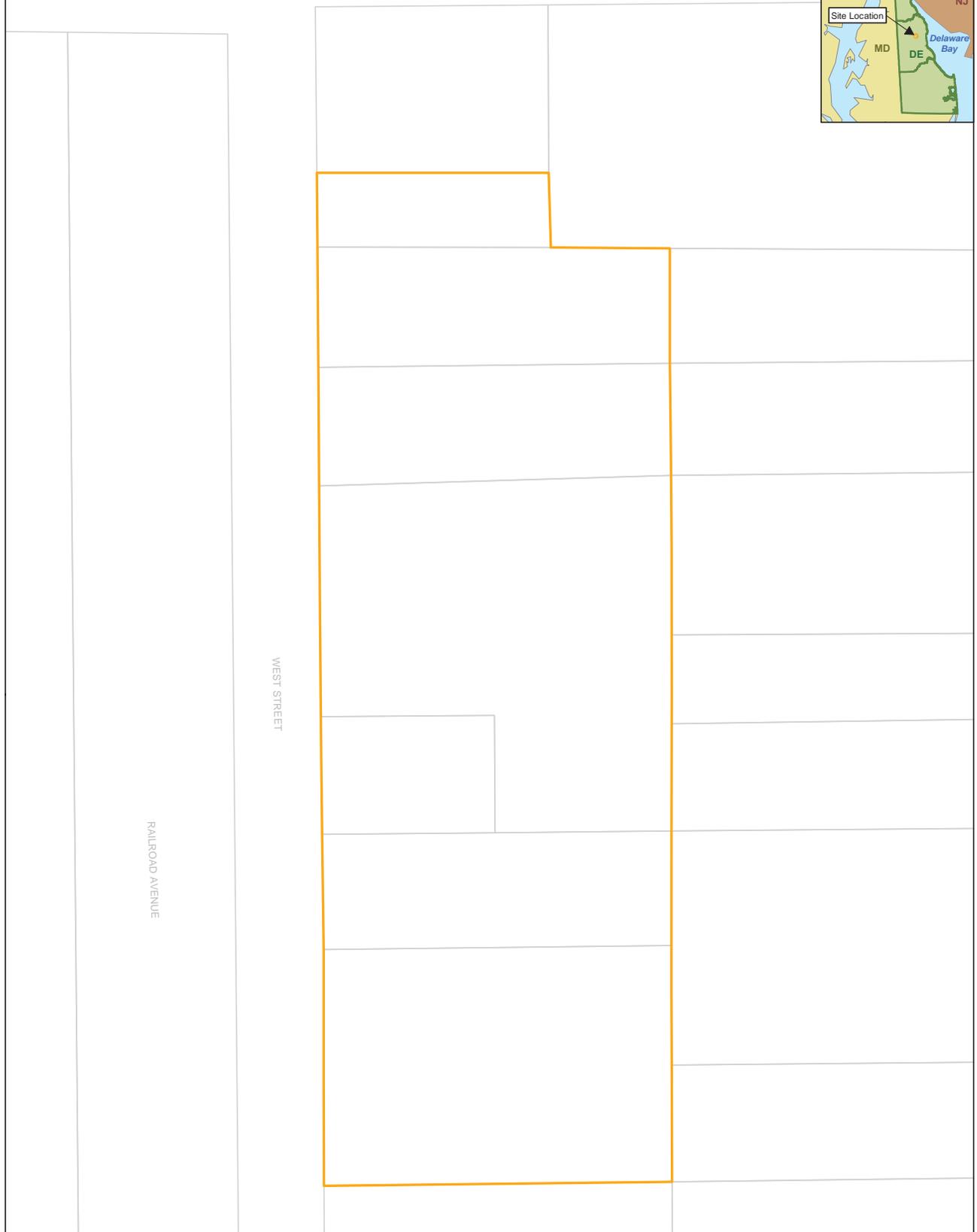
BrightFields, Inc.
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PCB Distribution in Subsurface Unsaturated Soil
 Capitol Scrapyard
 Dover, Delaware

By	Date	Scale:	File Name:
Drawn ADS	5/1/2014	1:480	Fig3SS_UnSat.mxd
Checked JEH	5/1/2014	Fig. No.	
Project # 0985.69.51		Figure 3	

0 20 40 Feet

DIVISION STREET



 Capitol Scrapyard Site Boundary
 Tax Parcels

Source: Delaware DataML - Tax Parcels.


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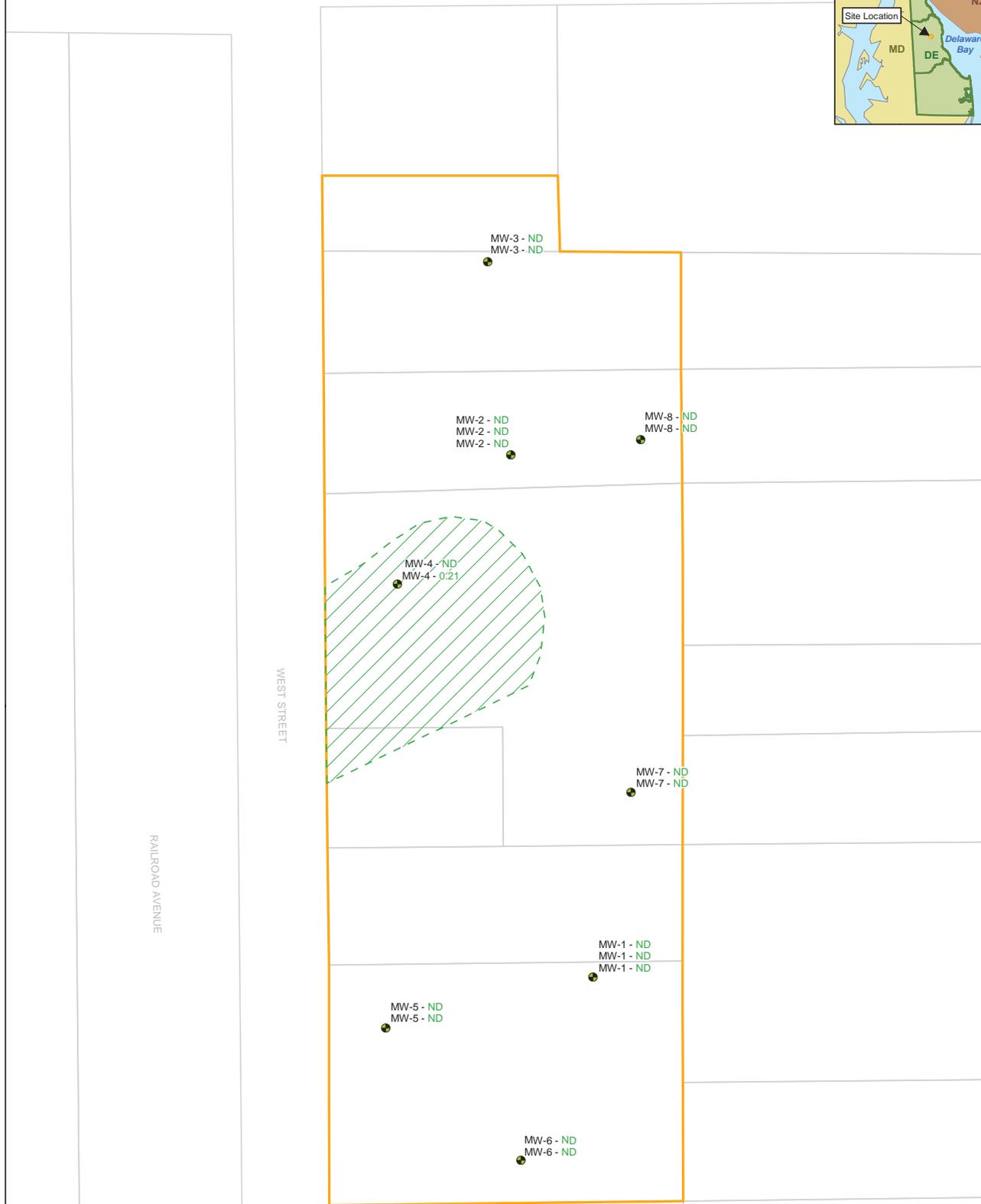
PCB Distribution in Subsurface Saturated Soil
 Capitol Scrapyard
 Dover, Delaware

Drawn	By	Date	Scale:	File Name:
ADS	ADS	5/1/2014	1:480	Fig4SS_Sat.mxd
Checked	JEH	5/1/2014	Fig. No.	
Project #	0985.69.51		Figure 4	

0 20 40 Feet



DIVISION STREET



- Groundwater Sample
- Estimated PCB Distribution
- Capitol Scrapyard Site Boundary
- Tax Parcels

Notes:
 0.37 - Total PCB Concentration (ug/L).
 ND - Not Detected
 Samples showing multiple values were taken at different depths.
 Source: Delaware DataML - Tax Parcels.

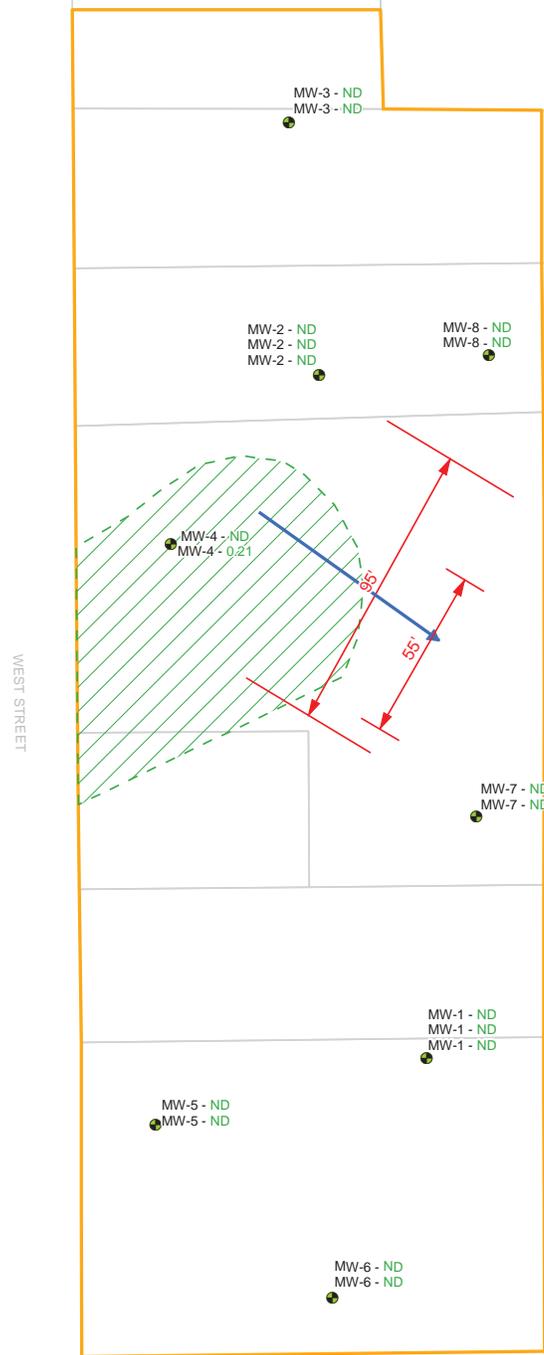
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PCB Distribution in Groundwater
 Capitol Scrapyard
 Dover, Delaware

Drawn	By	Date	Scale:	File Name:
ADS	ADS	5/1/2014	1:480	Fig5GW.mxd
Checked	JEH	5/1/2014	Fig. No.	
Project #	0985.69.51		Figure 5	

0 20 40 Feet

DIVISION STREET



- Groundwater Sample
- Groundwater Discharge Distance (feet)
- Groundwater Discharge Limit
- Groundwater Flow Direction
- Estimated PCB Distribution
- Capitol Scrapyard Site Boundary
- Tax Parcels

Notes:
 0.21 - Total PCB Concentration (ug/L).
 ND - Not Detected
 Source: Delaware DataMIL - Tax Parcels.

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Groundwater Discharge Map
 Capitol Scrapyard
 Dover, Delaware

Drawn	By	Date	Scale:	File Name:
ADS	ADS	5/1/2014	1:480	Fig6Discharge.mxd
Checked	JEH	5/1/2014	Fig. No.	
Project #	0985.69.51		Figure 6	

0 20 40 Feet

PCB Mass Loading Phase II
Capitol Scrapyard
SIRS ID: DE-1171
Dover, Delaware



Tables

**Table 1
PCB Screening Results For Soil
Capitol Scrapyard (DE-1171)
Dover, DE**

Sample Identification	Sample Depth (feet bgs)	Sampling Company	Report Name	Report Date	Total PCBs
					DNREC-SIRS Screening Level (January 2014) (mg/kg) NCA
SS-1	0' - 0.25'	DNREC	Capitol Scrap Yard BPA II	1999	>0.5, <10
SS-1	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-10	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-11	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-12	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-13	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	>1, <10
SS-13a	2'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-13b	2'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-13c	2'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-13d	2'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-13-X	2'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-14	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-15	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-16	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-17	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-18	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-2	0.17' - 0.3'	DNREC	Capitol Scrap Yard BPA II	1999	<0.5
SS-2	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-22	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-23	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-24	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-25	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-26	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-27	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-28	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-29	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-3	0.17' - 0.3'	DNREC	Capitol Scrap Yard BPA II	1999	<0.5
SS-3	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-33	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-34	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-35	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-36	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-37	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-38	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-39	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-4	0' - 0.25'	DNREC	Capitol Scrap Yard BPA II	1999	>0.5, <10
SS-4	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-40	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-41	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-42	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-43	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND

**Table 1
PCB Screening Results For Soil
Capitol Scrapyard (DE-1171)
Dover, DE**

Sample Identification	Sample Depth (feet bgs)	Sampling Company	Report Name	Report Date	Total PCBs
					DNREC-SIRS Screening Level (January 2014) (mg/kg) NCA
SS-5	0.17' - 0.3'	DNREC	Capitol Scrap Yard BPA II	1999	<0.5
SS-5	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-6	0' - 0.3'	DNREC	Capitol Scrap Yard BPA II	1999	>0.5, <10
SS-6	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-7	0.5' - 1'	DNREC	Capitol Scrap Yard BPA II	1999	>10
SS-7	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-8	0.5' - 0.6'	DNREC	Capitol Scrap Yard BPA II	1999	>0.5, <10
SS-8	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-9	0' - 0.3'	DNREC	Capitol Scrap Yard BPA II	1999	>0.5, <10
SS-9	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	>1, <20
SS-9a	2'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-9b	2'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-9c	2'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-9d	2'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
SS-9-X	2'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND
TP-1	1'	DNREC	Capitol Scrap Yard BPA II	1999	>0.5, <10
TP-1	3'	DNREC	Capitol Scrap Yard BPA II	1999	>0.5, <10
TP-2	1'	DNREC	Capitol Scrap Yard BPA II	1999	>0.5, <10
TP-2	5'	DNREC	Capitol Scrap Yard BPA II	1999	>0.5, <10
TP-3	0.17' - 0.3'	DNREC	Capitol Scrap Yard BPA II	1999	>0.5, <10
TP-3	5' - 6'	DNREC	Capitol Scrap Yard BPA II	1999	<0.5
TP-4	1'	DNREC	Capitol Scrap Yard BPA II	1999	>0.5, <10
TP-4	5' - 6'	DNREC	Capitol Scrap Yard BPA II	1999	<0.5
TP-5	1'	DNREC	Capitol Scrap Yard BPA II	1999	<0.5
TP-5	5' - 6'	DNREC	Capitol Scrap Yard BPA II	1999	<0.5
TP-6	1'	DNREC	Capitol Scrap Yard BPA II	1999	<0.5
TP-6	4' - 5'	DNREC	Capitol Scrap Yard BPA II	1999	<0.5
TP-7	1'	DNREC	Capitol Scrap Yard BPA II	1999	>0.5, <10
TP-7	1.5' - 2'	DNREC	Capitol Scrap Yard BPA II	1999	<0.5
TP-8	0.5' - 1'	DNREC	Capitol Scrap Yard BPA II	1999	>0.5, <10
TP-8	3' - 4'	DNREC	Capitol Scrap Yard BPA II	1999	<0.5

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
Capitol Scrapyard (DE-1171)
Dover, DE

Sample Identification	Sample Depth (feet bgs)	Sampling Company	Report Name	Report Date	Aroclor-1016 Screening Level (mg/kg)	Aroclor-1221 Screening Level (mg/kg)	Aroclor-1232 Screening Level (mg/kg)	Aroclor-1242 Screening Level (mg/kg)	Aroclor-1248 Screening Level (mg/kg)	Aroclor-1254 Screening Level (mg/kg)	Aroclor-1260 Screening Level (mg/kg)	Total PCBs Screening Level (January 2014) (mg/kg)
MW-3	2' - 4'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	0.39	0.19	U	0.22	0.12	0.034	0.01	J
MW-4	2.5' - 4.5'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	0.39	0.39	U	0.39	2.7	1.1	0.14	J
MW-5	4' - 6'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	0.019	0.019	U	0.019	0.019	0.019	0.019	U
MW-6	0.5' - 1.5'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	0.02	0.02	U	0.02	0.02	0.13	0.026	U
MW-7	1.5' - 3'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	0.1	0.1	U	0.1	0.5	0.23	0.034	J
MW-8	4.5' - 5'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	0.097	0.097	U	0.097	0.58	0.19	0.047	J
SS-2	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND	ND	U	ND	ND	ND	ND	ND
SS-24	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND	ND	U	ND	ND	ND	ND	ND
SS-25	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND	ND	U	ND	ND	ND	ND	ND
SS-26	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND	ND	U	ND	ND	ND	ND	ND
SS-27	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	NA	NA	U	NA	NA	NA	NA	NA
SS-27D	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	NA	NA	U	NA	NA	NA	NA	0.016
SS-28	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	NA	NA	U	NA	NA	NA	NA	0.36
SS-29	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	NA	NA	U	NA	NA	NA	NA	0.75
SS-3	0.17' - 0.3'	DNREC	Capitol Scrap Yard BPA II	1999	0.043	0.087	U	0.043	0.043	U	0.043	U
SS-35	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	NA	NA	U	NA	NA	NA	NA	0.14
SS-36	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	NA	NA	U	NA	NA	NA	NA	0.043
SS-37	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	NA	NA	U	NA	NA	NA	NA	0.74
SS-38	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	NA	NA	U	NA	NA	NA	NA	0.016
SS-5	0.17' - 0.3'	DNREC	Capitol Scrap Yard BPA II	1999	0.041	0.084	U	0.041	0.071	U	0.068	U
SS-5	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	ND	ND	U	ND	ND	ND	ND	ND
SS-6	0' - 0.3'	DNREC	Capitol Scrap Yard BPA II	1999	0.046	0.093	U	0.046	2.5	D	0.28	D
SS-7	0.5' - 1'	DNREC	Capitol Scrap Yard BPA II	1999	0.2	0.41	U	0.2	0.2	U	0.65	U
SS-8	1'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	NA	NA	U	NA	NA	NA	NA	0.0045
TP-2	1'	DNREC	Capitol Scrap Yard BPA II	1999	0.041	0.084	U	2.4	0.041	U	0.31	D
TP-2	5'	DNREC	Capitol Scrap Yard BPA II	1999	0.036	0.072	U	0.53	0.036	U	0.36	U
TP-3	0.17' - 0.3'	DNREC	Capitol Scrap Yard BPA II	1999	0.043	0.087	U	0.043	4.6	D	0.28	U
TP-4	1'	DNREC	Capitol Scrap Yard BPA II	1999	0.039	0.08	U	0.039	3	D	0.38	D
TP-5	1'	DNREC	Capitol Scrap Yard BPA II	1999	0.039	0.08	U	0.039	0.77	U	0.39	U
TP-7	1'	DNREC	Capitol Scrap Yard BPA II	1999	0.19	0.38	U	16	0.19	U	0.65	U
TP-8	0.5' - 1'	DNREC	Capitol Scrap Yard BPA II	1999	0.047	0.095	U	1.3	0.047	U	2.5	D

Note: All results reported in mg/kg.

- Qualifiers:
bgs - Below ground surface
NCA - No criteria available
U - Sample not detected above the laboratory method
J - Estimated value
D - Diluted sample
ND - Not detected
NA - Not available from reports provided to Brightfields
Bold and shaded - Exceeds DNREC-SIRS January 2014 Screening Levels

Table 3
PCB Analytical Results For Groundwater
Capitol Scrapyard (DE-1171)
Dover, 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 2013) (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*
MW-1	14' - 24'	DNREC	Capitol Scrap Yard BPA II	1999	1	2	1	1	1	1	1
MW-1	14' - 24'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	U	U	U	U	U	U	U
MW-1	14' - 24'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	0.48	U	0.47	U	0.47	U	0.47
MW-2	15' - 25'	DNREC	Capitol Scrap Yard BPA II	1999	1	2	1	1	1	1	1
MW-2	15' - 25'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	0.48	U	0.48	U	0.48	U	0.48
MW-2	15' - 25'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	0.47	U	0.47	U	0.47	U	0.47
MW-3	>2'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	0.47	U	0.47	U	0.47	U	0.47
MW-3	>2'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	0.48	U	0.48	U	0.48	U	0.48
MW-3	>2'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	0.48	U	0.48	U	0.48	U	0.48
MW-4	>2'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	0.47	U	0.47	U	0.47	U	0.47
MW-4	>2'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	0.48	U	0.48	U	0.48	U	0.48
MW-5	>2'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	0.48	U	0.48	U	0.48	U	0.48
MW-5	>2'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	0.47	U	0.47	U	0.47	U	0.47
MW-6	>2'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	0.48	U	0.48	U	0.48	U	0.48
MW-6	>2'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	0.48	U	0.48	U	0.48	U	0.48
MW-7	>2'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	0.48	U	0.48	U	0.48	U	0.48
MW-7	>2'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	0.47	U	0.47	U	0.47	U	0.47
MW-8	>2'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	0.48	U	0.48	U	0.48	U	0.48
MW-8	>2'	BrownField Associates	Remedial Investigation and Interim Action Report	Jul-08	0.47	U	0.47	U	0.47	U	0.47

Note: All results reported in ug/L.

Qualifiers:

bgs - Below ground surface

* - Screening level likely below the routine method detection limit

U - Sample not detected above the laboratory method detection limit

J - Estimated value

Bold and shaded - Exceeds DNREC-SIRS January 2014 Screening Levels

PCB Mass Loading Phase II
Capitol Scrapyard
SIRS ID: DE-1171
Dover, Delaware



BrightFields, Inc.

Site Photographs



Looking northeast onto the site there is large vegetation in the eastern portion of the site, beyond which are residences.



Looking north onto the site towards an auto parts store. There is a dirt path along West Street and some patchy areas in the grass.



From the parking lot of the auto parts store north of the site, a large bare area can be seen which extends towards West Street.



The southern portion of the site which is bordered by the Bay Contractor Supply, Inc. building and driveway.



The eastern portion of the site with thicker grass, large bushes, and trees.



The thick vegetation in the eastern portion of the site.

PCB Mass Loading Phase II
Capitol Scrapyard
SIRS ID: DE-1171
Dover, Delaware



BrightFields, Inc.

Overland Flow Calculations

(Not Applicable)

PCB Mass Loading Phase II
Capitol Scrapyard
SIRS ID: DE-1171
Dover, Delaware



BrightFields, Inc.

Groundwater Transport Calculations

**PCB Loading Calculations - Groundwater Discharge to Surface Water
Capitol Scrapyard (DE-1171)
Dover, DE**

**TABLE A
Groundwater Discharge Calculations**

	Hydraulic Conductivity (K) (ft/day)	Horizontal Gradient (i) (ft/ft)	Cross-sectional Area (A) (ft ²)	Groundwater Discharge*	
				Liters/day	Gallons/day
Minimum	14	0.0035	418	580	153
Maximum	850	0.0035	855	72,000	19,000

* - Groundwater Discharge (Q) = KiA

**TABLE B
Groundwater PCB Concentrations**

Detected Groundwater PCB Concentrations (µg/L)	
Maximum	Minimum
0.21	0.21

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

Estimated PCB Mass Loading (g/yr)	
Minimum	Maximum
0.04	5.5