

PCB Mass Loading
Former NVF Facility
SIRB ID: DE-1374
Wilmington, Delaware



BrightFields, Inc.

Appendix 20

FORMER NVF FACILITY WILMINGTON, DELAWARE

SIRB ID: DE-1374

GENERAL SITE INFORMATION

Site Name: Former NVF Facility

SIRB ID Number: DE-1374

Site Location and Description: The Former NVF Facility is located at 700 Maryland Avenue in Wilmington, New Castle County, Delaware (the “Site”). The Site comprises approximately 2 acres and is identified as tax parcel 26-042.30-079. The Site consists of a city block bounded by Maryland Avenue, Beech Street, Oak Street, and Anchorage Street and is zoned for industrial use. Currently, the Site is occupied by a partially decommissioned former manufacturing facility comprising several adjoining buildings and surrounding paved areas. Residential urban neighborhoods and light commercial sites adjoin the Site to the southwest and northwest. Industrial and heavy commercial facilities are present to the southeast and northeast. The Site is currently owned by Reybold Venture Group XI-F LLC.

Previous Site Uses: The site is located in an area of Wilmington that has been in continuous industrial use since the late 1700s. Historical uses of the site and the surrounding areas were investigated during a 2006 Modified Phase I Environmental Site Assessment through a review of the following sources: aerial photographs, fire insurance maps, and an interview with a past employee of the Site.

Based on the earliest historical source reviewed, in 1884 the Site was occupied by *W.Y. Warner Morocco Mfy.*, a leather tannery. Adjacent properties at the time included machine shops to the east and south and residential dwellings to the north and west. In 1901 the Site was identified as *The Kartavert Mfg. Co.*, a manufacturing company. Adjacent property use does not appear to have changed during this time period. In 1927 the Site was identified as *National Vulcanized Fibre*. On-site structures of concern included a manufacturing facility, machine shops, and gasoline storage tanks. Adjacent property uses include the *11th Ward Bottling Works* to the north, machine shops to the east and south, and residential dwellings to the west. Subsequent historical sources indicate several minor changes to the Site, including the removal of the gasoline tanks. Subsequent changes to adjacent properties include the addition of an auto repair shop, a welding facility, and a gasoline filling station to the north, *DuPont DeNemours & Co.* to the east and south and the *Engineering and Development Lab* to the southeast. Given the nature of industrial or commercial disposal practices before environmental regulation, the possibility

exists for contamination to have migrated into the subsurface from neighboring properties and from the Site.

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.

Modified Phase I Environmental Site Assessment (Duffield Associates, 2006)

During January 2006, Duffield Associates performed a Modified Phase I ESA to identify recognized environmental conditions (RECs) at the Site for the purpose of potential real estate transfer. The assessment did not include sampling of soils, groundwater, or other media for laboratory analysis. Duffield Associates identified the following RECs and other potential environmental issues in connection with the Site:

- Oil spills inside the Site buildings;
- Possible polychlorinated biphenyls (PCB)-containing equipment in the form of hydraulic pumps, compressors, and electrical transformers. Hydraulic pumps and related equipment were observed on the first level in the manufacturing buildings. Electrical transformers were observed throughout the buildings and outside near the intersection of Maryland Avenue and Beech Street;
- Evidence of a UST near the boiler house. Regulatory documentation indicated that the UST contained heating oil and was abandoned in place;
- One gasoline UST was removed from the Site; historical research indicated the presence of two on-site USTs. It is unknown if the second UST exists or if petroleum impacted soils are present;
- The New Castle County Soil Survey reports that the Site contains fill material. In addition, the Site historically operated as a leather tanning facility; this suggests that environmental constituents of concern may be present in Site soils and groundwater;
- Numerous drums and other containers of industrial chemicals and lubricants are present and several containers are not labeled;
- Abandoned industrial equipment is located throughout Site buildings. The equipment may be impacted by chemicals or contain asbestos; and

- Asbestos-containing materials, mold-like materials and lead-based paint are potentially present at the Site.

Brownfield Investigation (Duffield Associates, 2006)

Soil Investigation:

During February 2006, fifteen hand auger soil borings, 29 Geoprobe soil borings, and 17 backhoe excavations were performed to assess surface and subsurface soil conditions at the Site. Fifty-eight surface and 49 subsurface soil samples were collected for laboratory analysis for volatile organics (VOCs), semivolatile organics (SVOCs), pesticides, PCBs, and inorganics. DNREC-SIRB screened 107 samples for the parameters listed above. Pesticides and PCBs were not detected in the screened samples. Twenty-one of the 107 samples screened by DNREC-SIRB were submitted to Lancaster Laboratories for confirmation analysis. Analytical results were compared to DNREC-SIRB's Uniform Risk Based Standard (URS) within a Non-Critical Water Resource Area assuming a restricted use and an unrestricted use scenario for the Site. Two of the 21 samples were analyzed for PCBs. Although not detected by the DNREC-SIRB screening, PCBs were detected in both the confirmatory samples analyzed for those parameters. The reported concentrations of the two detected PCBs were 0.023 mg/kg and 0.015 mg/kg for PCB 1254 and 0.042 mg/kg and 0.046 mg/kg for PCB 1260, well below the DNREC-SIRB's unrestricted use standard of 0.3 mg/kg for each parameter.

It should be noted that, during the Brownfield Investigation, separate phase petroleum product was observed at seven locations in soil and water. However, the monitoring well location was biased to identify potential off-site contributions to groundwater loading and to evaluate potential site-related impacts to local groundwater quality. Therefore, the areas visually observed to contain separate phase product were not sampled.

Groundwater Investigation:

During February 2006, Duffield Associates collected one groundwater sample from each of four Geoprobe installed prepacked wells. Groundwater samples were submitted to Lancaster Laboratories for the following analyses: TCL VOCs, TCL SVOCs, TCL pesticides, TCL PCBs, and TAL inorganics using HSCA protocols. No PCBs were detected in Site groundwater. The laboratory report indicated that VOCs, SVOCs, pesticides, and inorganics were detected in the groundwater samples below DNREC-SIRB's URS for groundwater. A manganese concentration

of 72.3 µg/L was detected in one groundwater sample, exceeding the URS of 50 µg/L for that constituent.

Building Materials Survey (Duffield Associates, 2006)

During February and April 2006, Duffield Associates performed an evaluation of building materials at the Site which included a selective survey of potential PCB contaminated areas. Thirteen wipe samples from visible petroleum-like stained floor surfaces, three oil samples from floor spills, and 15 oil transformer reservoir samples were obtained to evaluate the presence of PCBs. Samples were analyzed by STL Edison Laboratories for PCBs by the United States Environmental Protection Agency (USEPA) Method SW-846 8082. Laboratory analysis indicated that PCBs were detected in 6 of the 13 wipe samples and 6 of the 15 transformer oil samples collected. Two of the six samples contained concentrations of PCBs that exceeded the regulatory standard of 10 µg/100cm² found in the Code of Federal Regulations Title 40, Part 761, subpart 79 (40 CFR 761 subpart 79). PCB concentrations in the transformer oil did not exceed the regulatory standard of 50 mg/kg found in 40 CFR 761 subpart 79. An evaluation to detect the potential presence of PCBs within the remaining three small, exterior oil transformer reservoirs located on the Site could not be performed due to limited access. Duffield Associates suggested that the reservoirs may be dry but recommended an evaluation be performed during demolition activities.

Current Regulatory Status:

The Brownfield Investigation conducted by Duffield Associates in 2006 and addended in July 2008 was approved by DNREC in August 2008. Reybold Venture Group XI-F LLC proposes to redevelop the site as condominiums, potentially containing commercial components such as store(s) or shop(s). As of December 2008, a Remedial Action Work Plan was drafted by Duffield Associates for review by DNREC, but no remediation had occurred.

SUMMARY OF SITE PCB INFORMATION

Site Investigation PCB Findings:

Estimated concentrations of Aroclor-1254 and Aroclor-1260 were reported in one surface sample and one subsurface saturated sample at the same location (TP15) at concentrations well below the unrestricted URS criteria. All other sample locations were screened by DNREC-SIRB laboratory and no evidence of PCB concentrations were reported.

Due to the fact that there was only one detection in the subsurface saturated soil and one detection in the surface soil, these detected values were used in the calculations instead of calculating the 95% UCL of the mean across the site for subsurface saturated concentrations and surface concentrations. Concentrations were not observed in the subsurface non-saturated zone.

Concentrations of PCBs on Site			
Sample Matrix	Corresponding Figure	Analytical Methods	Range of Total PCBs
Surface Soil	Figure 2	Immunoassay and Method 8082	Not detected to 0.065 mg/kg
Subsurface Soil (unsaturated)	Figure 3	Immunoassay	Not detected
Subsurface Soil (saturated)	Figure 4	Immunoassay and Method 8082	Not detected to 0.061 mg/kg
Groundwater	Figure 5	Method 8082	Not detected

A summary of all samples collected for PCBs are presented in the attached Tables 1 through 3.

Acreage where PCBs detected:

The estimated surface soil area impacted by PCBs is 0.05 acres in the vicinity of the TP15 sample location (Figure 2). The estimated subsurface saturated soil area impacted by PCBs is 0.18 acres in the vicinity of TP15 sample location (Figure 4).

PCB Remediation Status:

No PCB remediation has been required or occurred on the site to date.

PCB MASS LOADING SUMMARY

The PCB mass loading rate to surface water via overland flow is discussed below. A summary of the results is included below and the details of the calculations are included as attachments to this Appendix.

OVERLAND FLOW:

One surface concentration was observed at NVF Wilmington at TP15 sample location. At the time of the inspection conducted by BrightFields on July 31, 2008 there was no access to inside of the facility. Interpretation of the aerial photograph led BrightFields to reason that the sample was either collected from inside the building footprint or directly adjacent to the building in the courtyard areas. Areas of the courtyard visible during the site visit consisted of impervious surfaces. No overland flow calculations were performed for this site because the sample location was interpreted as being under an impervious surface where little to no surface erosion could occur.

Ground Cover and Canopy:

A site inspection was performed on July 31, 2008 to estimate the current site ground cover and canopy. A large portion of the site was not characterized due to the restricted access. The entire site is protected by a chain link fence. Photographs of the site ground cover and canopy are attached.

Site Sediment and Erosion Control Practices:

At the time of the inspection the only sediment and erosion control on site included a physically damaged silt fence surrounding a catch basin directly adjacent to the NVF-Wilmington building on Anchorage Street.

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.

Because PCBs were detected in saturated soil, but not in groundwater, the calculated concentration of PCBs in pore water, based on partitioning, was used to calculate the mass loading. The calculated PCB concentration in the pore water ranges from 0.013 to 0.067 µg/L. 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)	8.1	8.1	Slug tests from 1990 for the 101 Beech Street property (the adjacent property to the south) were used to evaluate the lithology beneath the site. An examination of the slug tests show that the average hydraulic conductivity was 2.86×10^{-3} cm/sec.
I = Horizontal Groundwater Gradient	0.013	0.013	Groundwater elevations were collected in the shallow wells at the 101 Beech Street property. Calculations of the horizontal gradient from these measurements showed that the gradient of groundwater flowing toward the Christina River was approximately 0.013 ft/ft.
Saturated Thickness (ft)	9	22	Based on the borings logs, the saturated zone ranges from approximately 9 to 22 feet thick.
Lateral Discharge Distance (ft)	100	100	The lateral discharge distance was estimated to be equal to the length of the PCB impacted area measured perpendicular to the Christina River.
A= Cross-Sectional Area (ft ²)	900	2,200	Calculated from the saturated thickness and lateral discharge distance.
Groundwater PCB Concentration (µg/L)	0.013	0.067	The maximum concentration observed in the saturated subsurface soil (0.061 mg/kg) was used to determine the estimated concentration in groundwater.
Distance to Discharge point (ft)	1,885		Approximate distance from property boundary to closest surface water location.

Mass Loading Via Groundwater Transport Result:

The groundwater discharge is 2,700 to 6,600 L/day (attached Table A). The maximum detected soil concentrations were used to calculate the groundwater concentrations for the loading estimate. The estimated minimum and maximum contaminant mass loading contributions are shown in the Table C in the groundwater transport calculations attachment. As previously described, these calculations are highly conservative (protective), and they overestimate the actual mass loading because they assume that there are no contaminant losses due to degradation, dispersion, sorption, volatilization, etc.

The total PCB loading via groundwater discharge is between 0.1 and 0.2 grams per year (attached Table C).

Uncertainty Analysis Associated with Groundwater Transport:

Specific Areas and Degree of Uncertainty for the NVF Property

	Groundwater PCB Concentration	Hydraulic Conductivity	Horizontal Groundwater Gradient	Saturated Thickness	Lateral Discharge Distance	Distance to Discharge point
Site Specific Information	Partitioning based on maximum concentration observed in saturated soil	Based on slug test performed off-site	Based on off-site well measurements	Few good quality logs	Groundwater gradient defined by off-site wells and a limited number of samples collected onsite	1,885 feet
Degree of Uncertainty	High	Moderate	Moderate to High	Moderate	High	High

Based on this evaluation the overall uncertainty associated with mass loading via groundwater transport from the NVF Property is **moderate to high**.



Site References:

Corporate Remediation Group (CRG), June 2005. Sitewide Phase I & II Environmental Site Assessment Report. June 28, 2005.

Duffield Associates (Duffield), April 2006, Brownfield Investigation Report, NVF-Wilmington Site, 700 Maryland Avenue Wilmington, Delaware (DE-1374).

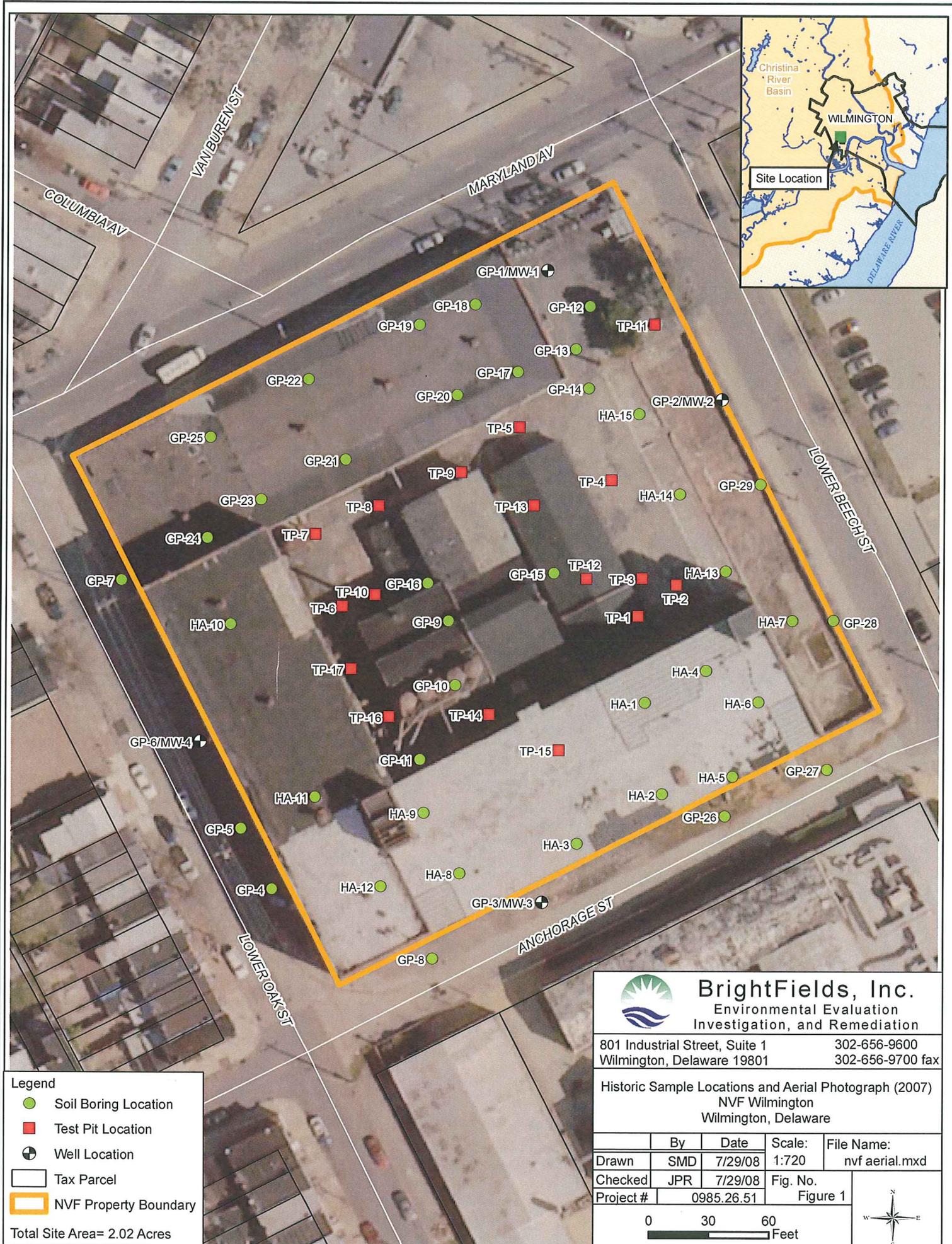
Duffield, January 2006, Modified Phase I Environmental Site Assessment, NVF-Wilmington Site, 700 Maryland Avenue Wilmington, Delaware (DE-1374).

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Former NVF Facility
SIRB ID: DE-1374
Wilmington, Delaware



BrightFields, Inc.

Figures



Legend

- Soil Boring Location
- Test Pit Location
- ⊕ Well Location
- Tax Parcel
- NVF Property Boundary

Total Site Area= 2.02 Acres

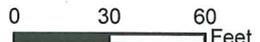


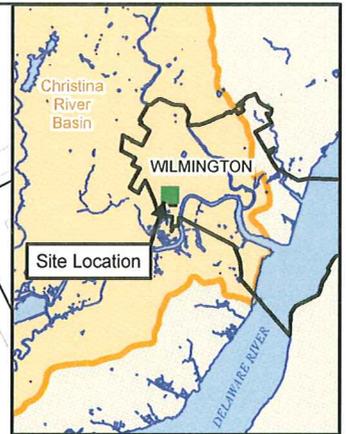
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Investigation, and Remediation

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Historic Sample Locations and Aerial Photograph (2007)
NVF Wilmington
Wilmington, Delaware

	By	Date	Scale:	File Name:
Drawn	SMD	7/29/08	1:720	nvf aerial.mxd
Checked	JPR	7/29/08	Fig. No.	
Project #	0985.26.51		Figure 1	



Legend

- 0.065 (0-2') Total PCB Concentration (mg/Kg) and Sample Depth (feet bgs)
- (ND) Screening Result
- Soil Boring Location
- Test Pit Location
- ⊕ Well Location
- ▨ Estimated PCB Distribution
- Existing Building
- Tax Parcel
- NVF Property Boundary

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

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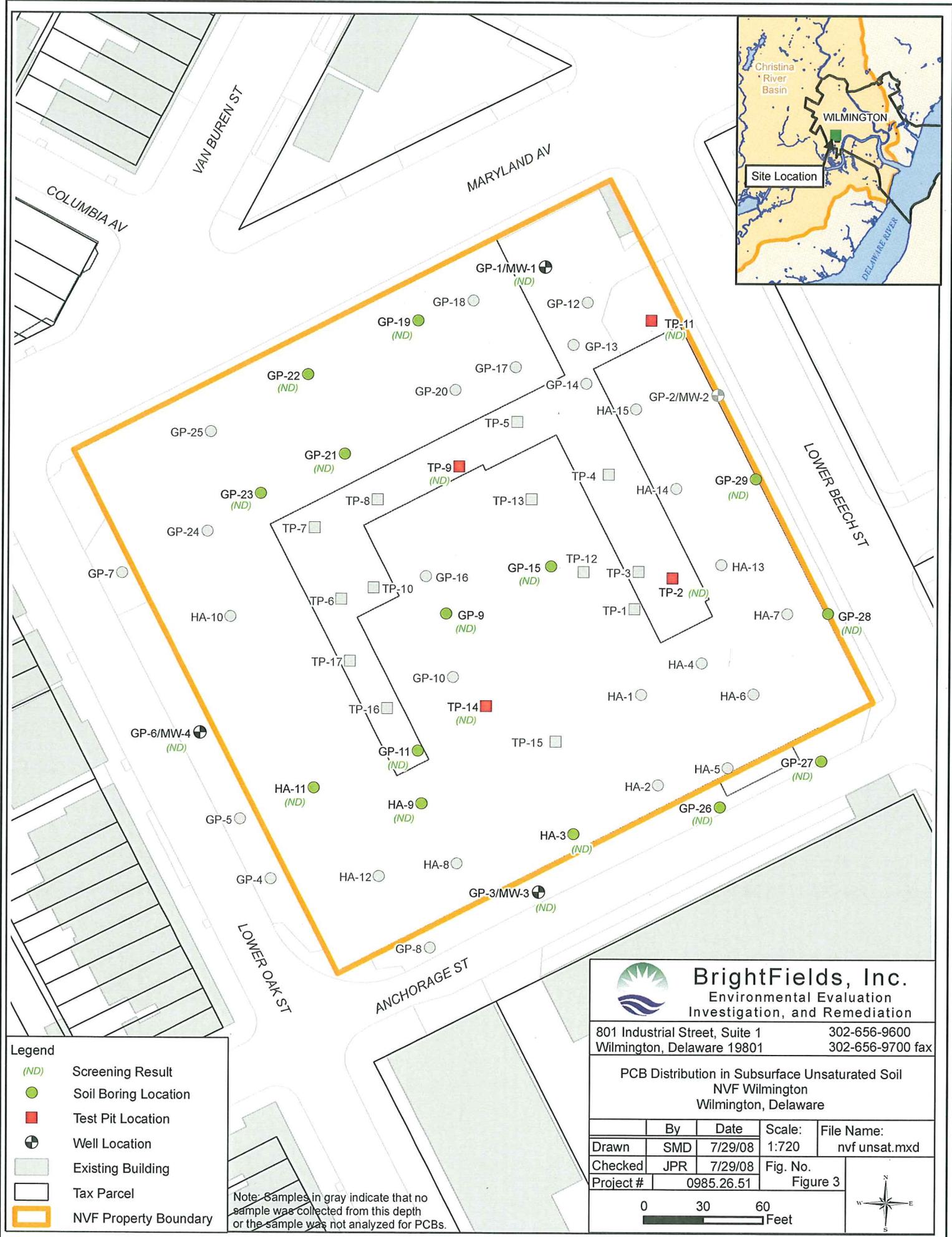
801 Industrial Street, Suite 1 302-656-9600
Wilmington, Delaware 19801 302-656-9700 fax

PCB Distribution in Surface Soil (0'-2' bgs)
NVF Wilmington
Wilmington, Delaware

	By	Date	Scale:	File Name:
Drawn	SMD	7/29/08	1:720	nvf 0-2.mxd
Checked	JPR	7/29/08	Fig. No.	
Project #	0985.26.51		Figure 2	

0 30 60

Feet



Legend

- (ND) Screening Result
- Soil Boring Location
- Test Pit Location
- ⊕ Well Location
- Existing Building
- Tax Parcel
- ▭ NVF Property Boundary

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



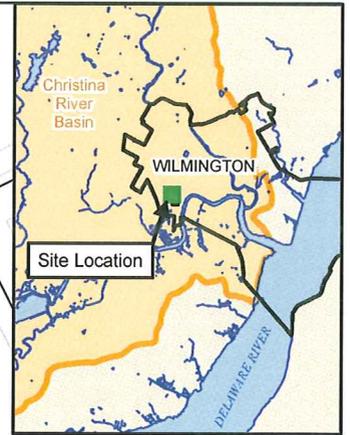
BrightFields, Inc.
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801 Industrial Street, Suite 1 Wilmington, Delaware 19801		302-656-9600 302-656-9700 fax		
PCB Distribution in Subsurface Unsaturated Soil NVF Wilmington Wilmington, Delaware				
	By	Date	Scale:	File Name:
Drawn	SMD	7/29/08	1:720	nvf unsat.mxd
Checked	JPR	7/29/08	Fig. No.	
Project #	0985.26.51		Figure 3	

0 30 60
Feet







Legend

- 0.061 (2'-4') Total PCB Concentration (mg/Kg) and Sample Depth (feet bgs)
- (ND) Screening Result
- Soil Boring Location
- Test Pit Location
- ⊕ Well Location
- ▨ Estimated PCB Distribution
- Existing Building
- Tax Parcel
- NVF Property Boundary

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



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Wilmington, Delaware 19801

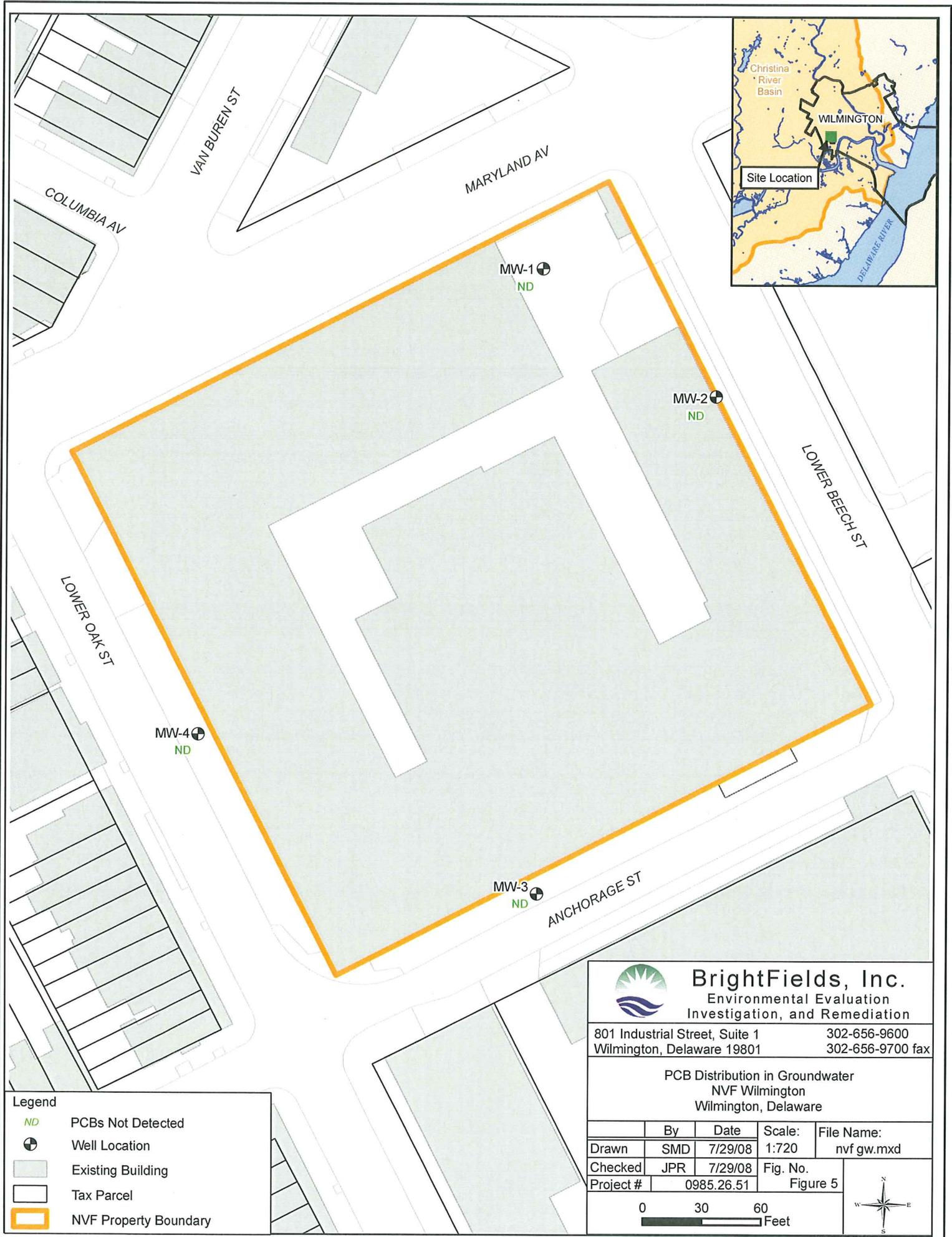
302-656-9600
302-656-9700 fax

PCB Distribution in Subsurface Saturated Soil
NVF Wilmington
Wilmington, Delaware

	By	Date	Scale:	File Name:
Drawn	SMD	7/29/08	1:720	nvf sat.mxd
Checked	JPR	7/29/08	Fig. No.	Figure 4
Project #	0985.26.51			

0 30 60 Feet





Legend

ND	PCBs Not Detected
	Well Location
	Existing Building
	Tax Parcel
	NVF Property Boundary



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801 Industrial Street, Suite 1 Wilmington, Delaware 19801		302-656-9600 302-656-9700 fax		
PCB Distribution in Groundwater NVF Wilmington Wilmington, Delaware				
	By	Date	Scale:	File Name:
Drawn	SMD	7/29/08	1:720	nvf gw.mxd
Checked	JPR	7/29/08	Fig. No.	
Project #	0985.26.51		Figure 5	



0 30 60
Feet





Legend

- 0.065 (0'-2') Total PCB Concentration (mg/Kg) and Sample Depth (feet bgs)
- (ND) Screening Result
- x Contour Elevation (feet)
- Soil Boring Location
- Test Pit Location
- ⊕ Well Location
- Existing Building
- Tax Parcel
- NVF Property Boundary

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



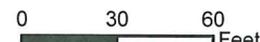
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Investigation, and Remediation

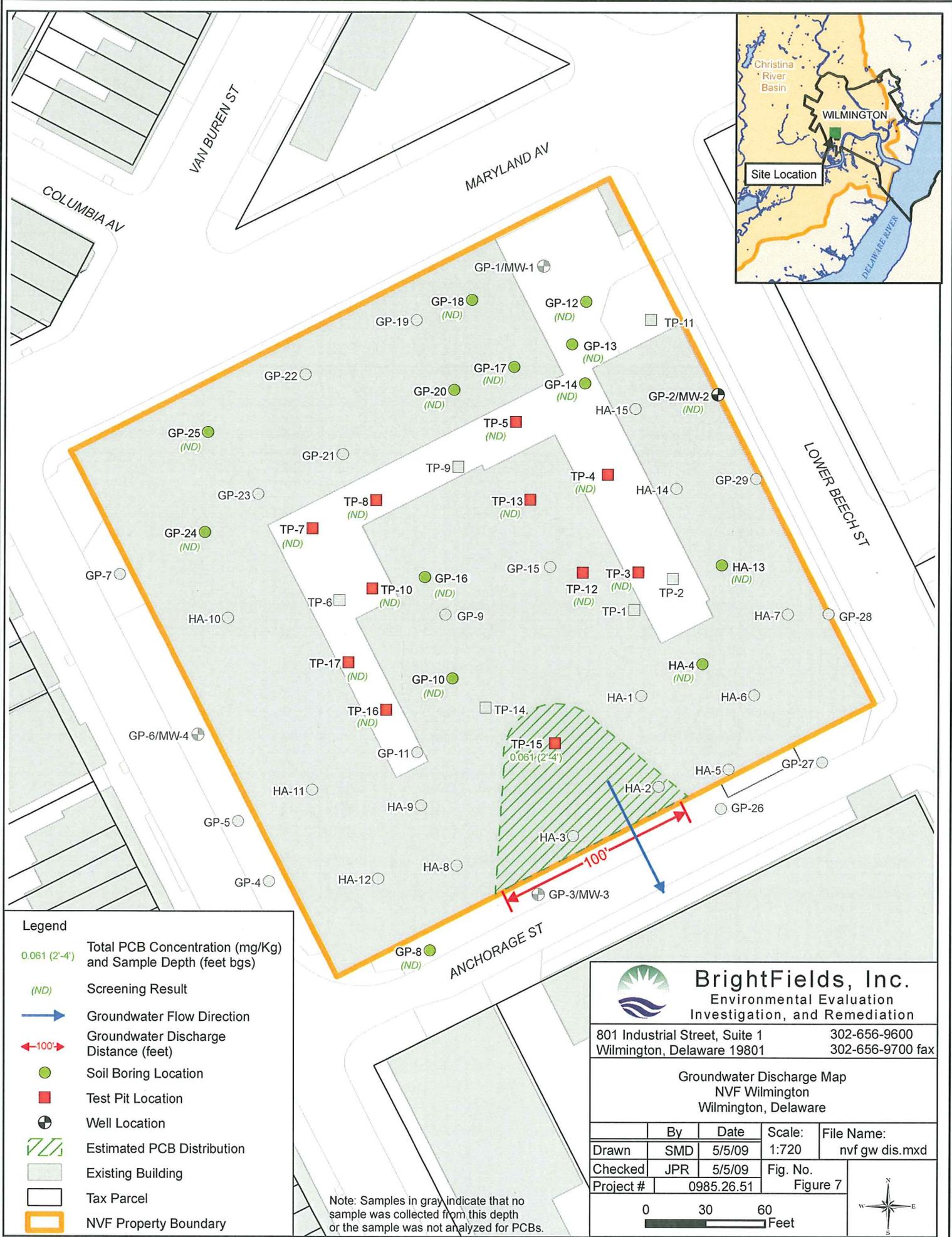
801 Industrial Street, Suite 1
Wilmington, Delaware 19801

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302-656-9700 fax

Overland Flow Map
NVF Wilmington
Wilmington, Delaware

	By	Date	Scale:	File Name:
Drawn	SMD	7/29/08	1:720	nvf topo.mxd
Checked	JPR	7/29/08	Fig. No.	Figure 6
Project #	0985.26.51			



- Legend**
- 0.061 (2'-4') Total PCB Concentration (mg/Kg) and Sample Depth (feet bgs)
 - (ND) Screening Result
 - Groundwater Flow Direction
 - ↔100' Groundwater Discharge Distance (feet)
 - Soil Boring Location
 - Test Pit Location
 - ⊕ Well Location
 - ▨ Estimated PCB Distribution
 - Existing Building
 - Tax Parcel
 - NVF Property Boundary

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



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Groundwater Discharge Map
 NVF Wilmington
 Wilmington, Delaware

	By	Date	Scale:	File Name:
Drawn	SMD	5/5/09	1:720	nvf gw dis.mxd
Checked	JPR	5/5/09	Fig. No.	Figure 7
Project #	0985.26.51			

0 30 60

Feet



PCB Mass Loading
Former NVF Facility
SIRB ID: DE-1374
Wilmington, Delaware



BrightFields, Inc.

Tables

Table 1
PCB Laboratory Results For Soil
NVF Wilmington
Wilmington, DE
SIRB ID: DE-1374

Sample ID Sampling Depth (feet bgs) Sampling Date Units Report Issued	DNREC URS for Protection of Human Health Non-critical Water Resource Area		TP-15 0.0-2.0 2/21/06 mg/Kg	TP-15 2.0-4.0 2/21/06 mg/Kg
	Unrestricted Use	Restricted Use	NVF BI (Duffield 2006)	NVF BI (Duffield 2006)
PCBs				
Aroclor-1016	5	82	0.025 U	0.028 U
Aroclor-1221	0.3	3	0.025 U	0.028 U
Aroclor-1232	0.3	3	0.025 U	0.028 U
Aroclor-1242	0.3	3	0.025 U	0.028 U
Aroclor-1248	0.3	3	0.049 U	0.054 U
Aroclor-1254	0.3	3	0.023 J	0.015 J
Aroclor-1260	0.3	3	0.042 J	0.046 J

NVF BI (Duffield 2006) - Brownfields Investigation Report for NVF
Wilmington

Qualifiers

- U - The compound was not detected above the indicated laboratory detection limit
- NR - Not analyzed
- J - estimated value
- 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
 NVF Property
 Wilmington, DE
 SIRB ID: DE-1374

Sample ID	Sample Depth	Investigation Report	Sample Date	DNREC URS for Protection of Human Health (Non-critical Water Resource Area) Unrestricted Use (mg/kg)	Total PCBs (mg/kg)
GP-7	0'-2'	Brownfield Investigation NVF-Wilmington	2/15/06	1	ND
GP-24	0'-2'	Brownfield Investigation NVF-Wilmington	2/23/06	1	ND
GP-25	0'-2'	Brownfield Investigation NVF-Wilmington	2/23/06	1	ND
GP-23	0'-2'	Brownfield Investigation NVF-Wilmington	2/22/06	1	ND
HA-10	0'-2'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
GP-6/MW-4	0'-2'	Brownfield Investigation NVF-Wilmington	2/15/06	1	ND
TP-10	0'-2'	Brownfield Investigation NVF-Wilmington	2/20/06	1	ND
TP-17	0'-2'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
TP-16	0'-2'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
GP-16	0'-2'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
GP-9	0'-2'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
GP-10	0'-2'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
GP-11	0'-2'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
TP-14	0'-2'	Brownfield Investigation NVF-Wilmington	2/20/06	1	ND
GP-5	0'-2'	Brownfield Investigation NVF-Wilmington	2/15/06	1	ND
GP-4	0'-2'	Brownfield Investigation NVF-Wilmington	2/15/06	1	ND
HA-12	0.4'-2'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
HA-11	0.5'-2'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
HA-9	0'-2'	Brownfield Investigation NVF-Wilmington	2/22/06	1	ND
HA-8	0'-2'	Brownfield Investigation NVF-Wilmington	2/22/06	1	ND
HA-3	0'-1.5'	Brownfield Investigation NVF-Wilmington	2/22/06	1	ND
GP-3/MW-3	0'-2'	Brownfield Investigation NVF-Wilmington	2/15/06	1	ND
GP-8	0'-2'	Brownfield Investigation NVF-Wilmington	2/15/06	1	ND
HA-2	0'-1.5'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
HA-5	0'-0.8'	Brownfield Investigation NVF-Wilmington	2/22/06	1	ND
GP-26	0'-2'	Brownfield Investigation NVF-Wilmington	2/23/06	1	ND
GP-27	0'-2'	Brownfield Investigation NVF-Wilmington	2/23/06	1	ND
HA-1	0'-2'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
HA-4	0'-2'	Brownfield Investigation NVF-Wilmington	2/22/06	1	ND
HA-6	0'-1.5'	Brownfield Investigation NVF-Wilmington	2/22/06	1	ND
GP-28	0'-2'	Brownfield Investigation NVF-Wilmington	2/23/06	1	ND
HA-7	0'-1'	Brownfield Investigation NVF-Wilmington	2/22/06	1	ND
TP-1	0'-2'	Brownfield Investigation NVF-Wilmington	2/15/06	1	ND
TP-2	0'-2'	Brownfield Investigation NVF-Wilmington	2/15/06	1	ND
HA-13	0.4'-2'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
TP-3	0'-2'	Brownfield Investigation NVF-Wilmington	2/15/06	1	ND
TP-12	0'-2'	Brownfield Investigation NVF-Wilmington	2/20/06	1	ND
GP-15	0'-2'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
TP-8	0'-2'	Brownfield Investigation NVF-Wilmington	2/20/06	1	ND
TP-9	0'-2'	Brownfield Investigation NVF-Wilmington	2/20/06	1	ND
TP-13	0'-2'	Brownfield Investigation NVF-Wilmington	2/20/06	1	ND
TP-5	0'-2'	Brownfield Investigation NVF-Wilmington	2/15/06	1	ND
HA-14	0'-1.5'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
GP-29	0'-2'	Brownfield Investigation NVF-Wilmington	2/23/06	1	ND
HA-15	0'-0.85'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
GP-2/MW-2	0'-2'	Brownfield Investigation NVF-Wilmington	2/15/06	1	ND
TP-11	0'-2'	Brownfield Investigation NVF-Wilmington	2/20/06	1	ND
GP-13	0'-2'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
GP-14	0'-2'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
GP-20	0'-2'	Brownfield Investigation NVF-Wilmington	2/22/06	1	ND
GP-17	0'-2'	Brownfield Investigation NVF-Wilmington	2/22/06	1	ND
GP-12	0'-2'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
GP-1/MW-1	0'-2'	Brownfield Investigation NVF-Wilmington	2/15/06	1	ND
GP-18	0'-2'	Brownfield Investigation NVF-Wilmington	2/22/06	1	ND
GP-19	0'-2'	Brownfield Investigation NVF-Wilmington	2/22/06	1	ND
GP-22	0'-2'	Brownfield Investigation NVF-Wilmington	2/22/06	1	ND
GP-21	0'-2'	Brownfield Investigation NVF-Wilmington	2/22/06	1	ND
TP-7	0'-2'	Brownfield Investigation NVF-Wilmington	2/20/06	1	ND
GP-1/MW-1	2'-13'	Brownfield Investigation NVF-Wilmington	2/15/06	1	ND

Data from Brownfield Investigation NVF - Wilmington (Duffield April 2006)

Table 2
 DNREC PCB Screening Data
 NVF Property
 Wilmington, DE
 SIRB ID: DE-1374

Sample ID	Sample Depth	Investigation Report	Sample Date	DNREC URS for Protection of Human Health (Non-critical Water Resource Area) Unrestricted Use (mg/kg)	Total PCBs (mg/kg)
GP-10	5'-8'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
GP-11	2'-6'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
GP-12	2'-5'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
GP-13	2'-5'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
GP-14	2'-4'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
GP-15	2'-6'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
GP-16	2'-7'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
GP-17	2'-9'	Brownfield Investigation NVF-Wilmington	2/22/06	1	ND
GP-18	2'-11'	Brownfield Investigation NVF-Wilmington	2/22/06	1	ND
GP-19	2'-11'	Brownfield Investigation NVF-Wilmington	2/22/06	1	ND
GP-2/MW-2	2'-13'	Brownfield Investigation NVF-Wilmington	2/15/06	1	ND
GP-20	2'-10'	Brownfield Investigation NVF-Wilmington	2/22/06	1	ND
GP-21	2'-11'	Brownfield Investigation NVF-Wilmington	2/22/06	1	ND
GP-22	2'-11'	Brownfield Investigation NVF-Wilmington	2/22/06	1	ND
GP-23	2'-11'	Brownfield Investigation NVF-Wilmington	2/22/06	1	ND
GP-24	2'-11'	Brownfield Investigation NVF-Wilmington	2/23/06	1	ND
GP-25	2'-9'	Brownfield Investigation NVF-Wilmington	2/23/06	1	ND
GP-26	2'-9'	Brownfield Investigation NVF-Wilmington	2/23/06	1	ND
GP-27	2'-10'	Brownfield Investigation NVF-Wilmington	2/23/06	1	ND
GP-28	2'-15'	Brownfield Investigation NVF-Wilmington	2/23/06	1	ND
GP-29	2'-11'	Brownfield Investigation NVF-Wilmington	2/23/06	1	ND
GP-3/MW-3	2'-13'	Brownfield Investigation NVF-Wilmington	2/15/06	1	ND
GP-6/MW-4	2'-13'	Brownfield Investigation NVF-Wilmington	2/15/06	1	ND
GP-8	2'-13'	Brownfield Investigation NVF-Wilmington	2/15/06	1	ND
GP-9	2'-5'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
HA-3	1.5'-4'	Brownfield Investigation NVF-Wilmington	2/22/06	1	ND
HA-4	2'-4'	Brownfield Investigation NVF-Wilmington	2/22/06	1	ND
HA-9	2'-4'	Brownfield Investigation NVF-Wilmington	2/22/06	1	ND
TP-11	2'-6'	Brownfield Investigation NVF-Wilmington	2/20/06	1	ND
TP-13	2'-6'	Brownfield Investigation NVF-Wilmington	2/20/06	1	ND
HA-11	2'-3.5'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
HA-13	2'-4'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
TP-2	2'-3'	Brownfield Investigation NVF-Wilmington	2/15/06	1	ND
TP-3	2.5'-3'	Brownfield Investigation NVF-Wilmington	2/15/06	1	ND
TP-4	2'-4'	Brownfield Investigation NVF-Wilmington	2/15/06	1	ND
TP-5	2'-5.5'	Brownfield Investigation NVF-Wilmington	2/15/06	1	ND
TP-7	2'-5'	Brownfield Investigation NVF-Wilmington	2/20/06	1	ND
TP-8	5'-6'	Brownfield Investigation NVF-Wilmington	2/20/06	1	ND
TP-9	2'-8'	Brownfield Investigation NVF-Wilmington	2/20/06	1	ND
TP-10	2'-10'	Brownfield Investigation NVF-Wilmington	2/20/06	1	ND
TP-12	2'-8'	Brownfield Investigation NVF-Wilmington	2/20/06	1	ND
TP-14	2'-6.5'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
TP-16	2'-4.5'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND
TP-17	2'-3.5'	Brownfield Investigation NVF-Wilmington	2/21/06	1	ND

Data from Brownfield Investigation NVF - Wilmington (Duffield April 2006)

Table 3
 PCB Laboratory Analytical Results For Groundwater
 NVF Wilmington
 Wilmington, DE
 SIRB ID: DE-1374

Sample ID Sampling Date Units Report Issued	DNREC URS for Protection of Human Health ug/L	MW-1 2/27/06 ug/L NVF BI (Duffield 2006)	MW-2 2/27/06 ug/L NVF BI (Duffield 2006)	MW-3 2/27/06 ug/L NVF BI (Duffield 2006)	MW-4 2/27/06 ug/L NVF BI (Duffield 2006)
PCBs					
Atoclor-1016	0.1	0.49 U	0.49 U	0.48 U	0.48 U
Atoclor-1221	0.03	0.49 U	0.49 U	0.48 U	0.48 U
Atoclor-1232	0.03	0.49 U	0.49 U	0.48 U	0.48 U
Atoclor-1242	0.03	0.49 U	0.49 U	0.48 U	0.48 U
Atoclor-1248	0.03	0.49 U	0.49 U	0.48 U	0.48 U
Atoclor-1254	0.03	0.49 U	0.49 U	0.48 U	0.48 U
Atoclor-1260	0.03	0.49 U	0.49 U	0.48 U	0.48 U

NVF BI (Duffield 2006) - Brownfields Investigation Report for NVF
 Wilmington

Qualifiers

U - The compound was not detected above the indicated laboratory detection limit
 nca - no criteria available
 bold - concentration is above DNREC URS criteria

PCB Mass Loading
Former NVF Facility
SIRB ID: DE-1374
Wilmington, Delaware



BrightFields, Inc.

Site Photographs

**PCB Mass Loading Evaluation
NVF-Wilmington**



Basement slab remaining from demolition of building along Beech St.



Crushed brick and gravel placed on site from building demolition.



**PCB Mass Loading Evaluation
NVF - Wilmington**



Area under capacitors.



Anchorage Street side of NVF - Wilmington building.

**PCB Mass Loading Evaluation
NVF - Wilmington**



Likely overland flow discharge point for TP15, if sample location is not under an impervious surface.

PCB Mass Loading
Former NVF Facility
SIRB ID: DE-1374
Wilmington, Delaware



BrightFields, Inc.

Overland Flow Calculations

(Not Applicable)

PCB Mass Loading
Former NVF Facility
SIRB ID: DE-1374
Wilmington, Delaware



BrightFields, Inc.

Groundwater Transport Calculations

**PCB Loading Calculations - Groundwater Discharge to Surface Water
NVF Wilmington
Wilmington, DE
DE-1374**

**TABLE A
Groundwater Discharge Calculations**

Location	Hydraulic Conductivity (K) (ft/day)	Horizontal Gradient (i) (ft/ft)	Cross-sectional Area (A) (ft ²)	Groundwater Discharge*	
				Liters/day	Gallons/day
Minimum	8.11	0.013	900	2,700	710
Maximum	8.11	0.013	2,200	6,600	1,700

* - Groundwater Discharge (Q) = KiA

**TABLE B
Potential Groundwater PCB Concentration Calculation**

Location	Maximum Soil PCB (µg/kg)	f _{oc} (fraction of organic carbon)		Pore Water PCB (µg/L)	
				Minimum	Maximum
	61	0.01	0.05	0.013	0.067

**TABLE C
Estimated Mass Loadings of PCBs in Groundwater to Surface Water**

LOCATION	Subsurface Soil Concentration/ Converted to Pore Water Concentration (µg/L)	Estimated PCB Mass Loading (g/yr)	
		Minimum	Maximum
	0.067	0.066	0.16