

## **Appendix G**

### **Technical Memorandum: Garfield Avenue Roadway Compliance Averaging for Antimony in Soil**

# Memorandum

To	Ian Curtis, NJDEP	Page 1
CC	Ronald Riccio, Site Administrator James Ray, Site Administrator PM Nancy Colson, Site Administrator Assistant Prabal Amin, WESTON Solutions, Inc. Laura Amend-Babcock, WESTON Solutions, Inc. Itza Wilson, Jersey City Peter Baker, Jersey City David Spader, ERF5 Jody Overmyer, PPG Rich Feinberg, PPG Dorothy Laguzza, K&L Gates Joe Lagrotteria, K&L Gates Aimee Ruitter, AECOM Sandy Paulsen, AECOM	
Subject	Garfield Avenue Roadway Compliance Averaging for Antimony in Soil (Revision 1)	
From	Claire Hunt	
Date	December 13, 2022	

## 1.0 Introduction

This memorandum provides documentation of attainment of compliance for antimony (Sb) in soil with the New Jersey Department of Environmental Protection (NJDEP) residential direct contact soil remediation standard (RDCSRS) for a site-specific soil sample set from the Garfield Avenue Roadway in accordance with the NJDEP’s Technical Guidance for the *Attainment of Remediation Standards and Site-Specific Criteria* (July 2021, Version 2.0). An iterative approach for compliance averaging was used to demonstrate partial attainment of the RDCSRS for an Sb soil sample within Functional Area 2 that exceeds the RDCSRS (discussed herein).

Boring logs, laboratory reports, and data validation reports for samples discussed in this memorandum are included as part of the *Remedial Action Report, Garfield Avenue Roadway (AOC GAR-1A and AOC 114-1B), Soil, Draft*, issued on August 31, 2022, except where otherwise noted.

## 2.0 Compliance Averaging Evaluation of Sb Compared to RDCSRS

### 2.1 Antimony Concentrations Greater than RDCSRS

The following soil samples (**Table 1**) with Sb concentrations greater than the RDCSRS for Sb of 31 milligrams per kilogram (mg/kg) remain in place within the Garfield Avenue Roadway.

**Table 1: Soil Samples Remaining with Sb Concentrations Greater than the RDCSRS**

Location ID	Sample ID	Depth Interval (ft bgs)	Sample Elevation (ft NAVD88)	Sb (mg/kg)
114SWE-A`6A	114-A`6A-6.5-7.0	6.5 - 7.0	4.2 - 3.7	69.7
A6	A6S6.5-7	6.5 - 7.0	4.0 - 3.5	43.2 J
A6	A6S8.5-9	8.5 - 9.0	2.0 - 1.5	37.2 J
114-B9B-CC-SW	114-B9B-SW-4.0-4.5X	4.2 - 4.7	7.3 - 6.8	38.0 J
114-B9B-CC-SW	114-B9B-SW-5.5-6.0	5.7 - 6.2	5.8 - 5.3	52.5 J
114-B10B-CC-SW	114-B10B-SW-5.5-6.0	5.8 - 6.3	5.8 - 5.3	35.9
C9	C9S7-7.5	7.0 - 7.5	4.5 - 4.0	198

**Notes:**

bgs - below ground surface  
 ft - foot or feet

J - The result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.  
 NAVD88 - North American Vertical Datum of 1988

**Figure 1** and **Figure 2** depict boring/sample locations, as well as analytical results for soil samples where Sb remains in place within the Garfield Avenue Roadway at concentrations greater than the RDCSRS.

**2.2 Delineation - RDCSRS**

Soil samples with Sb concentrations greater than the RDCSRS that remain in place within the Garfield Avenue Roadway are delineated as presented in **Table 2** through **Table 6**.

**Table 2: Delineation of Sample 114-A`6A-6.5-7.0**

Location ID	Depth Interval (ft bgs)	Sample Elevation (ft NAVD88)	Date Collected	Sb Result (mg/kg)	Direction
A6	10.5 - 11.0	0 - (-0.5)	9/2/2003	< 0.57 UJ	Vertical
EF-38A	7.5 - 8.0	4.8 - 4.3	4/26/2011	< 1.0 U	North/Northwest
GAR-PDI-C`7A	6.5 - 7.0	4.2 - 3.7	1/8/2017	0.<0.35 U	West
MW1A <sup>1</sup>	8.0 - 10.0	3.9 - 1.9	11/18/2003	1.1 B	South
X8 <sup>1</sup>	9.3 - 9.8	4.1 - 3.6	10/4/2005	3.6 J	East

**Notes:**

<sup>1</sup>The boring log for this sampling location is provided in **Attachment 2**; the laboratory report and data validation report associated with this sampling location are provided in **Attachment 3** and **Attachment 4**, respectively.

B - The analyte concentration was less than or equal to three times the maximum method blank.

J - The result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

U - The analyte was not detected above the sample reporting limit shown.

UJ - The analyte was not detected above the sample reporting limit shown and the reporting limit was approximate.

**Table 3: Delineation of Samples A6S6.5-7 and A6S8.5-9**

Location ID	Depth Interval (ft bgs)	Sample Elevation (ft NAVD88)	Date Collected	Sb Result (mg/kg)	Direction
A6	10.5 - 11.0	0 - (-0.5)	9/2/2003	< 0.57 UJ	Vertical

Location ID	Depth Interval (ft bgs)	Sample Elevation (ft NAVD88)	Date Collected	Sb Result (mg/kg)	Direction
X2 <sup>1</sup>	8.0 - 8.4	3.7 - 3.3	10/4/2005	< 1.2 UJ	North/Northeast
GAR-PDI-C'7A	6.5 - 7.0	4.2 - 3.7	1/8/2017	< 0.35 U	West
A-8A <sup>1</sup>	10.0 - 10.5	3.4 - 2.9	9/23/2011	0.54 J	South
MW1A <sup>1</sup>	8.0 - 10.0	3.9 - 1.9	11/18/2003	1.1 B	East

**Notes:**

<sup>1</sup>The boring log for this sampling location is provided in **Attachment 2**; the laboratory report and data validation report associated with this sampling location are provided in **Attachment 3** and **Attachment 4**, respectively.

B - The analyte concentration was less than or equal to three times the maximum method blank.

J - The result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

U - The analyte was not detected above the sample reporting limit shown.

UJ - The analyte was not detected above the sample reporting limit shown and the reporting limit was approximate.

**Table 4: Delineation of Samples 114-B9B-SW-4.0-4.5X and 114-B9B-SW-5.5-6.0**

Location ID	Depth Interval (ft bgs)	Sample Elevation (ft NAVD88)	Date Collected	Sb Result (mg/kg)	Direction
114-B9B-CC-PB	6.2 - 6.7	5.3 - 4.8	9/18/2014	17.0 J	Vertical
GAR-PDI-A10B	5.0 - 5.5	6.8 - 6.3	2/19/2017	0.53 J	North/Northwest
EF-42	6.0 - 6.5	5.4 - 4.9	4/29/2011	< 1.1 UJ	West
PZ13 <sup>1</sup>	10.0 - 10.5	6.2 - 5.7	10/19/2005	22.5	South
D10 <sup>1</sup>	4.5 - 5.0	9.1 - 8.6	8/21/2003	< 7.3 J	East

**Notes:**

<sup>1</sup>The boring log for this sampling location is provided in **Attachment 2**; the laboratory report and data validation report associated with this sampling location are provided in **Attachment 3** and **Attachment 4**, respectively.

J - The result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

UJ - The analyte was not detected above the sample reporting limit shown and the reporting limit was approximate.

**Table 5: Delineation of Sample 114-B10B-SW-5.5-6.0**

Location ID	Depth Interval (ft bgs)	Sample Elevation (ft NAVD88)	Date Collected	Sb Result (mg/kg)	Direction
114-B10B-CC-PB	6.3 - 6.8	5.3 - 4.8	9/19/2014	19.3	Vertical
GAR-PDI-A10B	5.0 - 5.5	6.8 - 6.3	2/19/2017	0.53 J	Northwest
114-C11B-CC-SW	5.5 - 6.0	5.8 - 5.3	9/23/2014	3.4	Northeast
EF-42	6.0 - 6.5	5.4 - 4.9	4/29/2011	< 1.1 UJ	West
PZ13 <sup>1</sup>	10.0 - 10.5	6.2 - 5.7	10/19/2005	22.5	South
D10 <sup>1</sup>	4.5 - 5.0	9.1 - 8.6	8/21/2003	< 7.3 J	East

**Notes:**

<sup>1</sup>The boring log for this sampling location is provided in **Attachment 2**; the laboratory report and data validation report associated with this sampling location are provided in **Attachment 3** and **Attachment 4**, respectively.

J - The result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

UJ - The analyte was not detected above the sample reporting limit shown and the reporting limit was approximate.

**Table 6: Delineation of Sample C9S7-7.5**

Location ID	Depth Interval (ft bgs)	Sample Elevation (ft NAVD88)	Date Collected	Sb Result (mg/kg)	Direction
C9	21.5 - 22.0	(-10) - (-10.5)	9/3/2003	1.4	Vertical
EF-42	6.0 - 6.5	5.4 - 4.9	4/29/2011	< 1.1 UJ	North
GE	4.1 - 4.6	6.7 - 6.2	3/16/2004	< 0.43 UJ	West
P4-GA-A5B	5.5 - 6.0	4.0 - 3.5	8/21/2014	2.1 J	South/Southwest
PZ13 <sup>1</sup>	10.0 - 10.5	6.2 - 5.7	10/19/2005	22.5	East

**Notes:**

<sup>1</sup>The boring log for this sampling location is provided in **Attachment 2**; the laboratory report and data validation report associated with this sampling location are provided in **Attachment 3** and **Attachment 4**, respectively.

J - The result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

UJ - The analyte was not detected above the sample reporting limit shown and the reporting limit was approximate.

**2.3 Functional Areas - RDCSRS**

The Sb RDCSRS is based on the ingestion-dermal pathway (**Attachment 1**). The functional area for the ingestion-dermal pathway is limited to 0.25 acres for residential use. The extents of the residential functional areas are shown on **Figure 1** and **Figure 2**. Remaining samples within the functional areas extents were collected from deeper than 2 feet below ground surface and are considered to be a part of the functional areas for the calculations.

**2.4 Compliance Averaging - RDCSRS**

Compliance with the Sb RDCSRS is demonstrated through spatial averaging. Theissen polygons were created within Functional Areas 1 and 2 as shown in **Figure 1** and **Figure 2**, respectively. The sample selection process is as follows:

1. The samples for Sb that fall within a functional area (horizontally and vertically), including samples that are associated with a functional area, but are located beyond the physical limits of a functional area, are identified.
2. The maximum concentration is selected at each sample location for use in the weighted average (refer to **Table 7** through **Table 9** below). The maximum of either the concentration for detections or the Method Detection Limit (MDL)/Reporting Limit (RL) for non-detects is selected.

**Table 7: Samples Used to Determine Weighted Average Sb Concentration for Samples 114-A'6A-6.5-7.0, A6S6.5-7, and A6S8.5-9 (Functional Area 1)**

Location ID	Sample Depth (ft bgs)	Sample Elevation (ft NAVD88)	Date Collected	Maximum Sb Result (mg/kg)	Area (sf)	Area x Maximum Sb Result (sf*mg/kg)
114SWE-A`10A <sup>1</sup>	8.0 - 8.5	4.1 - 3.6	8/3/2012	0.54 J	99	53
114SWE-A`6A	6.5 - 7.0	4.2 - 3.7	7/31/2012	69.7	1,509	105,177
A6	6.5 - 7.0	4.0 - 3.5	9/2/2003	43.2 J	626	27,043
EF-37	2.5 - 3.0	10.4 - 9.9	4/22/2011	2.8	17	48

Location ID	Sample Depth (ft bgs)	Sample Elevation (ft NAVD88)	Date Collected	Maximum Sb Result (mg/kg)	Area (sf)	Area x Maximum Sb Result (sf*mg/kg)
EF-38	2.5 - 3.0	9.4 - 8.9	4/22/2011	< 1.1 U	712	783
EF-38A	2.5 - 3.0	9.8 - 9.3	4/25/2011	< 1.1 UJ	1,537	1,691
GAR-PDI-A'8A	8.0 - 8.5	2.8 - 2.3	11/10/2016	< 0.37 U	975	361
GAR-PDI-B'9A	3.0 - 3.5	7.8 - 7.3	11/20/2016	2.6	1,908	4,961
GAR-PDI-C'7A	2.5 - 3.0	8.2 - 7.7	1/8/2017	0.93 J	1,289	1,199
GB	4.0 - 4.5	6.2 - 5.7	3/15/2004	< 0.41 UJ	826	339
X2 <sup>1</sup>	13.6 - 14.1	(-1.9) - (-2.4)	10/4/2005	< 1.2 UJ	1,393	1,672
Total					10,891	143,327

**Notes:**

<sup>1</sup>The laboratory report and data validation report associated with this sampling location are provided in **Attachment 3** and **Attachment 4**, respectively.

J - The result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.  
 sf - square feet

U - The analyte was not detected above the sample reporting limit shown.

UJ - The analyte was not detected above the sample reporting limit shown and the reporting limit was approximate.

Weighted Average Sb Concentration for Functional Area 1 = 143,327 sf x mg/kg / 10,891 sf = 13 mg/kg.

**Table 8: Samples Used to Determine Weighted Average Sb Concentration for Samples 114-B10B-SW-5.5-6.0, 114-B9B-SW-5.5-6.0, 114-B9B-SW-4.0-4.5X, and C9S7-7.5 (Functional Area 2)**

Location ID	Sample Depth (ft bgs)	Sample Elevation (ft NAVD88)	Date Collected	Maximum Sb Result (mg/kg)	Area (sf)	Area x Maximum Sb Result (sf*mg/kg)
114-B10B-CC-SW	5.8 - 6.3	5.8 - 5.3	9/19/2014	35.9	805	28,900
114-B9B-CC-SW	5.7 - 6.2	5.8 - 5.3	9/18/2014	52.5 J	1,213	63,683
114-C11B-CC-PB	6.5 - 7.0	5.3 - 4.8	9/23/2014	3.7	108	400
114-C11B-CC-SW	2.0 - 2.5	9.3 - 8.8	9/23/2014	10.3 J	1,278	13,163
114-C11B-PB <sup>1</sup>	13.5 - 14.0	(-0.8) - (-1.3)	10/17/2013	< 0.41 UJ	6	2
C9	7.0 - 7.5	4.5 - 4.0	9/3/2003	198	1,481	293,238
EF-41	2.5 - 3.0	8.6 - 8.1	4/26/2011	< 1.0 U	419	419
EF-42	2.5 - 3.0	8.9 - 8.4	4/26/2011	6.7	911	6,104

Location ID	Sample Depth (ft bgs)	Sample Elevation (ft NAVD88)	Date Collected	Maximum Sb Result (mg/kg)	Area (sf)	Area x Maximum Sb Result (sf*mg/kg)
GAR-PDI-A10B	5.0 - 5.5	6.8 - 6.3	2/19/2017	0.53 J	1,003	532
GAR-PDI-B'4B	3.0 - 3.5	7.8 - 7.3	1/22/2017	0.69 J	27	19
GE	4.1 - 4.6	6.7 - 6.2	3/16/2004	< 0.43 UJ	1,476	635
MW2AV	12.0 - 12.5	(-1.2) - (-1.7)	10/6/2005	< 1.1 UJ	23	25
P4-GA-A5B	5.5 - 6.0	4.0 - 3.5	8/21/2014	2.1 J	1,672	3,511
				Total	10,422	410,631

**Notes:**

<sup>1</sup>The laboratory report and data validation report associated with this sampling location are provided in **Attachment 3** and **Attachment 4**, respectively.

J - The result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.  
sf - square feet

U - The analyte was not detected above the sample reporting limit shown.

UJ - The analyte was not detected above the sample reporting limit shown and the reporting limit was approximate.

Weighted Average Sb Concentration for Functional Area 2 = 410,631 sf x mg/kg / 10,422 sf = 39 mg/kg.

The weighted average concentration of 39 mg/kg exceeds the 31 mg/kg RDCSRS for Sb. As a result, an iterative analysis was performed. Future soil removal is planned within Functional Area 2. It is assumed the Sb concentration in the soil will be 31 mg/kg or less based analytical results associated with backfill placed throughout the Garfield Avenue Group Sites. For this iterative analysis, the RDCSRS for Sb was substituted (i.e., 31 mg/kg). The weighted average Sb concentration, substituting the backfill concentration for the Sb concentration at sample location C9S7-7.5, is provided in **Table 9** below.

**Table 9: Samples Used to Determine Weighted Average Sb Concentration for Samples 114-B10B-SW-5.5-6.0, 114-B9B-SW-5.5-6.0, 114-B9B-SW-4.0-4.5X, and C9S7-7.5 (Functional Area 2) - Iterative Approach**

Location ID	Sample Depth (ft bgs)	Sample Elevation (ft NAVD88)	Date Collected	Maximum Sb Result (mg/kg)	Area (sf)	Area x Maximum Sb Result (sf*mg/kg)
114-B10B-CC-SW	5.8 - 6.3	5.8 - 5.3	9/19/2014	35.9	805	28,900
114-B9B-CC-SW	5.7 - 6.2	5.8 - 5.3	9/18/2014	52.5 J	1,213	63,683
114-C11B-CC-PB	6.5 - 7.0	5.3 - 4.8	9/23/2014	3.7	108	400
114-C11B-CC-SW	2.0 - 2.5	9.3 - 8.8	9/23/2014	10.3 J	1,278	13,163
114-C11B-PB <sup>1</sup>	13.5 - 14.0	(-0.8) - (-1.3)	10/17/2013	< 0.41 UJ	6	2
C9	7.0 - 7.5	4.5 - 4.0	9/3/2003	31	1,481	45,911

Location ID	Sample Depth (ft bgs)	Sample Elevation (ft NAVD88)	Date Collected	Maximum Sb Result (mg/kg)	Area (sf)	Area x Maximum Sb Result (sf*mg/kg)
EF-41	2.5 - 3.0	8.6 - 8.1	4/26/2011	< 1.0 U	419	419
EF-42	2.5 - 3.0	8.9 - 8.4	4/26/2011	6.7	911	6,104
GAR-PDI-A10B	5.0 - 5.5	6.8 - 6.3	2/19/2017	0.53 J	1,003	532
GAR-PDI-B'4B	3.0 - 3.5	7.8 - 7.3	1/22/2017	0.69 J	27	19
GE	4.1 - 4.6	6.7 - 6.2	3/16/2004	< 0.43 UJ	1,476	635
MW2AV	12.0 - 12.5	(-1.2) - (-1.7)	10/6/2005	< 1.1 UJ	23	25
P4-GA-A5B	5.5 - 6.0	4.0 - 3.5	8/21/2014	2.1 J	1,672	3,511
Total					10,422	163,303

**Notes:**

<sup>1</sup>The laboratory report and data validation report associated with this sampling location are provided in **Attachment 3** and **Attachment 4**, respectively.

J - The result was an estimated value; the associated numerical value was an approximate concentration of the analyte in the sample.

J- - The analyte was positively identified; the associated numerical value is an estimated quantity with a potential low bias.

sf - square feet

U - The analyte was not detected above the sample reporting limit shown.

UJ - The analyte was not detected above the sample reporting limit shown and the reporting limit was approximate.

Weighted Average Sb Concentration for Functional Area 2 = 163,303 sf x mg/kg / 10,422 sf = 16 mg/kg.

### 3.0 Conclusions

Based on the residential exposure scenario, the spatially weighted average Sb concentration within Functional Area 1 for samples 114-A'6A-6.5-7.0, A6S6.5-7, and A6S8.5-9 is 13 mg/kg, which is compliant with the 31 mg/kg RDCSRS.

The spatially weighted average Sb concentration within Functional Area 2 at the Garfield Avenue right-of-way for samples 114-B10B-SW-5.5-6.0, 114-B9B-SW-5.5-6.0, 114-B9B-SW-4.0-4.5X, and C9S7-7.5 is 39 mg/kg, which is not compliant with the 31 mg/kg RDCSRS. Removing sample C9S7-7.5, which exceeds the RDCSRS, and substituting an estimated backfill concentration of 31 mg/kg (the RDCSRS), results in a weighted average Sb concentration of 16 mg/kg, which is compliant with the 31 mg/kg Sb RDCSRS. The polygon within which the highest Sb concentration exceeding the RDCSRS was substituted with the estimated Sb concentration in backfill to achieve compliance with the RDCSRS, will be addressed via institutional controls as shown on **Figure 2**.



**Attachments:**

**Figures:**

**Figure 1 -** Compliance Averaging Evaluation, Antimony in Soil - RDCSRS, Garfield Avenue Roadway - Functional Area 1

**Figure 2 -** Compliance Averaging Evaluation, Antimony in Soil - RDCSRS, Garfield Avenue Roadway - Function Area 2

**Attachment 1 -** NJDEP Environmental Criteria for Sb

**Attachment 2 -** Boring Logs


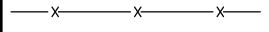





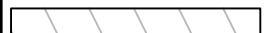

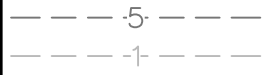
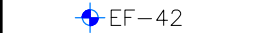
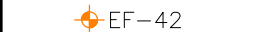

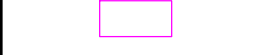


**Attachment 3 -** Laboratory Analytical Reports (*Provided Separately*)

**Attachment 4 -** Data Validation Reports (*Provided Separately*)

## Figures

File: C:\Users\amborns\AECOM\Directory\PPG - GDS\910 CAD\20 SHEETS\RAP\GAR\CAM\CAM\_SRS\_8-22.dwg Layout: CAM\_Fig. 1\_SRS User: amborns Plotted: Aug 22, 2022 - 5:40pm Xref's:

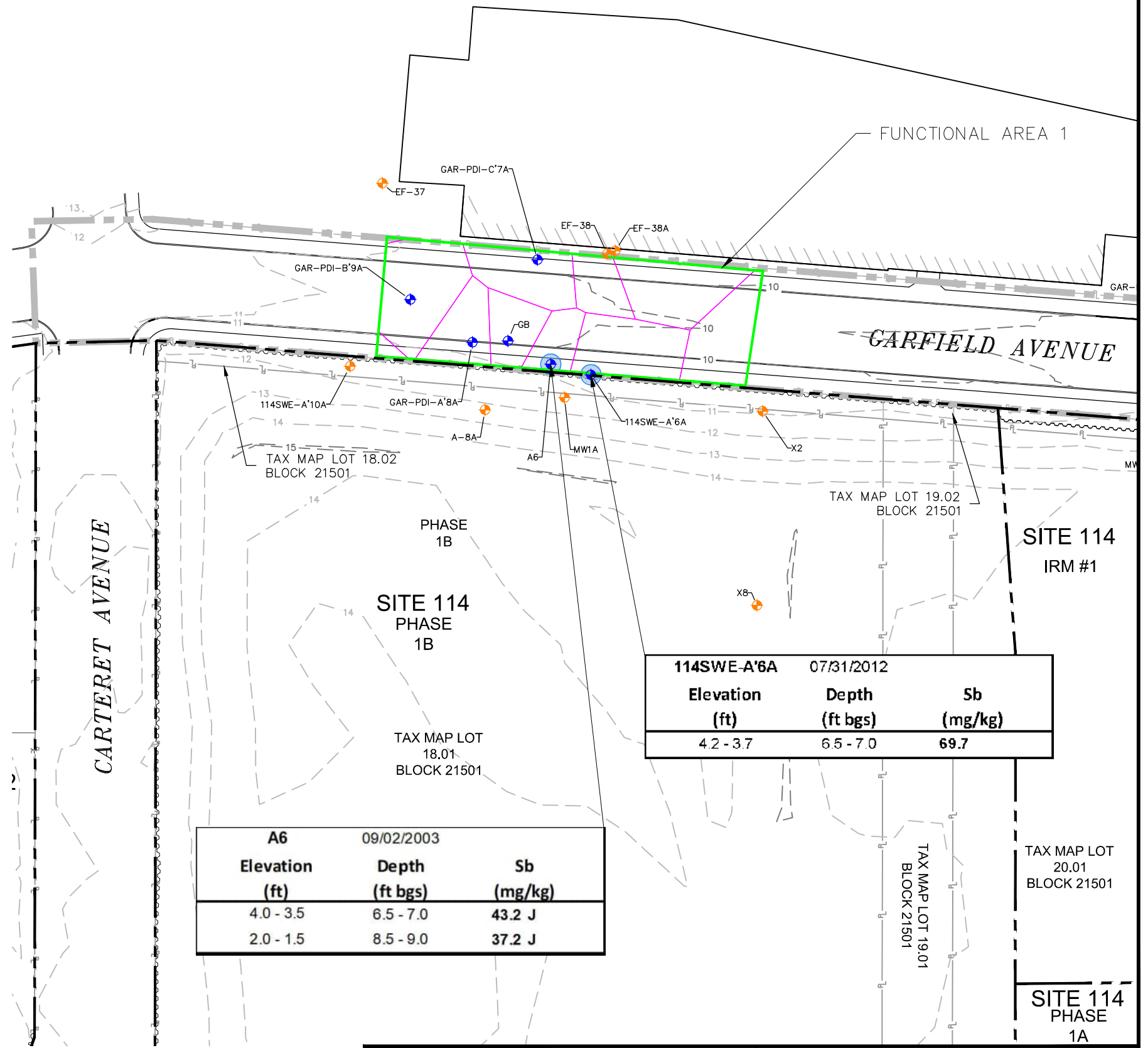
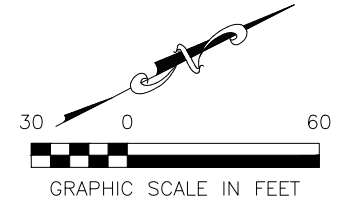
**LEGEND**

-  PROPERTY LINE
-  FENCE
-  EDGE OF CONCRETE
-  GARFIELD AVENUE ROADWAY SITE BOUNDARY
-  EXISTING SHEET PILE
-  ASPHALT
-  DEPRESSED CURB
-  CURB
-  EXISTING BUILDING
-  PRE-REMEDIAATION GROUND SURFACE ELEVATION CONTOURS 1' INTERVAL 5' INDEX
-  SOIL SAMPLE LOCATION - REMAINING IN SOIL - GARFIELD AVENUE ROADWAY
-  SOIL SAMPLE LOCATION - REMAINING IN SOIL - OUTSIDE GARFIELD AVENUE ROADWAY SITE BOUNDARY
-  LOCATION OF SOIL SAMPLE WITH Sb CONCENTRATION GREATER THAN THE RDCSRS WITHIN FUNCTIONAL AREA
-  THIESSEN POLYGON
-  FUNCTIONAL AREA
-  PHASE BOUNDARIES

**NOTES:**

1. Sb RESULTS ARE SHOWN IN mg/kg.

bgs BELOW GROUND SURFACE  
 ft FEET  
 J THE RESULT WAS AN ESTIMATED VALUE; THE ASSOCIATED NUMERICAL VALUE WAS AN APPROXIMATE CONCENTRATION OF THE ANALYTE IN THE SAMPLE.  
 mg/kg MILLIGRAMS PER KILOGRAM  
 RDCSRS NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION RESIDENTIAL DIRECT CONTACT SOIL REMEDIATION STANDARD  
 Sb ANTIMONY




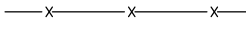


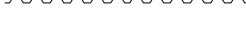



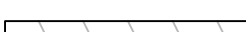


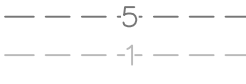
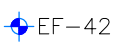
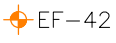





A6		09/02/2003
Elevation (ft)	Depth (ft bgs)	Sb (mg/kg)
4.0 - 3.5	6.5 - 7.0	43.2 J
2.0 - 1.5	8.5 - 9.0	37.2 J

114SWE-A'6A		07/31/2012
Elevation (ft)	Depth (ft bgs)	Sb (mg/kg)
4.2 - 3.7	6.5 - 7.0	69.7

PPG GARFIELD AVENUE GROUP SITES JERSEY CITY, NEW JERSEY	COMPLIANCE AVERAGING EVALUATION ANTIMONY IN SOIL - RDCSRS GARFIELD AVENUE ROADWAY FUNCTIONAL AREA 1
DATE: 08/22/2022	DRWN: MDN
<b>FIGURE 1</b>	

File: C:\Users\amborns\AECOM\Directory\PPG - GDS\910 CAD\20 SHEETS\PPG\GAR\CAM\_SRS\_8-22.dwg Layout: CAM\_Fig\_2\_SRS User: amborns Plotted: Aug 22, 2022 - 6:09pm Xref's:

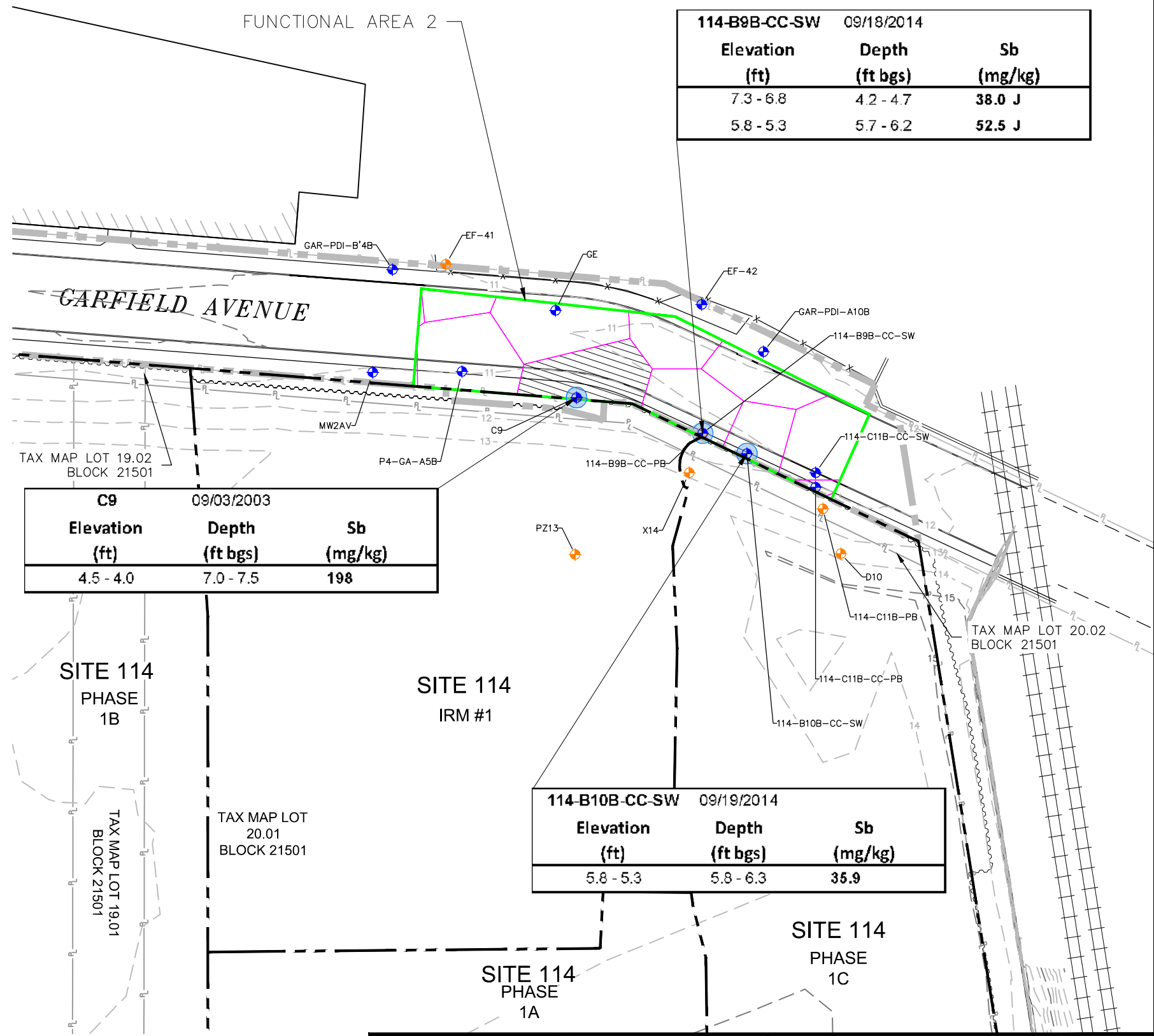
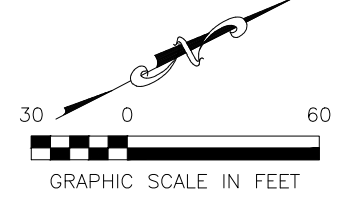
**LEGEND**

-  PROPERTY LINE
-  FENCE
-  EDGE OF CONCRETE
-  GARFIELD AVENUE ROADWAY SITE BOUNDARY
-  EXISTING SHEET PILE
-  ASPHALT
-  DEPRESSED CURB
-  CURB
-  RETAINING WALL
-  EXISTING BUILDING
-  NEW JERSEY TRANSIT HUDSON-BERGEN LIGHT RAIL
-  PRE-REMEDIAION GROUND SURFACE ELEVATION CONTOURS 1' INTERVAL 5' INDEX
-  EF-42
-  EF-42
- 
- 
- 
- 
- 

**NOTES:**

1. Sb RESULTS ARE SHOWN IN mg/kg.

bgs BELOW GROUND SURFACE  
 ft FEET  
 J THE RESULT WAS AN ESTIMATED VALUE; THE ASSOCIATED NUMERICAL VALUE WAS AN APPROXIMATE CONCENTRATION OF THE ANALYTE IN THE SAMPLE.  
 mg/kg MILLIGRAMS PER KILOGRAM  
 RDCSRS NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION RESIDENTIAL DIRECT CONTACT SOIL REMEDIATION STANDARD  
 Sb ANTIMONY



114-B9B-CC-SW 09/18/2014		
Elevation (ft)	Depth (ft bgs)	Sb (mg/kg)
7.3 - 6.8	4.2 - 4.7	38.0 J
5.8 - 5.3	5.7 - 6.2	52.5 J

C9 09/03/2003		
Elevation (ft)	Depth (ft bgs)	Sb (mg/kg)
4.5 - 4.0	7.0 - 7.5	198

114-B10B-CC-SW 09/19/2014		
Elevation (ft)	Depth (ft bgs)	Sb (mg/kg)
5.8 - 5.3	5.8 - 6.3	35.9

Garfield Avenue Compliance Averaging for Antimony in Soil (Revision 1)  
PPG, Jersey City, New Jersey

## **Attachment 1**

### **NJDEP Environmental Criteria for Sb**



**New Jersey Department of Environmental Protection**

**Standards for Drinking Water, Ground Water, Soil and Surface Water**

**Antimony (Total)**

**CAS #: 7440-36-0**

**Drinking Water Standards** ( $\mu$  g/l or ppb)

**Standard:** 6

**Type:** Primary

FEDERAL MCL

**Ground Water Quality Standards** ( $\mu$  g/l or ppb)

**Standard:** 6

**Type:** Specific

**GW-Quality Criterion:** 6

**PQL:** 3

**Surface Water Quality Standards** ( $\mu$  g/l or ppb)

**Fresh Water-**

**Human Health:** 5.6(h)(T)

**Aquatic-Acute:**

**Aquatic-Chronic:**

**Saline Water-**

**Human Health:** 640(h)(T)

**Aquatic-Acute:**

**Aquatic-Chronic:**

**Soil Standards** (mg/kg)

**Residential Direct Contact Health Based Criteria and Soil Remediation Standard**

**Soil Remediation Standard:** 31

**Effective:** 6/2/2008 **Interim:**

**Ingestion Dermal:** 31

**Inhalation:** 360,000

**Soil PQL:** 6

**Non-Residential Direct Contact Health Based Criteria and Soil Remediation Standard**

**Soil Remediation Standard:** 450

**Effective:** 6/2/2008 **Interim:**

**Ingestion Dermal:** 450

**Inhalation:** 23,000

**Soil PQL:** 6

## **Attachment 2**

### **Boring Logs**

Project Name: PPG Soil <del>RA</del> RA	Drilling Company: SGS	Drilling Water Level (bgs): 5.0 ft
Project Number: <del>6915-4201</del>	Drilling Method: GeoProbe	Boring Total Depth (bgs): 15 ft
Date Started Drilling: 9/21/11	Rig Type: 6010 D1	Grout Depth (bgs):
Date Finished Drilling: 9/21/11	Core Size: 2 in	Boring Total Depth (bgs): 15 ft
Physical Location: PPG Site 114, 30 Gnd Area	Logged By: M. Merdinger	(Note) bgs = below ground surface

Depth Range	Recovery ft	PID (ppm)	Moisture Content	GA Class.	USCS	Garfield Avenue Sites Classification & Modified Unified Soil Classification System	
						Surface Cover and Thickness:	Sample name & #:
0-1	0.8	0.0	dry/moist	3	fill	0.0-0.8 Reddish Brown (5YR 4/4) F SAND, little f Gravel and silt, medium dense, dry to moist. N/O.	114-A-8A-0.0 1035
1-2							
2-3							
3-4							
4-5							
5-6	2.0	0.0	wet.	3/6	fill	5.0-7.0 Brown (7.5YR 4/3) Black interbedded silty f SAND and COAL ASH/CINDERS, wet loose, N/O.	114-A-8A-5.0 1040
6-7		0.0	↓	3/6			114-A-8A-6.0 1045
7-8							
8-9							
9-10							
10-11	3.3	0.0	wet	6	↓	10.0-11.3 SAA, wet.	114-A-8A-10.0 1050
11-12		0.0	Moist	3	↓	11.3-12.0 Brown (7.5YR 4/3) SILT, f Sand, trace Organics, soft, moist, N/O.	
12-13		0.0	↓	7/8	PT (SM)	12.0-12.6 Black PEAT, high organics, little silt, soft, moist, N/O.	
13-14						12.6-13.0 PRK Grayish Brown (10YR 4/2) F SAND, some silt, little f gravel (Red Mudstone)	
14-15						dense, moist, N/O.	
15-16							
16-17							
17-18						End @ 15 ft.	
18-19							
19-20							

Stratigraphic Unit Depth Intervals (bgs):

Comments:

1)	4)	Sampled on 9/23/11 for Tot Cr, Xce, eh/ptt * Bottom Sample - for TAL Metals, Xce, eh/ptt, VOCs, SVOCs, SPLP Metals
2)	5)	
3)	6)	



Client: <b>PPG</b>	BORING ID: <b>D10</b>	
Site: <b>PPG - Jersey City, NJ</b>		
Start Date: 8/21/2003	Project: <b>Site Investigation</b>	Page: 1 of 2
	Coordinates: X-611141.89      Y-683913.65	Depth of Boring: 12.00
End Date: 8/21/2003	Elevation: 13.6 ft NAVD88	Geologist:
	Drill Subcontractor: S&S	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
------------	-----------	-------------	-----	-----------	-------------------

0	ASPHALT				
	COBBLE			D10 (0.5-1.0)	TAL Metals, Cr+6
	FILL: Yellow silt (staining), cobble, coal, coke/slag	0.0 ppm			
	FILL: Yellow silt (staining), fine	0.0 ppm		D10 (1.5-2.0)	TAL Metals, Cr+6, SVOCs, PCBs, VOCs, Cyanide
	FILL: Orange, sandy silt, small gravel	0.0 ppm			
		0.0 ppm			
	FILL: Brown silt, slight yellow staining, some sand, coal, coke, brick	0.0 ppm			
		0.0 ppm			
		0.0 ppm			
	FILL: COKE/SLAG	0.0 ppm			
		0.0 ppm			
		0.0 ppm			
	SAND: Red brown, cobble	0.0 ppm			
		0.0 ppm		D10 (11.0-11.5)	TAL Metals, Cr+6
12					

**NOTES:** Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

THIS IS A PRELIMINARY DRAFT. IT HAS BEEN PREPARED BASED ON PRELIMINARY INFORMATION AND ON ASSUMPTIONS. NO ONE MAY RELY ON THIS DRAFT. IT IS SUBJECT TO CHANGE AS ADDITIONAL INFORMATION BECOMES AVAILABLE OR IS CLARIFIED.

Client: <b>PPG</b>		BORING ID:			
Site: <b>PPG - Jersey City, NJ</b>		<b>D10</b>			
Start Date: 8/21/2003	Project: <b>Site Investigation</b>	Page: 2 of 2			
	Coordinates: X-611141.89      Y-683913.65	Depth of Boring: 12.00			
End Date: 8/21/2003	Elevation: 13.6 ft NAVD88	Geologist:			
	Drill Subcontractor: S&S	Driller:			
Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters

12

NULL: End of Boring at 12 ft.

**NOTES:** Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

THIS IS A PRELIMINARY DRAFT. IT HAS BEEN PREPARED BASED ON PRELIMINARY INFORMATION AND ON ASSUMPTIONS. NO ONE MAY RELY ON THIS DRAFT. IT IS SUBJECT TO CHANGE AS ADDITIONAL INFORMATION BECOMES AVAILABLE OR IS CLARIFIED.

Client: <b>PPG</b>	BORING ID: <b>MW1A</b>	
Site: <b>PPG - Jersey City, NJ</b>		
Start Date: 11/18/2003	Project: <b>Site Investigation</b>	Page: 1 of 2
End Date: 11/18/2003	Coordinates: X-610815.64      Y-683479.26	Depth of Boring: 12.00
	Elevation: 11.9 ft NAVD88	Geologist: D. Sherman
	Drill Subcontractor: ADI	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
------------	-----------	-------------	-----	-----------	-------------------

0		FILL: Dark brown (10YR 3/3) GRAVEL, some coarse to fine sand, cement, concrete, brick, cinder	0.0 ppm		
2		FILL: Dark brown (10YR 3/3) SILT, some fine sand, little gravel, clinker, cinder, 10% COPR	0.0 ppm	MW-1A2.0	TAL Metals, Cr+6, TCLSVOCs, TCLVOCs, Cyanide, PCBs
4		FILL: Black (10YR 2/1) SILT, some fine sand, little gravel, cinder, slag, 20% COPR, brick	0.0 ppm		
6		FILL: Black (10YR 2/1) SILT, little coarse to fine sand and gravel, cinder, clinker, cement, 20% COPR	0.0 ppm		
8		FILL: Reddish brown (5YR 5/3) SILT, little fine sand, clinker, wood, cinder	0.0 ppm	MW-1A8.0	TAL Metals, Cr+6, TCLSVOCs, TCLVOCs, Cyanide, PCBs
10		SILT: Dark gray (5YR 4/1) SILT, little clay, trace fine sand, native	0.0 ppm		
12			0.0 ppm		

**NOTES:** Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

THIS IS A PRELIMINARY DRAFT. IT HAS BEEN PREPARED BASED ON PRELIMINARY INFORMATION AND ON ASSUMPTIONS. NO ONE MAY RELY ON THIS DRAFT. IT IS SUBJECT TO CHANGE AS ADDITIONAL INFORMATION BECOMES AVAILABLE OR IS CLARIFIED.

Client: <b>PPG</b>		BORING ID:			
Site: <b>PPG - Jersey City, NJ</b>		<b>MW1A</b>			
Start Date: 11/18/2003	Project: <b>Site Investigation</b>	Page: 2 of 2			
	Coordinates: X-610815.64      Y-683479.26	Depth of Boring: 12.00			
End Date: 11/18/2003	Elevation: 11.9 ft NAVD88	Geologist: D. Sherman			
	Drill Subcontractor: ADI	Driller:			
Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters

12

NULL: End of Boring at 12 ft.

**NOTES:** Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

THIS IS A PRELIMINARY DRAFT. IT HAS BEEN PREPARED BASED ON PRELIMINARY INFORMATION AND ON ASSUMPTIONS. NO ONE MAY RELY ON THIS DRAFT. IT IS SUBJECT TO CHANGE AS ADDITIONAL INFORMATION BECOMES AVAILABLE OR IS CLARIFIED.

Client: <b>PPG</b>	BORING ID: <b>PZ13</b>	
Site: <b>PPG - Jersey City, NJ</b>		
Start Date: 10/19/2005	Project: <b>Site Investigation</b>	Page: 1 of 2
	Coordinates: X-611083.7      Y-683797	Depth of Boring: 20.00
End Date: 10/19/2005	Elevation: 16.2 ft NAVD88	Geologist: D. Sherman
	Drill Subcontractor: Ameridrill	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
------------	-----------	-------------	-----	-----------	-------------------

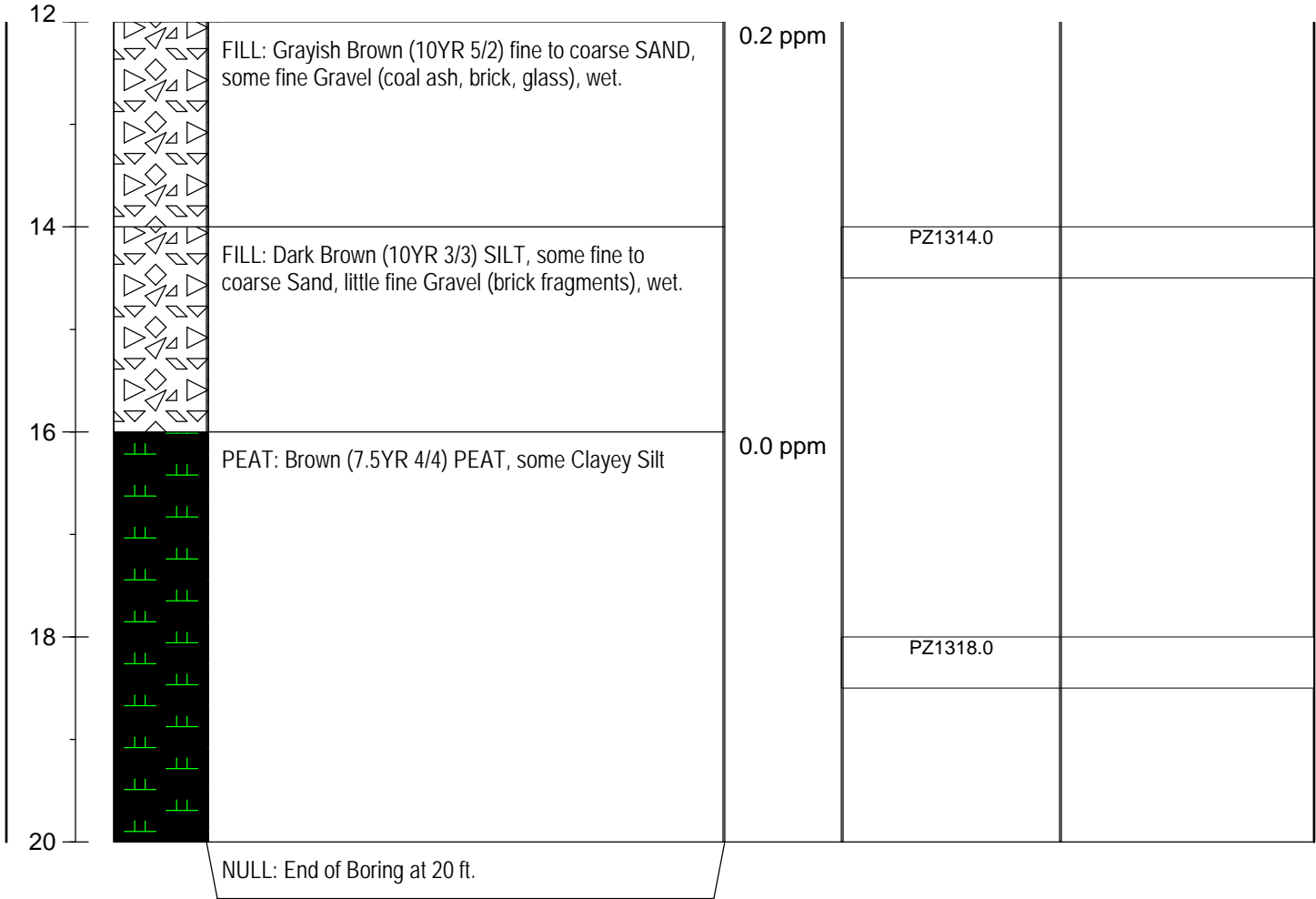
0		FILL: Yellowish Brown (10YR 5/8) fine SAND, well sorted, dry.	0.1 ppm			
				PZ130.5		
2		FILL: Very Dusky Red (10R 2.5/2) fine to coarse SAND, some fine Gravel (brick, glass, cinders), dry.			PZ132.0	
4		FILL: Weak Red (10R 4/4) fine SAND, some Sandy Silt, little Clayey Silt, trace Pebbles, wet at 6.0'. 100% COPR	0.0 ppm			
6					PZ136.0	
8		FILL: Grayish Brown (10YR 5/2) fine to medium SAND, some Gravel, trace Silt (coal ash, cinder), wet. 30% Mud Waste	0.0 ppm			
10		FILL: Greenish Gray (GLE Y1 5/1) fine to coarse SAND, some medium to fine Gravel (coal ash, clinker), wet. 80% Mud Waste			PZ1310.0	
12						

**NOTES:** Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

THIS IS A PRELIMINARY DRAFT. IT HAS BEEN PREPARED BASED ON PRELIMINARY INFORMATION AND ON ASSUMPTIONS. NO ONE MAY RELY ON THIS DRAFT. IT IS SUBJECT TO CHANGE AS ADDITIONAL INFORMATION BECOMES AVAILABLE OR IS CLARIFIED.

Client: <b>PPG</b>	BORING ID: <b>PZ13</b>	
Site: <b>PPG - Jersey City, NJ</b>		
Start Date: 10/19/2005	Project: <b>Site Investigation</b>	Page: 2 of 2
	Coordinates: X-611083.7      Y-683797	Depth of Boring: 20.00
End Date: 10/19/2005	Elevation: 16.2 ft NAVD88	Geologist: D. Sherman
	Drill Subcontractor: Ameridrill	Driller:

Depth (ft)	Lithology	Description	PID	Sample ID	Sample Parameters
------------	-----------	-------------	-----	-----------	-------------------



**NOTES:** Coordinates are provided in New Jersey State Plane NAD 1983 Feet.

THIS IS A PRELIMINARY DRAFT. IT HAS BEEN PREPARED BASED ON PRELIMINARY INFORMATION AND ON ASSUMPTIONS. NO ONE MAY RELY ON THIS DRAFT. IT IS SUBJECT TO CHANGE AS ADDITIONAL INFORMATION BECOMES AVAILABLE OR IS CLARIFIED.

<b>Project Name:</b> PPG Garfield Ave	<b>Drilling Company:</b> Ameridrill	
<b>Project Number:</b> 60240739	<b>Drilling Method:</b> Geoprobe	<b>Coordinates (NJSPNAD83) x:</b> 610865.92
<b>Date Started Drilling:</b> 10/4/2005	<b>Rig Type:</b>	<b>Coordinates (NJSPNAD83) y:</b> 683563.95
<b>Date Finished Drilling:</b> 10/4/2005	<b>Core Size:</b> 2 inches	<b>Boring Total Depth:</b> 24 ft
<b>Logged By:</b> Richard Firely	<b>Project Manager:</b>	<b>Depth to Water:</b>
<b>Physical Location:</b> as drilled		<b>Surface Elevation:</b> 11.7 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1			moist	FILL		Very dark gray (7.5YR 3/1) fine sand and silt, some fine to coarse gravel, trace coal fragments, brick and organics, slight cohesive	114-X2A0-0.5
2			dry	FILL		Dark reddish brown (2.5YR 3/4) medium to coarse gravel, loose	114-X2B-2-2.7
2			saturated	FILL			114-X2B2-2.7
3				NR		Very dark gray (7.5YR 3/1) medium and coarse sand, some fine to coarse gravel, little fine sand, loose No Recovery	
4			saturated	FILL		Very dark gray (7.5YR 3/1) fine to medium sand and silt, little fine gravel, slight cohesive No Recovery	114-X2C4-4.5
5				NR			
6							
7							
8			saturated	FILL		Very dark gray (7.5YR 3/1) silt, trace fine gravel and fine sand, cohesive No Recovery	114-X2D8-8.4
9				NR			
10							
11							
12			saturated	FILL		Very dark gray (7.5YR 3/1) fine sand and silt, trace clay, slight cohesive	
13			saturated	FILL			
14				NR		Dark reddish gray (7.5YR 4/1) silt and clay, little fine sand, trace organics, cohesive No Recovery	114-X2E13.6-14.1
15				NR			
16			saturated	SAND		Dark reddish brown (2.5YR 3/4) fine to coarse sand, some silt and fine to medium gravel, loose	
17							
18				NR		Dark reddish brown (2.5YR 3/4) fine to coarse sand, little fine gravel and silt, trace medium gravel, loose Very dark gray (7.5YR 3/4) fine to coarse sand, little fine gravel and silt, trace medium gravel, loose Dark reddish brown (2.5YR 3/4) fine sand and silt to fine	114-X2F-17.4-17.9
19				NR			
20			saturated	SAND			
21			saturated	SAND			
21			saturated	SILTY SAND			
							X2G

**Notes:**  
 bgs - below surface grade      COPR - chromite ore processing residue      UNDno - non-organic undisturbed native deposits      MGP - manufactured gas plant  
 MM - meadow mat                  GGM - green grey mud                  UNDorg - organic undisturbed native deposits      CCPW - chromate chemical production waste

**Comments:** 1) UND/MM was confirmed 1 ft thick 2) No CCPW was present in any interval of this boring

<b>Project Name:</b> PPG Garfield Ave	<b>Drilling Company:</b> Ameridrill	
<b>Project Number:</b> 60240739	<b>Drilling Method:</b> Geoprobe	<b>Coordinates (NJSPNAD83) x:</b> 610865.92
<b>Date Started Drilling:</b> 10/4/2005	<b>Rig Type:</b>	<b>Coordinates (NJSPNAD83) y:</b> 683563.95
<b>Date Finished Drilling:</b> 10/4/2005	<b>Core Size:</b> 2 inches	<b>Boring Total Depth:</b> 24 ft
<b>Logged By:</b> Richard Firely	<b>Project Manager:</b>	<b>Depth to Water:</b>
<b>Physical Location:</b> as drilled		<b>Surface Elevation:</b> 11.7 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
23				NR		sand, slight cohesive to loose No Recovery	
24				NULL		End of Boring at 24'	

**Notes:**  
 bgs - below surface grade    COPR - chromite ore processing residue    UNDno - non-organic undisturbed native deposits    MGP - manufactured gas plant  
 MM - meadow mat    GGM - green grey mud    UNDorg - organic undisturbed native deposits    CCPW - chromate chemical production waste

**Comments:** 1) UND/MM was confirmed 1 ft thick 2) No CCPW was present in any interval of this boring



<b>Project Name:</b> PPG Garfield Ave	<b>Drilling Company:</b> Ameridrill	
<b>Project Number:</b> 60240739	<b>Drilling Method:</b> Geoprobe	<b>Coordinates (NJSPNAD83) x:</b> 610951
<b>Date Started Drilling:</b> 10/4/2005	<b>Rig Type:</b>	<b>Coordinates (NJSPNAD83) y:</b> 683518
<b>Date Finished Drilling:</b> 10/4/2005	<b>Core Size:</b> 2 inches	<b>Boring Total Depth:</b> 24 ft
<b>Logged By:</b> Richard Firely	<b>Project Manager:</b>	<b>Depth to Water:</b>
<b>Physical Location:</b> 5 <sup>th</sup> West, relocated		<b>Surface Elevation:</b> 13.4 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
				CONCRETE		Concrete	
1			dry	FILL		White (7.5YR 8/1) fine to coarse sand and gravel, loose	114-X8A0.4-0.9
			moist	FILL		Strong brown (7.5YR 5/6) fine sand, trace silt, slight cohesive	114-X8B1-1.5
2			moist	FILL		Dark reddish brown (5YR 3/3) COPR 100% fine to medium gravel, little medium to coarse sand, loose	
3				NR		Very dark gray (7.5YR 3/1) COPR 10% fine to coarse sand and fine to medium gravel, ash, trace green stained soil, trace coal fragments, loose	
4				NR		No recovery	
5			saturated	FILL		Green stained medium to coarse, quartz gravel, wood, little medium to coarse sand, loose	
6			saturated	FILL		Brown (7.5YR 4/4) degraded wood, fibrous	
7			saturated	FILL		Dark brown (7.5YR 3/2) medium to coarse sand and fine to medium gravel, trace fine sand and silt, wood at 2.5 to 2.6 feet, loose	114-X8C6-6.5
8				NR		No recovery	
9			saturated	FILL		Gray (7.5YR 5/1) medium to coarse gravel, some fine to coarse sand and ash, little silt, trace wood, loose	
10				NR		No recovery	114-X8D9.3-9.8
11				NR		No recovery	
12			saturated	FILL		Black (7.5YR 2.5/1) medium to coarse gravel, loose	
13				NR		No recovery	
14				NR		No recovery	
15				NR		No recovery	
16			moist	FILL		Dark brown (7.5YR 3/4) silt and clay, trace organics, cohesive	114-X8F16-16.5
17				PT		Black (7.5YR 2.5/1) peat	
18				NR		No recovery	
19				NR		No recovery	
20				PT		Black (7.5YR 2.5/1) peat	
21			saturated	SM		Gray (7.5YR 5/1) fine sand, some silt, trace medium gravel, slight cohesive	
			saturated	SM		Dark reddish brown (2.5YR 3/4) fine sand and silt, some medium to coarse sand, little fine to coarse gravel, loose	X8G

**Notes:**  
 bgs - below surface grade      COPR - chromite ore processing residue      UNDno - non-organic undisturbed native deposits      MGP - manufactured gas plant  
 MM - meadow mat                  GGM - green grey mud                  UNDOrg - organic undisturbed native deposits      CCPW - chromate chemical production waste

**Comments:** 1) UND/MM confirmed 1 ft thick

<b>Project Name:</b> PPG Garfield Ave	<b>Drilling Company:</b> Ameridrill	
<b>Project Number:</b> 60240739	<b>Drilling Method:</b> Geoprobe	<b>Coordinates (NJSPNAD83) x:</b> 610951
<b>Date Started Drilling:</b> 10/4/2005	<b>Rig Type:</b>	<b>Coordinates (NJSPNAD83) y:</b> 683518
<b>Date Finished Drilling:</b> 10/4/2005	<b>Core Size:</b> 2 inches	<b>Boring Total Depth:</b> 24 ft
<b>Logged By:</b> Richard Firely	<b>Project Manager:</b>	<b>Depth to Water:</b>
<b>Physical Location:</b> 5 <sup>th</sup> West, relocated		<b>Surface Elevation:</b> 13.4 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
—				NR		No recovery	
23							
24				NULL		End of Boring at 24'	

**Notes:**  
 bgs - below surface grade    COPR - chromite ore processing residue    UNDno - non-organic undisturbed native deposits    MGP - manufactured gas plant  
 MM - meadow mat    GGM - green grey mud    UNDorg - organic undisturbed native deposits    CCPW - chromate chemical production waste

**Comments:** 1) UND/MM confirmed 1 ft thick

## **Attachment 3**

### **Laboratory Analytical Reports (*Provided Separately*)**

## **Attachment 4**

### **Data Validation Reports (*Provided Separately*)**