

Appendix I

Compliance Averaging Evaluation

Memorandum

To Wayne Howitz, NJDEP
David Doyle, NJDEP
Prabal Amin, WESTON Solutions, Inc.
Laura Amend Babcock, WESTON Solutions, Inc.
David Spader, ERFS
Hannah Bartges, City of Jersey City
Peter Baker, City of Jersey City
Nick Strasser, City of Jersey City
James D. Ray, MDMC-Law
Nancy Colson, MDMC-Law

CC Jody Overmyer, PPG
Mark Terril, PPG
Rich Feinberg, PPG
Joseph Lagrotteria, LeClairRyan
Dorothy Laguzza, LeClairRyan
Scott Mikaelian, AECOM
Carolyn Scott, AECOM
Aimee Ruiter, AECOM
Matt Beer, AECOM

Subject Forrest Street Properties (Block 21501, Lot 15)
Compliance Averaging for Nickel in Soil (Revision 0)

From Claire Hunt

Date January 15, 2019

This memorandum provides documentation of attainment of compliance for nickel in soil with the Impact to Groundwater Soil Remediation Standard for Garfield Avenue Group Sites (IGWSRS-GAG) for a site-specific soil sample set from Forrest Street Properties (Block 21501, Lot 15) in accordance with the New Jersey Department of Environmental Protection (NJDEP) *Technical Guidance for the Attainment of Remediation Standards and Site-Specific Criteria* (Attainment Guidance) (September 24, 2012, Version 1.0).

Introduction

This memorandum provides documentation of attainment of compliance for nickel with the IGWSRS-GAG (170 milligrams per kilogram [mg/kg]) for a site-specific soil sample set that includes a nickel exceedance in one sample collected at Forrest Street Properties in Block 21501, Lot 15:

Grid ID	Location ID	Sample ID	Depth Interval (ft bgs)	Sample Elevation (ft NAVD88)	Nickel (mg/kg)
X13B	FS18	FS18-2.0-2.5	2.0 - 2.5	9.6 - 9.1	366

Notes:

- bgs below ground surface
- ft foot or feet
- mg/kg milligrams per kilogram
- NAVD88 North American Vertical Datum of 1988

The IGWSRS-GAG applies to samples above the 50th percentile groundwater interface elevation for the Site, which is elevation (El.) 6.1 feet in the North American Vertical Datum of 1988 (ft NAVD88). The determination of the 50th percentile groundwater elevation is provided in Appendix A of the *Remedial Action Report – Forrest Street Properties (AOC FSP-1A, AOC FSP-1B, AOC FSP-2A, and AOC FSP-2B) Soil* (Forrest Street Properties RAR) (AECOM, January 2019).

Figure 1 shows borings with remaining nickel data, the site boundary, groundwater flow direction and the location of the sample exceeding the nickel IGWSRS-GAG. The remaining-in-place nickel sample results are provided in Table 5-3 of the Forrest Street Properties RAR (AECOM, January 2019).

Delineation

The sample FS18-2.0-2.5 is delineated by the following samples shown on **Figure 1**. Where multiple or duplicate samples were collected at a single location, both results are shown below.

Grid ID	Location ID	Depth Interval (ft bgs)	Sample Elevation (ft NAVD88)	Lab SDG	Sample Status	Date Collected	Nickel Result (mg/kg)	Direction
BB16B	FS22	0.0 - 0.5	10.3 - 9.8	JB96034A	remaining	6/2/2015	9.6 7.0 (dup)	East
W10B	B1001	2.8 - 3.3	9.1 - 8.6	R2318036	removed	8/15/2003	52.4	West
W13B	FSP-V13B-SW-E1	6.9 - 7.4	8.4 - 7.9	JC45343A	removed	6/16/2017	17.0	North
Y12B	P4-FOR-Y12B	0.5 - 1.0	9.9 - 9.4	JC22855A	remaining	6/23/2016	92.1	South
Y12B	P4-FOR-Y12BR	0.5 - 1.0	9.9 - 9.4	JC23104A	remaining	6/28/2016	53.2	South
X13B	FS18	4.0 - 4.5	7.6 - 7.1	JB62136A	remaining	3/17/2014	17.1 16.7 (dup)	Vertical

Notes:

- bgs below ground surface
- dup field duplicate sample
- ft foot or feet
- mg/kg milligrams per kilogram
- NAVD88 North American Vertical Datum of 1988
- remaining sample status that indicates the soil in that interval is outside the excavation footprint and remains in-place at that location
- removed sample status that indicates the sample was removed during excavation
- SDG sample delivery group

Laboratory reports and data validation reports for samples at locations FS22 and FSP-V13B-SW-E1 are included in in **Attachment 1** of this memorandum. The boring log for location FS22 is included in **Attachment 2** of this memorandum. Location FSP-V13B-SW-E1 was a post-excavation grab sample and, therefore, does not have a boring log. Laboratory reports, data validation reports, and boring logs for samples at locations P4-FOR-Y12B and P4-FOR-Y12BR are included with the *Forrest Street RAR Tables and Figures* submittal (AECOM, September 2018). Laboratory reports, data validation reports, and boring logs for samples at location FS18 are included in Appendix D, Appendix E, and Appendix H, respectively, of the Forrest Street Properties RAR (AECOM, January 2019). For location B1001, the laboratory report for SDG R2318036 could not be located, as explained in the *Remedial Action Report, Site 114 (AOC 114-1A, AOC 114-2, AOC 114-3, AOC 114-4A, AOC 114-4B, and AOC 114-5) Soil* (Site 114 RAR) (AECOM, December 2018). The boring log for samples at location B1001 is included in Appendix K-7 in the Site 114 RAR (AECOM, December 2018).

Delineation to the east is demonstrated by a sample at location FS22 that was collected in the 98/100 Forrest Street building footprint. Delineation to the north is demonstrated by the sample at location FSP-V13B-SW-E1 that was removed during the remedial excavation in Forrest Street Properties (Block 21501, Lot 15). Delineation to the south is demonstrated by samples at locations P4-FOR-Y12B and P4-FOR-Y12BR collected in Forrest Street. Delineation to the west is demonstrated by a removed sample at location B1001 in Site 114, Phase 2B-2.

Functional Area

The extent of the functional area was developed in accordance with the Attainment Guidance. The horizontal extent of the functional area for the impact-to-groundwater pathway is limited to 100 feet in the direction of groundwater flow. Perpendicular to groundwater flow, the functional area is limited to the delineated extent of contamination. The functional area is oriented to be between the two delineation points (sample locations B1001 and FS22) that bound the functional area perpendicular to the groundwater flow direction. The horizontal extent of the functional area within the site boundary is shown in **Figure 1**. It should be noted that the functional area could be oriented in different ways due to the nature of the shallow groundwater flow regime in this area (as presented in Figure 3-3 of the *Draft Groundwater Remedial Investigation Report* [AECOM, October 2018]). The shallow groundwater elevation contours wrap around the western side of exceedance location FS18. However, there are no data to the west of the Forrest Street Properties; therefore, the functional area orientation presented on **Figure 1** was determined as the most logical given the existing understanding of groundwater flow conditions. The interpreted groundwater flow direction based on the 2018 synoptic well gauging event was used to orient the functional area and is shown on **Figure 1**.

To establish the vertical extent of the functional area for the impact to groundwater pathway, samples are grouped into two categories (as per the Attainment Guidance): (1) samples from the groundwater interface to two ft above the groundwater interface (El. 6.1 to 8.1 ft NAVD88), or (2) samples from two ft above the groundwater interface to the ground surface (El. 8.1 ft NAVD88 to the ground surface). The sample exceeding the IGWSRS-GAG (FS18-2.0-2.5) is located within the elevation range of El. 8.1 ft NAVD88 to the ground surface, so the vertical extent of the functional area is the elevation range of El. 8.1 ft NAVD88 to the ground surface. The selected samples used

in the compliance averaging calculation are all located within the same vertical extent (El. 8.1 ft NAVD88 to the ground surface) as per the Attainment Guidance.

Compliance Averaging

For sample FS18-2.0-2.5, compliance with the nickel IGWSRS-GAG is demonstrated through spatial averaging. Thiessen polygons were created within the functional area as shown in **Figure 1**.

The sample selection process is as follows:

- The samples for nickel with a sample status of remaining that fall within the functional area horizontally and vertically are identified.
- The maximum concentration is selected at each sample location for use in the weighted average. Either the maximum of the concentration for detections or the method detection limit/reporting limit (MDL/RL) for non-detects is selected.

The data listed below were selected:

Grid ID	Location ID	Sample Depth (ft bgs)	Sample Elevation (ft NAVD88)	Date Collected	Lab SDG	Maximum Nickel Result (mg/kg)	Area (sf)	Area x Maximum Nickel Result (sf x mg/kg)	
AA13B	EF-73A	0.0 - 0.5	9.5 - 9	6/1/2015	JB95926A	16.0	1,579	25,264	
BB14B	FS21	0.0 - 0.5	10.4 - 9.9	6/4/2015	JB96227A	12.5	2,519	31,488	
BB16B	FS22	0.0 - 0.5	10.3 - 9.8	6/2/2015	JB96034A	9.6	3,368	32,333	
U15B	FSP-U14B-SW-N5	8.0 - 8.5	11.8 - 11.3	5/19/2017	JC43710A	10.3	15	155	
V15B	FSP-V14B-SW-N4	9.0 - 9.5	8.6 - 8.1	5/22/2017	JC43852A	9.3	1,009	9,384	
X13B	FS18	2.0 - 2.5	9.6 - 9.1	3/17/2014	JB62136A	366	7,087	2,593,842	
X16B	EF-04	2.5 - 3.0	18.7 - 18.2	4/11/2011	460251901	7.4 J	2,800	20,720	
X16B	EF-04B	2.5 - 3.0	19.1 - 18.6	4/14/2011	460253501	29.8 J	879	26,194	
Y12B	P4-FOR-Y12B	0.5 - 1.0	9.9 - 9.4	6/23/2016	JC22855A	92.1	2,241	206,396	
Y12B	P4-FOR-Y12BR	0.5 - 1.0	9.9 - 9.4	6/28/2016	JC23104A	53.2	193	10,268	
							Sum	21,690	2,956,044

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.
- mg/kg milligram per kilogram
- NAVD88 North American Vertical Datum of 1988
- SDG sample delivery group
- sf square feet

Spatially Weighted Average Concentration = 2,956,044 sf x mg/kg / 21,690 sf = 136 mg/kg

Laboratory reports and data validation reports for samples at locations FSP-U14B-SW-N5, FSP-V14B-SW-N4, and FS18 are included in Appendix D and Appendix E, respectively, of the *Forrest Street Properties RAR* (AECOM, January 2019). The boring log for location FS18 is included in Appendix H of the *Forrest Street Properties RAR*. Samples collected at locations FSP-U14B-SW-N5 and FSP-V14B-SW-N4 were post-excavation grab samples and, therefore, do not have boring logs. The laboratory reports, data validation reports, and boring logs for the samples at locations P4-FOR-Y12B and P4-FOR-Y12BR were included with the *Forrest Street RAR Tables and Figures* submittal (AECOM, September 2018). The laboratory reports, data validation reports, and boring logs for the samples at locations EF-73A, FS21, FS22, EF-04, and EF-04B are included in **Attachment 1** and **Attachment 2** of this memorandum.

Conclusion

Based on the impact-to-groundwater scenario, the spatially weighted average nickel concentration within the study area at sample FS18-2.0-2.5 is 136 mg/kg, which is compliant with the 170 mg/kg IGWSRS-GAG.

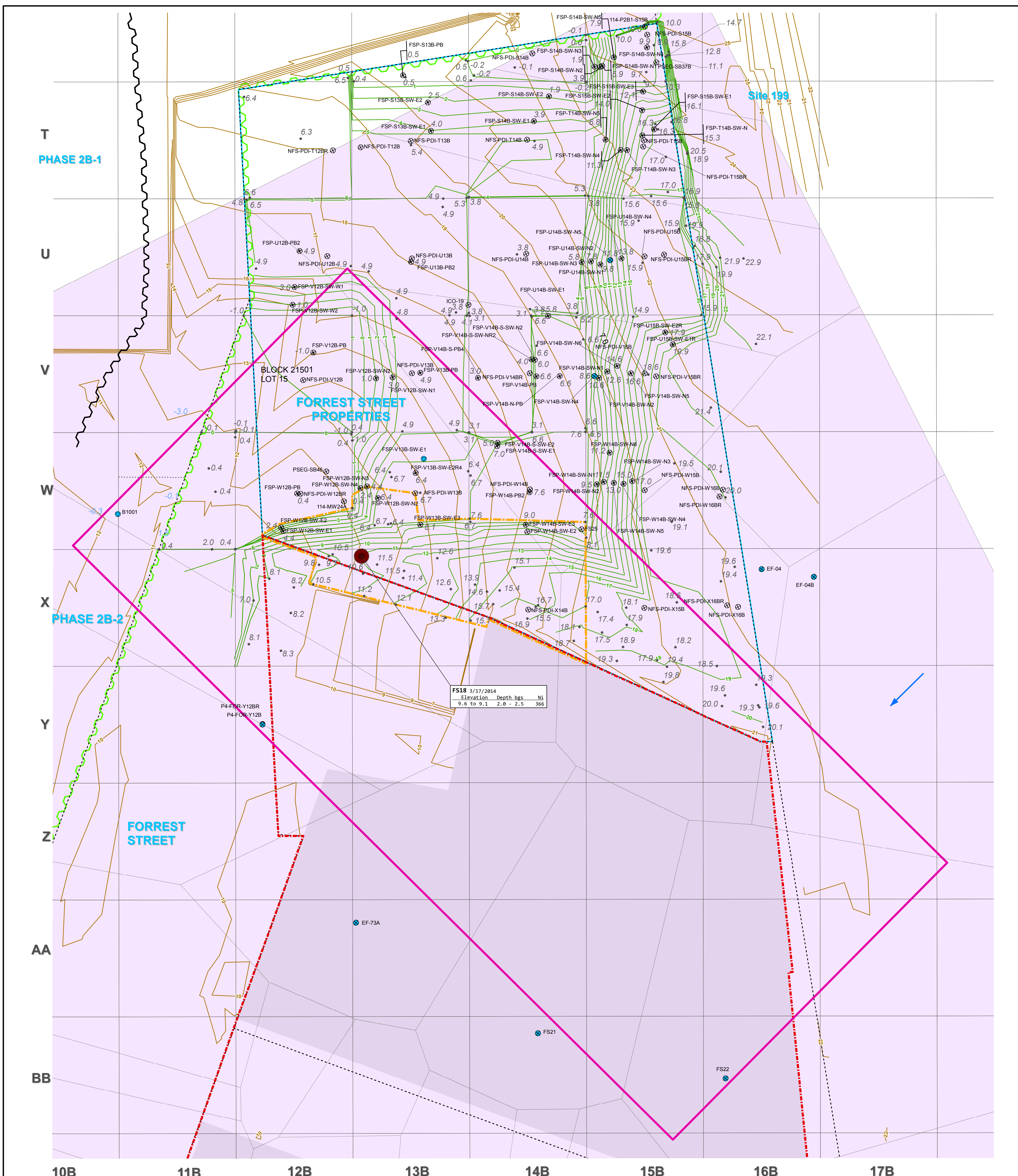
Attachments:

- Figure 1 Sample Map for Nickel in the Unsaturated Soil Zone Compared to IGWSRS-GAG and Functional Area
- Attachment 1 Supplemental Lab and Data Validation Reports
- Attachment 2 Supplemental Boring Logs

Forrest Street Properties (Block 21501, Lot 15)
Compliance Averaging for Nickel in Soil (Revision 0)
PPG, Jersey City, New Jersey

FIGURE 1

**Sample Map for Nickel in the Unsaturated Soil Zone Compared
to IGWSRS-GAG and Functional Area**



LEGEND

- ⊗ SAMPLING LOCATION (REMAINING SAMPLES)
- REMAINING SAMPLES NOT ANALYZED FOR CCPW METALS
- RESULT IS BELOW THE MOST STRINGENT STANDARD
- RESULTS EXCEED THE MOST STRINGENT STANDARD, BUT ARE IN COMPLIANCE WITH REMEDIATION OBJECTIVES
- NICKEL (NI)

- ◆ -3.8 POST-EXCAVATION ELEVATION SURVEY POINT REPRESENTING AS-BUILT TERMINAL EXCAVATION ELEVATION (FT NAVD88)
- IN PLACE SHEET PILE (AS OF JANUARY 2019)
- REMOVED SHEET PILE
- PRE-REMEDIATION ELEVATION CONTOUR (1-FOOT INTERVAL IN FT NAVD88)
- CONCEPTUAL POST-EXCAVATION ELEVATION CONTOUR (1-FOOT INTERVAL IN FT NAVD88)

- PROPERTY LINE
- APPROXIMATE LOCATION OF GRID SPLIT
- FORREST STREET PROPERTIES FUTURE RESIDENTIAL USE AREAS TO BE ADDRESSED VIA ENGINEERING CONTROLS AND INSTITUTIONAL CONTROLS TO BE DISCUSSED IN A SEPARATE SUBMITTAL
- 100 FORREST STREET OFFSET BEING ADDRESSED VIA ENGINEERING CONTROLS AND INSTITUTIONAL CONTROLS
- GROUNDWATER FLOW DIRECTION

- 0.5 SITE BOUNDARY
- GRID LAYOUT WITH AS-BUILT TERMINAL EXCAVATION ELEVATIONS (FT NAVD88)
- BUILDING
- THIESSEN POLYGONS
- FUNCTIONAL AREA

Soil Screening Level & Soil Remediation Standards (mg/kg)	
Analyte	IGWSRS-GAG
NICKEL	170

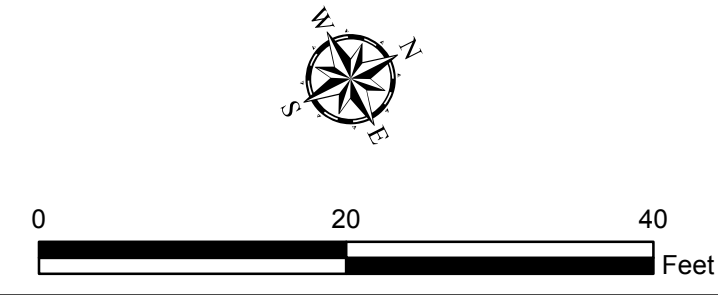
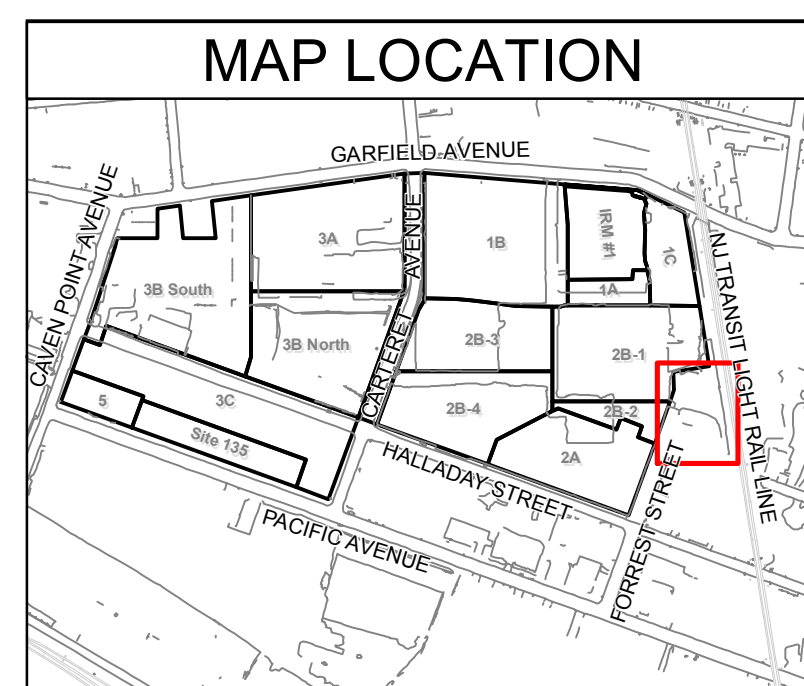
ABBREVIATIONS:
 bgs - below ground surface
 CCPW - Chromate Chemical Production Waste
 ft - feet
 IGWSRS-GAG - Impact to Groundwater Soil Remediation Standard - Garfield Avenue Group (alternative remediation standard as proposed in the Supplemental Soil Remedial Investigation Report, Final (Revision 1), dated 08/30/2018 and approved by NJDEP on 10/22/2018)
 mg/kg - milligrams per kilogram
 NAVD88 - North American Vertical Datum of 1988
 Ni - nickel
 NJDEP - New Jersey Department of Environmental Protection
 U.S. - United States

GENERAL NOTES:

- The nickel data associated with the sample locations shown on this figure are provided in the Technical Memorandum *Forrest Street Properties (Block 21501, Lot 15), Compliance Averaging for Nickel in Soil*, AECOM, January 2019.
- "Elevation" refers to the sample elevation based on the pre-remediation surface elevation for samples collected from the pit bottom, and the surface elevation of the sample location when the sample was collected via boring or test pit.
- Elevation vertical datum is NAVD88, in U.S. survey ft.
- Results are reported in mg/kg.
- Source of block/lot information is Jersey City Parcel Data from New Jersey Geographic Information Network (NJGIN), last updated 10/6/2015 (available at: <http://data.jerseycitynj.gov/dataset/jersey-city-parcel-polygon>).
- This figure presents data for locations within the Site boundary and functional area that have samples remaining in place. In addition, locations from outside the Site boundary and/or removed samples may be shown to demonstrate compliance with the remediation objectives.

SPECIFIC NOTES:

- Property lines and pre-construction topographical contours are sourced from the "Boundary and Topographic Survey, PPG Industries Site 114, Lots 11, 12, 14 and 15, Block 21501, City of Jersey City, Hudson County, New Jersey" prepared by Borbas Surveying and Mapping, LLC, dated January 8, 2019.
- Post-excavation elevation survey points were taken from the "Post Excavation Elevations Plan for ENTACT, LLC, PPG Site 133 & 135 Skyways," produced by Maser Consulting P.A., dated 06/30/17.
- Conceptual post-excavation elevation contours in Forrest Street Properties and Forrest Street were generated using professional judgment based on post-excavation elevation survey points and knowledge of excavation practices utilized during remedial excavation (i.e., excavation conducted on a 30 ft by 30 ft basis).
- The as-built terminal excavation elevations in Grids V11B, W10B, and W11B are sourced from "Post Excavation Grade Plan for ENTACT, LLC, PPG SITE 114" prepared by Maser Consulting, dated August 10, 2018.
- In Grid Y12B, two sample locations are located adjacent to one another; therefore, the sampling location symbols overlap on the figure.



PPG
 FORREST STREET PROPERTIES
 (BLOCK 21501, LOT 15)
 GARFIELD AVENUE GROUP
 JERSEY CITY, NEW JERSEY

Date: 1/23/2019

**SAMPLE MAP FOR NICKEL
 IN THE UNSATURATED SOIL ZONE
 COMPARED TO IGWSRS-GAG
 AND FUNCTIONAL AREA**

FIGURE 1

Forrest Street Properties (Block 21501, Lot 15)
Compliance Averaging for Nickel in Soil (Revision 0)
PPG, Jersey City, New Jersey

ATTACHMENT 1

Supplemental Lab and Data Validation Reports

(provided separately on DVD)

Forrest Street Properties (Block 21501, Lot 15)
Compliance Averaging for Nickel in Soil (Revision 0)
PPG, Jersey City, New Jersey

ATTACHMENT 2

Supplemental Boring Logs



30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: EF-04

Page: 1

Project Name: PPG Soil RIWP	Drilling Company: SGS	
Project Number: 6015-4801	Drilling Method: Airknife/Geoprobe	Coordinates (NJSPNAD83) x: 611733.927
Date Started Drilling: 4/13/2011	Rig Type: Airknife/Geoprobe	Coordinates (NJSPNAD83) y: 683770.361
Date Finished Drilling: 4/13/2011	Core Size: 2 in	Boring Total Depth: 10 ft
Logged By: M. Merdinger	Project Manager: Robert Cataldo	Depth to Water: N/A ft
Physical Location: Near PSEG-SB38		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample Number	
1	1	0	moist	2	Fill		Black Asphalt		
2			moist	3	Fill		Brown (7.5YR 3/4) medium-fine SILTY SAND, little Gravel, trace Coal Ash (5%), moist. No odor.		
3		0	moist	3	Fill		Coarse GRAVEL, medium Cobbles, moist. No odor.		
4							Reddish Brown (7.5YR 4/3) SILTY SAND, some coarse angular Gravel, trace fine-medium Gravel and Coal Ash, moist. No odor.		
5									
6		0	moist		10		SP-SM	Reddish Brown (5YR 4/3) fine to coarse GRAVEL angular, little fine Sand and Silt, dense, moist. No odor.	
7			dry		13		BEDROCK	Black with White flecks DIABASE fragments, dry, very dense.	
8									
9									
10									
11						Refusal at 10 ft on Diabase. Bent core barrel.			
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
31									
32									
33									
34									
35									

Comments: No COPR/GGM identified at this location.

PPG - GINT STD US LAB.GDT - 11/3/11 14:34 - \\USPSW2\FP001\DATA_USPSW2\FP001\ENVIRONMENT\PISCATAWAY\PROJECT\PPG-NJ\PROGRAM9-WORKFILES\PROJECT MANAGER-CATALDO\BGA RI-SOIL INVESTIGATION\FIELD WORKING LOGS\GINT L



30 Knightsbridge Road, Piscataway, NJ 08854
732.564.3200 office telephone

Boring ID: EF-04B

Page: 1

Project Name: PPG Soil RIWP	Drilling Company: SGS	
Project Number: 6015-4801	Drilling Method: Airknife/Geoprobe	Coordinates (NJSPNAD83) x: 611741.715
Date Started Drilling: 4/14/2011	Rig Type: Airknife/Geoprobe	Coordinates (NJSPNAD83) y: 683781.465
Date Finished Drilling: 4/14/2011	Core Size: 2 in	Boring Total Depth: 15 ft
Logged By: M. Merdinger	Project Manager: Robert Cataldo	Depth to Water: 5 ft
Physical Location: 2nd off-set of EF-04, 16 ft N of original location		

(Note bgs = below ground surface)

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample Number	
1		0	moist	2	Fill		Black Asphalt	EF-B04B_0.15	
				3	Fill				
2		0	moist	3	Fill		Brown (7.5YR 3/4) medium-fine SILTY SAND, little Gravel, trace Coal Ash (5%), moist. No odor.	EF-B04B_2.0	
3				3	Fill				Coarse GRAVEL, medium Cobbles, moist. No odor.
4				3	Fill				
5	0.5	0	wet	10	SP-SM		Reddish Brown (7.5YR 4/3) SILTY SAND, some coarse angular Gravel, trace fine-medium Gravel and Coal Ash, moist. No odor.	EF-B04B_2.5	
6				10	SP-SM				
7									
8									
9	0.5	0	wet	13	SP		Reddish Brown (5YR 4/3) fine to medium SAND and fine to coarse angular GRAVEL, some to little Silt, wet, dense. No odor.	EF-B04B_4.0	
10									
11									
12									
13									
14	Refusal at 15 ft on Bedrock.								
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
31									
32									
33									
34									
35									

Comments: No COPR/GGM identified at this location.

PPG - GINT STD US LAB.GDT - 11/3/11 14:34 - \\USPSW2\FP001\DATA_USPSW2\FP001\ENVIRONMENT\PISCATAWAY\PROJECT\PPG-NJ\PROGRAM9-WORKFILES\PROJECT MANAGER-CATALDO\BGA RI-SOIL INVESTIGATION\FIELD WORKING LOGS\GINT.L

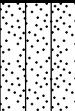
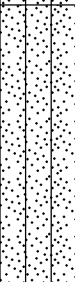
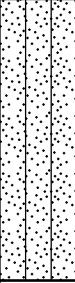
Project Name: PPG Soil RIWP	Drilling Company: SGS North America	
Project Number: 6015-4801	Drilling Method: Geoprobe	Coordinates (NJSPNAD83) x: 611768
Date Started Drilling: 6/1/2015 11:20:00 AM	Rig Type:	Coordinates (NJSPNAD83) y: 683636.5
Date Finished Drilling: 6/2/2015 10:40:00 AM	Core Size: 3 in	Boring Total Depth: 40 ft
Logged By: EW	Project Manager: Robert Cataldo	Depth to Water: NA
Physical Location:		Surface Elevation: 9.5 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1	4.5	0.0	dry	FILL		medium SAND, trace slag, (7.5YR 3/2) dark brown, dry, no odor, no staining.	EF-73A-0.0-0.5
2		0.0	dry	FILL		medium SAND, trace coarse gravel trace coal, (5YR 3/2) dark reddish brown, dry, no odor, no staining.	EF-73A-2.0-2.5
3		0.0	moist	FILL		fine to medium SAND, (7.5YR 3/2) dark brown, moist, no odor, no staining.	
4		0.0	slightly moist	FILL		medium SAND, with ash and cinders, (10YR 3/4) dark yellowish brown, slightly moist, no odor, no staining.	
5					NR		NO RECOVERY.
6	4.5	0.0	dry	FILL		fine SAND, trace silt, (7.5YR 3/1) very dark gray, dry, no odor, no staining.	EF-73A-4.0-4.5
7		0.0	moist	FILL		fine SAND, some silt, (7.5YR 6/1) gray, moist, no odor, no staining.	EF-73A-6.0-6.5
8		0.0	moist	SM		UNDno medium SAND, some silt, (5YR 4/3) reddish brown, moist, no odor, no staining. Soils consistent with UNDno.	EF-73A-8.0-8.5
9	4.5	0.0	moist	SM		UNDno medium SAND, some silt, (5YR 4/3) reddish brown, moist, no odor, no staining. Soils consistent with UNDno.	EF-73A-10.0-10.5
10							
11		0.0	moist	SM		UNDno fine to coarse SAND, with medium gravel, (5YR 3/2) dark reddish brown, moist, no odor, no staining. Soils consistent with UNDno.	EF-73A-12.0-12.5
12							
13	4	0.0	moist	SM		UNDno fine to coarse SAND, with medium gravel, (5YR 3/2) dark reddish brown, moist, no odor, no staining. Soils consistent with UNDno.	EF-73A-14.0-14.5
14							
15		0.0	moist	SM		UNDno fine to coarse SAND, with medium gravel, (5YR 3/2) dark reddish brown, moist, no odor, no staining. Soils consistent with UNDno.	EF-73A-16.0-16.5
16							
17	5	0.0	moist	SM		UNDno fine to coarse SAND, with medium gravel, (5YR 3/2) dark reddish brown, moist, no odor, no staining. Soils consistent with UNDno.	EF-73A-18.0-18.5
18							
19		0.0	moist	SM		UNDno fine to coarse SAND, with medium gravel, (5YR 3/2) dark reddish brown, moist, no odor, no staining. Soils consistent with UNDno.	EF-73A-20.0-20.5
20							
21	5	0.0	moist	SM		UNDno fine to coarse SAND, with medium gravel, (5YR 3/2) dark reddish brown, moist, no odor, no staining. Soils consistent with UNDno.	EF-73A-22.0-22.5
22							
23		0.0	moist	SM		UNDno fine to coarse SAND, with medium gravel, (5YR 3/2) dark reddish brown, moist, no odor, no staining. Soils consistent with UNDno.	EF-73A-24.0-24.5
24							
25							

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 UNOrg - organic undisturbed native deposits CCPW - chromate chemical production waste

Comments:

Project Name: PPG Soil RIWP	Drilling Company: SGS North America	
Project Number: 6015-4801	Drilling Method: Geoprobe	Coordinates (NJSPNAD83) x: 611768
Date Started Drilling: 6/1/2015 11:20:00 AM	Rig Type:	Coordinates (NJSPNAD83) y: 683636.5
Date Finished Drilling: 6/2/2015 10:40:00 AM	Core Size: 3 in	Boring Total Depth: 40 ft
Logged By: EW	Project Manager: Robert Cataldo	Depth to Water: NA
Physical Location:		Surface Elevation: 9.5 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
27	5					consistent with UNDno.	EF-73A-26.0-26.5
28							EF-73A-28.0-28.5
29	5	0.0	moist	SM		UNDno fine to coarse SAND,(5YR 3/2) dark reddish brown,moist,no odor,no staining. Soils consistent with UNDno.	EF-73A-30.0-30.5
30							EF-73A-32.0-32.5
31							EF-73A-34.0-34.5
32							EF-73A-36.0-36.5
33	5	0.0	moist	SM		UNDno fine to coarse SAND, (5YR 3/2) dark reddish brown,moist,no odor,no staining. Soils consistent with UNDno.	EF-73A-36.0-36.5
34							EF-73A-38.0-38.5
35							EF-73A-39.5-40.0
36							
37							
38							
39							
40							

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:

Project Name: PPG Garfield Ave	Drilling Company: SGS North America	
Project Number: 60240739	Drilling Method: Geoprobe	Coordinates (NJSPNAD83) x: 611814.4
Date Started Drilling: 6/4/2015 9:30:00 AM	Rig Type:	Coordinates (NJSPNAD83) y: 683665.4
Date Finished Drilling: 6/4/2015 4:00:00 PM	Core Size: 3 in	Boring Total Depth: 40 ft
Logged By: EW	Project Manager: Scott Mikaelian	Depth to Water: NA
Physical Location: Forrest Street - FS21		Surface Elevation: 10.4 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1	5	0.0	dry	3	FILL		ASH and CINDERS, (5YR 4/2) dark reddish gray, dry, no odor, no staining.	FS21-0.0-0.5
		0.0	dry	3	FILL			FS21-0.0-0.5X
		0.0	dry	3	FILL			fine to medium SAND, (7.5YR 3/2) dark brown, dry, no odor, no staining.
		0.0	dry	3	FILL			ASH and CINDERS, (5YR 4/2) dark reddish gray, dry, no odor, no staining.
2	5	0.0	wet	3	FILL		fine to medium SAND, (7.5YR 3/2) dark brown, dry, no odor, no staining.	FS21-2.0-2.5
								0.0
3	5	0.0	wet	3	FILL		NO RECOVERY.	FS21-39.5-40.0
								0.0
5	5	0.0	wet	3	FILL		medium SAND, some silt, (7.5YR 4/1) dark gray, wet, no odor, no staining.	FS21-6.0-6.5
								0.0
8	5	0.0	wet	3	FILL		fine SAND, some silt, (5YR 4/2) dark reddish gray, wet, no odor, no staining.	FS21-8.0-8.5
								0.0
10	5	0.0	wet	9	SM		UNDno fine SAND, little silt, (5YR 4/3) reddish brown, wet, no odor, no staining. Soils consistent with UNDno.	FS21-10.0-10.5
								0.0
12	5	0.0	wet	9	SM		UNDno medium to coarse SAND, with medium gravel, (5YR 4/3) reddish brown, wet, no odor, no staining. Soils consistent with UNDno.	FS21-12.0-12.5
								0.0
15	3.5	0.0	wet	9	SM		UNDno medium to coarse SAND, with medium gravel, (5YR 4/3) reddish brown, wet, no odor, no staining. Soils consistent with UNDno.	FS21-16.0-16.5
								0.0
18	3.5	0.0	wet	9	SM		NO RECOVERY.	FS21-18.0-18.5
								0.0
20	3.5	0.0	wet	9	SM		UNDno medium to coarse SAND, with medium gravel, (5YR 4/3) reddish brown, wet, no odor, no staining. Soils consistent with UNDno.	FS21-20.0-20.5
								0.0

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:

PPG - 2012-09 RA PPG LOGS - A.GDT - 12/20/16 10:22

Project Name: PPG Garfield Ave	Drilling Company: SGS North America	
Project Number: 60240739	Drilling Method: Geoprobe	Coordinates (NJSPNAD83) x: 611814.4
Date Started Drilling: 6/4/2015 9:30:00 AM	Rig Type:	Coordinates (NJSPNAD83) y: 683665.4
Date Finished Drilling: 6/4/2015 4:00:00 PM	Core Size: 3 in	Boring Total Depth: 40 ft
Logged By: EW	Project Manager: Scott Mikaelian	Depth to Water: NA
Physical Location: Forrest Street - FS21		Surface Elevation: 10.4 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	GA Class	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
23-24	4.5							FS21-22.0-22.5
24-25				9	SM		NO RECOVERY.	FS21-24.0-24.5
25-26		0.0	wet	9	SM		UNDno fine SAND,with medium gravel,(5YR 4/3) reddish brown,wet,no odor,no staining. Soils consistent with UNDno.	FS21-26.0-26.5
26-27	5							FS21-28.0-28.5
27-28								
28-29								
29-30								
30-31		0.0	wet	9	SM		UNDno fine SAND,with medium gravel, (5YR 4/3) reddish brown,wet,no odor,no staining. Soils consistent with UNDno.	FS21-30.0-30.5
31-32	5							FS21-32.0-32.5
32-33								
33-34								FS21-34.0-34.5
34-35								
35-36		0.0	wet	9	SM		UNDno fine SAND, with medium gravel, (5YR 4/3) reddish brown, wet, no odor, no staining. Soils consistent with UNDno.	FS21-36.0-36.5
36-37	5							FS21-38.0-38.5
37-38								
38-39								
39-40								

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:

PPG - 2012-09 RA PPG_LOGS_A_GDT - 12/20/16 10:22

Project Name: PPG Garfield Ave	Drilling Company: SGS North America	
Project Number: 60240739	Drilling Method: Geoprobe	Coordinates (NJSPNAD83) x: 611846.4133
Date Started Drilling: 6/1/2015 9:20:00 AM	Rig Type:	Coordinates (NJSPNAD83) y: 683703.1547
Date Finished Drilling: 6/3/2015 1:40:00 PM	Core Size: 3 in	Boring Total Depth: 40 ft
Logged By: EW	Project Manager: Scott Mikaelian	Depth to Water: NA
Physical Location: Forrest Street - FS22		Surface Elevation: 10.3 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID	
1-4	3.5	0.0	dry	FILL		fine to medium SAND, some medium gravel, (7.5YR 3/2) dark brown, dry, no odor, no staining.	FS22-0.0-0.5	
		0.0	dry	FILL		fine to medium SAND, trace silt, trace fine gravel, (7.5YR 2.5/3) very dark brown, dry, no odor, no staining.		
		0.0	dry	FILL		fine to medium SAND, some ash and cinders, (7.5YR 3/2) dark brown, dry, no odor, no staining.	FS22-2.0-2.5	
			wet	NR		NO RECOVERY.		
		0.0	slightly moist	FILL		fine SAND, with silt, (7.5YR 3/1) very dark gray, slightly moist, no odor, no staining.	FS22-3.0-3.5	
4		0.0		NR		NO RECOVERY.		
5-9	5	0.0	dry	FILL		fine silty SAND, (7.5YR 4/1) dark gray, dry, no odor, no staining.	FS22-5.0-5.5	
		0.0	dry	FILL		fine SAND, little silt, (7.5YR 3/2) dark brown, dry, no odor, no staining.	FS22-6.0-6.5	
		0.0	wet	FILL		fine SAND, (7.5YR 4/1) dark gray, wet, no odor, no staining.		
								FS22-8.0-8.5
		0.0	moist	SM		UNDno fine SAND, (5YR 4/3) reddish brown, slightly moist, no odor, no staining. Soils consistent with UNDno.		
10						FS22-10.0-10.5		
12-15	4.5	0.0	wet	SM		medium SAND, with medium to coarse gravel, (5YR 4/3) reddish brown, wet, no odor, no staining. Soils consistent with UNDno.	FS22-12.0-12.5	
							FS22-14.0-14.5	
		0.0		NR		NO RECOVERY.		
16-19	4	0.0	wet	SM		medium SAND, with medium to coarse gravel, (5YR 4/3) reddish brown, wet, no odor, no staining. Soils consistent with UNDno.	FS22-16.0-16.5	
							FS22-18.0-18.5	
		0.0		NR		NO RECOVERY.		
20		0.0	wet	SM		medium SAND, with medium to coarse gravel, (5YR 4/3) reddish brown, wet, no odor, no staining. Soils consistent with UNDno.	FS22-20.0-20.5	
21								

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:

Project Name: PPG Garfield Ave	Drilling Company: SGS North America	
Project Number: 60240739	Drilling Method: Geoprobe	Coordinates (NJSPNAD83) x: 611846.4133
Date Started Drilling: 6/1/2015 9:20:00 AM	Rig Type:	Coordinates (NJSPNAD83) y: 683703.1547
Date Finished Drilling: 6/3/2015 1:40:00 PM	Core Size: 3 in	Boring Total Depth: 40 ft
Logged By: EW	Project Manager: Scott Mikaelian	Depth to Water: NA
Physical Location: Forrest Street - FS22		Surface Elevation: 10.3 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
23-24	5						FS22-22.0-22.5
24-25							FS22-24.0-24.5
25-26		0.0	wet	SM		medium SAND,with medium to coarse gravel,(5YR 4/3) reddish brown,wet,no odor,no staining. Soils consistent with UNDno.	FS22-26.0-26.5
26-27							
27-28	5						FS22-28.0-28.5
28-29							
29-30							
30-31		0.0	wet	SM		medium SAND,(5YR 4/3) reddish brown,wet,no odor,no staining. Soils consistent with UNDno.	FS22-30.0-30.5
31-32							
32-33	5						FS22-32.0-32.5
33-34							FS22-34.0-34.5
34-35							
35-36		0.0	wet	SM		medium SAND,(5YR 4/3) reddish brown,wet,no odor,no staining. Soils consistent with UNDno.	FS22-35.0-35.5
36-37		0.0		NR		NO RECOVERY.	
37-38	0.5						
38-39							
39-40							

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:

PPG - 2012-08 RA PPG_LOGS_A_GDT - 12/15/16 23:46