

Appendix A-9

Frac Tank Release Completion Memo

MEMO

To:

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From:

James McLaughlin

Date:

August 26, 2020

Subject:

Revised February 15, 2019 Non-GA Group Site 107 Frac Tank Release Completion Report

This memorandum presents a summary of a release at Non-Garfield Avenue (GA) Group Site 107 (Site 107), located at 18 Chapel Avenue, Jersey City, New Jersey, and its associated response actions. This memorandum has been revised per New Jersey Department of Environmental Protection (NJDEP) comments received via email on March 27, 2020.

RELEASE DESCRIPTION

Remedial excavations and associated dewatering were conducted at Site 107. At approximately 0900 on February 15, 2019, a 21,000-gallon tank being filled with excavation wastewater overflowed. Approximately 50 gallons of wastewater escaped secondary containment and spilled onto ground surface. Ground surface in this area was partially backfilled with clean fill. There was no snow cover nor standing water in the area at the time of the release. The release did not reach a sewer system or an open water body. A root cause analysis determined that due to a faulty radio, the laborer overseeing frac tank filling was unable to notify the laborer responsible for dewatering pump operation within the excavation to turn off the pump. To prevent future releases, the faulty radio had been replaced with a new radio and it was reiterated to all personnel that may be responsible for tank watch to have pump shut down within one foot of headspace without any exceptions. A Corrective Measures Plan will be submitted to the Department detailing the measures implemented to prevent reoccurrence in the future.

On February 14, 2019, a characterization sample was collected from the wastewater transferred to the 21,000-gallon tank and analyzed for total chromium and total suspended solids. The total chromium concentration was 0.5249 milligrams per liter (mg/L), below the hazardous level of 5.0 mg/L.

Because the wastewater was characterized as non-hazardous, the release was not reported to the NJDEP's Hotline. The area of the release was scraped with an excavator, and 2 to 4 inches of material were removed across an area of 1,163 square feet (ft²) (approximately 8 cubic yards removed). The attached figure shows in red the surveyed location of the scraped area within the 30 by 30-foot excavation grids. Scraped material was staged onsite.

POST-REMEDIAL SAMPLING

As described in the *Non-GA Group Site 107 Frac Tank Release Response Work Plan* (Arcadis 2019), wastewater from the Site 107 excavation has been sampled nine times for characterization. Seven of the nine samples were analyzed for volatile organic compounds (VOCs) via United States Environmental Protection Agency (USEPA) Method 624. No VOC detections or exceedances of NJDEP Groundwater Quality Criteria were observed. Therefore, post-excavation soil samples were not analyzed for VOCs.

Arcadis collected two post-excavation base soil samples and four post-excavation sidewall samples to confirm that all impacts associated with the spilled wastewater have been removed. This proposed number of samples was based on the square footage of the excavated area (1,163 ft²), and the NJDEP's guidance regarding post excavation soil sampling of one base soil sample per 900 ft² of excavated area. Since the spill was to vadose-zone soils, the potential for exceedances of the default Impact to Groundwater (IGW) Soil Screening Levels (SSL) and site-specific IGW Soil Remediation Standards (SSIGWSRS) were evaluated. The six soil samples were analyzed for target compound list (TCL) semi-volatile organic compounds (SVOC), and the full suite of target analyte list (TAL) metals, including hexavalent chromium.

Analytical results were compared to the NJDEP Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS), Residential Direct Contact Soil Remediation Standards (RDCSRS, site-specific SRS, where applicable), IGW SSLs (site-specific SRS, where applicable), and the Hexavalent Chromium Soil Cleanup Criteria (CrSCC). The results are summarized below:

- All six samples exceeded the IGW SSL for manganese, and every sample, except for SW-FS-01, exceeded the IGW SSL for aluminum. NJDEP has decided that the impact to groundwater

pathway does not need to be addressed for aluminum and manganese as these are constituents with Groundwater Quality Standards that are based on secondary considerations.

- In sample BS-FS-02, antimony and thallium were non-detect, however, laboratory reporting limits were elevated due to an interfering element and therefore the reporting limits exceeded applicable IGW SSLs. These elevated non-detect results were present in the absence of hexavalent chromium, and neither antimony nor thallium were detected in any other sample. Based on these lines of evidence, there is no indication that antimony or thallium is present at concentrations exceeding the IGW SSL.
- There were no additional detections in exceedance of the RDCSRS, NRDCSRS, IGWSRS, SS SRS, or CrSCC.

Arcadis proposes no further corrective action in the area, and the spill response is complete, pending submittal of a Corrective Action Plan under separate cover.

ATTACHMENTS

Table 1: Post-excavation Soil Sampling Analytical Results

Figure 1: Frac Tank Spill Area

Attachment 1: Data Validation Report

TABLES



Table 1. Summary of Soil Samples
 PPG 107 Fashionland, 18 Chapel Avenue, Jersey City, New Jersey

		NRDCSRS	RDCSRS	IGW SSL	CrSCC	SS SRS	BS-FS-01 JC85448-17 3/29/2019	BS-FS-02 JC85448-18 3/29/2019	SW-FS-01 JC85448-13 3/29/2019	SW-FS-02 JC85448-14 3/29/2019	SW-FS-03 JC85448-15 3/29/2019	SW-FS-04 JC85448-16 3/29/2019
Semi-Volatiles												
Acenaphthene	mg/kg	37000	3400	110	--	--	<0.033	<0.033	<0.034 UJ	<0.034	<0.033	<0.034
Acenaphthylene	mg/kg	300000	--	--	--	--	<0.033	<0.033	<0.034 UJ	<0.034	<0.033	<0.034
Acetophenone	mg/kg	5	2	3	--	--	<0.16	<0.17	<0.17	<0.17	<0.17	<0.17
Anthracene	mg/kg	30000	17000	2400	--	--	<0.033	<0.033	<0.034	<0.034	<0.033	<0.034
Atrazine	mg/kg	2400	210	0.2	--	--	<0.066 UJ	<0.066 UJ	<0.068 UJ	<0.068 UJ	<0.066 UJ	<0.069 UJ
Benzo(a)anthracene	mg/kg	17	5	0.8	--	--	<0.033	<0.033	0.0122 J	<0.034	0.0323 J	0.0385
Benzaldehyde	mg/kg	68000	6100	--	--	--	<0.16	<0.17	<0.17	<0.17	<0.17	<0.17
Benzo(a)pyrene	mg/kg	2	0.5	0.2	--	--	<0.033	<0.033	<0.034 UJ	<0.034	0.0360	0.0397
Benzo(b)fluoranthene	mg/kg	17	5	2	--	--	<0.033	<0.033	<0.034	<0.034	0.0399	0.0494
Benzo(g,h,i)perylene	mg/kg	30000	380000	--	--	--	<0.033	<0.033	<0.034 UJ	<0.034	0.0255 J	0.0302 J
Benzo(k)fluoranthene	mg/kg	170	45	25	--	--	<0.033	<0.033	<0.034 UJ	<0.034	0.0176 J	0.0200 J
1,1-Biphenyl	mg/kg	240	61	140	--	--	<0.066	<0.066	<0.068	<0.068	<0.066	<0.069
bis(2-Chloroethoxy)methane	mg/kg	--	--	--	--	--	<0.066	<0.066	<0.068 UJ	<0.068	<0.066	<0.069
bis(2-Chloroethyl)ether	mg/kg	2	0.4	0.2	--	--	<0.066	<0.066	<0.068 UJ	<0.068	<0.066	<0.069
bis(2-Ethylhexyl)phthalate	mg/kg	140	35	1200	--	--	<0.066 UJ	<0.066 UJ	<0.068 UJ	<0.068 UJ	<0.066 UJ	<0.069 UJ
4-Bromophenyl phenyl ether	mg/kg	--	--	--	--	--	<0.066	<0.066	<0.068 UJ	<0.068	<0.066	<0.069
Butyl benzyl phthalate	mg/kg	14000	1200	230	--	--	<0.066 UJ	<0.066 UJ	<0.068 UJ	0.0137 J	0.0182 J	0.0271 J
Caprolactam	mg/kg	340000	31000	12	--	--	<0.066 UJ	<0.066 UJ	<0.068 UJ	<0.068 UJ	<0.066 UJ	<0.069 UJ
Carbazole	mg/kg	96	24	--	--	--	<0.066	<0.066	<0.068	<0.068	<0.066	<0.069
2-Chloronaphthalene	mg/kg	--	--	--	--	--	<0.066	<0.066	<0.068 UJ	<0.068	<0.066	<0.069
2-Chlorophenol	mg/kg	2200	310	0.8	--	--	<0.066	<0.066	<0.068	<0.068	<0.066	<0.069
4-Chloro-3-Methylphenol	mg/kg	--	--	--	--	--	<0.16	<0.17	<0.17	<0.17	<0.17	<0.17
4-Chlorophenyl phenyl ether	mg/kg	--	--	--	--	--	<0.066	<0.066	<0.068 UJ	<0.068	<0.066	<0.069
2,2-Oxybis(1-Chloropropane)	mg/kg	67	23	5	--	--	<0.066 UJ	<0.066 UJ	<0.068 UJ	<0.068 UJ	<0.066 UJ	<0.069 UJ
Chrysene	mg/kg	1700	450	80	--	--	<0.033	<0.033	<0.034 UJ	<0.034	0.0345	0.0375
Cyclic octatomic sulfur	mg/kg	--	--	--	--	--	NA	0.16 JN	NA	NA	NA	NA
Dibenzo(a,h)anthracene	mg/kg	2	0.5	0.8	--	--	<0.033	<0.033	<0.034 UJ	<0.034	<0.033	<0.034
Dibenzofuran	mg/kg	--	--	--	--	--	<0.066	<0.066	<0.068	<0.068	<0.066	<0.069
2,4-Dichlorophenol	mg/kg	2100	180	0.2	--	--	<0.16	<0.17	<0.17	<0.17	<0.17	<0.17
3,3-Dichlorobenzidine	mg/kg	4	1	0.2	--	--	<0.066 UJ	<0.066 UJ	<0.068 UJ	<0.068 UJ	<0.066 UJ	<0.069 UJ
2,4-Dimethylphenol	mg/kg	14000	1200	1	--	--	<0.16	<0.17	<0.17	<0.17	<0.17	<0.17
2,4-Dinitrophenol	mg/kg	1400	120	0.3	--	--	<0.16	<0.17	<0.17	<0.17	<0.17	<0.17
2,4-Dinitrotoluene	mg/kg	3	0.7	--	--	--	<0.033	<0.033	<0.034 UJ	<0.034	<0.033	<0.034
2,6-Dinitrotoluene	mg/kg	3	0.7	--	--	--	<0.033	<0.033	<0.034 UJ	<0.034	<0.033	<0.034
Diethyl phthalate	mg/kg	550000	49000	88	--	--	<0.066	<0.066	<0.068 UJ	<0.068	<0.066	<0.069
Dimethyl phthalate	mg/kg	--	--	--	--	--	<0.066	<0.066	<0.068 UJ	<0.068	<0.066	<0.069
Di-n-butyl phthalate	mg/kg	68000	6100	760	--	--	<0.066 UJ	<0.066 UJ	<0.068 UJ	<0.068 UJ	<0.066 UJ	<0.069 UJ
Di-n-octyl phthalate	mg/kg	27000	2400	3300	--	--	<0.066	<0.066	<0.068 UJ	<0.068	<0.066	<0.069
1,4-Dioxane	mg/kg	--	--	--	--	--	<0.033	<0.033	<0.034	<0.034	<0.033	<0.034
Fluoranthene	mg/kg	24000	2300	1300	--	--	<0.033	<0.033	<0.034	<0.034	0.0504	0.0588
Fluorene	mg/kg	24000	2300	170	--	--	<0.033	<0.033	<0.034 UJ	<0.034	<0.033	<0.034
Hexachloro-1,3-butadiene	mg/kg	25	6	0.9	--	--	<0.033	<0.033	<0.034 UJ	<0.034	<0.033	<0.034
Hexachlorobenzene	mg/kg	1	0.3	0.2	--	--	<0.066	<0.066	<0.068 UJ	<0.068	<0.066	<0.069
Hexachlorocyclopentadiene	mg/kg	110	45	320	--	--	<0.33	<0.33	<0.34	<0.34	<0.33	<0.34
Hexachloroethane	mg/kg	48	12	0.2	--	--	<0.16	<0.17	<0.17 UJ	<0.17	<0.17	<0.17
Indeno(1,2,3-cd)pyrene	mg/kg	17	5	7	--	--	<0.033	<0.033	0.0379 J	0.0340	0.0519	0.0564

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		NRDCSRS	RDCSRS	IGW SSL	CrSCC	SS SRS	BS-FS-01 JC85448-17 3/29/2019	BS-FS-02 JC85448-18 3/29/2019	SW-FS-01 JC85448-13 3/29/2019	SW-FS-02 JC85448-14 3/29/2019	SW-FS-03 JC85448-15 3/29/2019	SW-FS-04 JC85448-16 3/29/2019
Semi-Volatiles Continued												
Isophorone	mg/kg	2000	510	0.2	--	--	<0.066	<0.066	<0.068 UJ	<0.068	<0.066	<0.069
Methylphenol	mg/kg	--	--	--	--	--	<0.066	<0.066	<0.068	<0.068	<0.066	<0.069
2-Methyl-4,6-dinitrophenol	mg/kg	68	6	0.3	--	--	<0.16	<0.17	<0.17	<0.17	<0.17	<0.17
2-Methylnaphthalene	mg/kg	2400	230	8	--	--	<0.033	<0.033	<0.034	<0.034	<0.033	<0.034
2-Methylphenol	mg/kg	3400	310	--	--	--	<0.066	<0.066	<0.068	<0.068	<0.066	<0.069
Naphthalene	mg/kg	17	6	25	--	--	<0.033	<0.033	<0.034 UJ	<0.034	<0.033	<0.034
2-Nitroaniline	mg/kg	23000	39	--	--	--	<0.16 UJ	<0.17 UJ	<0.17 UJ	<0.17 UJ	<0.17 UJ	<0.17 UJ
3-Nitroaniline	mg/kg	--	--	--	--	--	<0.16	<0.17	<0.17	<0.17	<0.17	<0.17
4-Nitroaniline	mg/kg	--	--	--	--	--	<0.16	<0.17	<0.17	<0.17	<0.17	<0.17
2-Nitrophenol	mg/kg	--	--	--	--	--	<0.16	<0.17	<0.17	<0.17	<0.17	<0.17
Nitrobenzene	mg/kg	14	5	0.2	--	--	<0.066	<0.066	<0.068 UJ	<0.068	<0.066	<0.069
4-Nitrophenol	mg/kg	--	--	--	--	--	<0.33	<0.33	<0.34 UJ	<0.34	<0.33	<0.34
N-Nitrosodi-n-propylamine	mg/kg	0.3	0.2	0.2	--	--	<0.066	<0.066	<0.068 UJ	<0.068	<0.066	<0.069
N-Nitrosodiphenylamine	mg/kg	390	99	0.4	--	--	<0.16	<0.17	<0.17 UJ	<0.17	<0.17	<0.17
p-Chloroaniline	mg/kg	--	--	--	--	--	<0.16	<0.17	<0.17	<0.17	<0.17	<0.17
Pentachlorophenol	mg/kg	3	0.9	0.3	--	--	<0.13	<0.13	<0.14	<0.14	<0.13	<0.14
Phenanthrene	mg/kg	300000	--	--	--	--	<0.033	<0.033	<0.034	<0.034	0.0148 J	0.0163 J
Phenol	mg/kg	210000	18000	8	--	--	<0.66	<0.66	<0.68	<0.68	<0.66	<0.68
Pyrene	mg/kg	18000	1700	840	--	--	<0.033	<0.033	0.0143 J	0.0135 J	0.0487	0.0581
1,2,4,5-Tetrachlorobenzene	mg/kg	--	--	--	--	--	<0.16	<0.17	<0.17 UJ	<0.17	<0.17	<0.17
2,3,4,6-Tetrachlorophenol	mg/kg	--	--	--	--	--	<0.16	<0.17	<0.17 UJ	<0.17	<0.17	<0.17
Total TIC, Semi-Volatile	mg/kg	--	--	--	--	--	0	0.16 J	0	0	0	0
2,4,5-Trichlorophenol	mg/kg	68000	6100	68	--	--	<0.16	<0.17	<0.17 UJ	<0.17	<0.17	<0.17
2,4,6-Trichlorophenol	mg/kg	74	19	0.2	--	--	<0.16	<0.17	<0.17	<0.17	<0.17	<0.17
Metals												
Aluminum	mg/kg	--	78000	6000	--	--	7570	8950	5890	7640	7800	7430
Antimony	mg/kg	450	31	6	--	--	<4.0	<6.2*	<2.1	<4.0	<4.0	<4.0
Arsenic	mg/kg	19	19	19	--	--	<2.0	4.5	<2.1	2.1	4.6	<2.0
Barium	mg/kg	59000	16000	2100	--	--	52.6	56.1	35.4	49.8	68.1	51.1
Beryllium	mg/kg	140	16	0.7	--	--	<0.50	<0.62	<0.42	<0.40	0.42	0.42
Cadmium	mg/kg	78	78	2	--	--	<0.50	<0.52	<0.53	<0.50	<0.51	<0.50
Calcium	mg/kg	--	--	--	--	--	4230	3960	3750	3640	4230	3430
Chromium	mg/kg	--	--	--	--	--	38.0	31.0	20.0	26.4	32.8	31.5
Chromium VI	mg/kg	--	--	--	20	--	<0.41 UJ	<0.42 UJ	<0.42 UJ	<0.41 UJ	<0.42 UJ	<0.42 UJ
Cobalt	mg/kg	590	1600	90	--	--	13.0	19	7.6	15.3	13.7	10.7
Copper	mg/kg	45000	3100	11000	--	--	52.1	70.4	39.7	54.0	44.0	29.0
Iron	mg/kg	--	--	--	--	--	17000	20500	14700	17600	17200	16000
Lead	mg/kg	800	400	90	--	--	<2.0	3.2	<2.1	2.4	3.4	3.0
Magnesium	mg/kg	--	--	--	--	--	8650	9200	5040	7740	7960	7820
Manganese	mg/kg	5900	11000	65	--	--	113	150	112	128	124	116
Mercury	mg/kg	65	23	0.1	--	--	<0.035	<0.031	<0.034	<0.028	<0.031	<0.034
Nickel	mg/kg	23000	1600	--	--	855	25.0	23.0	14.4	19.9	27.8	18.0
Potassium	mg/kg	--	--	--	--	--	5890	6410	3540	5340	5490	5470
Selenium	mg/kg	5700	390	11	--	--	<2.0	<2.1	<2.1	<2.0	<2.0	<2.0
Silver	mg/kg	5700	390	1	--	--	<0.50	<0.52	<0.53	<0.50	<0.51	<0.50

Table 1. Summary of Soil Samples
 PPG 107 Fashionland, 18 Chapel Avenue, Jersey City, New Jersey

		NRDCSRS	RDCSRS	IGW SSL	CrSCC	SS SRS	BS-FS-01 JC85448-17 3/29/2019	BS-FS-02 JC85448-18 3/29/2019	SW-FS-01 JC85448-13 3/29/2019	SW-FS-02 JC85448-14 3/29/2019	SW-FS-03 JC85448-15 3/29/2019	SW-FS-04 JC85448-16 3/29/2019
Metals Continued												
Sodium	mg/kg	--	--	--	--	--	<1000	<1000	<1100	<990	<1000	<990
Thallium	mg/kg	--	--	3	--	--	<2.0	<3.1*	<2.1	<2.0	<2.0	<2.0
Vanadium	mg/kg	1100	--	--	--	390	38.9	39.3	26.2	33.2	36.7	32.4
Zinc	mg/kg	110000	23000	930	--	--	14.9	21.0	16.5	15.9	21.6	16.1
GenChem												
pH	pH units	--	--	--	--	--	8.04 J	7.71 J	8.03 J	7.67 J	8.11 J	7.99 J
Oxidation Reduction Potential	mV	--	--	--	--	--	322	329	314	314	314	320
Percent Solids	%	--	--	--	--	--	96.5	96.0	96.1	97.1	96.0	96.0

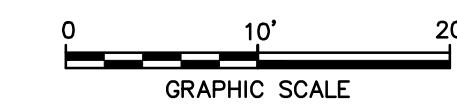
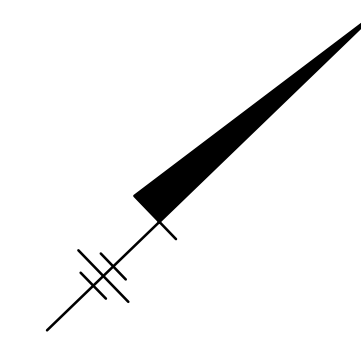
NOTES:

1. A SS SRS was developed for Nickel in lieu of the IGW SSL as part of the *Alternative Remediation Standard for Impact to Groundwater- Nickel* submittal (Arcadis 2019). The SS SRS is 855 mg/kg and was accepted by NJDEP on March 21, 2019.
2. A SS SRS was developed for Vanadium in lieu of the RDCSRS as part of the *Technical Execution Plan – Site Soils; Site 107 Fashionland* submittal (Arcadis 2018). The SS SRS is 390 mg/kg and was accepted by NJDEP on November 7, 2018.
3. Sample BS-FS-02, *An elevated detection limit exceeding the IGW SSL for antimony and thallium was reported due to dilution required for high interfering element associated with arsenic and cobalt.

NRDCSRS	Non-Residential Direct Contact Soil Remediation Standard
RDCSRS	Residential Direct Contact Soil Remediation Standard
IGW SSL	Impact to Groundwater Soil Screening Levels
CrSCC	Chromium Soil Cleanup Criteria
SS SRS	Site Specific Soil Remediation Standard
mg/kg	Milligrams per Kilograms
mV	millivolts
--	Not Available
ND	Constituent not detected at concentrations greater than the laboratory detection limit.
7570	Sample exceeds IGW SSL
J	The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
N	Spiked sample recovery is not within control limits.
UJ	The analyte was not detected above the reporting limit. However, the reporting limit is approximate and may or may not represent the actual limit of detection.

FIGURES





- LEGEND:**
- SPILL RESPONSE EXCAVATION LIMITS
 - POST-EXCAVATION SAMPLE LOCATIONS
 - 10 AS-BUILT EXCAVATION ELEVATION
 - 19 POST-EXCAVATION RESTORED GROUND SURFACE ELEVATION (OCTOBER 2019)

PPG 18 CHAPEL AVENUE, JERSEY CITY, NEW JERSEY	
FRAC TANK SPILL AREA	
Design & Consultancy for natural and built assets	FIGURE 1

PPG Industries

DATA QUALITY ASSESSMENT

Site 107 Fashionland

Jersey City, New Jersey

Semivolatile Organic Compounds, Metals, Hexavalent Chromium, and Miscellaneous Analyses

SDG #JC85448

Analyses Performed By:

SGS Accutest

Dayton, New Jersey

Report #33446R

Review Level: Tier III

Project: 30017557.2A000.ANA / NP000770.0001.00020

DATA REVIEW REPORT

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # JC85448 for samples collected in association with the PPG Industries Site 107 Fashionland, Jersey City, New Jersey Site. The review was conducted as a Tier III evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis			
					SVOC	Cr VI	MET	MISC
FB(20190329)	JC85448-1	Water	3/29/2019			X	X	X
SW-A57(0.0-0.5)	JC85448-2	Soil	3/29/2019			X	X	X
SW-A57(2.0-2.5)	JC85448-3	Soil	3/29/2019			X	X	X
SW-A57(4.0-4.5)	JC85448-4	Soil	3/29/2019			X	X	X
SW-A57(5.5-6.0)	JC85448-5	Soil	3/29/2019			X	X	X
BS-K5	JC85448-6	Soil	3/29/2019			X	X	X
BS-I5A	JC85448-7	Soil	3/29/2019			X	X	X
DUP-23(20190329)	JC85448-8	Soil	3/29/2019	SW-A57(5.5-6.0)		X	X	X
BS-D19A	JC85448-9	Soil	3/29/2019			X	X	X
BS-E19	JC85448-10	Soil	3/29/2019			X	X	X
BS-E20	JC85448-11	Soil	3/29/2019			X	X	X
CS-E20	JC85448-12	Soil	3/29/2019			X	X	X
SW-FS-01	JC85448-13	Soil	3/29/2019		X	X	X	X
SW-FS-02	JC85448-14	Soil	3/29/2019		X	X	X	X
SW-FS-03	JC85448-15	Soil	3/29/2019		X	X	X	X
SW-FS-04	JC85448-16	Soil	3/29/2019		X	X	X	X
BS-FS-01	JC85448-17	Soil	3/29/2019		X	X	X	X
BS-FS-02	JC85448-18	Soil	3/29/2019		X	X	X	X

Notes:

1. Metals for samples JC85448-2 through JC85448-12 include antimony, chromium, nickel, thallium, and vanadium. Trivalent chromium is reported by calculation (Chromium) – (Hexavalent Chromium).
2. Metals for samples JC85448-1, and JC85448-13 through JC-85448-18 includes target analyte list metals.
3. Cr VI is hexavalent chromium.
4. Miscellaneous parameters include pH and redox potential.

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ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

Note:

QA - Quality Assurance

DATA REVIEW REPORT

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8270D. Data were reviewed in accordance with USEPA Region 2 SOP HW-35, Revision 1 (August 2007); New Jersey Department of Environmental Protection Data Quality Assessment and Data Usability Evaluation Technical Guidance (April 2014); Field Sampling Plan/Quality Assurance Project Plan, PPG Non-Residential and Residential Chromium Sites, Hudson County, New Jersey (AECOM, June 2010); and Arcadis Quality Assurance Project Plan – Addendum, Site 107 Fashionland, Jersey City, New Jersey (Arcadis, June 2018).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
 - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
 - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
 - E The compound was quantitated above the calibration range.
 - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
 - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
 - UB Analyte considered non-detect at the listed value due to associated blank contamination.
 - R The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.

Two facts should be noted by all data users. First, the “R” flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. “R” values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is

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that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

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SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270D	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6°C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

All compounds associated with the QA blanks exhibited a concentration less than the MDL, with the exception of the compounds listed in the following table. Sample results associated with QA blank contamination that were greater than the BAL resulted in the removal of the laboratory qualifier (B) of data. Sample results less than the BAL associated with the following sample locations were qualified as listed in the following table.

Sample Locations	Analytes	Sample Result	Qualification
SW-FS-01 SW-FS-02 SW-FS-03 SW-FS-04 BS-FS-01 BS-FS-02	TIC: System Artifact RT 2.63 (MB)	Detected sample results less than 5 times blank result	R

Note:

MB Method blank
RL Reporting limit

3. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

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4. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

4.2 Continuing Calibration

All target compounds associated with the initial calibration verification (ICV) and continuing calibration verification (CCV) must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits, with the exception of the compounds presented in the following table.

Sample Locations	Initial/Continuing	Compound	Criteria
SW-FS-01 SW-FS-02 SW-FS-03 SW-FS-04 BS-FS-01 BS-FS-02	Continuing Calibration Verification %D	Pentachlorophenol	+20.8%
		Atrazine	-40.6%
		Butyl benzyl phthalate	-33.3%
		Caprolactam	-39.7%
		2,2'-Oxybis(1-chloropropane)	-23.7%
		3,3'-Dichlorobenzidine	-23.4%
		1,4-Dioxane	+24.2%
		Di-n-butyl phthalate	-25.3%
		bis(2-Ethylhexyl)phthalate	-31.9%
		2-Nitroaniline	-35.8%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

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Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing Calibration	RRF < 0.05	Non-detect	R
		Detect	J
	RRF < 0.01 ¹	Non-detect	R
		Detect	J
	RRF > 0.05 or RRF > 0.01 ¹	Non-detect	No Action
		Detect	
Initial Calibration	%RSD > 20% or a correlation coefficient <0.99	Non-detect	UJ
		Detect	J
	%RSD > 90%	Non-detect	R
		Detect	J
Continuing Calibration	%D > 20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D > 20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

Note:

¹ RRF of 0.01 only applies to compounds which are typically poor responding compounds (i.e., ketones, 1,4-dioxane, etc.)

5. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory established acceptance limits.

All surrogate recoveries were within control limits.

6. Internal Standard Performance

Internal standard performance criteria insure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria requires the internal standard compounds associated with the SVOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

7. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory established

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acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD performed using sample SW-FS-01 exhibited RPDs between the MS and MSD samples greater than the control limits as presented in the following table.

Sample Locations	Compound
SW-FS-01	4-Nitrophenol
	2,3,4,6-Tetrachlorophenol
	2,4,5-Trichlorophenol
	Acenaphthene
	Acenaphthylene
	Anthracene
	Benzo(a)anthracene
	Benzo(a)pyrene Benzo(g,h,i)
	perylene Benzo(k)fluoranthene
	4-Bromophenyl phenyl ether
	Butyl benzyl phthalate
	2-Chloronaphthalene
	Chrysene
	bis(2-Chloroethoxy)methane
	bis(2-Chloroethyl)ether
	2,2'-Oxybis(1-chloropropane)
	4-Chlorophenyl phenyl ether
	2,4-Dinitrotoluene 2,6-
	Dinitrotoluene Dibenzo(a,h)
	anthracene
	Di-n-butyl phthalate
	Di-n-octyl phthalate
	Diethyl phthalate
	Dimethyl phthalate
	bis(2-Ethylhexyl)phthalate
	Fluorene

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Sample Locations	Compound
	Hexachlorobenzene
	Hexachlorobutadiene
	Hexachloroethane
	Indeno(1,2,3-cd)pyrene
	Isophorone
	Naphthalene
	Nitrobenzene
	N-Nitroso-di-n-propylamine
	N-Nitrosodiphenylamine
	Pyrene
	1,2,4,5-Tetrachlorobenzene

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

8. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory established acceptance limits.

The LCS analysis exhibited recoveries within the control limits.

9. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Field duplicate sample DUP-23(20190329) was not collected for SVOC analysis.

10. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

11. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

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DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270D	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X	X		
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate (LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X	X		
Field/Lab Duplicate (RPD)	X				X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content	X				X
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X	X		
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	

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SVOCs: SW-846 8270D	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

- %RSD Relative standard deviation
- %R Percent recovery
- RPD Relative percent difference
- %D Percent difference

DATA REVIEW REPORT

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 6010C, 7470A, 7471B, 7196A, and 9045D; Standard Methods (SM) 4500H+B and SM4500S2-A; Lloyd Kahn; and ASTM D1498-76 and D3872-86. Data were reviewed in accordance with USEPA Region 2 SOP HW-2b, Revision 15 (December 2012); New Jersey Division of Remediation Management and Response Standard Operating Procedure for Analytical Data Validation of Hexavalent Chromium (September 2009); New Jersey Department of Environmental Protection Data Quality Assessment and Data Usability Evaluation Technical Guidance (April 2014); Field Sampling Plan/Quality Assurance Project Plan, PPG Non-Residential and Residential Chromium Sites, Hudson County, New Jersey (AECOM, June 2010); and Arcadis Quality Assurance Project Plan – Addendum, Site 107 Fashionland, Jersey City, New Jersey (Arcadis, June 2018).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
 - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
 - B The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
 - E The reported value is estimated due to the presence of interference.
 - N Spiked sample recovery is not within control limits.
 - * Duplicate analysis is not within control limits.
- Validation Qualifiers
 - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
 - J+ The result is an estimated quantity, but the result may be biased high.
 - J- The result is an estimated quantity, but the result may be biased low.
 - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
 - UB Analyte considered non-detect at the listed value due to associated blank contamination.
 - R The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.

DATA REVIEW REPORT

Two facts should be noted by all data users. First, the “R” flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. “R” values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

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METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010C	Water	180 days from collection to analysis	Preserved to a pH of less than 2; Cool to <6°C
	Soil	180 days from collection to analysis	Cool to <6°C
SW-846 7470A	Water	28 days from collection to analysis	Preserved to a pH of less than 2; Cool to <6°C
SW-846 7471B	Soil	28 days from collection to analysis	Cool to <6°C

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to provide that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument's continuing performance is satisfactory.

3.1 Initial Calibration and Continuing Calibration

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.998 and all initial calibration verification standard and continuing calibration verification standard recoveries were within control limits of 90% to 110%.

All continuing calibration verification standard recoveries were within the control limit.

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3.2 Low-Level Calibration Verification

The low-level initial and continuing calibration check standard serves to verify the linearity of calibration of the analysis at the reporting limit.

All RL standard recoveries were within control limits of 70% to 130% (50% to 150% for antimony and thallium).

3.3 ICP Interference Control Sample (ICS)

The ICS verifies the laboratories interelement and background correction factors.

All ICS exhibited recoveries within the control limits of 80% to 120%.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD analysis performed using sample SW-FS-01 in association with mercury analysis exhibited recoveries within the acceptance limits.

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of \pm the RL is applied.

MS/MSD analysis was performed in replacement of the laboratory duplicate analysis using sample SW-FS-01 in association with mercury analysis. The MS/MSD recoveries exhibited an acceptable RPD.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

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Sample ID/Duplicate ID	Analyte	Sample Result	Duplicate Result	RPD
SW-A57(5.5-6.0) / DUP-23(20190329)	Nickel	11.8	11.3	AC
	Vanadium	18.8	17.3	
	Chromium	13.4	11.6	14.4%
	Trivalent Chromium	12.9	11.6	10.6%

Notes:

AC = Acceptable

The differences in the results between the parent sample SW-A57(5.5-6.0) and field duplicate sample DUP-23(20190329) were acceptable.

6. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

7. Serial Dilution

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 10 times the RL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

The serial dilution analysis was not performed using a sample from this SDG.

8. System Performance and Overall Assessment

The antimony and thallium results in sample BS-FS-02 were reported as not detected at elevated reporting limits (RLs) due to the dilution required for high interfering element associated with arsenic and cobalt. The elevated RLs are slightly higher than the associated Impact to Groundwater Soil Screening Levels (IGWSSL) for antimony (RL=6.2mg/kg; IGWSSL=6mg/kg) and thallium (RL=3.1mg/kg; IGWSSL=3mg/kg).

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

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DATA VALIDATION CHECKLIST FOR METALS

METALS: SW-846 6010C, 7470A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Cold Vapor Atomic Absorption (CVAA)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Instrument Blanks		X		X	
B. Method Blanks		X		X	
C. Equipment/Field Blanks		X		X	
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate (LCSD)	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)	X				X
ICP Serial Dilution %D		X		X	
Total vs. Dissolved	X				X
Reporting Limit Verification		X		X	
Tier III Validation					
Initial Calibration Verification		X		X	
Continuing Calibration Verification		X		X	
CRDL Standard Recovery		X		X	
ICP Interference Check		X		X	
ICP-MS Internal Standards	X				X
Transcription/calculations acceptable		X		X	
Raw Data	X				X
Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

- %R Percent recovery
- RPD Relative percent difference
- %D Percent difference

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HEXAVALENT CHROMIUM ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 7196A	Water	24 hours from collection to analysis	Cool to <6°C
SW-846 3060A/ 7196A	Soil	30 days from collection to extraction; 7 days from extraction to analysis	Cool to <6°C

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all calibration verification standard recoveries were within control limits of 90% to 110%.

4. Matrix Spike (MS)/Post-Digestion Spike (PDS)/Laboratory Duplicate Analysis

MS, PDS, and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

Soluble and insoluble spike sample analyses are designed to provide information about the effect of the sample matrix on the digestion and measurement methodology. The insoluble spike is used to evaluate the dissolution during the digestion process. Hexavalent chromium must exhibit a percent recovery within

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the established acceptance limits of 75% to 125% in both the soluble and insoluble spiked analyses. The control limits do not apply when the parent sample concentration exceeds the spike amount by a factor of four or greater.

The MS analysis performed on sample location SW-A57(0.0-0.5) in association with the insoluble and soluble hexavalent chromium analysis exhibited recoveries within the control limits.

4.2 Post-Digestion Spike (PDS) Analysis

The PDS analysis is designed to verify that neither a reducing condition nor a chemical interference is affecting the analysis. This is accomplished by analyzing a second aliquot of the pH-adjusted filtrate that has been spiked with hexavalent chromium. The PDS must exhibit a percent recovery within the method acceptance limits of 85% to 115%.

The PDS analysis performed on sample location SW-A57(0.0-0.5) exhibited recoveries within the control limits.

4.3 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to four times the RL. A control limit of 20% is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to four times the RL, a control limit of \pm the RL is used.

All analytes associated with laboratory duplicate were within the control limit, with the exception of the analytes presented in the following table.

Sample Location	Analytes	Laboratory Duplicate RPD
SW-A57(0.0-0.5)	Hexavalent Chromium	38.4%

The criteria used to evaluate laboratory duplicate RPD are presented in the following table. In the case of a laboratory duplicate RPD deviation, the sample results are qualified. The qualifications are applied to all sample results associated with the sample preparation batch.

Sample Concentration	Control Limit	Sample Result	Qualification
Parent sample and/or laboratory duplicate sample result > four times the RL	> 20%	Non-detect	UJ
		Detect	J
Parent sample and/or laboratory duplicate sample result < four times the RL	\pm RL	Non-detect	UJ
		Detect	J

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

DATA REVIEW REPORT

Sample ID/Duplicate ID	Analyte	Sample Result	Duplicate Result	RPD
SW-A57(5.5-6.0) / DUP-23(20190329)	Hexavalent Chromium	0.54	0.49 U	AC

Notes:

AC = Acceptable

The difference in the hexavalent chromium results between the parent sample SW-A57(5.5-6.0) and field duplicate sample DUP-23(20190329) was acceptable.

6. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW REPORT

DATA VALIDATION CHECKLIST FOR HEXAVALENT CHROMIUM

HEXAVALENT CHROMIUM: SW-846 7196A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Spectrophotometer					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Instrument Blanks		X		X	
B. Method Blanks		X		X	
C. Equipment/Field Blanks		X		X	
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Post Digestion Spike %R Field/		X		X	
Lab Duplicate (RPD) Dilution		X	X		
Factor		X		X	
Tier III Validation					
Initial calibration %RSD or correlation coefficient		X		X	
Continuing calibration %R		X		X	
Raw Data		X		X	
Transcription/calculation errors present		X		X	
Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

- %R Percent recovery
- RPD Relative percent difference
- %RSD Relative percent deviation

DATA REVIEW REPORT

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
pH by SM4500H+B	Water	QAPP: 24 hours of receipt at laboratory	Cool to <6°C
pH by SW846 9045D	Soil	QAPP: 24 hours of receipt at laboratory	Cool to <6°C
Oxidation-Reduction Potential by ASTM D1498-76	Water	Not applicable	Cool to <6°C
Oxidation-Reduction Potential (Redox) by ASTM D1498-76	Soil	Measure immediately after creating leachate	Cool to <6°C

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Method	Holding Time	Criteria
SW-A57(0.0-0.5) SW-A57(2.0-2.5) SW-A57(4.0-4.5) SW-A57(5.5-6.0) BS-K5 BS-I5A DUP-23(20190329) BS-D19A BS- E19 BS-E20 CS-E20 SW- FS-01 SW-FS-02 SW-FS-03 SW-FS-04 BS-FS-01 BS-FS-02	SW846 9045D	Analysis: 5 days	< 24 hours of receipt by laboratory

Sample results were qualified as specified in the table below. All other holding times were met.

Criteria	Non-detect Analytes	
	Detected Analytes	
Analysis completed greater than two times holding time	J	R

DATA REVIEW REPORT

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Method blank analysis is not applicable for Redox and pH analyses.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. All buffer check results were within acceptance limits.

4. Laboratory Duplicate Analysis

Laboratory duplicate data are used to assess the precision of the analytical method. The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of \pm the RL is applied.

The laboratory duplicate analysis performed on sample location BS-FS-02 exhibited results within the control limit.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Analyte	Sample Result	Duplicate Result	RPD
SW-A57(5.5-6.0) / DUP-23(20190329)	Redox	319	325	1.9%
	pH	5.70	6.06	6.1%

DATA REVIEW REPORT

The differences in the results between the parent sample SW-A57(5.5-6.0) and field duplicate sample DUP-23(20190329) were acceptable.

6. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

LCS results for redox potential, pH, and sulfide screen were not reported in the analytical report.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA REVIEW REPORT

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: SM4500H+B, SW846 9045D, ASTM D1498-76	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X	X		
Reporting limits (units)		X		X	
Blanks					
A. Instrument Blanks		X		X	
B. Method blanks		X		X	
C. Equipment blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate (LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate (MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Tier III Validation					
Initial calibration %RSD or correlation coefficient	X				X
Continuing calibration %R	X				X
Raw Data		X		X	
Transcription/calculation errors present		X		X	
Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%R Percent recovery

RPD Relative percent difference

DATA REVIEW REPORT

VALIDATION PERFORMED BY: Jennifer Singer

SIGNATURE: 

DATE: July 16, 2019

PEER REVIEW: Dennis Capria

DATE: July 18, 2019

**CHAIN OF CUSTODY
CORRECTED SAMPLE ANALYSIS DATA
SHEETS**





SO
PB

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

F

FED-EX Tracking #
SGS Quote #

Client / Reporting Information		Project Information										Requested Analysis																							
Company Name: Arcoadis		Project Name: DPG Site 107 (Jersey City)																																	
Street Address: 10 Friends Lane, Suite 100		Street: 18 Chapel Avenue																																	
City, State, Zip: Newtown, PA 18440		City, State, Zip: Jersey City NJ																																	
Project Contact: Matthew Bell		Billing Information (if different from Report to): Company Name: Street Address: City: State: Zip:																																	
Phone #: 610-755-7080		Client Purchase Order #: NP000770-0003																																	
Signature(s) Name(s): Christian Cifelli		Project Manager: Jim McLaughlin, Jr.																																	
SGS Sample #	Field ID / Point of Collection	MEQ/DOI Viol #	Date	Time	Sampled by	One (1) (S) or (C)	Matrix	# of bottles	Number of preserved Bottles							Requested Analysis																			
									HC	PH	PH/2	PH/4	PH/8	PH/16	PH/32	PH/64	PH/128	PH/256	Total Chromium	Trivalent Chromium	Hexavalent Chromium	Arsenic	Nickel	Tellurium	Vanadium										
1	FB(20190329)		3/23/19	1100	CC	G	FB	2	1	1										X	X	X	X	X	X	X	X	X	X	X	X				
2	SW-A57(0.0-0.5)		3/23/19	0915	CC	G	JA	1												X	X	X	X	X	X	X	X	X	X	X	X				
3	SW-A57(2.0-2.5)		3/23/19	0920	CC	G	JA	1												X	X	X	X	X	X	X	X	X	X	X	X	X			
4	SW-A57(4.0-4.5)		3/23/19	0925	CC	G	JA	1												X	X	X	X	X	X	X	X	X	X	X	X	X			
5	SW-A57(5.5-6.0)		3/23/19	0930	CC	G	JA	1												X	X	X	X	X	X	X	X	X	X	X	X	X			
6	BS-KS		3/23/19	0935	CC	G	SO	1												X	X	X	X	X	X	X	X	X	X	X	X	X			
	BS-KSM		3/23/19	0935	CC	G	SO	1												X	X	X	X	X	X	X	X	X	X	X	X	X			
	BS-KSMMSD		3/23/19	0935	CC	G	SO	1												X	X	X	X	X	X	X	X	X	X	X	X	X			
7	BS-ISA		3/23/19	0955	CC	G	SO	1												X	X	X	X	X	X	X	X	X	X	X	X	X			
8	DUP-23(20190329)		3/23/19		CC	G	SO	1												X	X	X	X	X	X	X	X	X	X	X	X	X			
9	BS-D19A		3/23/19	1225	CC	G	SO	1												X	X	X	X	X	X	X	X	X	X	X	X	X			
10	BS-E19		3/23/19	1230	CC	G	SO	1												X	X	X	X	X	X	X	X	X	X	X	X	X			
Turn Around Time (Business Days)												Deliverable																							
<input type="checkbox"/> 10 Business Days <input type="checkbox"/> 5 Business Days <input type="checkbox"/> 3 Business Days <input checked="" type="checkbox"/> 2 Business Days <input type="checkbox"/> 1 Business Day <input type="checkbox"/> Other												<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> NJ Reduced (Level 3) <input type="checkbox"/> Full Tier I (Level 4) <input type="checkbox"/> Commercial "C" <input type="checkbox"/> NJ DKQP																							
Approved By (SGS PM) / Date:												<input type="checkbox"/> NYASP Category A <input type="checkbox"/> NYASP Category B <input type="checkbox"/> MA MCP Criteria <input type="checkbox"/> CT RCP Criteria <input type="checkbox"/> State Forms <input checked="" type="checkbox"/> EDD Format: EDW																							
All data available via Lablink												Commercial "A" = Results only, Commercial "B" = Results + QC Summary Commercial "C" = Results + QC Summary + Partial Raw data																							
Sample Custody must be documented below each time samples change possession, including courier delivery.												INITIAL AC LABEL VER																							
Relinquished by: J. Bell	Date / Time: 3/23/19 1440	Received By: Robert Chambers	Date / Time: 3/29/19	Relinquished by: Robert Chambers	Date / Time: 3/29/19	Received By: Robert Chambers	Date / Time: 3/29/19	Relinquished by:	Date / Time:	Received By:	Date / Time:	Relinquished by:	Date / Time:	Received By:	Date / Time:	Relinquished by:	Date / Time:	Received By:	Date / Time:	Relinquished by:	Date / Time:	Received By:	Date / Time:	Relinquished by:	Date / Time:	Received By:	Date / Time:	Relinquished by:	Date / Time:	Received By:	Date / Time:	Relinquished by:	Date / Time:	Received By:	Date / Time:
Custody Seal # 14154												<input type="checkbox"/> Intact <input type="checkbox"/> Not Intact <input type="checkbox"/> Absent <input type="checkbox"/> Preserved where applicable <input type="checkbox"/> Therm. ID:																							

5.2
5

ERSA-QAC-0023-02-FORM-Dayton - Standard COC.atx





CHAIN OF CUSTODY

SGS North America Inc. - Dayton
 2235 Route 130, Dayton, NJ 08810
 TEL: 732-329-0200 FAX: 732-329-3499/3480
 www.sgs.com/ehsusa

FED-EX Tracking # _____ Bottle Order # _____
 SGS Quote # _____ SGS Job # _____

Client / Reporting Information		Project Information												Requested Analysis							
Company Name: Arcadis		Project Name: PPG Site 107 (Jersey City)												Total Chromium Trivalent Chromium Hexavalent Chromium Antimony Nickel Theilium Vanadium							
Street Address: 10 Friends Lane Suite 100 Newtown, PA 18440		Street: 18 Chapel Avenue Jersey City NJ																			
Project Contact: Matthew Bell		Billing Information (if different from Report to): Company Name: PPG																			
E-mail: 610.755.7050		City: Jersey City NJ																			
Phone #: 610.755.7050		Street Address: NP000770.0003																			
Phone # (Home): Christin Citelli		City: Jersey City NJ																			
Phone #:		State: NJ																			
Phone #:		Zip: 07310																			
Project Manager: Jim McLaughlin, Jr.		Attention: Jim McLaughlin, Jr.																			
Client Purchase Order #:		Number of preserved Bottles:																			
SGS Sample #	Field ID / Point of Collection	MEDWDI Viol #	Date	Time	Sampled by	Comp (ID)	Matrix	# of bottles	HCl	NH3	NO3	NO2	SO4	SO2	CO	HCN	PHOSPH	PERCHL	OTHER		
11	BS-E20		3/29/19	1235	CC	G	SO	1													
12	CS-E20		3/29/19	1240	CC	G	SO	1													
13	SW-FS-01		3/29/19	1330	CC	G	SO	1													
14	SW-FS-02		3/29/19	1335	CC	G	SO	1													
15	SW-FS-03		3/29/19	1340	CC	G	SO	1													
16	SW-FS-04		3/29/19	1345	CC	G	SO	1													
17	BS-FS-01		3/29/19	1350	CC	G	SO	1													
18	BS-FS-02		3/29/19	1355	CC	G	SO	1													
Turn Around Time (Business Days)		Deliverable																			
<input type="checkbox"/> 10 Business Days <input type="checkbox"/> 5 Business Days <input type="checkbox"/> 3 Business Days <input checked="" type="checkbox"/> 2 Business Days <input type="checkbox"/> 1 Business Day <input type="checkbox"/> Other _____ <small>All data available via LabLink</small>		Approved By (SGS PM): Date: _____ <input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> NJ Reduced (Level 3) <input type="checkbox"/> Full Tier I (Level 4) <input type="checkbox"/> Commercial "C" <input type="checkbox"/> NJ DKQP												<input type="checkbox"/> NYASP Category A <input type="checkbox"/> NYASP Category B <input type="checkbox"/> MA MCP Criteria <input type="checkbox"/> CT RCP Criteria <input type="checkbox"/> State Forms <input checked="" type="checkbox"/> EDD Format EDUS <small>Commercial "A" = Results only, Commercial "B" = Results + QC Summary Commercial "C" = Results + QC Summary + Partial Raw data</small>							
Sample Custody must be documented below each time samples change possession, including courier delivery.																					
Relinquished by: 1 [Signature]	Date / Time: 3/29/19 1440	Received By: 1 [Signature]	Relinquished By: 2 [Signature]	Date / Time: 3/29/19 1757	Received By: 2 [Signature]																
Relinquished by: 3	Date / Time:	Received By: 3	Relinquished By: 4	Date / Time:	Received By: 4																
Relinquished by: 5	Date / Time:	Received By: 5	Custody Seal # 14154	<input type="checkbox"/> Intact <input type="checkbox"/> Not intact <input type="checkbox"/> Absent <input type="checkbox"/> Preserved where applicable Therm. ID: _____																	

EHSQA-QAC-0023-02-FORM-01-Dayton - Standard COC.xlsx

JC85448: Chain of Custody

Page 2 of 6

5.2
5



Report of Analysis

Client Sample ID: FB(20190329)	Date Sampled: 03/29/19
Lab Sample ID: JC85448-1	Date Received: 03/29/19
Matrix: AQ - Field Blank Soil	Percent Solids: n/a
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	< 0.010	0.010	mg/l	1	03/29/19 23:10	JO	SW846 7196A
Redox Potential Vs H2	729		mv	1	04/03/19 22:24	EB	ASTM D1498-76
pH ^a	5.60		su	1	03/29/19 18:51	FR	SM4500H+ B-11

(a) Sample received out of holding time for pH analysis.

RL = Reporting Limit

Report of Analysis

Client Sample ID: SW-A57(0.0-0.5)	Date Sampled: 03/29/19
Lab Sample ID: JC85448-2	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 85.7
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	45.9 J	0.93	mg/kg	2	04/04/19 12:32	RI	SW846 3060A/7196A
Redox Potential Vs H2	315		mv	1	04/03/19 21:24	EB	ASTM D1498-76M
Solids, Percent	85.7		%	1	03/31/19 11:33	BG	SM2540 G 18TH ED MOD
pH	6.55 J		su	1	04/03/19 21:31	EB	SW846 9045D

RL = Reporting Limit

4.2
4

Report of Analysis

Client Sample ID: SW-A57(2.0-2.5)	Date Sampled: 03/29/19
Lab Sample ID: JC85448-3	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 87.2
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.55 J	0.46	mg/kg	1	04/04/19 12:32	RI	SW846 3060A/7196A
Redox Potential Vs H2	322		mv	1	04/03/19 21:26	EB	ASTM D1498-76M
Solids, Percent	87.2		%	1	03/31/19 11:33	BG	SM2540 G 18TH ED MOD
pH	6.19 J		su	1	04/03/19 21:33	EB	SW846 9045D

RL = Reporting Limit

4.3
4

Report of Analysis

Client Sample ID: SW-A57(4.0-4.5)	Date Sampled: 03/29/19
Lab Sample ID: JC85448-4	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 86.9
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.55 J	0.46	mg/kg	1	04/04/19 12:32	RI	SW846 3060A/7196A
Redox Potential Vs H2	320		mv	1	04/03/19 21:27	EB	ASTM D1498-76M
Solids, Percent	86.9		%	1	03/31/19 11:33	BG	SM2540 G 18TH ED MOD
pH	6.72 J		su	1	04/03/19 21:38	EB	SW846 9045D

RL = Reporting Limit

4.4
4

Report of Analysis

Client Sample ID: SW-A57(5.5-6.0)	Date Sampled: 03/29/19
Lab Sample ID: JC85448-5	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 81.8
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.54 J	0.49	mg/kg	1	04/04/19 12:32	RI	SW846 3060A/7196A
Redox Potential Vs H2	319		mv	1	04/03/19 21:29	EB	ASTM D1498-76M
Solids, Percent	81.8		%	1	03/31/19 11:33	BG	SM2540 G 18TH ED MOD
pH	5.70 J		su	1	04/03/19 21:39	EB	SW846 9045D

RL = Reporting Limit

Report of Analysis

Client Sample ID: BS-K5	Date Sampled: 03/29/19
Lab Sample ID: JC85448-6	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 82.5
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	1.2 J	0.48	mg/kg	1	04/04/19 12:32	RI	SW846 3060A/7196A
Redox Potential Vs H2	331		mv	1	04/03/19 21:30	EB	ASTM D1498-76M
Solids, Percent	82.5		%	1	03/31/19 11:33	BG	SM2540 G 18TH ED MOD
pH	6.19 J		su	1	04/03/19 21:43	EB	SW846 9045D

RL = Reporting Limit

Report of Analysis

Client Sample ID: BS-I5A	Date Sampled: 03/29/19
Lab Sample ID: JC85448-7	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 84.0
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	< 0.48 UJ	0.48	mg/kg	1	04/04/19 12:32	RI	SW846 3060A/7196A
Redox Potential Vs H2	335		mv	1	04/03/19 21:32	EB	ASTM D1498-76M
Solids, Percent	84		%	1	03/31/19 11:33	BG	SM2540 G 18TH ED MOD
pH	7.30 J		su	1	04/03/19 21:48	EB	SW846 9045D

RL = Reporting Limit

4.7
4

Report of Analysis

Client Sample ID: DUP-23(20190329)	Date Sampled: 03/29/19
Lab Sample ID: JC85448-8	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 80.9
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	< 0.49 UJ	0.49	mg/kg	1	04/04/19 12:32	RI	SW846 3060A/7196A
Redox Potential Vs H2	325		mv	1	04/03/19 21:33	EB	ASTM D1498-76M
Solids, Percent	80.9		%	1	03/31/19 11:33	BG	SM2540 G 18TH ED MOD
pH	6.06 J		su	1	04/03/19 21:54	EB	SW846 9045D

RL = Reporting Limit

Report of Analysis

Client Sample ID: BS-D19A	Date Sampled: 03/29/19
Lab Sample ID: JC85448-9	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 63.0
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	< 0.63 UJ	0.63	mg/kg	1	04/04/19 12:32	RI	SW846 3060A/7196A
Redox Potential Vs H2	270		mv	1	04/03/19 21:36	EB	ASTM D1498-76M
Solids, Percent	63		%	1	03/31/19 11:33	BG	SM2540 G 18TH ED MOD
pH	6.25 J		su	1	04/03/19 21:57	EB	SW846 9045D

RL = Reporting Limit

Report of Analysis

Client Sample ID: BS-E19	Date Sampled: 03/29/19
Lab Sample ID: JC85448-10	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 77.2
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	< 0.52 UJ	0.52	mg/kg	1	04/04/19 12:32	RI	SW846 3060A/7196A
Redox Potential Vs H2	323		mv	1	04/03/19 21:48	EB	ASTM D1498-76M
Solids, Percent	77.2		%	1	03/31/19 11:33	BG	SM2540 G 18TH ED MOD
pH	6.28 J		su	1	04/03/19 22:05	EB	SW846 9045D

RL = Reporting Limit

4.10
4

Report of Analysis

Client Sample ID: BS-E20	Date Sampled: 03/29/19
Lab Sample ID: JC85448-11	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 51.7
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	1.0 J	0.77	mg/kg	1	04/04/19 12:32	RI	SW846 3060A/7196A
Redox Potential Vs H2	321		mv	1	04/03/19 21:54	EB	ASTM D1498-76M
Solids, Percent	51.7		%	1	03/31/19 11:33	BG	SM2540 G 18TH ED MOD
pH	6.58 J		su	1	04/03/19 22:11	EB	SW846 9045D

RL = Reporting Limit

4.11
4

Report of Analysis

Client Sample ID: CS-E20	Date Sampled: 03/29/19
Lab Sample ID: JC85448-12	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 57.2
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	< 0.70 UJ	0.70	mg/kg	1	04/04/19 13:14	RI	SW846 3060A/7196A
Redox Potential Vs H2	321		mv	1	04/03/19 21:58	EB	ASTM D1498-76M
Solids, Percent	57.2		%	1	03/31/19 11:33	BG	SM2540 G 18TH ED MOD
pH	6.85 J		su	1	04/03/19 22:16	EB	SW846 9045D

RL = Reporting Limit

4.12
4

Report of Analysis

Client Sample ID: SW-FS-01	Date Sampled: 03/29/19
Lab Sample ID: JC85448-13	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 96.1
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	< 0.42 UJ	0.42	mg/kg	1	04/04/19 13:14	RI	SW846 3060A/7196A
Redox Potential Vs H2	314		mv	1	04/03/19 22:05	EB	ASTM D1498-76M
Solids, Percent	96.1		%	1	03/31/19 11:33	BG	SM2540 G 18TH ED MOD
pH	8.03 J		su	1	04/03/19 22:38	EB	SW846 9045D

RL = Reporting Limit

4.1
4

Report of Analysis

Client Sample ID: SW-FS-02	Date Sampled: 03/29/19
Lab Sample ID: JC85448-14	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 97.1
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	< 0.41 UJ	0.41	mg/kg	1	04/04/19 13:14	RI	SW846 3060A/7196A
Redox Potential Vs H2	314		mv	1	04/03/19 22:11	EB	ASTM D1498-76M
Solids, Percent	97.1		%	1	03/31/19 11:33	BG	SM2540 G 18TH ED MOD
pH	7.67 J		su	1	04/03/19 22:46	EB	SW846 9045D

RL = Reporting Limit

4.2
4

Report of Analysis

Client Sample ID: SW-FS-03	Date Sampled: 03/29/19
Lab Sample ID: JC85448-15	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 96.0
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	< 0.42 UJ	0.42	mg/kg	1	04/04/19 13:14	RI	SW846 3060A/7196A
Redox Potential Vs H2	314		mv	1	04/03/19 22:16	EB	ASTM D1498-76M
Solids, Percent	96		%	1	03/31/19 11:33	BG	SM2540 G 18TH ED MOD
pH	8.11 J		su	1	04/03/19 23:01	EB	SW846 9045D

RL = Reporting Limit

4.3
4

Report of Analysis

Client Sample ID: SW-FS-04	Date Sampled: 03/29/19
Lab Sample ID: JC85448-16	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 96.0
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	< 0.42 UJ	0.42	mg/kg	1	04/04/19 13:14	RI	SW846 3060A/7196A
Redox Potential Vs H2	320		mv	1	04/03/19 22:32	EB	ASTM D1498-76M
Solids, Percent	96		%	1	03/31/19 11:33	BG	SM2540 G 18TH ED MOD
pH	7.99 J		su	1	04/03/19 23:09	EB	SW846 9045D

RL = Reporting Limit

4.4
4

Report of Analysis

Client Sample ID: BS-FS-01	Date Sampled: 03/29/19
Lab Sample ID: JC85448-17	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 96.5
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	< 0.41 UJ	0.41	mg/kg	1	04/04/19 13:14	RI	SW846 3060A/7196A
Redox Potential Vs H2	322		mv	1	04/03/19 22:37	EB	ASTM D1498-76M
Solids, Percent	96.5		%	1	03/31/19 11:33	BG	SM2540 G 18TH ED MOD
pH	8.04 J		su	1	04/03/19 23:18	EB	SW846 9045D

RL = Reporting Limit

Report of Analysis

Client Sample ID: BS-FS-02	Date Sampled: 03/29/19
Lab Sample ID: JC85448-18	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 96.0
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	< 0.42 UJ	0.42	mg/kg	1	04/04/19 13:14	RI	SW846 3060A/7196A
Redox Potential Vs H2	329		mv	1	04/03/19 21:23	EB	ASTM D1498-76M
Solids, Percent	96		%	1	03/31/19 11:33	BG	SM2540 G 18TH ED MOD
pH	7.71 J		su	1	04/03/19 21:30	EB	SW846 9045D

RL = Reporting Limit

Report of Analysis

Client Sample ID: FB(20190329) Lab Sample ID: JC85448-1A Matrix: AQ - Field Blank Soil Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	Date Sampled: 03/29/19 Date Received: 03/29/19 Percent Solids: n/a
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Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	04/01/19	04/01/19	ND SW846 6010D ²	SW846 3010A ³
Antimony	< 6.0	6.0	ug/l	1	04/01/19	04/01/19	ND SW846 6010D ²	SW846 3010A ³
Arsenic	< 3.0	3.0	ug/l	1	04/01/19	04/01/19	ND SW846 6010D ²	SW846 3010A ³
Barium	< 200	200	ug/l	1	04/01/19	04/01/19	ND SW846 6010D ²	SW846 3010A ³
Beryllium	< 1.0	1.0	ug/l	1	04/01/19	04/01/19	ND SW846 6010D ²	SW846 3010A ³
Cadmium	< 3.0	3.0	ug/l	1	04/01/19	04/01/19	ND SW846 6010D ²	SW846 3010A ³
Calcium	< 5000	5000	ug/l	1	04/01/19	04/01/19	ND SW846 6010D ²	SW846 3010A ³
Chromium	< 10	10	ug/l	1	04/01/19	04/01/19	ND SW846 6010D ²	SW846 3010A ³
Cobalt	< 50	50	ug/l	1	04/01/19	04/01/19	ND SW846 6010D ²	SW846 3010A ³
Copper	< 10	10	ug/l	1	04/01/19	04/01/19	ND SW846 6010D ²	SW846 3010A ³
Iron	< 100	100	ug/l	1	04/01/19	04/01/19	ND SW846 6010D ²	SW846 3010A ³
Lead	< 3.0	3.0	ug/l	1	04/01/19	04/01/19	ND SW846 6010D ²	SW846 3010A ³
Magnesium	< 5000	5000	ug/l	1	04/01/19	04/01/19	ND SW846 6010D ²	SW846 3010A ³
Manganese	< 15	15	ug/l	1	04/01/19	04/01/19	ND SW846 6010D ²	SW846 3010A ³
Mercury	< 0.20	0.20	ug/l	1	04/01/19	04/01/19	LL SW846 7470A ¹	SW846 7470A ⁴
Nickel	< 10	10	ug/l	1	04/01/19	04/01/19	ND SW846 6010D ²	SW846 3010A ³
Potassium	< 10000	10000	ug/l	1	04/01/19	04/01/19	ND SW846 6010D ²	SW846 3010A ³
Selenium	< 10	10	ug/l	1	04/01/19	04/01/19	ND SW846 6010D ²	SW846 3010A ³
Silver	< 10	10	ug/l	1	04/01/19	04/01/19	ND SW846 6010D ²	SW846 3010A ³
Sodium	< 10000	10000	ug/l	1	04/01/19	04/01/19	ND SW846 6010D ²	SW846 3010A ³
Thallium	< 10	10	ug/l	1	04/01/19	04/01/19	ND SW846 6010D ²	SW846 3010A ³
Vanadium	< 50	50	ug/l	1	04/01/19	04/01/19	ND SW846 6010D ²	SW846 3010A ³
Zinc	< 20	20	ug/l	1	04/01/19	04/01/19	ND SW846 6010D ²	SW846 3010A ³

- (1) Instrument QC Batch: MA46394
- (2) Instrument QC Batch: MA46401
- (3) Prep QC Batch: MP13712
- (4) Prep QC Batch: MP13749

RL = Reporting Limit

4.1
4

Report of Analysis

Client Sample ID: SW-A57(0.0-0.5) Lab Sample ID: JC85448-2A Matrix: SO - Soil Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	Date Sampled: 03/29/19 Date Received: 03/29/19 Percent Solids: 85.7
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Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Antimony ^a	< 4.5	4.5	mg/kg	2	03/30/19	04/02/19	ND	SW846 6010D ¹ SW846 3050B ²
Chromium ^a	492	2.2	mg/kg	2	03/30/19	04/02/19	ND	SW846 6010D ¹ SW846 3050B ²
Nickel	27.8	4.5	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Thallium ^a	< 2.2	2.2	mg/kg	2	03/30/19	04/02/19	ND	SW846 6010D ¹ SW846 3050B ²
Vanadium	61.1	5.6	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²

(1) Instrument QC Batch: MA46404

(2) Prep QC Batch: MP13709

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

4.2
4

Report of Analysis

Client Sample ID: SW-A57(0.0-0.5)	Date Sampled: 03/29/19
Lab Sample ID: JC85448-2A	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 85.7
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Trivalent ^a	446	3.1	mg/kg	1	04/04/19 12:32	RI	SW846 6010/7196A M

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)

RL = Reporting Limit

4.2
4

Report of Analysis

Client Sample ID: SW-A57(2.0-2.5)	Date Sampled: 03/29/19
Lab Sample ID: JC85448-3A	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 87.2
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Antimony	< 2.2	2.2	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Chromium	45.0	1.1	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Nickel	21.9	4.4	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Thallium	< 1.1	1.1	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Vanadium	25.9	5.5	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²

(1) Instrument QC Batch: MA46404

(2) Prep QC Batch: MP13709

RL = Reporting Limit

4.3
4

Report of Analysis

Client Sample ID: SW-A57(2.0-2.5)	Date Sampled: 03/29/19
Lab Sample ID: JC85448-3A	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 87.2
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Trivalent ^a	44.5	1.6	mg/kg	1	04/04/19 12:32	RI	SW846 6010/7196A M

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)

RL = Reporting Limit

4.3
4

Report of Analysis

Client Sample ID: SW-A57(4.0-4.5)	Date Sampled: 03/29/19
Lab Sample ID: JC85448-4A	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 86.9
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Antimony	< 2.3	2.3	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Chromium	19.2	1.2	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Nickel	14.5	4.6	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Thallium	< 1.2	1.2	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Vanadium	26.1	5.8	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²

(1) Instrument QC Batch: MA46404

(2) Prep QC Batch: MP13709

RL = Reporting Limit

4.4
4

Report of Analysis

Client Sample ID: SW-A57(4.0-4.5)	Date Sampled: 03/29/19
Lab Sample ID: JC85448-4A	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 86.9
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Trivalent ^a	18.7	1.7	mg/kg	1	04/04/19 12:32	RI	SW846 6010/7196A M

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)

RL = Reporting Limit

4.4
4

Report of Analysis

Client Sample ID: SW-A57(5.5-6.0) Lab Sample ID: JC85448-5A Matrix: SO - Soil Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	Date Sampled: 03/29/19 Date Received: 03/29/19 Percent Solids: 81.8
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Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Antimony	< 2.4	2.4	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Chromium	13.4	1.2	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Nickel	11.8	4.8	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Thallium	< 1.2	1.2	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Vanadium	18.8	6.0	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²

(1) Instrument QC Batch: MA46404

(2) Prep QC Batch: MP13709

RL = Reporting Limit

4.5
4

Report of Analysis

Client Sample ID: SW-A57(5.5-6.0)	Date Sampled: 03/29/19
Lab Sample ID: JC85448-5A	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 81.8
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Trivalent ^a	12.9	1.7	mg/kg	1	04/04/19 12:32	RI	SW846 6010/7196A M

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)

RL = Reporting Limit

Report of Analysis

Client Sample ID: BS-K5	Date Sampled: 03/29/19
Lab Sample ID: JC85448-6A	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 82.5
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Antimony	< 2.4	2.4	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Chromium	26.7	1.2	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Nickel	11.2	4.7	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Thallium	< 1.2	1.2	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Vanadium	35.1	5.9	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²

(1) Instrument QC Batch: MA46404

(2) Prep QC Batch: MP13709

RL = Reporting Limit

4.6
4

Report of Analysis

Client Sample ID: BS-K5	Date Sampled: 03/29/19
Lab Sample ID: JC85448-6A	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 82.5
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Trivalent ^a	25.5	1.7	mg/kg	1	04/04/19 12:32	RI	SW846 6010/7196A M

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)

RL = Reporting Limit

Report of Analysis

Client Sample ID: BS-I5A	Date Sampled: 03/29/19
Lab Sample ID: JC85448-7A	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 84.0
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Antimony	< 2.3	2.3	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Chromium	19.7	1.1	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Nickel	16.0	4.6	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Thallium	< 1.1	1.1	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Vanadium	33.2	5.7	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²

(1) Instrument QC Batch: MA46404

(2) Prep QC Batch: MP13709

RL = Reporting Limit

4.7
4

Report of Analysis

Client Sample ID: BS-I5A		Date Sampled: 03/29/19
Lab Sample ID: JC85448-7A		Date Received: 03/29/19
Matrix: SO - Soil		Percent Solids: 84.0
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Trivalent ^a	19.3	1.6	mg/kg	1	04/04/19 12:32	RI	SW846 6010/7196A M

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)

RL = Reporting Limit

4.7
4

Report of Analysis

Client Sample ID: DUP-23(20190329)	Date Sampled: 03/29/19
Lab Sample ID: JC85448-8A	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 80.9
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Antimony	< 2.5	2.5	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Chromium	11.6	1.2	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Nickel	11.3	4.9	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Thallium	< 1.2	1.2	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Vanadium	17.3	6.2	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²

(1) Instrument QC Batch: MA46404

(2) Prep QC Batch: MP13709

RL = Reporting Limit

4.8
4

Report of Analysis

Client Sample ID: DUP-23(20190329)	Date Sampled: 03/29/19
Lab Sample ID: JC85448-8A	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 80.9
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Trivalent ^a	11.6	1.7	mg/kg	1	04/04/19 12:32	RI	SW846 6010/7196A M

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)

RL = Reporting Limit

4.8
4

Report of Analysis

Client Sample ID: BS-D19A	Date Sampled: 03/29/19
Lab Sample ID: JC85448-9A	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 63.0
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Antimony	< 3.1	3.1	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Chromium	22.1	1.5	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Nickel	21.6	6.2	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Thallium	< 1.5	1.5	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Vanadium	29.4	7.7	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²

(1) Instrument QC Batch: MA46404

(2) Prep QC Batch: MP13709

RL = Reporting Limit

Report of Analysis

Client Sample ID: BS-D19A	Date Sampled: 03/29/19
Lab Sample ID: JC85448-9A	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 63.0
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Trivalent ^a	22.1	2.1	mg/kg	1	04/04/19 12:32	RI	SW846 6010/7196A M

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)

RL = Reporting Limit

Report of Analysis

Client Sample ID: BS-E19	Date Sampled: 03/29/19
Lab Sample ID: JC85448-10A	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 77.2
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Antimony	< 2.5	2.5	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Chromium	17.3	1.2	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Nickel	584	5.0	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Thallium	< 1.2	1.2	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Vanadium	20.2	6.2	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²

(1) Instrument QC Batch: MA46404

(2) Prep QC Batch: MP13709

RL = Reporting Limit

Report of Analysis

Client Sample ID: BS-E19	Date Sampled: 03/29/19
Lab Sample ID: JC85448-10A	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 77.2
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Trivalent ^a	17.3	1.7	mg/kg	1	04/04/19 12:32	RI	SW846 6010/7196A M

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)

RL = Reporting Limit

4.10
4

Report of Analysis

Client Sample ID: BS-E20	Date Sampled: 03/29/19
Lab Sample ID: JC85448-11A	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 51.7
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Antimony	< 3.7	3.7	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Chromium	202	1.8	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Nickel	433	7.4	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Thallium	< 1.8	1.8	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²
Vanadium	65.9	9.2	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²

(1) Instrument QC Batch: MA46404

(2) Prep QC Batch: MP13709

RL = Reporting Limit

4.11
4

Report of Analysis

Client Sample ID: BS-E20	Date Sampled: 03/29/19
Lab Sample ID: JC85448-11A	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 51.7
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Trivalent ^a	201	2.6	mg/kg	1	04/04/19 12:32	RI	SW846 6010/7196A M

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)

RL = Reporting Limit

4.11
4

Report of Analysis

Client Sample ID: CS-E20		Date Sampled: 03/29/19
Lab Sample ID: JC85448-12A		Date Received: 03/29/19
Matrix: SO - Soil		Percent Solids: 57.2
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Antimony ^a	< 17	17	mg/kg	5	03/30/19	04/02/19	ND	SW846 6010D ¹ SW846 3050B ²
Chromium ^a	172	8.4	mg/kg	5	03/30/19	04/02/19	ND	SW846 6010D ¹ SW846 3050B ²
Nickel	2060	34	mg/kg	5	03/30/19	04/02/19	ND	SW846 6010D ¹ SW846 3050B ²
Thallium ^a	< 8.4	8.4	mg/kg	5	03/30/19	04/02/19	ND	SW846 6010D ¹ SW846 3050B ²
Vanadium	42.8	8.4	mg/kg	1	03/30/19	04/01/19	ND	SW846 6010D ¹ SW846 3050B ²

(1) Instrument QC Batch: MA46404

(2) Prep QC Batch: MP13709

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

4.12
4

Report of Analysis

Client Sample ID: CS-E20	Date Sampled: 03/29/19
Lab Sample ID: JC85448-12A	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 57.2
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

4.12
4

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Trivalent ^a	171	9.1	mg/kg	1	04/04/19 13:14	RI	SW846 6010/7196A M

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)

RL = Reporting Limit

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Report of Analysis

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Client Sample ID:	SW-FS-01	Date Sampled:	03/29/19
Lab Sample ID:	JC85448-13A	Date Received:	03/29/19
Matrix:	SO - Soil	Percent Solids:	96.1
Method:	SW846 8270D SW846 3546		
Project:	PPG Site 107, 18 Chapel Avenue, Jersey City, NJ		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	2M111386.D	1	04/02/19 13:50	CC	04/01/19 17:55	OP19474	E2M4944

Run #1	Initial Weight	Final Volume
Run #2	30.8 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	68	17	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	170	21	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	170	29	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	170	60	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	130	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	170	36	ug/kg	
95-48-7	2-Methylphenol	ND	68	22	ug/kg	
	3&4-Methylphenol	ND	68	28	ug/kg	
88-75-5	2-Nitrophenol	ND	170	22	ug/kg	
100-02-7	4-Nitrophenol	ND UJ	340	90	ug/kg	
87-86-5	Pentachlorophenol ^a	ND	140	32	ug/kg	
108-95-2	Phenol	ND	68	18	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND UJ	170	22	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND UJ	170	25	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	170	20	ug/kg	
83-32-9	Acenaphthene	ND UJ	34	12	ug/kg	
208-96-8	Acenaphthylene	ND UJ	34	17	ug/kg	
98-86-2	Acetophenone	ND	170	7.3	ug/kg	
120-12-7	Anthracene	ND	34	21	ug/kg	
1912-24-9	Atrazine ^b	ND UJ	68	14	ug/kg	
56-55-3	Benzo(a)anthracene	12.2	34	9.6	ug/kg	J
50-32-8	Benzo(a)pyrene	ND UJ	34	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	34	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND UJ	34	17	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND UJ	34	16	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND UJ	68	13	ug/kg	
85-68-7	Butyl benzyl phthalate ^b	ND UJ	68	8.2	ug/kg	
92-52-4	1,1'-Biphenyl	ND	68	4.6	ug/kg	
100-52-7	Benzaldehyde	ND	170	8.4	ug/kg	
91-58-7	2-Chloronaphthalene	ND UJ	68	8.0	ug/kg	
106-47-8	4-Chloroaniline	ND	170	12	ug/kg	
86-74-8	Carbazole	ND	68	4.9	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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3

Client Sample ID:	SW-FS-01	Date Sampled:	03/29/19
Lab Sample ID:	JC85448-13A	Date Received:	03/29/19
Matrix:	SO - Soil	Percent Solids:	96.1
Method:	SW846 8270D SW846 3546		
Project:	PPG Site 107, 18 Chapel Avenue, Jersey City, NJ		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam ^b	ND UJ	68	13	ug/kg	
218-01-9	Chrysene	ND UJ	34	11	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND UJ	68	7.2	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND UJ	68	15	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane) ^b	ND UJ	68	12	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND UJ	68	11	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND UJ	34	10	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND UJ	34	17	ug/kg	
91-94-1	3,3'-Dichlorobenzidine ^b	ND UJ	68	28	ug/kg	
123-91-1	1,4-Dioxane ^a	ND	34	22	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND UJ	34	15	ug/kg	
132-64-9	Dibenzofuran	ND	68	14	ug/kg	
84-74-2	Di-n-butyl phthalate ^b	ND UJ	68	5.5	ug/kg	
117-84-0	Di-n-octyl phthalate	ND UJ	68	8.4	ug/kg	
84-66-2	Diethyl phthalate	ND UJ	68	7.2	ug/kg	
131-11-3	Dimethyl phthalate	ND UJ	68	6.0	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate ^b	ND UJ	68	7.9	ug/kg	
206-44-0	Fluoranthene	ND	34	15	ug/kg	
86-73-7	Fluorene	ND UJ	34	16	ug/kg	
118-74-1	Hexachlorobenzene	ND UJ	68	8.5	ug/kg	
87-68-3	Hexachlorobutadiene	ND UJ	34	14	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	340	13	ug/kg	
67-72-1	Hexachloroethane	ND UJ	170	17	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	37.9 J	34	16	ug/kg	
78-59-1	Isophorone	ND UJ	68	7.2	ug/kg	
91-57-6	2-Methylnaphthalene	ND	34	7.6	ug/kg	
88-74-4	2-Nitroaniline ^b	ND UJ	170	8.0	ug/kg	
99-09-2	3-Nitroaniline	ND	170	8.4	ug/kg	
100-01-6	4-Nitroaniline	ND	170	8.8	ug/kg	
91-20-3	Naphthalene	ND UJ	34	9.5	ug/kg	
98-95-3	Nitrobenzene	ND UJ	68	13	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND UJ	68	9.8	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND UJ	170	12	ug/kg	
85-01-8	Phenanthrene	ND	34	11	ug/kg	
129-00-0	Pyrene	14.3	34	11	ug/kg	J
95-94-3	1,2,4,5-Tetrachlorobenzene	ND UJ	170	8.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	57%		23-115%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SW-FS-01 Lab Sample ID: JC85448-13A Matrix: SO - Soil Method: SW846 8270D SW846 3546 Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	Date Sampled: 03/29/19 Date Received: 03/29/19 Percent Solids: 96.1
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ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	60%		27-114%
118-79-6	2,4,6-Tribromophenol	68%		19-152%
4165-60-0	Nitrobenzene-d5	72%		26-134%
321-60-8	2-Fluorobiphenyl	64%		39-124%
1718-51-0	Terphenyl-d14	81%		36-134%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	system artifact	2.63	1400	ug/kg	J R
	Total TIC, Semi-Volatile		0	ug/kg	

- (a) Associated CCV outside of control limits low. Low level standard analyzed to demonstrate system suitability to detect affected analytes.
- (b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SW-FS-01	Date Sampled:	03/29/19
Lab Sample ID:	JC85448-13A	Date Received:	03/29/19
Matrix:	SO - Soil	Percent Solids:	96.1
Project:	PPG Site 107, 18 Chapel Avenue, Jersey City, NJ		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	5890	53	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Antimony	< 2.1	2.1	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Arsenic	< 2.1	2.1	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Barium	35.4	21	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Beryllium ^a	< 0.42	0.42	mg/kg	2	03/30/19	04/02/19	ND SW846 6010D ²	SW846 3050B ³
Cadmium	< 0.53	0.53	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Calcium	3750	530	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Chromium	20.0	1.1	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Cobalt	7.6	5.3	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Copper	39.7	2.6	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Iron	14700	53	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Lead	< 2.1	2.1	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Magnesium	5040	530	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Manganese	112	1.6	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Mercury	< 0.034	0.034	mg/kg	1	04/01/19	04/01/19	EAL SW846 7471B ¹	SW846 7471B ⁴
Nickel	14.4	4.2	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Potassium	3540	1100	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Selenium	< 2.1	2.1	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Silver	< 0.53	0.53	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Sodium	< 1100	1100	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Thallium ^a	< 2.1	2.1	mg/kg	2	03/30/19	04/02/19	ND SW846 6010D ²	SW846 3050B ³
Vanadium	26.2	5.3	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Zinc	16.5	5.3	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³

(1) Instrument QC Batch: MA46397

(2) Instrument QC Batch: MA46404

(3) Prep QC Batch: MP13709

(4) Prep QC Batch: MP13740

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

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Report of Analysis

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Client Sample ID:	SW-FS-02	Date Sampled:	03/29/19
Lab Sample ID:	JC85448-14A	Date Received:	03/29/19
Matrix:	SO - Soil	Percent Solids:	97.1
Method:	SW846 8270D SW846 3546		
Project:	PPG Site 107, 18 Chapel Avenue, Jersey City, NJ		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	2M111379.D	1	04/02/19 10:29	CC	04/01/19 17:55	OP19474	E2M4944

Run #1	Initial Weight	Final Volume
Run #2	30.3 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	68	17	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	170	21	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	170	29	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	170	61	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	130	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	170	36	ug/kg	
95-48-7	2-Methylphenol	ND	68	22	ug/kg	
	3&4-Methylphenol	ND	68	28	ug/kg	
88-75-5	2-Nitrophenol	ND	170	22	ug/kg	
100-02-7	4-Nitrophenol	ND	340	91	ug/kg	
87-86-5	Pentachlorophenol ^a	ND	140	32	ug/kg	
108-95-2	Phenol	ND	68	18	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	170	23	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	170	25	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	170	20	ug/kg	
83-32-9	Acenaphthene	ND	34	12	ug/kg	
208-96-8	Acenaphthylene	ND	34	17	ug/kg	
98-86-2	Acetophenone	ND	170	7.3	ug/kg	
120-12-7	Anthracene	ND	34	21	ug/kg	
1912-24-9	Atrazine ^b	ND UJ	68	15	ug/kg	
56-55-3	Benzo(a)anthracene	ND	34	9.6	ug/kg	
50-32-8	Benzo(a)pyrene	ND	34	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	34	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	34	17	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	34	16	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	68	13	ug/kg	
85-68-7	Butyl benzyl phthalate ^c	13.7	68	8.3	ug/kg	J
92-52-4	1,1'-Biphenyl	ND	68	4.7	ug/kg	
100-52-7	Benzaldehyde	ND	170	8.4	ug/kg	
91-58-7	2-Chloronaphthalene	ND	68	8.1	ug/kg	
106-47-8	4-Chloroaniline	ND	170	12	ug/kg	
86-74-8	Carbazole	ND	68	4.9	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

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3

Client Sample ID:	SW-FS-02	Date Sampled:	03/29/19
Lab Sample ID:	JC85448-14A	Date Received:	03/29/19
Matrix:	SO - Soil	Percent Solids:	97.1
Method:	SW846 8270D SW846 3546		
Project:	PPG Site 107, 18 Chapel Avenue, Jersey City, NJ		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam ^b	ND UJ	68	13	ug/kg	
218-01-9	Chrysene	ND	34	11	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	68	7.3	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	68	15	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane) ^b	ND UJ	68	12	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	68	11	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	34	11	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	34	17	ug/kg	
91-94-1	3,3'-Dichlorobenzidine ^b	ND UJ	68	28	ug/kg	
123-91-1	1,4-Dioxane ^a	ND	34	22	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	34	15	ug/kg	
132-64-9	Dibenzofuran	ND	68	14	ug/kg	
84-74-2	Di-n-butyl phthalate ^b	ND UJ	68	5.5	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	68	8.5	ug/kg	
84-66-2	Diethyl phthalate	ND	68	7.2	ug/kg	
131-11-3	Dimethyl phthalate	ND	68	6.1	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate ^b	ND UJ	68	8.0	ug/kg	
206-44-0	Fluoranthene	ND	34	15	ug/kg	
86-73-7	Fluorene	ND	34	16	ug/kg	
118-74-1	Hexachlorobenzene	ND	68	8.6	ug/kg	
87-68-3	Hexachlorobutadiene	ND	34	14	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	340	14	ug/kg	
67-72-1	Hexachloroethane	ND	170	17	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	34.0	34	16	ug/kg	
78-59-1	Isophorone	ND	68	7.3	ug/kg	
91-57-6	2-Methylnaphthalene	ND	34	7.7	ug/kg	
88-74-4	2-Nitroaniline ^b	ND UJ	170	8.0	ug/kg	
99-09-2	3-Nitroaniline	ND	170	8.5	ug/kg	
100-01-6	4-Nitroaniline	ND	170	8.8	ug/kg	
91-20-3	Naphthalene	ND	34	9.6	ug/kg	
98-95-3	Nitrobenzene	ND	68	13	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	68	9.8	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	170	12	ug/kg	
85-01-8	Phenanthrene	ND	34	11	ug/kg	
129-00-0	Pyrene	13.5	34	11	ug/kg	J
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	170	8.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	64%		23-115%

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID: SW-FS-02		Date Sampled: 03/29/19
Lab Sample ID: JC85448-14A		Date Received: 03/29/19
Matrix: SO - Soil		Percent Solids: 97.1
Method: SW846 8270D SW846 3546		
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	67%		27-114%
118-79-6	2,4,6-Tribromophenol	74%		19-152%
4165-60-0	Nitrobenzene-d5	81%		26-134%
321-60-8	2-Fluorobiphenyl	71%		39-124%
1718-51-0	Terphenyl-d14	87%		36-134%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	system artifact	2.64	1500	ug/kg	J R
	Total TIC, Semi-Volatile		0	ug/kg	

- (a) Associated CCV outside of control limits low. Low level standard analyzed to demonstrate system suitability to detect affected analytes.
- (b) Associated CCV outside of control limits high, sample was ND.
- (c) Associated CCV outside of control limits high.

ND = Not detected	MDL = Method Detection Limit	J = Indicates an estimated value
RL = Reporting Limit		B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range		N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SW-FS-02	Date Sampled:	03/29/19
Lab Sample ID:	JC85448-14A	Date Received:	03/29/19
Matrix:	SO - Soil	Percent Solids:	97.1
Project:	PPG Site 107, 18 Chapel Avenue, Jersey City, NJ		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	7640	50	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Antimony ^a	< 4.0	4.0	mg/kg	2	03/30/19	04/02/19	ND SW846 6010D ²	SW846 3050B ³
Arsenic	2.1	2.0	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Barium	49.8	20	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Beryllium ^a	< 0.40	0.40	mg/kg	2	03/30/19	04/02/19	ND SW846 6010D ²	SW846 3050B ³
Cadmium	< 0.50	0.50	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Calcium	3640	500	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Chromium	26.4	0.99	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Cobalt ^a	15.3	9.9	mg/kg	2	03/30/19	04/02/19	ND SW846 6010D ²	SW846 3050B ³
Copper	54.0	2.5	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Iron	17600	50	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Lead	2.4	2.0	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Magnesium	7740	500	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Manganese	128	1.5	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Mercury	< 0.028	0.028	mg/kg	1	04/01/19	04/01/19	EAL SW846 7471B ¹	SW846 7471B ⁴
Nickel	19.9	4.0	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Potassium	5340	990	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Selenium	< 2.0	2.0	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Silver	< 0.50	0.50	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Sodium	< 990	990	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Thallium ^a	< 2.0	2.0	mg/kg	2	03/30/19	04/02/19	ND SW846 6010D ²	SW846 3050B ³
Vanadium	33.2	5.0	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Zinc	15.9	5.0	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³

(1) Instrument QC Batch: MA46397

(2) Instrument QC Batch: MA46404

(3) Prep QC Batch: MP13709

(4) Prep QC Batch: MP13740

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

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Report of Analysis

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Client Sample ID:	SW-FS-03	Date Sampled:	03/29/19
Lab Sample ID:	JC85448-15A	Date Received:	03/29/19
Matrix:	SO - Soil	Percent Solids:	96.0
Method:	SW846 8270D SW846 3546		
Project:	PPG Site 107, 18 Chapel Avenue, Jersey City, NJ		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	2M111383.D	1	04/02/19 12:10	CC	04/01/19 17:55	OP19474	E2M4944

Run #1	Initial Weight	Final Volume
Run #2	31.5 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	66	16	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	170	20	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	170	28	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	170	59	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	120	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	170	35	ug/kg	
95-48-7	2-Methylphenol	ND	66	21	ug/kg	
	3&4-Methylphenol	ND	66	27	ug/kg	
88-75-5	2-Nitrophenol	ND	170	22	ug/kg	
100-02-7	4-Nitrophenol	ND	330	88	ug/kg	
87-86-5	Pentachlorophenol ^a	ND	130	31	ug/kg	
108-95-2	Phenol	ND	66	17	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	170	22	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	170	25	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	170	20	ug/kg	
83-32-9	Acenaphthene	ND	33	11	ug/kg	
208-96-8	Acenaphthylene	ND	33	17	ug/kg	
98-86-2	Acetophenone	ND	170	7.1	ug/kg	
120-12-7	Anthracene	ND	33	20	ug/kg	
1912-24-9	Atrazine ^b	ND UJ	66	14	ug/kg	
56-55-3	Benzo(a)anthracene	32.3	33	9.4	ug/kg	J
50-32-8	Benzo(a)pyrene	36.0	33	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	39.9	33	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	25.5	33	17	ug/kg	J
207-08-9	Benzo(k)fluoranthene	17.6	33	15	ug/kg	J
101-55-3	4-Bromophenyl phenyl ether	ND	66	13	ug/kg	
85-68-7	Butyl benzyl phthalate ^c	18.2	66	8.1	ug/kg	J
92-52-4	1,1'-Biphenyl	ND	66	4.5	ug/kg	
100-52-7	Benzaldehyde	ND	170	8.2	ug/kg	
91-58-7	2-Chloronaphthalene	ND	66	7.9	ug/kg	
106-47-8	4-Chloroaniline	ND	170	12	ug/kg	
86-74-8	Carbazole	ND	66	4.8	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SW-FS-03	Date Sampled:	03/29/19
Lab Sample ID:	JC85448-15A	Date Received:	03/29/19
Matrix:	SO - Soil	Percent Solids:	96.0
Method:	SW846 8270D SW846 3546		
Project:	PPG Site 107, 18 Chapel Avenue, Jersey City, NJ		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam ^b	ND UJ	66	13	ug/kg	
218-01-9	Chrysene	34.5	33	10	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	66	7.1	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	66	14	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane) ^b	ND UJ	66	12	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	66	11	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	33	10	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	33	17	ug/kg	
91-94-1	3,3'-Dichlorobenzidine ^b	ND UJ	66	28	ug/kg	
123-91-1	1,4-Dioxane ^a	ND	33	22	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	33	15	ug/kg	
132-64-9	Dibenzofuran	ND	66	13	ug/kg	
84-74-2	Di-n-butyl phthalate ^b	ND UJ	66	5.4	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	66	8.2	ug/kg	
84-66-2	Diethyl phthalate	ND	66	7.0	ug/kg	
131-11-3	Dimethyl phthalate	ND	66	5.9	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate ^b	ND UJ	66	7.7	ug/kg	
206-44-0	Fluoranthene	50.4	33	15	ug/kg	
86-73-7	Fluorene	ND	33	15	ug/kg	
118-74-1	Hexachlorobenzene	ND	66	8.4	ug/kg	
87-68-3	Hexachlorobutadiene	ND	33	13	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	330	13	ug/kg	
67-72-1	Hexachloroethane	ND	170	16	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	51.9	33	16	ug/kg	
78-59-1	Isophorone	ND	66	7.1	ug/kg	
91-57-6	2-Methylnaphthalene	ND	33	7.5	ug/kg	
88-74-4	2-Nitroaniline ^b	ND UJ	170	7.8	ug/kg	
99-09-2	3-Nitroaniline	ND	170	8.3	ug/kg	
100-01-6	4-Nitroaniline	ND	170	8.6	ug/kg	
91-20-3	Naphthalene	ND	33	9.3	ug/kg	
98-95-3	Nitrobenzene	ND	66	13	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	66	9.6	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	170	12	ug/kg	
85-01-8	Phenanthrene	14.8	33	11	ug/kg	J
129-00-0	Pyrene	48.7	33	11	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	170	8.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	60%		23-115%

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SW-FS-03 Lab Sample ID: JC85448-15A Matrix: SO - Soil Method: SW846 8270D SW846 3546 Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	Date Sampled: 03/29/19 Date Received: 03/29/19 Percent Solids: 96.0
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ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	62%		27-114%
118-79-6	2,4,6-Tribromophenol	73%		19-152%
4165-60-0	Nitrobenzene-d5	76%		26-134%
321-60-8	2-Fluorobiphenyl	66%		39-124%
1718-51-0	Terphenyl-d14	82%		36-134%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	system artifact	2.64	410	ug/kg	J R
	Total TIC, Semi-Volatile		0	ug/kg	

- (a) Associated CCV outside of control limits low. Low level standard analyzed to demonstrate system suitability to detect affected analytes.
- (b) Associated CCV outside of control limits high, sample was ND.
- (c) Associated CCV outside of control limits high.

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SW-FS-03	Date Sampled: 03/29/19
Lab Sample ID: JC85448-15A	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 96.0
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	7800	51	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Antimony ^a	< 4.0	4.0	mg/kg	2	03/30/19	04/02/19	ND SW846 6010D ²	SW846 3050B ³
Arsenic	4.6	2.0	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Barium	68.1	20	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Beryllium ^a	0.42	0.40	mg/kg	2	03/30/19	04/02/19	ND SW846 6010D ²	SW846 3050B ³
Cadmium	< 0.51	0.51	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Calcium	4230	510	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Chromium	32.8	1.0	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Cobalt ^a	13.7	10	mg/kg	2	03/30/19	04/02/19	ND SW846 6010D ²	SW846 3050B ³
Copper	44.0	2.5	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Iron	17200	51	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Lead	3.4	2.0	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Magnesium	7960	510	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Manganese	124	1.5	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Mercury	< 0.031	0.031	mg/kg	1	04/01/19	04/01/19	EAL SW846 7471B ¹	SW846 7471B ⁴
Nickel	27.8	4.0	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Potassium	5490	1000	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Selenium	< 2.0	2.0	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Silver	< 0.51	0.51	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Sodium	< 1000	1000	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Thallium ^a	< 2.0	2.0	mg/kg	2	03/30/19	04/02/19	ND SW846 6010D ²	SW846 3050B ³
Vanadium	36.7	5.1	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Zinc	21.6	5.1	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³

(1) Instrument QC Batch: MA46397

(2) Instrument QC Batch: MA46404

(3) Prep QC Batch: MP13709

(4) Prep QC Batch: MP13740

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

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Report of Analysis

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Client Sample ID:	SW-FS-04	Date Sampled:	03/29/19
Lab Sample ID:	JC85448-16A	Date Received:	03/29/19
Matrix:	SO - Soil	Percent Solids:	96.0
Method:	SW846 8270D SW846 3546		
Project:	PPG Site 107, 18 Chapel Avenue, Jersey City, NJ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M111385.D	1	04/02/19 13:25	CC	04/01/19 17:55	OP19474	E2M4944
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	69	17	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	170	21	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	170	29	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	170	61	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	130	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	170	37	ug/kg	
95-48-7	2-Methylphenol	ND	69	22	ug/kg	
	3&4-Methylphenol	ND	69	28	ug/kg	
88-75-5	2-Nitrophenol	ND	170	23	ug/kg	
100-02-7	4-Nitrophenol	ND	340	91	ug/kg	
87-86-5	Pentachlorophenol ^a	ND	140	32	ug/kg	
108-95-2	Phenol	ND	69	18	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	170	23	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	170	26	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	170	20	ug/kg	
83-32-9	Acenaphthene	ND	34	12	ug/kg	
208-96-8	Acenaphthylene	ND	34	17	ug/kg	
98-86-2	Acetophenone	ND	170	7.4	ug/kg	
120-12-7	Anthracene	ND	34	21	ug/kg	
1912-24-9	Atrazine ^b	ND UJ	69	15	ug/kg	
56-55-3	Benzo(a)anthracene	38.5	34	9.7	ug/kg	
50-32-8	Benzo(a)pyrene	39.7	34	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	49.4	34	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	30.2	34	17	ug/kg	J
207-08-9	Benzo(k)fluoranthene	20.0	34	16	ug/kg	J
101-55-3	4-Bromophenyl phenyl ether	ND	69	13	ug/kg	
85-68-7	Butyl benzyl phthalate ^c	27.1	69	8.4	ug/kg	J
92-52-4	1,1'-Biphenyl	ND	69	4.7	ug/kg	
100-52-7	Benzaldehyde	ND	170	8.5	ug/kg	
91-58-7	2-Chloronaphthalene	ND	69	8.2	ug/kg	
106-47-8	4-Chloroaniline	ND	170	12	ug/kg	
86-74-8	Carbazole	ND	69	5.0	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SW-FS-04	Date Sampled:	03/29/19
Lab Sample ID:	JC85448-16A	Date Received:	03/29/19
Matrix:	SO - Soil	Percent Solids:	96.0
Method:	SW846 8270D SW846 3546		
Project:	PPG Site 107, 18 Chapel Avenue, Jersey City, NJ		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam ^b	ND UJ	69	14	ug/kg	
218-01-9	Chrysene	37.5	34	11	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	69	7.3	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	69	15	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane) ^b	ND UJ	69	12	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	69	11	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	34	11	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	34	17	ug/kg	
91-94-1	3,3'-Dichlorobenzidine ^b	ND UJ	69	29	ug/kg	
123-91-1	1,4-Dioxane ^a	ND	34	23	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	34	15	ug/kg	
132-64-9	Dibenzofuran	ND	69	14	ug/kg	
84-74-2	Di-n-butyl phthalate ^b	ND UJ	69	5.6	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	69	8.5	ug/kg	
84-66-2	Diethyl phthalate	ND	69	7.3	ug/kg	
131-11-3	Dimethyl phthalate	ND	69	6.1	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate ^b	ND UJ	69	8.0	ug/kg	
206-44-0	Fluoranthene	58.8	34	15	ug/kg	
86-73-7	Fluorene	ND	34	16	ug/kg	
118-74-1	Hexachlorobenzene	ND	69	8.7	ug/kg	
87-68-3	Hexachlorobutadiene	ND	34	14	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	340	14	ug/kg	
67-72-1	Hexachloroethane	ND	170	17	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	56.4	34	16	ug/kg	
78-59-1	Isophorone	ND	69	7.3	ug/kg	
91-57-6	2-Methylnaphthalene	ND	34	7.7	ug/kg	
88-74-4	2-Nitroaniline ^b	ND UJ	170	8.1	ug/kg	
99-09-2	3-Nitroaniline	ND	170	8.6	ug/kg	
100-01-6	4-Nitroaniline	ND	170	8.9	ug/kg	
91-20-3	Naphthalene	ND	34	9.7	ug/kg	
98-95-3	Nitrobenzene	ND	69	13	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	69	9.9	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	170	13	ug/kg	
85-01-8	Phenanthrene	16.3	34	12	ug/kg	J
129-00-0	Pyrene	58.1	34	11	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	170	8.7	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	63%		23-115%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SW-FS-04		Date Sampled: 03/29/19
Lab Sample ID: JC85448-16A		Date Received: 03/29/19
Matrix: SO - Soil		Percent Solids: 96.0
Method: SW846 8270D SW846 3546		
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	65%		27-114%
118-79-6	2,4,6-Tribromophenol	77%		19-152%
4165-60-0	Nitrobenzene-d5	80%		26-134%
321-60-8	2-Fluorobiphenyl	71%		39-124%
1718-51-0	Terphenyl-d14	90%		36-134%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	system artifact	2.64	370	ug/kg	J R
	Total TIC, Semi-Volatile		0	ug/kg	

- (a) Associated CCV outside of control limits low. Low level standard analyzed to demonstrate system suitability to detect affected analytes.
- (b) Associated CCV outside of control limits high, sample was ND.
- (c) Associated CCV outside of control limits high.

ND = Not detected	MDL = Method Detection Limit	J = Indicates an estimated value
RL = Reporting Limit		B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range		N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SW-FS-04	Date Sampled:	03/29/19
Lab Sample ID:	JC85448-16A	Date Received:	03/29/19
Matrix:	SO - Soil	Percent Solids:	96.0
Project:	PPG Site 107, 18 Chapel Avenue, Jersey City, NJ		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	7430	50	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Antimony ^a	< 4.0	4.0	mg/kg	2	03/30/19	04/02/19	ND SW846 6010D ²	SW846 3050B ³
Arsenic	< 2.0	2.0	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Barium	51.1	20	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Beryllium ^a	0.42	0.40	mg/kg	2	03/30/19	04/02/19	ND SW846 6010D ²	SW846 3050B ³
Cadmium	< 0.50	0.50	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Calcium	3430	500	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Chromium	31.5	0.99	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Cobalt ^a	10.7	9.9	mg/kg	2	03/30/19	04/02/19	ND SW846 6010D ²	SW846 3050B ³
Copper	29.0	2.5	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Iron	16000	50	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Lead	3.0	2.0	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Magnesium	7820	500	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Manganese	116	1.5	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Mercury	< 0.034	0.034	mg/kg	1	04/01/19	04/01/19	EAL SW846 7471B ¹	SW846 7471B ⁴
Nickel	18.0	4.0	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Potassium	5470	990	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Selenium	< 2.0	2.0	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Silver	< 0.50	0.50	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Sodium	< 990	990	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Thallium ^a	< 2.0	2.0	mg/kg	2	03/30/19	04/02/19	ND SW846 6010D ²	SW846 3050B ³
Vanadium	32.4	5.0	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Zinc	16.1	5.0	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³

(1) Instrument QC Batch: MA46397

(2) Instrument QC Batch: MA46404

(3) Prep QC Batch: MP13709

(4) Prep QC Batch: MP13740

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

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Report of Analysis

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Client Sample ID:	BS-FS-01	Date Sampled:	03/29/19
Lab Sample ID:	JC85448-17A	Date Received:	03/29/19
Matrix:	SO - Soil	Percent Solids:	96.5
Method:	SW846 8270D SW846 3546		
Project:	PPG Site 107, 18 Chapel Avenue, Jersey City, NJ		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	2M111380.D	1	04/02/19 10:54	CC	04/01/19 17:55	OP19474	E2M4944

Run #1	Initial Weight	Final Volume
Run #2	31.5 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	66	16	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	160	20	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	160	28	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	160	59	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	160	120	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	160	35	ug/kg	
95-48-7	2-Methylphenol	ND	66	21	ug/kg	
	3&4-Methylphenol	ND	66	27	ug/kg	
88-75-5	2-Nitrophenol	ND	160	22	ug/kg	
100-02-7	4-Nitrophenol	ND	330	88	ug/kg	
87-86-5	Pentachlorophenol ^a	ND	130	31	ug/kg	
108-95-2	Phenol	ND	66	17	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	160	22	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	160	25	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	160	20	ug/kg	
83-32-9	Acenaphthene	ND	33	11	ug/kg	
208-96-8	Acenaphthylene	ND	33	17	ug/kg	
98-86-2	Acetophenone	ND	160	7.1	ug/kg	
120-12-7	Anthracene	ND	33	20	ug/kg	
1912-24-9	Atrazine ^b	ND UJ	66	14	ug/kg	
56-55-3	Benzo(a)anthracene	ND	33	9.3	ug/kg	
50-32-8	Benzo(a)pyrene	ND	33	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	33	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	33	16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	33	15	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	66	13	ug/kg	
85-68-7	Butyl benzyl phthalate ^b	ND UJ	66	8.0	ug/kg	
92-52-4	1,1'-Biphenyl	ND	66	4.5	ug/kg	
100-52-7	Benzaldehyde	ND	160	8.2	ug/kg	
91-58-7	2-Chloronaphthalene	ND	66	7.8	ug/kg	
106-47-8	4-Chloroaniline	ND	160	12	ug/kg	
86-74-8	Carbazole	ND	66	4.8	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BS-FS-01	Date Sampled:	03/29/19
Lab Sample ID:	JC85448-17A	Date Received:	03/29/19
Matrix:	SO - Soil	Percent Solids:	96.5
Method:	SW846 8270D SW846 3546		
Project:	PPG Site 107, 18 Chapel Avenue, Jersey City, NJ		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam ^b	ND UJ	66	13	ug/kg	
218-01-9	Chrysene	ND	33	10	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	66	7.0	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	66	14	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane) ^b	ND UJ	66	12	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	66	11	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	33	10	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	33	17	ug/kg	
91-94-1	3,3'-Dichlorobenzidine ^b	ND UJ	66	27	ug/kg	
123-91-1	1,4-Dioxane ^a	ND	33	22	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	33	15	ug/kg	
132-64-9	Dibenzofuran	ND	66	13	ug/kg	
84-74-2	Di-n-butyl phthalate ^b	ND UJ	66	5.4	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	66	8.2	ug/kg	
84-66-2	Diethyl phthalate	ND	66	7.0	ug/kg	
131-11-3	Dimethyl phthalate	ND	66	5.9	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate ^b	ND UJ	66	7.7	ug/kg	
206-44-0	Fluoranthene	ND	33	15	ug/kg	
86-73-7	Fluorene	ND	33	15	ug/kg	
118-74-1	Hexachlorobenzene	ND	66	8.3	ug/kg	
87-68-3	Hexachlorobutadiene	ND	33	13	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	330	13	ug/kg	
67-72-1	Hexachloroethane	ND	160	16	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	33	15	ug/kg	
78-59-1	Isophorone	ND	66	7.0	ug/kg	
91-57-6	2-Methylnaphthalene	ND	33	7.4	ug/kg	
88-74-4	2-Nitroaniline ^b	ND UJ	160	7.8	ug/kg	
99-09-2	3-Nitroaniline	ND	160	8.2	ug/kg	
100-01-6	4-Nitroaniline	ND	160	8.5	ug/kg	
91-20-3	Naphthalene	ND	33	9.3	ug/kg	
98-95-3	Nitrobenzene	ND	66	13	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	66	9.5	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	160	12	ug/kg	
85-01-8	Phenanthrene	ND	33	11	ug/kg	
129-00-0	Pyrene	ND	33	11	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	160	8.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	57%		23-115%

ND = Not detected MDL = Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

3.5
3

Client Sample ID: BS-FS-01 Lab Sample ID: JC85448-17A Matrix: SO - Soil Method: SW846 8270D SW846 3546 Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	Date Sampled: 03/29/19 Date Received: 03/29/19 Percent Solids: 96.5
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ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	60%		27-114%
118-79-6	2,4,6-Tribromophenol	68%		19-152%
4165-60-0	Nitrobenzene-d5	72%		26-134%
321-60-8	2-Fluorobiphenyl	65%		39-124%
1718-51-0	Terphenyl-d14	78%		36-134%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	system artifact	2.64	950	ug/kg	J R
	Total TIC, Semi-Volatile		0	ug/kg	

- (a) Associated CCV outside of control limits low. Low level standard analyzed to demonstrate system suitability to detect affected analytes.
- (b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected	MDL = Method Detection Limit	J = Indicates an estimated value
RL = Reporting Limit		B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range		N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BS-FS-01	Date Sampled:	03/29/19
Lab Sample ID:	JC85448-17A	Date Received:	03/29/19
Matrix:	SO - Soil	Percent Solids:	96.5
Project:	PPG Site 107, 18 Chapel Avenue, Jersey City, NJ		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	7570	50	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Antimony ^a	< 4.0	4.0	mg/kg	2	03/30/19	04/02/19	ND SW846 6010D ²	SW846 3050B ³
Arsenic	< 2.0	2.0	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Barium	52.6	20	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Beryllium ^a	< 0.40	0.40	mg/kg	2	03/30/19	04/02/19	ND SW846 6010D ²	SW846 3050B ³
Cadmium	< 0.50	0.50	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Calcium	4230	500	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Chromium	38.0	1.0	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Cobalt ^a	13.0	10	mg/kg	2	03/30/19	04/02/19	ND SW846 6010D ²	SW846 3050B ³
Copper	52.1	2.5	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Iron	17000	50	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Lead	< 2.0	2.0	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Magnesium	8650	500	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Manganese	113	1.5	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Mercury	< 0.035	0.035	mg/kg	1	04/01/19	04/01/19	EAL SW846 7471B ¹	SW846 7471B ⁴
Nickel	25.0	4.0	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Potassium	5890	1000	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Selenium	< 2.0	2.0	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Silver	< 0.50	0.50	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Sodium	< 1000	1000	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Thallium ^a	< 2.0	2.0	mg/kg	2	03/30/19	04/02/19	ND SW846 6010D ²	SW846 3050B ³
Vanadium	38.9	5.0	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Zinc	14.9	5.0	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³

(1) Instrument QC Batch: MA46397

(2) Instrument QC Batch: MA46404

(3) Prep QC Batch: MP13709

(4) Prep QC Batch: MP13740

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

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Report of Analysis

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Client Sample ID: BS-FS-02	Date Sampled: 03/29/19
Lab Sample ID: JC85448-18A	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 96.0
Method: SW846 8270D SW846 3546	
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	2M111381.D	1	04/02/19 11:19	CC	04/01/19 17:55	OP19474	E2M4944

Run #1	Initial Weight	Final Volume
Run #2	31.5 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	66	16	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	170	20	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	170	28	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	170	59	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	120	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	170	35	ug/kg	
95-48-7	2-Methylphenol	ND	66	21	ug/kg	
	3&4-Methylphenol	ND	66	27	ug/kg	
88-75-5	2-Nitrophenol	ND	170	22	ug/kg	
100-02-7	4-Nitrophenol	ND	330	88	ug/kg	
87-86-5	Pentachlorophenol ^a	ND	130	31	ug/kg	
108-95-2	Phenol	ND	66	17	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	170	22	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	170	25	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	170	20	ug/kg	
83-32-9	Acenaphthene	ND	33	11	ug/kg	
208-96-8	Acenaphthylene	ND	33	17	ug/kg	
98-86-2	Acetophenone	ND	170	7.1	ug/kg	
120-12-7	Anthracene	ND	33	20	ug/kg	
1912-24-9	Atrazine ^b	ND UJ	66	14	ug/kg	
56-55-3	Benzo(a)anthracene	ND	33	9.4	ug/kg	
50-32-8	Benzo(a)pyrene	ND	33	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	33	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	33	17	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	33	15	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	66	13	ug/kg	
85-68-7	Butyl benzyl phthalate ^b	ND UJ	66	8.1	ug/kg	
92-52-4	1,1'-Biphenyl	ND	66	4.5	ug/kg	
100-52-7	Benzaldehyde	ND	170	8.2	ug/kg	
91-58-7	2-Chloronaphthalene	ND	66	7.9	ug/kg	
106-47-8	4-Chloroaniline	ND	170	12	ug/kg	
86-74-8	Carbazole	ND	66	4.8	ug/kg	

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BS-FS-02	Date Sampled:	03/29/19
Lab Sample ID:	JC85448-18A	Date Received:	03/29/19
Matrix:	SO - Soil	Percent Solids:	96.0
Method:	SW846 8270D SW846 3546		
Project:	PPG Site 107, 18 Chapel Avenue, Jersey City, NJ		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam ^b	ND UJ	66	13	ug/kg	
218-01-9	Chrysene	ND	33	10	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	66	7.1	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	66	14	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane) ^b	ND UJ	66	12	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	66	11	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	33	10	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	33	17	ug/kg	
91-94-1	3,3'-Dichlorobenzidine ^b	ND UJ	66	28	ug/kg	
123-91-1	1,4-Dioxane ^a	ND	33	22	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	33	15	ug/kg	
132-64-9	Dibenzofuran	ND	66	13	ug/kg	
84-74-2	Di-n-butyl phthalate ^b	ND UJ	66	5.4	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	66	8.2	ug/kg	
84-66-2	Diethyl phthalate	ND	66	7.0	ug/kg	
131-11-3	Dimethyl phthalate	ND	66	5.9	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate ^b	ND UJ	66	7.7	ug/kg	
206-44-0	Fluoranthene	ND	33	15	ug/kg	
86-73-7	Fluorene	ND	33	15	ug/kg	
118-74-1	Hexachlorobenzene	ND	66	8.4	ug/kg	
87-68-3	Hexachlorobutadiene	ND	33	13	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	330	13	ug/kg	
67-72-1	Hexachloroethane	ND	170	16	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	33	16	ug/kg	
78-59-1	Isophorone	ND	66	7.1	ug/kg	
91-57-6	2-Methylnaphthalene	ND	33	7.5	ug/kg	
88-74-4	2-Nitroaniline ^b	ND UJ	170	7.8	ug/kg	
99-09-2	3-Nitroaniline	ND	170	8.3	ug/kg	
100-01-6	4-Nitroaniline	ND	170	8.6	ug/kg	
91-20-3	Naphthalene	ND	33	9.3	ug/kg	
98-95-3	Nitrobenzene	ND	66	13	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	66	9.6	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	170	12	ug/kg	
85-01-8	Phenanthrene	ND	33	11	ug/kg	
129-00-0	Pyrene	ND	33	11	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	170	8.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	58%		23-115%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
 RL = Reporting Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: BS-FS-02 Lab Sample ID: JC85448-18A Matrix: SO - Soil Method: SW846 8270D SW846 3546 Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	Date Sampled: 03/29/19 Date Received: 03/29/19 Percent Solids: 96.0
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ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	65%		27-114%
118-79-6	2,4,6-Tribromophenol	68%		19-152%
4165-60-0	Nitrobenzene-d5	77%		26-134%
321-60-8	2-Fluorobiphenyl	67%		39-124%
1718-51-0	Terphenyl-d14	81%		36-134%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	system artifact	2.63	1500	ug/kg	J R
544-50-0	Cyclic octaatomic sulfur	11.27	160	ug/kg	JN
	Total TIC, Semi-Volatile		160	ug/kg	J

- (a) Associated CCV outside of control limits low. Low level standard analyzed to demonstrate system suitability to detect affected analytes.
- (b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected	MDL = Method Detection Limit	J = Indicates an estimated value
RL = Reporting Limit		B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range		N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: BS-FS-02	Date Sampled: 03/29/19
Lab Sample ID: JC85448-18A	Date Received: 03/29/19
Matrix: SO - Soil	Percent Solids: 96.0
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	8950	52	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Antimony ^a	< 6.2	6.2	mg/kg	3	03/30/19	04/02/19	ND SW846 6010D ²	SW846 3050B ³
Arsenic	4.5	2.1	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Barium	56.1	21	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Beryllium ^a	< 0.62	0.62	mg/kg	3	03/30/19	04/02/19	ND SW846 6010D ²	SW846 3050B ³
Cadmium	< 0.52	0.52	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Calcium	3960	520	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Chromium	31.0	1.0	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Cobalt ^a	19.0	15	mg/kg	3	03/30/19	04/02/19	ND SW846 6010D ²	SW846 3050B ³
Copper	70.4	2.6	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Iron	20500	52	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Lead	3.2	2.1	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Magnesium	9200	520	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Manganese	150	1.5	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Mercury	< 0.031	0.031	mg/kg	1	04/01/19	04/01/19	EAL SW846 7471B ¹	SW846 7471B ⁴
Nickel	23.0	4.1	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Potassium	6410	1000	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Selenium	< 2.1	2.1	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Silver	< 0.52	0.52	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Sodium	< 1000	1000	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Thallium ^a	< 3.1	3.1	mg/kg	3	03/30/19	04/02/19	ND SW846 6010D ²	SW846 3050B ³
Vanadium	39.3	5.2	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³
Zinc	21.0	5.2	mg/kg	1	03/30/19	04/01/19	ND SW846 6010D ²	SW846 3050B ³

(1) Instrument QC Batch: MA46397

(2) Instrument QC Batch: MA46404

(3) Prep QC Batch: MP13709

(4) Prep QC Batch: MP13740

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit