

MSA Sample Results



PPG Site 107

DATA QUALITY ASSESSMENT

18 Chapel Avenue Jersey City, New Jersey

Miscellaneous Analyses SDG # JD17176 Analyses Performed By:

SGS Accutest Dayton, New Jersey

Report #39871R Review Level: Tier II Project: 30065658.0003

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # JD17176 for samples collected in association with the PPG Industries Site at 18 Chapel Avenue, NJ. The review was conducted as a Tier II 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			Analysis
Sample ID	Lab ID	Matrix	Collection Date	Parent Sample	MISC
SW-B43(6.0-6.5)	JD17176-1	Soil	12/04/2020		Х
SW-B43(8.0-8.5)	JD17176-2	Soil	12/04/2020		Х
SW-B42(0.0-0.5)	JD17176-3	Soil	12/04/2020		Х
SW-B42(2.0-2.5)	JD17176-4	Soil	12/04/2020		Х
SW-B42(4.0-4.5)	JD17176-5	Soil	12/04/2020		Х
SW-B42(6.0-6.5)	JD17176-6	Soil	12/04/2020		Х
SW-B42(8.0-8.5)	JD17176-7	Soil	12/04/2020		Х
SW-B42(9.0-9.5)	JD17176-8	Soil	12/04/2020		Х
FB	JD17176-9F	Soil	12/04/2020		Х

Notes:

MISC - Miscellaneous analysis includes Hexavalent Chromium, Sulfide, TOC, Ferrous Iron and pH.

ANALYTICAL DATA PACKAGE DOCUMENTATION

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

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

Note:

QA - Quality Assurance

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 7196A, 9045D, ASTM D1498-76M, SM4500S2-A-11 and LLOYD KAHN 1988 MOD. Data were reviewed in accordance with USEPA Region 2 SOP HW-2b, Revision 15 (December 2012), and NJ DEP Data Quality Assessment and Data Usability Evaluation Technical Guidance, New Jersey Department of Environmental Protection, Site Remediation Program (April 2014).

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.

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.

DATA REVIEW REPORT

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	Soil	21 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. Matrix Spike (MS)/Post-Digestion Spike (PDS)/Laboratory Duplicate Analysis

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

3.1 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 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.

MS analysis was performed on sample ID SW-B43(6.0-6.5). Samples associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Location	Analyte	Initial Spike Recovery	Reanalysis Spike Recovery	
SW-B43 (6.0-6.5)	Hexavalent Chromium, Soluble	< 50%	< 50%	

The criteria used to evaluate spike recoveries are presented in the following table. The qualifications are applied to the parent sample results only. In the event of a recovery outside of the control limits, the MS must be reanalyzed.

DATA REVIEW REPORT

Control limit	Sample Result	Qualification ¹
	Non-detect	UJ-
Spike recovery $\ge 50\%$ but < 75%	Detect	J-
0.1	Non-detect	R
Spike recovery < 50%	Detect	R
Spike recovery > 125%	Non-detect	No Action
Spike recovery > 125% but ≤ 150%	Detect	J+
Spike recovery > 150%	Detect	R

Notes:

¹ If recoveries are < 50% or > 150% for both insoluble and soluble spikes, associated data will be rejected ("R"); otherwise qualify associated data if one of the spikes is outside the < 50% or > 150% limits.

The original analyses of the field samples are usable with appropriate qualification. No sample results were rejected.

3.2 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 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 ± the RL is used.

The laboratory duplicate analysis was performed on sample ID SW-B43(6.0-6.5). The laboratory duplicate analysis exhibited a RPD within the control limit.

4. 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.

A filed duplicate sample was not collected for the samples from this SDG.

5. 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.

6. 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.

HEXAVALENT CHROMIUM: SW-846 7196A	Rep	orted		mance ptable	Not Required
	No	Yes	No	Yes	
Spectrophotometer					
Tier II Validation					
Holding Times		X		Х	
Reporting limits (units)		Х		Х	
Blanks		-	1	1	1
A. Instrument Blanks	Х				Х
B. Method Blanks		Х		Х	
C. Equipment/Field Blanks		Х		Х	
Laboratory Control Sample (LCS)		Х		Х	
Matrix Spike (MS) %R		Х	Х		
Matrix Spike Duplicate (MSD) %R	Х				Х
MS/MSD Precision (RPD)	Х				Х
Field/Lab Duplicate (RPD)	Х				Х
Dilution Factor		Х		Х	
Total vs Dissolved %D	Х				Х

DATA VALIDATION CHECKLIST FOR HEXAVALENT CHROMIUM

Notes:

%R Percent recovery

RPD Relative percent difference

%RSD Relative percent deviation

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 SW 846 9045D	Soil	24 hours of receipt at laboratory	Cool to <6°C
Ferrous Iron by ASTM D3872-86	Soil	24hours from collection to analysis	Cool to <6 °C
Sulfide SM4500S2- A-11	Soil	7 days from collection to analysis	Cool to <6°C
Total Organic Carbon LLOYD KAHN 1988 MOD	Soil	28 days from collection to analysis	Cool to <6°C

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

Sample ID	Method	Holding Time	Criteria
	pH by SW 846 9045D	> 48hours	24 hours of receipt at laboratory
SW-B43(6.0-6.5)	Ferrous Iron by ASTM D3872-86	16 days	24 hours of receipt at laboratory
	Sulfide SM4500S2- A-11	16 days	7 days from collection to analysis
SW-B43(8.0-8.5)	pH by SW 846 9045D	> 48hours	24 hours of receipt at laboratory
SW-B42(0.0-0.5)	pH by SW 846 9045D	> 48hours	24 hours of receipt at laboratory
SW-B42(2.0-2.5)	pH by SW 846 9045D	> 48hours	24 hours of receipt at laboratory
SW-B42(4.0-4.5)	pH by SW 846 9045D	> 48hours	24 hours of receipt at laboratory
SW-B42(6.0-6.5)	pH by SW 846 9045D	> 48hours	24 hours of receipt at laboratory
SW-B42(8.0-8.5)	pH by SW 846 9045D	> 48hours	24 hours of receipt at laboratory
SW-B42(9.0-9.5)	pH by SW 846 9045D	> 48hours	24 hours of receipt at laboratory
FB	pH by SW 846 9045D	> 48hours	24 hours of receipt at laboratory

Sample results associated with sample locations analyzed outside holding time were qualified, as specified in the table below. All other holding times were met.

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

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.

DATA REVIEW REPORT

3. 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 ± the RL is applied.

The laboratory duplicate analysis was not performed on samples from this data package.

4. MS/MSD Analysis

All 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. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD analysis was not performed on samples from this data package.

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.

A filed duplicate sample was not collected for the samples from this SDG.

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.

General Chemistry: SW 8469045D, ASTM D3872-86, SM4500S2-A-11 and LLOYD KAHN		orted		mance otable	Not Required
1988 MOD	No	Yes	No	Yes	rioquirou
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X	Х		
Reporting limits (units)		Х		Х	
Blanks					
A. Instrument Blanks	Х				Х
B. Method blanks		Х		Х	
C. Field blanks		Х		Х	
Laboratory Control Sample (LCS) %R		Х		Х	
Laboratory Control Sample Duplicate (LCSD) %R	Х				Х
LCS/LCSD Precision (RPD)	Х				Х
Matrix Spike (MS) %R	Х				Х
Matrix Spike Duplicate (MSD) %R	Х				Х
MS/MSD Precision (RPD)	Х				Х
Field/Lab Duplicate (RPD)					Х
Dilution Factor		Х		Х	

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

Notes:

%R Percent recovery

RPD Relative percent difference

VALIDATION PERFORMED BY: Prashanth K

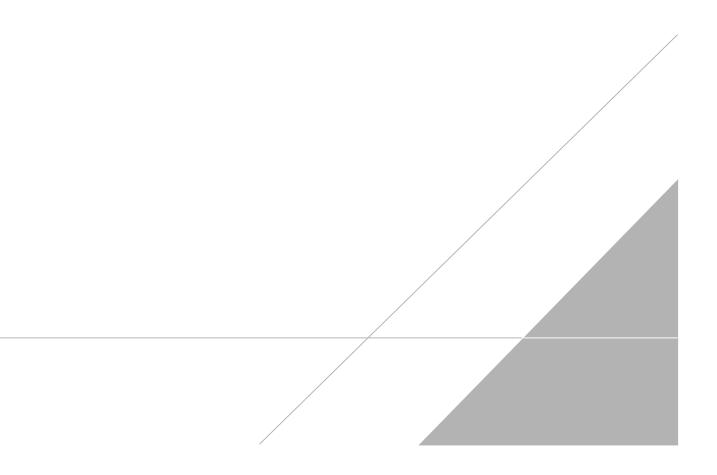
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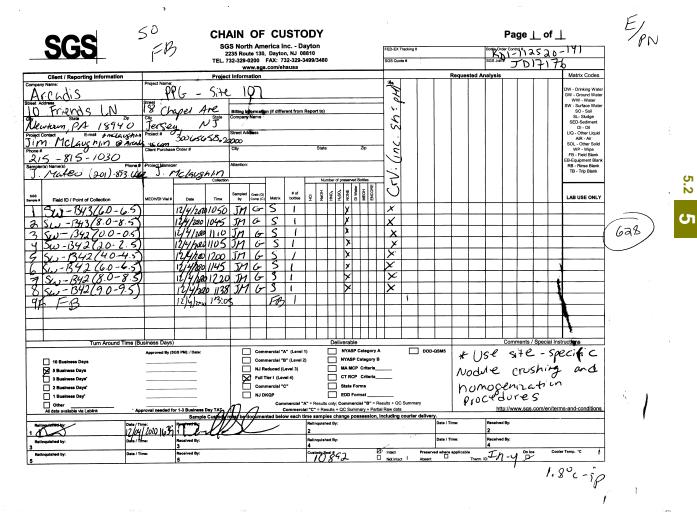
DATE: January 12, 2021

PEER REVIEW: Rachelle Borne

DATE: January 13, 2021

CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS





EHSA-QAC-0023-02-FORM-Dayton - Standard COC.xtsx

JD17176: Chain of Custody



			Repo	rt of Ar	nalysis			Page 1 of 1
Client Sample ID: Lab Sample ID: Matrix:	SW-B43 JD17176 SO - Soi	-1					Sampled: 12/04/20 Received: 12/04/20	
Matrix: Project:		107, 18 Chap	el Avenue	e, Jersey Ci	ty, NJ		nt Solids: 84.5	4
General Chemistry	7]
Analyte		Result	RL	MDL	Units	DF	Analyzed By M	Method
Chromium, Hexava Redox Potential Vs Solids, Percent pH ^a		ND UJ 447 84.5 7.65 J	0.46	0.37	mg/kg mv % su	1 1 1 1	12/07/20 12:14 RI A 12/07/20 16:32 BG S	SW846 3060A/7196A ASTM D1498-76M SM2540 G 18TH ED MOD SW846 9045D

(a) Temp of pH Reading: 18.6 Deg. C



JD17176

			Repo	rt of Ai	nalysis		Page 1 of 1
Client Sample ID:	SW-B43(6.0-6.5)					
Lab Sample ID:	JD17176	-1R				Date S	Sampled: 12/04/20
Matrix:	SO - Soil					Date I	Received: 12/04/20
						Percer	nt Solids: 84.5
Project:	PPG Site	107, 18 Cha	ipel Avenue	, Jersey Ci	ity, NJ		
General Chemistry	,						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	1.3 J	0.47	0.37	mg/kg	1	12/15/20 13:28 RI SW846 3060A/719



4.2 4

Client Sample ID: Lab Sample ID: Matrix:	SW-B43(6.0-6.5) JD17176-1RT SO - Soil				Date 1	Sampled: 12/04/20
Project:	PPG Site 107, 18 Chape	el Avenue,	Jersey Ci	ty, NJ	Perce	nt Solids: 84.5
General Chemistry						
Analyte	Result	RL	MDL	Units	DF	Analyzed By Method
Iron, Ferrous ^a Sulfide Screen ^b Total Organic Carbo	1.1 J NEGATIVE	0.20 R	0.092 92	% mg/kg	1 1 1	12/20/20 12:36 MP ASTM D3872-86 12/20/20 12:30 MP SM4500S2- A-11 12/29/20 12:54 BM LLOYD KAHN 1988 MOD

Report of Analysis

(a) The ferrous iron test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(b) The sulfide screen test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(c) Analysis done out of holding time.



			-		·		0	
Client Sample ID:	SW-B43	` '					S 1 1 10/04/90	4.4
Lab Sample ID:	JD17176						Sampled: 12/04/20	4
Matrix:	SO - Soi	l				Date 1	Received: 12/04/20	
						Percer	nt Solids: 83.2	4
Project:	PPG Site	e 107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			
			_	-	-			
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent	ND	0.47	0.37	mg/kg	1	12/09/20 15:39 RI SW846 3060A/7196A	
Redox Potential Vs	H2	464			mv	1	12/07/20 12:18 RI ASTM D1498-76M	
Solids, Percent		83.2			%	1	12/07/20 16:32 BG SM2540 G 18TH ED M	OD
pH ^a		7.90 J			su	1	12/07/20 12:14 RI SW846 9045D	-
P.1		1.00 0			Ju	-	1W/01/W0 1W.11 1W1 5W010 J015D	

Report of Analysis

(a) Temp of pH Reading: 18.6 Deg. C



JD17176

			Repo	rt of Ai	nalysis		Р	age 1 of 1
Client Sample ID:		,					S 1 1 10/04/00	
Lab Sample ID:	JD17176						Sampled: 12/04/20	
Matrix:	SO - Soil	l					Received: 12/04/20 nt Solids: 83.2	
Project:	PPG Site	107, 18 Cha	ipel Avenue	, Jersey Ci	ity, NJ	rercei	it Solius: 63.2	
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Met	hod
Chromium, Hexava	lent	0.58	0.46	0.37	mg/kg	1	12/15/20 13:36 RI SW84	16 3060A/7196A

Report of Analysis



JD17176

4.5 4

Client Sample ID: Lab Sample ID: Matrix:	SW-B420 JD17176 SO - Soil	-3				Date 1	Sampled: 12/04/20 Received: 12/04/20 nt Solids: 93.5
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ		
General Chemistry							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	ND	0.42	0.34	mg/kg	1	12/09/20 15:39 RI SW846 3060A/7196A
Redox Potential Vs	H2	411			mv	1	12/07/20 12:00 RI ASTM D1498-76M
Solids, Percent		93.5			%	1	12/07/20 16:32 BG SM2540 G 18TH ED MOD
pH ^a		8.35 J			su	1	12/07/20 11:59 RI SW846 9045D

Report of Analysis

(a) Temp of pH Reading: 18.5 Deg. C



JD17176

Client Sample ID:	SW-B42(0.0-0.5)					
Lab Sample ID:	JD17176					Date S	Sampled: 12/04/20
Matrix:	SO - Soil					Date 1	Received: 12/04/20
						Percer	nt Solids: 93.5
Project:	PPG Site	107, 18 Cha	ipel Avenue	, Jersey Ci	ty, NJ		
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method

Report of Analysis

JD17176

4.7 4

Client Sample ID: Lab Sample ID: Matrix:	SW-B42(JD17176 SO - Soil	-4		I O		Date 1	Sampled: 12/04/20 Received: 12/04/20 nt Solids: 88.2
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ		
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava Redox Potential Vs		ND 457	0.45	0.36	mg/kg mv	1 1	12/09/20 15:39 RI SW846 3060A/7196A 12/07/20 12:20 RI ASTM D1498-76M
Solids, Percent pH ^a		88.2 8.19 J			% su	1 1	12/07/20 16:32 BG SM2540 G 18TH ED MO 12/07/20 12:17 RI SW846 9045D

Report of Analysis

(a) Temp of pH Reading: 18.5 Deg. C



			Repo	rt of A1	nalysis			Page 1 of 1
Client Sample ID:		· · ·				_		
Lab Sample ID:	JD17176						Sampled: 12/04/20	
Matrix:	SO - Soi	l					Received: 12/04/20	
						Percer	nt Solids: 88.2	
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By M	lethod
Chromium, Hexava	lent	ND	0.46	0.36	mg/kg	1	12/15/20 13:36 RI SV	W846 3060A/7196A

Report of Analysis

RL = **Reporting Limit** MDL = Method Detection Limit



JD17176

4.9 4

			Repo	rt of Ai	nalysis			Page 1 of 1
Client Sample ID: Lab Sample ID: Matrix:	SW-B42(JD17176 SO - Soil	-5					Sampled: 12/04/20 Received: 12/04/20	U
Project:	PPG Site	107, 18 Chaj	oel Avenue	e, Jersey Ci	ity, NJ	Perce	nt Solids: 87.1	4
General Chemistry Analyte		Result	RL	MDL	Units	DF	Analyzed By 1	Method
Chromium, Hexaval Redox Potential Vs I Solids, Percent pH ^a		ND 443 87.1 8.15 J	0.45	0.36	mg/kg mv % su	1 1 1 1	12/07/20 12:25 RI / 12/07/20 16:32 BG S	SW846 3060A/7196A ASTM D1498-76M SM2540 G 18TH ED MOD SW846 9045D

(a) Temp of pH Reading: 18.8 Deg. C



JD17176

			Repo	rt of Ai	nalysis		Page 1 of 1
Client Sample ID: Lab Sample ID:	SW-B42 JD17176	` '				Date S	ampled: 12/04/20
Matrix:	SO - Soi	1					Received: 12/04/20 nt Solids: 87.1
Project:	PPG Site	e 107, 18 Cha	pel Avenue	, Jersey Ci	ity, NJ		
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	ND	0.45	0.35	mg/kg	1	12/15/20 13:36 RI SW846 3060A/719

4.11 4

Client Sample ID: Lab Sample ID: Matrix:	SW-B42(6 JD17176-(SO - Soil	,				Date 1	Sampled: 12/04/20 Received: 12/04/20 nt Solids: 85.8
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ		
General Chemistry							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	ent	ND	0.46	0.37	mg/kg	1	12/09/20 15:39 RI SW846 3060A/7196A
Redox Potential Vs	H2	437			mv	1	12/07/20 12:29 RI ASTM D1498-76M
Solids, Percent		85.8			%	1	12/07/20 16:32 BG SM2540 G 18TH ED MC
pH ^a		8.19 J			su	1	12/07/20 12:24 RI SW846 9045D

Report of Analysis

(a) Temp of pH Reading: 18.8 Deg. C



Climat Gammala ID.	CW D49						
Client Sample ID:	SW-B42(JD17176	· · ·				Data (Sampled: 12/04/20
Lab Sample ID: Matrix:	SO - Soil						Received: 12/04/20
Maurix:	30 - 301	l					nt Solids: 85.8
Project:	PPG Site	107, 18 Cha	apel Avenue	, Jersey Ci	ty, NJ	1 01 00	
General Chemistry	,						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	0.46	0.46	0.36	mg/kg	1	12/15/20 13:36 RI SW846 3060A/7196A

Report of Analysis

26 of 120 SGS JD17176

4.13 4

Client Sample ID: Lab Sample ID: Matrix:	SW-B42(8 JD17176- SO - Soil	,				Date 1	Sampled: 12/04/20 Received: 12/04/20 nt Solids: 85.7
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ		
General Chemistry	,						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	ND	0.46	0.36	mg/kg	1	12/09/20 15:39 RI SW846 3060A/7196A
Redox Potential Vs	H2	435			mv	1	12/07/20 12:31 RI ASTM D1498-76M
Solids, Percent		85.7			%	1	12/07/20 16:32 BG SM2540 G 18TH ED MO
pH ^a		8.14 J			su	1	12/07/20 12:29 RI SW846 9045D

Report of Analysis

(a) Temp of pH Reading: 18.9 Deg. C



JD17176

			Repo	rt of A1	nalysis		Page 1 of 1
Client Sample ID:	SW-B42						1 10/04/00
Lab Sample ID: Matrix:	JD17176 SO - Soil						Sampled: 12/04/20 Received: 12/04/20
11444117.	50 501	L.					nt Solids: 85.7
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ity, NJ		
General Chemistry	,						I
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	ND	0.48	0.38	mg/kg	1	12/15/20 13:36 RI SW846 3060A/7196.

4.15 **4**

Client Sample ID: Lab Sample ID: Matrix:	SW-B42(JD17176 SO - Soil	-8				Date 1	Sampled: 12/04/20 Received: 12/04/20 nt Solids: 84.8	4.16 4
Project:	PPG Site	107, 18 Cha	pel Avenue	e, Jersey Ci	ty, NJ			
General Chemistry								
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava		0.94	0.46	0.36	mg/kg	1	12/09/20 15:39 RI SW846 3060A/7196A	A
Redox Potential Vs	H2	420			mv	1	12/07/20 12:36 RI ASTM D1498-76M	
Solids, Percent		84.8			%	1	12/07/20 16:32 BG SM2540 G 18TH ED	MOD
pH ^a		8.49 J			su	1	12/07/20 12:32 RI SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 18.9 Deg. C



JD17176

			Repo	rt of Aı	nalysis			Page 1 of 1
Client Sample ID: Lab Sample ID:	JD17176	-8R					Sampled: 12/04/20	
Matrix:	SO - Soi	l					Received: 12/04/20 nt Solids: 84.8	
Project:	PPG Site	e 107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Me	ethod
Chromium, Hexava	lent	ND	0.46	0.37	mg/kg	1	12/15/20 13:36 RI SW	/846 3060A/7196A

Report of Analysis





SGS

30 of 120 JD17176

Client Sample ID: Lab Sample ID: Matrix:	D: FB JD17176-9F AQ - Field Blank Soil					Date Sampled: 12/04/20 Date Received: 12/04/20 Percent Solids: n/a			
Project:	PPG Site	e 107, 18 Cha	pel Avenue,	Jersey Cit	y, NJ				
General Chemistry	y								
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method		
Chromium, Hexava Redox Potential Vs pH ^a		ND 437 5.44 J	0.010	0.0058	mg/l mv su	1 1 1	12/04/20 22:44 EB SW846 7196A 12/07/20 11:34 RI ASTM D1498-76 12/07/20 09:22 DG SM4500H+ B-11		

Report of Analysis

(a) Sample received out of holding time for pH analysis. Temp of pH Reading: 6.5 Deg. C

JD17176

4.18 4



PPG Site 107

DATA QUALITY ASSESSMENT

18 Chapel Avenue Jersey City, New Jersey

Miscellaneous Analyses SDG # JD17304 Analyses Performed By: SGS Accutest Dayton, New Jersey

Report #39872R Review Level: Tier II Project: 30065658.0003

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # JD17304 for samples collected in association with the PPG Industries Site at 18 Chapel Avenue, NJ. The review was conducted as a Tier II 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		Analysis
Sample ID	Lab ID	Matrix	Collection Date	Parent Sample	MISC
SW-B41(0.0-0.5)	JD17304-1	Soil	12/07/2020		Х
SW-B40(0.0-0.5)	JD17304-4	Soil	12/07/2020		Х
SW-B40(4.0-4.5)	JD17304-6	Soil	12/07/2020		Х
SW-B39(0.0-0.5)	JD17304-7	Soil	12/07/2020		Х
SW-B38(0.0-0.5)	JD17304-8	Soil	12/07/2020		Х
SW-B38(2.0-2.5)	JD17304-9	Soil	12/07/2020		Х
SW-B37(0.0-0.5)	JD17304-12	Soil	12/07/2020		Х
FB(20201207)	JD17304-13	Soil	12/07/2020		Х

Notes:

MISC - Miscellaneous analysis includes Hexavalent Chromium, Sulfide, TOC, Ferrous Iron and pH.

ANALYTICAL DATA PACKAGE DOCUMENTATION

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

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

Note:

QA - Quality Assurance

10. Sample IDs SW-B41(2.0 - 2.5), SW-B41(4.0 - 4.5), SW-B40(2.0 - 2.5), SW-B35(0.0 - 0.5) and SW-B35(0.0 - 0.5) were listed in chain of custody. But these samples were not analyzed as per communication from project team.

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 7196A, 9045D, ASTM D1498-76M, SM4500S2-A-11 and LLOYD KAHN 1988 MOD. Data were reviewed in accordance with USEPA Region 2 SOP HW-2b, Revision 15 (December 2012), and NJ DEP Data Quality Assessment and Data Usability Evaluation Technical Guidance, New Jersey Department of Environmental Protection, Site Remediation Program (April 2014).

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.

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.

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	Soil	21 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. Matrix Spike (MS)/Post-Digestion Spike (PDS)/Laboratory Duplicate Analysis

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

3.1 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 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.

MS analysis was performed on sample ID SW-B37(0.0-0.5). Samples associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Location	Analyte	Initial Spike Recovery	Reanalysis Spike Recovery
SW-B37(0.0-0.5)	Hexavalent Chromium, Soluble	< 50%	74.6%

The criteria used to evaluate spike recoveries are presented in the following table. The qualifications are applied to the parent sample results only. In the event of a recovery outside of the control limits, the MS must be reanalyzed.

Control limit	Sample Result	Qualification ¹
	Non-detect	UJ-
Spike recovery ≥ 50% but < 75%	Detect	J-

Control limit	Sample Result	Qualification ¹			
0.1	Non-detect	R			
Spike recovery < 50%	Detect	R			
Spike recovery > 125%	Non-detect	No Action			
Spike recovery > 125% but \leq 150%	Detect	J+			
Spike recovery > 150%	Detect	R			

Notes:

¹ If recoveries are < 50% or > 150% for both insoluble and soluble spikes, associated data will be rejected ("R"); otherwise qualify associated data if one of the spikes is outside the < 50% or > 150% limits.

The original analyses of the field samples are usable with appropriate qualification. No sample results were rejected.

3.2 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 four times the RL. A control limit of 50% 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.

The laboratory duplicate analysis was performed on sample ID SW-B37(0.0-0.5). The laboratory duplicate analysis exhibited a RPD within the control limit.

4. 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.

A filed duplicate sample was not collected for the samples from this SDG.

5. 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.

6. 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.

HEXAVALENT CHROMIUM: SW-846 7196A	Rep	orted		mance ptable	Not Required		
	No	Yes	No	Yes			
Spectrophotometer							
Tier II Validation							
Holding Times		X		Х			
Reporting limits (units)		Х		Х			
Blanks	I		-		1		
A. Instrument Blanks	Х				X		
B. Method Blanks		Х		Х			
C. Equipment/Field Blanks		Х		Х			
Laboratory Control Sample (LCS)		Х		Х			
Matrix Spike (MS) %R		Х	Х				
Matrix Spike Duplicate (MSD) %R	Х				Х		
MS/MSD Precision (RPD)	Х				Х		
Field/Lab Duplicate (RPD)		Х		Х			
Dilution Factor		Х		Х			
Total vs Dissolved %D	Х				Х		

DATA VALIDATION CHECKLIST FOR HEXAVALENT CHROMIUM

Notes:

%R Percent recovery

RPD Relative percent difference

%RSD Relative percent deviation

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 SW 846 9045D	Soil	24 hours of receipt at laboratory	Cool to <6°C		
Ferrous Iron by ASTM D3872-86	Soil	24hours from collection to analysis	Cool to <6 °C		
Sulfide SM4500S2- A-11	Soil	7 days from collection to analysis	Cool to <6°C		
Total Organic Carbon LLOYD KAHN 1988 MOD	Soil	28 days from collection to analysis	Cool to <6°C		

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

Sample ID	Method	Holding Time	Criteria					
pH by SW 846 9045D		> 24hours	24 hours of receipt at laboratory					
SW-B37(0.0-0.5)	Ferrous Iron by ASTM D3872-86	13 days	24 hours of receipt at laboratory					
	Sulfide SM4500S2- A-11	13 days	7 days from collection to analysis					
SW-B41(0.0-0.5)	pH by SW 846 9045D	> 24hours	24 hours of receipt at laboratory					
SW-B40(0.0-0.5)	pH by SW 846 9045D	> 24hours	24 hours of receipt at laboratory					
SW-B40(4.0-4.5)	pH by SW 846 9045D	> 24hours	24 hours of receipt at laboratory					
SW-B39(0.0-0.5)	pH by SW 846 9045D	> 24hours	24 hours of receipt at laboratory					
SW-B38(0.0-0.5)	pH by SW 846 9045D	> 24hours	24 hours of receipt at laboratory					
SW-B38(2.0-2.5)	pH by SW 846 9045D	> 24hours	24 hours of receipt at laboratory					
FB(20201207)	pH by SW 846 9045D	> 24hours	24 hours of receipt at laboratory					

Sample results associated with sample locations analyzed outside holding time were qualified, as specified in the table below. All other holding times were met.

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

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. 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 ± the RL is applied.

The laboratory duplicate analysis was not performed on samples from this data package.

4. MS/MSD Analysis

All 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. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

MS analysis performed on sample ID SW-B37(0.0-0.5) for total organic carbon. MS recovery exceeding the control limits tabulated below.

Sample ID	Analyte	MS Recovery
SW-B37(0.0-0.5)	Total Organic Carbon	>UL

The criteria used to evaluate MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified. The qualifications are applied to all sample results associated with this SDG.

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

Control limit	Sample Result	Qualification
MS percent recovery 30% to 74%	Non-detect	UJ
	Detect	J
MS percent recovery <30%	Non-detect	R
Nis percent recovery <30 %	Detect	J
MS percept receiver / > 12EP/	Non-detect	No Action
MS percent recovery >125%	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.

A filed duplicate sample was not collected for the samples from this SDG.

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 VALIDATION CHECKLISTTOK GENERAL CHEMISTRT											
General Chemistry: SW 8469045D, ASTM D3872-86, SM4500S2-A-11 and LLOYD KAHN	Rep	orted		mance otable	Not Required						
1988 MOD	No	Yes	No	Yes	rioquirou						
Miscellaneous Instrumentation											
Tier II Validation											
Holding times		Х	Х								
Reporting limits (units)		Х		Х							
Blanks											
A. Instrument Blanks	Х				Х						
B. Method blanks		Х		Х							
C. Field blanks		Х		Х							
Laboratory Control Sample (LCS) %R		Х		Х							
Laboratory Control Sample Duplicate (LCSD) %R	Х				Х						
LCS/LCSD Precision (RPD)	Х				Х						
Matrix Spike (MS) %R		Х	Х								
Matrix Spike Duplicate (MSD) %R	Х				Х						
MS/MSD Precision (RPD)	Х				Х						
Field/Lab Duplicate (RPD)	Х				Х						
Dilution Factor		Х		Х							

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

Notes:

%R Percent recovery

RPD Relative percent difference

VALIDATION PERFORMED BY: Prashanth K

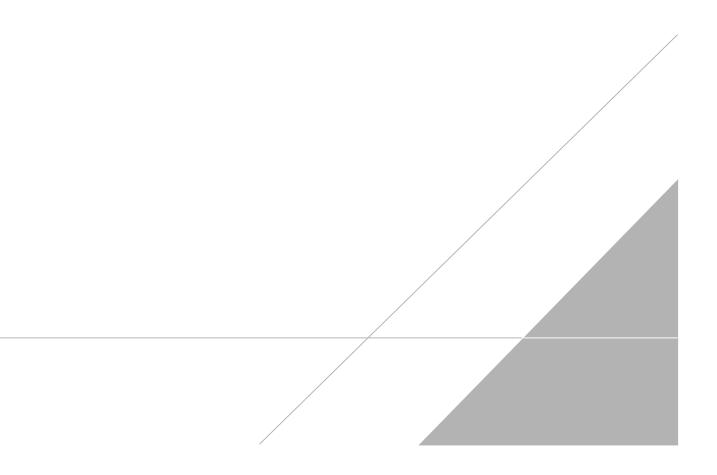
SIGNATURE:

DATE: January 12, 2021

PEER REVIEW: Rachelle Borne

DATE: January 13, 2021

CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS



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803									TET	5	13									- Inp Mark	
Sample # Field ID / Point of Collection	MEOH/DI Via		Time	Sampled Gra by Con	b (G) np (C) Matrix	# of bottles	<u> </u>	NN, HNO,	DI Wate	ENCORE	0										
1 Sw- B41 (0.0	-0.5)	12/07/20	0830	5n (55	1			XT	TT	X				+	+	$ \vdash $		+	LAB USE ONLY	
2 SW-B41(2.0	-2.5)	12/07/20	0835	SMC	- 5	1			x		×			+	+	+			+	D28	
3 Sw-B41(40.	4.5)	1263/20	0840	KN 6	r 5	1			×	++	X				+				+		
4 Sw - B40 (0.0.	-0.51	12/03/10	005	SH C	- 5	i			x +	++	X				+					628	
5 RW- B40 (2.0.	- 1.5)	12/05/00	Ono	JM 6	- 5	1			1		X				1	<u>├</u>			+		
6 SW -1340741	-4.5)	Viotho	(JAN)	JM G	r 3	1		+ + +	×		X										
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JD17304: Chain of Custody Page 1 of 7



JD17304



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JD17304: Chain of Custody Page 2 of 7



SGS



5.2

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Client Sample ID: Lab Sample ID: Matrix:	SW-B41 JD17304 SO - Soi					Date 1	Sampled: 12/07/20 Received: 12/07/20 nt Solids: 81.3	4.1
Project:	PPG Site	e 107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			
General Chemistry	7						L	
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent	ND	0.49	0.39	mg/kg	1	12/11/20 13:33 RI SW846 3060A/7196	A
Redox Potential Vs	H2	296			mv	1	12/08/20 15:00 ER ASTM D1498-76M	
Solids, Percent		81.3			%	1	12/09/20 16:09 BG SM2540 G 18TH EI	D MOD
pH ^a		8.03 J			su	1	12/08/20 13:00 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.8 Deg. C

JD17304

Client Sample ID: Lab Sample ID: Matrix:	SW-B41(JD17304 SO - Soil	-1R				Date I	Sampled: 12/07/20 Received: 12/07/20 nt Solids: 81.3
Project:	PPG Site	107, 18 Cha	apel Avenue	, Jersey Ci	ity, NJ		
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	0.65	0.49	0.39	mg/kg	1	12/18/20 12:24 RI SW846 3060A/7196A

Report of Analysis



Client Sample ID: Lab Sample ID: Matrix:	SW-B40 JD17304 SO - Soi	-4				Date 1	Sampled: 12/07/20 Received: 12/07/20 nt Solids: 83.3	در ا
Project:	PPG Site	e 107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			
General Chemistry								
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent	0.44 J	0.48	0.38	mg/kg	1	12/11/20 13:33 RI SW846 3060A/7196A	
Redox Potential Vs	H2	303			mv	1	12/08/20 15:21 ER ASTM D1498-76M	
Solids, Percent		83.3			%	1	12/09/20 16:09 BG SM2540 G 18TH ED MOD)
pH ^a		8.32 J			su	1	12/08/20 13:12 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 25. Deg. C



JD17304

Client Sample ID:	SW-B40(0.0-0.5)					
Lab Sample ID:	JD17304-	-4R				Date S	Sampled: 12/07/20
Matrix:	SO - Soil					Date 1	Received: 12/07/20
						Percer	nt Solids: 83.3
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ		
General Chemistry							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method

Report of Analysis



JD17304

Client Sample ID: Lab Sample ID: Matrix:	SW-B40 JD17304 SO - Soi	-6				Date 1	Sampled: 12/07/20 Received: 12/07/20 nt Solids: 87.5	4.5 4
Project:	PPG Site	e 107, 18 Cha	pel Avenue	e, Jersey Ci	ty, NJ			
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent	0.97	0.45	0.36	mg/kg	1	12/11/20 13:33 RI SW846 3060A/7196A	
Redox Potential Vs	H2	304			mv	1	12/08/20 15:27 ER ASTM D1498-76M	
Solids, Percent		87.5			%	1	12/09/20 16:09 BG SM2540 G 18TH ED N	10D
pH ^a		8.05 J			su	1	12/08/20 13:18 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.9 Deg. C



JD17304

			Repo	rt of Ai	nalysis		Page 1 of 1
Client Sample ID:	SW-B40(
Lab Sample ID:	JD17304	-6R				Date S	Sampled: 12/07/20
Matrix:	SO - Soil					Date 1	Received: 12/07/20
						Percer	nt Solids: 87.5
Project:	PPG Site	107, 18 Cha	apel Avenue	, Jersey Ci	ity, NJ		
General Chemistry							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	ND	0.45	0.36	mg/kg	1	12/18/20 12:24 RI SW846 3060A/719



4.6

4

Client Sample ID: Lab Sample ID: Matrix: Project:	JD17304 SO - Soi		pel Avenue	, Jersey Ci	ty, NJ	Date 1	Sampled: 12/07/20 Received: 12/07/20 nt Solids: 90.7	4.7 4
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava Redox Potential Vs Solids, Percent pH ^a		ND 294 90.7 8.59 J	0.45	0.35	mg/kg mv % su	1 1 1 1	12/11/20 13:33 RI SW846 3060A/7196/ 12/08/20 15:29 ER ASTM D1498-76M 12/09/20 16:09 BG SM2540 G 18TH EE 12/08/20 13:21 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.9 Deg. C



Client Sample ID: Lab Sample ID: Matrix:	SW-B39(JD17304 SO - Soil	-7 R				Date 1	Sampled: 12/07/20 Received: 12/07/20 nt Solids: 90.7
Project:	PPG Site	e 107, 18 Cha	ipel Avenue	, Jersey Ci	ty, NJ		
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	1.0	0.43	0.34	mg/kg	1	12/18/20 12:24 RI SW846 3060A/7196A

Report of Analysis



JD17304

4.8 4

Client Sample ID: Lab Sample ID: Matrix:	SW-B38(JD17304 SO - Soil	-8				Date 1	Sampled: 12/07/20 Received: 12/07/20 nt Solids: 90.5	4.9
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			
General Chemistry								
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexaval	ent	ND	0.45	0.36	mg/kg	1	12/11/20 13:33 RI SW846 3060A/7196A	
Redox Potential Vs	H2	307			mv	1	12/08/20 15:40 ER ASTM D1498-76M	
Solids, Percent		90.5			%	1	12/09/20 16:09 BG SM2540 G 18TH ED MOI	D
pH ^a		8.12 J			su	1	12/08/20 13:24 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.9 Deg. C



Page 1 of 1

JD17304

Client Sample ID: Lab Sample ID: Matrix:	SW-B38(JD17304 SO - Soil	-8R				Date 1	Sampled: 12/07/20 Received: 12/07/20 nt Solids: 90.5
Project:	PPG Site	e 107, 18 Cha	apel Avenue	, Jersey Ci	ty, NJ		
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	ND	0.43	0.34	mg/kg	1	12/18/20 12:24 RI SW846 3060A/7196A

Report of Analysis

RL = Reporting Limit MDL = Method Detection Limit

4.10 4

Client Sample ID: Lab Sample ID: Matrix:	SW-B38(JD17304 SO - Soil	-9				Date 1	Sampled: 12/07/20 Received: 12/07/20 nt Solids: 90.5	-	4.11
Project:	PPG Site	107, 18 Cha	pel Avenue	e, Jersey Ci	ty, NJ				
General Chemistry	7								
Analyte		Result	RL	MDL	Units	DF	Analyzed By	Method	
Chromium, Hexava Redox Potential Vs Solids, Percent pH ^a		0.80 279 90.5 7.94 J	0.45	0.36	mg/kg mv % su	1 1 1	12/08/20 15:54 ER	SM2540 G 18TH ED	-

Report of Analysis

(a) Temp of pH Reading: 25.1 Deg. C



JD17304

			Repo	rt of Ai	nalysis			Page 1 of 1
Client Sample ID:	SW-B38							
Lab Sample ID:	JD17304						Sampled: 12/07/20	
Matrix:	SO - Soil					Date I	Received: 12/07/20	
						Percer	nt Solids: 90.5	
Project:	PPG Site	107, 18 Cha	apel Avenue	, Jersey Ci	ity, NJ			
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By M	Method
Chromium, Hexava	lent	1.2	0.43	0.34	mg/kg	1	12/18/20 12:24 RI S	SW846 3060A/7196A

Report of Analysis

4.12 4

			Repo	rt of Ai	nalysis			Page 1 of 1
Client Sample ID: Lab Sample ID:	SW-B37 JD17304	-12					Sampled: 12/07/20	
Matrix:	SO - Soil	l					Received: 12/07/20 nt Solids: 91.1	4
Project:	PPG Site	107, 18 Chap	el Avenue	e, Jersey Ci	ty, NJ			
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By I	Method
Chromium, Hexava	lent	ND UJ	0.43	0.34	mg/kg	1	12/11/20 13:28 RI	SW846 3060A/7196A
Redox Potential Vs	H2	292			mv	1	12/08/20 13:29 ER	ASTM D1498-76M
Solids, Percent		91.1			%	1	12/09/20 16:09 BG	SM2540 G 18TH ED MOD
pH ^a		8.22 J			su	1	12/08/20 15:13 ER	SW846 9045D

(a) Temp of pH Reading: 24.9 Deg. C



			Repo	rt of Ai	nalysis			Page 1 of 1
Client Sample ID: Lab Sample ID:	SW-B37 JD17304					Date S	Sampled: 12/07/20	
Matrix:	SO - Soi					Date I	Received: 12/07/20	
Project:	PPG Site	107, 18 Chaj	pel Avenue	, Jersey Ci	ity, NJ	Percei	nt Solids: 91.1	
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By M	ethod
Chromium, Hexava	lent	ND UJ	0.43	0.34	mg/kg	1	12/18/20 12:20 RI SW	/846 3060A/7196A

Report of Analysis

JD17304

4.14 4

Client Sample ID: Lab Sample ID: Matrix:	SW-B37(JD17304 SO - Soil	-12RT				Date 1	Sampled: 12/07/20 Received: 12/07/20 nt Solids: 91.1
Project:	PPG Site	107, 18 Chap	el Avenue	e, Jersey Ci	ty, NJ	10100	
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Iron, Ferrous ^a Sulfide Screen ^b		1.1 J NEGATIVE	0.20 UJ	0.092	%	1 1	12/20/20 12:36 MP ASTM D3872-86 12/20/20 12:30 MP SM4500S2- A-11
Total Organic Carbo	on ^c	68400 J	110	85	mg/kg	1	12/29/20 13:37 BM LLOYD KAHN 1988 MOD

Report of Analysis

(a) The ferrous iron test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(b) The sulfide screen test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(c) Analysis done out of holding time.



Client Sample ID: Lab Sample ID: Matrix:	FB(2020 JD17304 AQ - Fie					Date I	Sampled: 12/07/20 Received: 12/07/20 nt Solids: n/a
Project:	PPG Site	107, 18 Cha	pel Avenue,	Jersey Cit	y, NJ		
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava Redox Potential Vs pH ^a		ND 404 4.97 J	0.010	0.0058	mg/l mv su	1 1 1	12/07/20 21:08 EB SW846 7196A 12/08/20 11:56 ER ASTM D1498-76 12/14/20 10:55 SK SM4500H+ B-11

Report of Analysis

(a) Sample received out of holding time for pH analysis. Temp of pH Reading: 8.8 Deg. C

JD17304



PPG Site 107

DATA QUALITY ASSESSMENT

18 Chapel Avenue Jersey City, New Jersey

Miscellaneous Analyses SDG # JD17438 Analyses Performed By: SGS Accutest Dayton, New Jersey

Report #39873R Review Level: Tier II Project: 30065658.0003

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # JD17438 for samples collected in association with the PPG Industries Site at 18 Chapel Avenue, NJ. The review was conducted as a Tier II 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		Analysis
Sample ID	Lab ID	Matrix	Collection Date	Parent Sample	MISC
MSA-B2627(7.5-8.0)	JD17438-1	Soil	12/09/2020		Х
MSA-C2829(13.0-13.5)	JD17438-2	Soil	12/08/2020		Х
MSA-BC28(9.8-10.0)	JD17438-3	Soil	12/09/2020		Х
MSA-C2829(9.8-10.0)	JD17438-4	Soil	12/08/2020		Х
MSA-C2829(11.7-12.0)	JD17438-5	Soil	12/08/2020		Х
MSA-C2829(6.5-7.0)	JD17438-6	Soil	12/08/2020		Х
FB(20201209)	JD17438-7	Soil	12/09/2020		Х

Notes:

MISC - Miscellaneous analysis includes Hexavalent Chromium, Sulfide, TOC, Ferrous Iron and pH.

ANALYTICAL DATA PACKAGE DOCUMENTATION

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

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

Note:

QA - Quality Assurance

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 7196A, 9045D, ASTM D1498-76M, SM4500S2-A-11 and LLOYD KAHN 1988 MOD. Data were reviewed in accordance with USEPA Region 2 SOP HW-2b, Revision 15 (December 2012), and NJ DEP Data Quality Assessment and Data Usability Evaluation Technical Guidance, New Jersey Department of Environmental Protection, Site Remediation Program (April 2014).

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.
 - RA The result was rejected due to deficiencies but is considered usable for decision-making purposes.

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.

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	Soil	21 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. Matrix Spike (MS)/Post-Digestion Spike (PDS)/Laboratory Duplicate Analysis

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

3.1 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 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.

MS analysis was performed on sample ID MSA-B2627(7.5-8.0). Samples associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Location	Analyte	Initial Spike Recovery	Reanalysis Spike Recovery
MSA-B2627(7.5-8.0)	Hexavalent Chromium, Soluble	< 50%	< 50%

The criteria used to evaluate spike recoveries are presented in the following table. The qualifications are applied to the parent sample results only. In the event of a recovery outside of the control limits, the MS must be reanalyzed.

Control limit	Sample Result	Qualification ¹
	Non-detect	UJ-
Spike recovery ≥ 50% but < 75%	Detect	J-

Control limit	Sample Result	Qualification ¹		
0-1	Non-detect	R/RA		
Spike recovery < 50%	Detect	R/RA		
Spike recovery > 125%	Non-detect	No Action		
Spike recovery > 125% but \leq 150%	Detect	J+		
Spike recovery > 150%	Detect	R		

Notes:

¹ If recoveries are < 50% or > 150% for both insoluble and soluble spikes, associated data will be rejected ("R"); otherwise qualify associated data if one of the spikes is outside the < 50% or > 150% limits.

Consistent with practices on the PPG remediation program, since the source sample used for MS analysis exhibited a reducing environment, both detected and non-detected hexavalent chromium results from the original analysis were determined to be rejected but acceptable for use ("RA" qualifier).

3.2 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 four times the RL. A control limit of 50% 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.

The laboratory duplicate analysis was performed on sample ID MSA-B2627(7.5-8.0). The laboratory duplicate analysis exhibited a RPD within the control limit.

4. 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.

A filed duplicate sample was not collected for the samples from this SDG.

5. 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.

6. 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.

HEXAVALENT CHROMIUM: SW-846 7196A	Rep	orted		mance ptable	Not Required
	No	Yes	No	Yes	
Spectrophotometer					
Tier II Validation					
Holding Times		X		Х	
Reporting limits (units)		Х		Х	
Blanks	I		-		1
A. Instrument Blanks	Х				X
B. Method Blanks		Х		Х	
C. Equipment/Field Blanks		Х		Х	
Laboratory Control Sample (LCS)		Х		Х	
Matrix Spike (MS) %R		Х	Х		
Matrix Spike Duplicate (MSD) %R	Х				Х
MS/MSD Precision (RPD)	Х				Х
Field/Lab Duplicate (RPD)		Х		Х	
Dilution Factor		Х		Х	
Total vs Dissolved %D	Х				Х

DATA VALIDATION CHECKLIST FOR HEXAVALENT CHROMIUM

Notes:

%R Percent recovery

RPD Relative percent difference

%RSD Relative percent deviation

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 SW 846 9045D	Soil	24 hours of receipt at laboratory	Cool to <6°C
Ferrous Iron by ASTM D3872-86	Soil	24hours from collection to analysis	Cool to <6 °C
Sulfide SM4500S2- A-11	Soil	7 days from collection to analysis	Cool to <6°C
Total Organic Carbon LLOYD KAHN 1988 MOD	Soil	28 days from collection to analysis	Cool to <6°C

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

Sample ID	Method	Holding Time	Criteria
	pH by SW 846 9045D	> 6 days	24 hours of receipt at laboratory
SW-B37(0.0-0.5)	Ferrous Iron by ASTM D3872-86	20 days	24 hours of receipt at laboratory
	Sulfide SM4500S2- A-11	20 days	7 days from collection to analysis
MSA-C2829(13.0-13.5)	pH by SW 846 9045D	6 days	24 hours of receipt at laboratory
MSA-BC28(9.8-10.0)	pH by SW 846 9045D	6 days	24 hours of receipt at laboratory
MSA-C2829(9.8-10.0)	pH by SW 846 9045D	6 days	24 hours of receipt at laboratory
MSA-C2829(11.7-12.0)	pH by SW 846 9045D	6 days	24 hours of receipt at laboratory
MSA-C2829(6.5-7.0)	pH by SW 846 9045D	6 days	24 hours of receipt at laboratory

Sample results associated with sample locations analyzed outside holding time were qualified, as specified in the table below. All other holding times were met.

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

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. 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 ± the RL is applied.

The laboratory duplicate analysis was performed on sample ID MSA-B2627(7.5-8.0) for pH and redox potential. The laboratory duplicate analysis exhibited acceptable RPDs.

4. MS/MSD Analysis

All 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. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

MS analysis was not performed on samples from this SDG.

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.

A filed duplicate sample was not collected for the samples from this SDG.

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.

		-			
General Chemistry: SW 8469045D, ASTM D3872-86, SM4500S2-A-11 and LLOYD KAHN	Rep	orted		mance otable	Not Required
1988 MOD	No	Yes	No	Yes	rioquirou
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		Х	Х		
Reporting limits (units)		X		Х	
Blanks					
A. Instrument Blanks	Х				Х
B. Method blanks		X		Х	
C. Field blanks		Х		Х	
Laboratory Control Sample (LCS) %R		Х		Х	
Laboratory Control Sample Duplicate (LCSD) %R	Х				Х
LCS/LCSD Precision (RPD)	Х				Х
Matrix Spike (MS) %R	Х				Х
Matrix Spike Duplicate (MSD) %R	Х				Х
MS/MSD Precision (RPD)	Х				Х
Field/Lab Duplicate (RPD)		Х		Х	
Dilution Factor		Х		Х	

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

Notes:

%R Percent recovery

RPD Relative percent difference

VALIDATION PERFORMED BY: Prashanth K

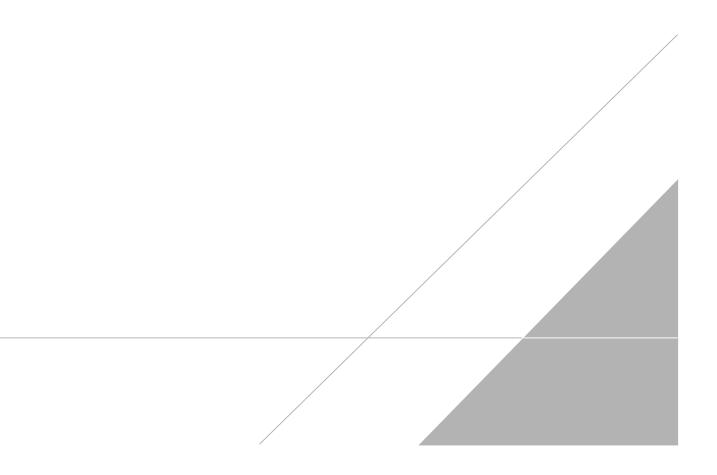
SIGNATURE:

DATE: January 12, 2021

PEER REVIEW: Rachelle Borne

DATE: January 13, 2021

CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS



	SGS	50	_		S North	n Ame	rica Ir	nc Da	aytor					FED-EX T	'racking #						Pag er Control		of _	<u> </u>
		- X1			32-329-0		AX: 73	32-329-3		480				SGS Quot	le W					3GS Job #		SD.	17	138
	Client / Reporting Information	1		Project	Informa		com/en	ISUBA									Re	ques	ted An	alysis	T			Matrix Codes
ompan	y Name:	Project Name:												*										DW - Drinking Water
	Arcadis	PP	<u>6 - 5</u>	ixi	61									PF1,										GW - Ground Water WW - Water SW - Surface Water
reet A/	Friends Ln	18 Char	RIAV	e	Billing Inf	ormation	(if diffe	rent from	Report	to)		_												SO - Soli SL- Sludge
ity in	NOLLA DA 18940	Tersey	PAN	NT.	Company	Name								12	5									SED-Sediment OI - Oil
Project	Contact E-mail 10/14 0	Project #			Street Add	ress								13	and CU									LIQ - Other Liquid AIR - Air SOL - Other Solid
<u>íum</u>	Contact E-mail Tanes S acus	360 úst	0 58 . 20 Order#	000	City	-			:	State		Zi	p		म्									SOL - Other Solid WP - Wipe FB - Field Blank
21	5-815-1030 r(s) Name(s) 0 (Phone &				Attention:									E	3				1					EB-Equipment Blank RB - Rinse Blank
Sample Ci	r(s) Name(s) Phone #	Project Manage	r Iclaugh		Autoniion:					÷					3									TB - Trip Blank
Chy	istin citetti			Collection					- 1	Numbe	r of prese	ved Bott	W	12	are									
SGS Semple #	Field ID / Point of Collection	MEOH/DI Vial #	Date	Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	ę	HNO,	H,SO.	DI Wat	ENCOR	0	3 U									LAB USE ONLY
Sample #			219170		cc	6	<u>s</u>	1		-	T ×	÷6	D	X	J			1						DLY
21	M54-021027 M5A-021027(75-8.0)		12 19170	1140	rc	6	5	1			X			×	J		٢	4	1					
32	MSA- C 2829(13.0-135)		12/8/20	1400	CC	6	Š	2			X			X	J			3	2					AIZ
4 3	MSA - BC/8(98-100)		1219120	0415	C	C	5	2			X			X	V				3					67
54	MSA - C28 29 (9 5- 10.0)		1218120	MIS	CC.	6	5	2			X			X	V				Y_					· · ·
65	MSA - (2829 (11.7-120)		1218/70	1445		0	5	2		_	Υ		++	$ \times$	J				5					
6	MSA - C2529 (1.5-76)		1715120			C	5	2			17	41	++	$+ \times$	$ $ \vee				6			-+		+
7	FB(20201209)		12/7/20	1200	α	6	FB	2			+ +2	44	++	$+\times$		+			7					
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-			SGS PM): / Date:					A" (Level		Ē			tegory A legory B			000-0	SM5	⊁	Vά	5, #	2 - 5	na	ipecial In f L f ad	ι
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	1 Business Day'						Con	nmercial *	'A" = F	lesults or	nly; Com	nercial	"B" = R	esuits + Q	C Summa	ary			6.					
	Other All data available via Lablink A	oproval needed i	or 1-3 Business	Day TAT	most be a	locumer		Commerc	ial "C"	= Result	ts + QC S	Summai	v + Parti	al Raw dat	a		. 1)		nt	tp://ww	w.sgs.co	an/en/ter	ms-and-conditions
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3	inquismo by.		3 Received By:						4 Cust	ody Seal	•			Intact		Preserve	d where a	plicab	ie]4		On Ice	Cor	oler Temp. *C
R	belinquished by: Date /	1.0000	5						#C))(12-1	10-1	40 [Not inta	et I	Absent			Therm. I	D:				

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JD17438: Chain of Custody Page 1 of 5



5.2

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30 of 133 SGS

Client Sample ID: Lab Sample ID: Matrix: Project:	JD17438 SO - Soil			. Jersev Ci	Date S Date I Percer	4.1		
General Chemistry				, versey er				
Analyte		Result	RL	MDL	Units	DF	Analyzed By Metho	od
Chromium, Hexava Redox Potential Vs Solids, Percent pH ^a		ND 294 87.2 8.40 J	0.46	0.36	mg/kg mv % su	1 1 1 1	12/16/20 14:35 RI SW846 12/15/20 16:49 ER ASTM 12/14/20 16:42 BG SM2540 12/15/20 16:15 ER SW846) G 18TH ED MOD

Report of Analysis

(a) Temp of pH Reading: 24.3 Deg. C

			Repo	rt of Ar	nalysis		Page 1 of 1	
Client Sample ID: Lab Sample ID: Matrix:	JD17438 SO - Soi	1		Iomor C	6. NI	Date I	Received: 12/09/20	4.2 4
Project:		e 107, 18 Cha	pei Avenue	, Jersey CI	ly, inj			
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent	ND	0.45	0.36	mg/kg	1	12/22/20 11:34 RI SW846 3060A/7196A R/	А



Client Sample ID: Lab Sample ID: Matrix: Project:	MSA-B2627(7.5-8.0) JD17438-1RT SO - Soil PPG Site 107, 18 Chape	el Avenue	, Jersey Ci	Date 1	Sampled: 12/09/20 Received: 12/09/20 nt Solids: 87.2	
General Chemistry						
Analyte	Result	RL	MDL	Units	DF	Analyzed By Method
Iron, Ferrous ^a Sulfide Screen ^b Total Organic Carbo	2.5 J NEGATIVE on ^c 47400	0.20 R 110	0.092 89	% mg/kg	1 1 1	12/29/20 09:45 MP ASTM D3872-86 12/29/20 09:45 MP SM4500S2- A-11 12/29/20 17:18 BM LLOYD KAHN 1988 MOD

Report of Analysis

(a) The ferrous iron test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(b) The sulfide screen test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(c) Analysis done out of holding time.



Client Sample ID: Lab Sample ID: Matrix:	JD17438 SO - Soil	l	Date 1	Sampled: 12/09/20 Received: 12/09/20 nt Solids: 86.6	4.4 4			
Project: General Chemistry		107, 18 Cha	ipei Avenue	, Jersey CI	ly, INJ			
General Chemistry								
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent	ND	0.45	0.35	mg/kg	1	12/16/20 14:41 RI SW846 3060A/7196	BA
Redox Potential Vs	H2	282			mv	1	12/15/20 16:56 ER ASTM D1498-76M	
Solids, Percent		86.6			%	1	12/14/20 16:42 BG SM2540 G 18TH E	D MOD
pH ^a		8.54 J			su	1	12/15/20 16:18 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.5 Deg. C



Client Sample ID:	MSA-C2	829(13.0-13.	5)				
Lab Sample ID:	JD17438	-2R				Date S	Sampled: 12/09/20
Matrix:	SO - Soil					Date I	Received: 12/09/20
D • 4		107 10 01	1.4	I C		Percer	nt Solids: 86.6
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ		
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
	lent	ND	0.46	0.36	mg/kg		

Report of Analysis

RL = **Reporting Limit** MDL = Method Detection Limit



4.5 4

Page 1 of 1

JD17438

Client Sample ID: Lab Sample ID: Matrix:	JD17438 SO - Soi	l	Date S Date I Percer	4.6 4				
Project: General Chemistry		e 107, 18 Cha	ipei Avenue	, Jersey CI	ly, inj			
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava Redox Potential Vs Solids, Percent pH ^a		0.64 286 85.1 8.22 J	0.46	0.37	mg/kg mv % su	1 1 1 1	12/16/20 14:41 RI SW846 3060A/719 12/15/20 16:59 ER ASTM D1498-76M 12/14/20 16:42 BG SM2540 G 18TH E 12/15/20 16:21 ER SW846 9045D	I

Report of Analysis

(a) Temp of pH Reading: 24.3 Deg. C



JD17438

Client Sample ID: Lab Sample ID: Matrix: Project:	JD17438 SO - Soil			, Jersey Ci	Date I	Sampled: 12/09/20 Received: 12/09/20 nt Solids: 85.1	
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	0.59	0.46	0.37	mg/kg	1	12/22/20 11:37 RI SW846 3060A/7196A

Report of Analysis

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4.7

4



Client Sample ID: Lab Sample ID: Matrix: Project:	JD17438 SO - Soi	-	Date 1	Sampled: 12/09/20 Received: 12/09/20 nt Solids: 71.9	4.8 4			
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava Redox Potential Vs Solids, Percent pH ^a		1.3 253 71.9 8.18 J	0.55	0.43	mg/kg mv % su	1 1 1 1	12/16/20 14:41 RI SW846 3060A/7196A 12/15/20 17:06 ER ASTM D1498-76M 12/14/20 16:42 BG SM2540 G 18TH ED M 12/15/20 16:33 ER SW846 9045D	OD

Report of Analysis

(a) Temp of pH Reading: 24.3 Deg. C



Client Sample ID: Lab Sample ID: Matrix:	JD17438 SO - Soil	-4R				Date I	Sampled: 12/09/20 Received: 12/09/20 nt Solids: 71.9
Project: General Chemistry		107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ		
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	0.97	0.55	0.44	mg/kg	1	12/22/20 11:37 RI SW846 3060A/7196A

Report of Analysis

RL = **Reporting Limit** MDL = Method Detection Limit



4.9 4

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JD17438

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Client Sample ID: Lab Sample ID: Matrix:	JD17438 SO - Soi	l	Date 1	Sampled: 12/09/20 Received: 12/09/20 nt Solids: 84.2	4.10 4			
Project:	PPG Site	107, 18 Cha	ipel Avenue	, Jersey Ci	ty, NJ			
General Chemistry								
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent	ND	0.47	0.37	mg/kg	1	12/16/20 14:41 RI SW846 3060A/7196A	
Redox Potential Vs	H2	245			mv	1	12/15/20 17:08 ER ASTM D1498-76M	
Solids, Percent		84.2			%	1	12/14/20 16:42 BG SM2540 G 18TH ED M	IOD
pH ^a		8.43 J			su	1	12/15/20 16:36 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.7 Deg. C



Client Sample ID: Lab Sample ID: Matrix:	MSA-C282 JD17438-5 SO - Soil	29(11.7-12.0) R				Date R	ampled: 12/09/20 Received: 12/09/20 at Solids: 84.2
Project:		07, 18 Chapel	Avenue,	Jersey Cit	y, NJ		
General Chemistry							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	ND	0.47	0.37	mg/kg	1	12/22/20 11:37 RI SW846 3060A/7196A

Report of Analysis



JD17438

4.11 4

Client Sample ID: Lab Sample ID: Matrix:	MSA-C2 JD17438 SO - Soil	•				Date 1	Sampled: 12/09/20 Received: 12/09/20 nt Solids: 88.6
Project:	PPG Site	e 107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ		
General Chemistry							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexaval	ent	0.46	0.45	0.35	mg/kg	1	12/16/20 14:41 RI SW846 3060A/7196A
Redox Potential Vs	H2	262			mv	1	12/15/20 17:14 ER ASTM D1498-76M
Solids, Percent		88.6			%	1	12/14/20 16:42 BG SM2540 G 18TH ED MO
pH ^a		8.14 J			su	1	12/15/20 16:39 ER SW846 9045D

Report of Analysis

(a) Temp of pH Reading: 24.7 Deg. C



Client Sample ID: Lab Sample ID: Matrix:	JD17438- SO - Soil					Date I	Sampled: 12/09/20 Received: 12/09/20 nt Solids: 88.6
Project: General Chemistry		107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ		
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	ND	0.44	0.35	mg/kg	1	12/22/20 11:37 RI SW846 3060A/7196/

Report of Analysis

RL = **Reporting Limit** MDL = Method Detection Limit



JD17438

4.13 4

Client Sample ID: Lab Sample ID: Matrix:	FB(2020 JD17438 AQ - Fie	,				Date 1	Sampled: 12/09/20 Received: 12/09/20 nt Solids: n/a
Project: General Chemistry		e 107, 18 Chap	oel Avenue,	Jersey Cit	y, NJ		
General Chemistry	y						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava Redox Potential Vs pH ^a		ND 305 5.14 J	0.010	0.0058	mg/l mv su	1 1 1	12/09/20 22:20 EB SW846 7196A 12/10/20 10:33 ER ASTM D1498-76 12/09/20 21:37 RS SM4500H+ B-11

Report of Analysis

(a) Sample received out of holding time for pH analysis. Temp of pH Reading: 18.9 Deg. C

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JD17438

4.14 4



PPG Site 107

DATA QUALITY ASSESSMENT

18 Chapel Avenue Jersey City, New Jersey

Miscellaneous Analyses SDG # JD17335 Analyses Performed By: SGS Accutest Dayton, New Jersey

Report #39874R Review Level: Tier II Project: 30065658.0003

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # JD17335 for samples collected in association with the PPG Industries Site at 18 Chapel Avenue, NJ. The review was conducted as a Tier II 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		Analysis
Sample ID	Lab ID	Matrix	Collection Date	Parent Sample	MISC
SW-B39(8.0-8.5)	JD17335-1	Soil	12/08/2020		Х
SW-B39(6.0-6.5)	JD17335-2	Soil	12/08/2020		Х
SW-B36(4.0-4.5)	JD17335-3	Soil	12/08/2020		Х
SW-B37(6.0-6.5)	JD17335-4	Soil	12/08/2020		Х
SW-B41(8.0-8.5)	JD17335-5	Soil	12/08/2020		Х
SW-B41(6.0-6.5)	JD17335-6	Soil	12/08/2020		Х
SW-B38(4.0-4.5)	JD17335-7	Soil	12/08/2020		Х
SW-B35(6.0-6.5)	JD17335-8	Soil	12/08/2020		Х
SW-B39(2.0-2.5)	JD17335-9	Soil	12/08/2020		Х
SW-B39(4.0-4.5)	JD17335-10	Soil	12/08/2020		Х
SW-B38(6.0-6.5)	JD17335-12	Soil	12/08/2020		Х
SW-B37(4.0-4.5)	JD17335-13	Soil	12/08/2020		Х
SW-B37(2.0-2.5)	JD17335-14	Soil	12/08/2020		Х
SW-B36(0.0-0.5)	JD17335-15	Soil	12/08/2020		Х
SW-B38(8.0-8.5)	JD17335-16	Soil	12/08/2020		Х
SW-B36(2.0-2.5)	JD17335-17	Soil	12/08/2020		Х
DUP-01(20201208)	JD17335-18	Soil	12/08/2020	SW-B41 (6.0-6.5)	Х
FB(20201208)	JD17335-19	Soil	12/08/2020		Х

MISC - Miscellaneous analysis includes Hexavalent Chromium, Sulfide, TOC, Ferrous Iron and pH.

ANALYTICAL DATA PACKAGE DOCUMENTATION

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

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

Note:

QA - Quality Assurance

10. Sample ID and SW-B35(4.0 - 4.5) was listed in chain of custody. But this sample was not analyzed as per communication from project team.

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 7196A, 9045D, ASTM D1498-76M, SM4500S2-A-11 and LLOYD KAHN 1988 MOD. Data were reviewed in accordance with USEPA Region 2 SOP HW-2b, Revision 15 (December 2012), and NJ DEP Data Quality Assessment and Data Usability Evaluation Technical Guidance, New Jersey Department of Environmental Protection, Site Remediation Program (April 2014).

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.

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.

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	Soil	21 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. Matrix Spike (MS)/Post-Digestion Spike (PDS)/Laboratory Duplicate Analysis

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

3.1 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 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.

MS analysis was performed on sample ID SW-B41(8.0-8.5). Samples associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Location	Analyte	Initial Spike Recovery	Reanalysis Spike Recovery
SW-B41(8.0-8.5)	Hexavalent Chromium, Soluble	< 50%	< 50%

The criteria used to evaluate spike recoveries are presented in the following table. The qualifications are applied to the parent sample results only. In the event of a recovery outside of the control limits, the MS must be reanalyzed.

Control limit	Sample Result	Qualification ¹
	Non-detect	UJ-
Spike recovery ≥ 50% but < 75%	Detect	J-

Control limit	Sample Result	Qualification ¹
	Non-detect	R
Spike recovery < 50%	Detect	R
Spike recovery > 125%	Non-detect	No Action
Spike recovery > 125% but ≤ 150%	Detect	J+
Spike recovery > 150%	Detect	R

Notes:

¹ If recoveries are < 50% or > 150% for both insoluble and soluble spikes, associated data will be rejected ("R"); otherwise qualify associated data if one of the spikes is outside the < 50% or > 150% limits.

The original analyses of the field samples are usable with appropriate qualification. No sample results were rejected.

3.2 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 four times the RL. A control limit of 50% 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.

The laboratory duplicate analysis was performed on sample ID SW-B41(8.0-8.5). The laboratory duplicate analysis exhibited a RPD within the control limit.

4. 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-B41 (6.0-6.5) / DUP-01(20201208)	Chromium, Hexavalent	U	U	AC

 $\frac{\text{Notes:}}{\text{U} = \text{Non-detect}}$ AC = Acceptable

The calculated difference between the parent sample and field duplicate were acceptable.

5. 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.

6. 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.

HEXAVALENT CHROMIUM: SW-846 7196A	Rep	Reported		mance ptable	Not Required
	No	Yes	No	Yes	
Spectrophotometer					
Tier II Validation					
Holding Times		X		Х	
Reporting limits (units)		Х		Х	
Blanks	I		-		1
A. Instrument Blanks	Х				X
B. Method Blanks		Х		Х	
C. Equipment/Field Blanks		Х		Х	
Laboratory Control Sample (LCS)		Х		Х	
Matrix Spike (MS) %R		Х	Х		
Matrix Spike Duplicate (MSD) %R	Х				Х
MS/MSD Precision (RPD)	Х				Х
Field/Lab Duplicate (RPD)		Х		Х	
Dilution Factor		Х		Х	
Total vs Dissolved %D	Х				Х

DATA VALIDATION CHECKLIST FOR HEXAVALENT CHROMIUM

Notes:

%R Percent recovery

RPD Relative percent difference

%RSD Relative percent deviation

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 SW 846 9045D	Soil	24 hours of receipt at laboratory	Cool to <6°C
Ferrous Iron by ASTM D3872-86	Soil	24hours from collection to analysis	Cool to <6 °C
Sulfide SM4500S2- A-11	Soil	7 days from collection to analysis	Cool to <6°C
Total Organic Carbon LLOYD KAHN 1988 MOD	Soil	28 days from collection to analysis	Cool to <6°C

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

Sample ID	Method	Holding Time	Criteria
	pH by SW 846 9045D	> 24 hours	24 hours of receipt at laborator
SW-B41(8.0-8.5)	Ferrous Iron by ASTM D3872-86	21 days	24 hours of receipt at laborator
	Sulfide SM4500S2- A-11	21 days	7 days from collection to analys
SW-B39(8.0-8.5)	pH by SW 846 9045D	> 24 hours	24 hours of receipt at laborator
SW-B39(6.0-6.5)	pH by SW 846 9045D	> 24 hours	24 hours of receipt at laborator
SW-B36(4.0-4.5)	pH by SW 846 9045D	> 24 hours	24 hours of receipt at laborator
SW-B37(6.0-6.5)	pH by SW 846 9045D	> 24 hours	24 hours of receipt at laborator
SW-B41(6.0-6.5)	pH by SW 846 9045D	> 24 hours	24 hours of receipt at laborato
SW-B38(4.0-4.5)	pH by SW 846 9045D	> 24 hours	24 hours of receipt at laborator
SW-B35(6.0-6.5)	pH by SW 846 9045D	> 24 hours	24 hours of receipt at laborator
SW-B39(2.0-2.5)	pH by SW 846 9045D	> 24 hours	24 hours of receipt at laborato
SW-B39(4.0-4.5)	pH by SW 846 9045D	> 24 hours	24 hours of receipt at laborato
SW-B38(6.0-6.5)	pH by SW 846 9045D	> 24 hours	24 hours of receipt at laborato
SW-B37(4.0-4.5)	pH by SW 846 9045D	> 24 hours	24 hours of receipt at laborator
SW-B37(2.0-2.5)	pH by SW 846 9045D	> 24 hours	24 hours of receipt at laborator
SW-B36(0.0-0.5)	pH by SW 846 9045D	> 24 hours	24 hours of receipt at laborator
SW-B38(8.0-8.5)	pH by SW 846 9045D	> 24 hours	24 hours of receipt at laborator
SW-B36(2.0-2.5)	pH by SW 846 9045D	> 24 hours	24 hours of receipt at laborator
DUP-01(20201208)	pH by SW 846 9045D	> 24 hours	24 hours of receipt at laborator
FB(20201208)	pH by SW 846 9045D	> 48 hours	24 hours of receipt at laborator

Sample results associated with sample locations analyzed outside holding time were qualified, as specified in the table below. All other holding times were met.

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

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. 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 ± the RL is applied.

The laboratory duplicate analysis was performed on sample ID SW-B41(8.0-8.5) for sulfide screen and ferrous iron. The laboratory duplicate analysis exhibited acceptable RPDs.

4. MS/MSD Analysis

All 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. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

MS analysis was performed on sample ID SW-B41(8.0-8.5) for ferrous iron. MS analysis exhibited an acceptable recovery.

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-B41 (6.0-6.5) / DUP-01(20201208)	рН	7.76	7.84	1.0%

The calculated RPD between the parent sample and field duplicate 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%.

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 VALIDATION CHECKLIST FOR GENERAL CHEMISTRY														
General Chemistry: SW 8469045D, ASTM D3872-86, SM4500S2-A-11 and LLOYD KAHN	Rep	orted		mance ptable	Not Required									
1988 MOD	No	Yes	No	Yes										
Miscellaneous Instrumentation														
Tier II Validation														
Holding times		X	X											
Reporting limits (units)		Х		Х										
Blanks														
A. Instrument Blanks	Х				Х									
B. Method blanks		X		Х										
C. Field blanks		Х		Х										
Laboratory Control Sample (LCS) %R		Х		Х										
Laboratory Control Sample Duplicate (LCSD) %R	Х				Х									
LCS/LCSD Precision (RPD)	Х				Х									
Matrix Spike (MS) %R		Х		Х										
Matrix Spike Duplicate (MSD) %R	Х				Х									
MS/MSD Precision (RPD)	Х				Х									
Field/Lab Duplicate (RPD)		Х		Х										

Х

Х

Notes:

Dilution Factor

%R Percent recovery

RPD Relative percent difference

VALIDATION PERFORMED BY: Prashanth K

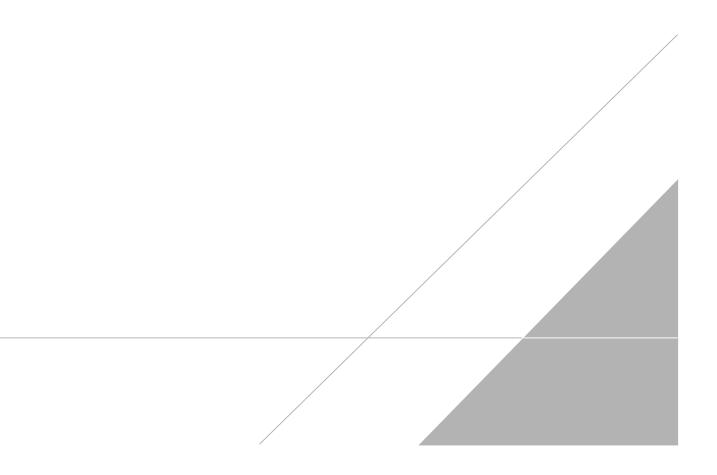
SIGNATURE:

DATE: January 12, 2021

PEER REVIEW: Rachelle Borne

DATE: January 13, 2021

CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS



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Solids, Percent		85.7			%	1	12/09/20 16:09 BG SM2540 G 18TH E	D MOD
pH ^a		8.48 J			su	1	12/09/20 15:17 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.3 Deg. C



JD17335

			Repo	rt of A1	nalysis			Page 1 of 1
Client Sample ID:		· /						
Lab Sample ID:	JD17335						Sampled: 12/08/20	
Matrix:	SO - Soi	l					Received: 12/08/20	
						Percer	nt Solids: 85.7	
Project:	PPG Site	107, 18 Cha	ipel Avenue	, Jersey Ci	ity, NJ			
General Chemistry	,							
Analyte		Result	RL	MDL	Units	DF	Analyzed By N	lethod
Chromium, Hexava	lent	ND	0.45	0.36	mg/kg	1	12/18/20 16:44 RI S	W846 3060A/7196A

Report of Analysis

RL = **Reporting Limit** MDL = Method Detection Limit



JD17335

4.2

4

Client Sample ID: Lab Sample ID: Matrix:	SW-B39 JD17335 SO - Soi	-2				Date 1	Sampled: 12/08/20 Received: 12/08/20 nt Solids: 87.3	4.3 4
Project:	PPG Site	e 107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			
General Chemistry								
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent	0.43 J	0.46	0.37	mg/kg	1	12/14/20 18:21 EB SW846 3060A/7196A	
Redox Potential Vs	H2	269			mv	1	12/09/20 15:15 ER ASTM D1498-76M	
Solids, Percent		87.3			%	1	12/09/20 16:09 BG SM2540 G 18TH ED MO	OD
pH ^a		8.40 J			su	1	12/09/20 15:56 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.4 Deg. C



JD17335

Client Sample ID:	SW-B39(6.0-6.5)									
Lab Sample ID:	JD17335	-2R				Date Sampled: 12/08/20					
Matrix:	SO - Soil					Date Received: 12/08/20					
						Percent Solids: 87.3					
Project:	PPG Site	PG Site 107, 18 Chapel Avenue, Jersey City, NJ									
General Chemistry	,										
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method				

Report of Analysis

RL = **Reporting Limit** MDL = Method Detection Limit



JD17335

4.4

4

			Repo	rt of Ai	nalysis			Page 1 of 1	
Client Sample ID: Lab Sample ID: Matrix:	SW-B36(JD17335 SO - Soil	-3			Date S Date I Perce	4.5			
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ				
General Chemistry	,								
Analyte		Result	RL	MDL	Units	DF	Analyzed By M	Method	
Chromium, Hexava Redox Potential Vs Solids, Percent pH ^a		3.9 276 89.5 8.21 J	0.45	0.36	mg/kg mv % su	1 1 1 1	12/09/20 15:16 ER A	M2540 G 18TH ED MOD	

(a) Temp of pH Reading: 24.4 Deg. C



JD17335

			Repo	rt of Ai	nalysis			Page 1 of 1
Client Sample ID: Lab Sample ID:	SW-B36 JD17335	· · ·				Data (Sampled: 12/08/20	
Matrix:	SO - Soil						Received: 12/08/20	
	50 501						nt Solids: 89.5	
Project:	PPG Site	107, 18 Cha	ipel Avenue	, Jersey Ci	ity, NJ			
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Me	thod
Chromium, Hexava	lent	7.0	0.44	0.35	mg/kg	1	12/18/20 16:44 RI SW	846 3060A/7196A

Report of Analysis



JD17335

4.6 4

Client Sample ID: Lab Sample ID: Matrix:	SW-B37(6 JD17335-4 SO - Soil	4				Date 1	Sampled: 12/08/20 Received: 12/08/20 nt Solids: 85.6	4.7 4
Project:	PPG Site 1	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			
General Chemistry								
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexaval	ent	ND	0.46	0.36	mg/kg	1	12/14/20 18:21 EB SW846 3060A/7196A	
Redox Potential Vs I	H2	279			mv	1	12/09/20 15:18 ER ASTM D1498-76M	
Solids, Percent		85.6			%	1	12/09/20 16:09 BG SM2540 G 18TH ED M	MOD
pH ^a		8.19 J			su	1	12/09/20 16:02 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.3 Deg. C



JD17335

Client Sample ID: Lab Sample ID: Matrix:		SW-B37(6.0-6.5)Date Sampled: 12/08/20D17335-4RDate Received: 12/08/20SO - SoilDate Received: 12/08/20							
Project: General Chemistry		107, 18 Cha	Perce	nt Solids: 85.6					
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method		
Chromium, Hexava	lent	1.2	0.46	0.37	mg/kg	1	12/18/20 16:44 RI SW846 3060A/7196A		

Report of Analysis



JD17335

4.8

4

			Repo	rt of Ai	nalysis			Page 1 of 1
Client Sample ID: Lab Sample ID:	SW-B41 JD17335	-5					Sampled: 12/08/20	•
Matrix:	SO - Soil						Received: 12/08/20 nt Solids: 80.0	
Project:	PPG Site	107, 18 Chap	el Avenue	e, Jersey Ci	ty, NJ	reice	nt Sonus. 80.0	4
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By I	Method
Chromium, Hexava	lent	ND UJ	0.48	0.38	mg/kg	1	12/14/20 18:15 EB	SW846 3060A/7196A
Redox Potential Vs	H2	324			mv	1	12/09/20 15:20 ER	ASTM D1498-76M
Solids, Percent		80			%	1	12/09/20 16:09 BG	SM2540 G 18TH ED MOD
pH ^a		7.75 J			su	1	12/09/20 16:05 ER S	SW846 9045D

pH a

(a) Temp of pH Reading: 24.5 Deg. C

JD17335

			Repo	rt of A1	nalysis		Page 1 of 1
Client Sample ID:	SW-B41(· · ·					
Lab Sample ID:	JD17335						Sampled: 12/08/20
Matrix:	SO - Soil	l				Date I	Received: 12/08/20
						Percer	nt Solids: 80.0
Project:	PPG Site	107, 18 Chap	oel Avenue	, Jersey Ci	ity, NJ		
General Chemistry							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	ND UJ	0.49	0.39	mg/kg	1	12/18/20 16:32 RI SW846 3060A/719



JD17335

4.10

4

Client Sample ID: Lab Sample ID:	SW-B41(8.0-8.5) JD17335-5RT				Data	Sampled: 12/08/20			
Matrix:	SO - Soil				Date Sampled: 12/08/20 Date Received: 12/08/20				
Mati IX.	50 501					nt Solids: 80.0			
Project:	PPG Site 107, 18 Chape	l Avenue,	Jersey Ci	ty, NJ					
General Chemistry									
Analyte	Result	RL	MDL	Units	DF	Analyzed By Method			
Iron, Ferrous ^a	0.83 ^J	0.20	0.092	%	1	12/29/20 09:45 MP ASTM D3872-86			
Sulfide Screen b	NEGATIVE	R			1	12/29/20 09:45 MP SM4500S2- A-11			
Total Organic Carbo	n ^c 67900	130	97	mg/kg	1	12/29/20 16:18 BM LLOYD KAHN 1988 MOD			

Report of Analysis

(a) The ferrous iron test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(b) The sulfide screen test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(c) Analysis done out of holding time.



			Repo	rt of Aı	nalysis			Page 1 of 1	
Client Sample ID: Lab Sample ID:	SW-B41 JD17335	` '				Date S	Date Sampled: 12/08/20		
Matrix:	SO - Soi	l					Received: 12/08/20 nt Solids: 85.6	4	
Project:	PPG Site	e 107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ				
General Chemistry	7								
Analyte		Result	RL	MDL	Units	DF	Analyzed By	Method	
Chromium, Hexava	lent	ND	0.47	0.37	mg/kg	1	12/14/20 18:21 EB	SW846 3060A/7196A	
Redox Potential Vs	H2	289			mv	1	12/09/20 15:21 ER	ASTM D1498-76M	
Solids, Percent		85.6			%	1	12/09/20 16:09 BG	SM2540 G 18TH ED MOD	
pH ^a		7.76 J			su	1	12/09/20 16:08 ER	SW846 9045D	

(a) Temp of pH Reading: 24.6 Deg. C



JD17335

			Repo	rt of Ai	nalysis		I	Page 1 of 1
Client Sample ID: Lab Sample ID:	JD17335	-6R					ampled: 12/08/20 Received: 12/08/20	
Matrix: Project:	SO - Soi PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	Date F Percer			
General Chemistry	7							,
Analyte		Result	RL	MDL	Units	DF	Analyzed By Met	hod
Chromium, Hexava	lent	0.44 J	0.46	0.36	mg/kg	1	12/18/20 16:44 RI SW8	46 3060A/7196A

Report of Analysis





30 of 173

Client Sample ID: Lab Sample ID: Matrix:	SW-B380 JD17335 SO - Soil	-7				Date 1	Sampled: 12/08/20 Received: 12/08/20 nt Solids: 84.7	4.14 4
Project:	PPG Site	e 107, 18 Cha	pel Avenue	e, Jersey Ci	ity, NJ			
General Chemistry	,							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent	ND	0.46	0.37	mg/kg	1	12/14/20 18:21 EB SW846 3060A/7196A	
Redox Potential Vs	H2	284			mv	1	12/09/20 15:23 ER ASTM D1498-76M	
Solids, Percent		84.7			%	1	12/09/20 16:09 BG SM2540 G 18TH ED	MOD
pH ^a		8.39 J			su	1	12/09/20 16:11 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.5 Deg. C



JD17335

			Repo	rt of Ai	nalysis		Page 1 of 1
Client Sample ID: Lab Sample ID:	SW-B38 JD17335					Date S	Sampled: 12/08/20
Matrix:	SO - Soi	l				Date F	Received: 12/08/20 nt Solids: 84.7
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ity, NJ		
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	1.1	0.46	0.36	mg/kg	1	12/18/20 16:44 RI SW846 3060A/7196A



4.15 **4**

SW-B35(6.0-6.5 JD17335-8 SO - Soil)			Date 1	Received: 12/08/20	4.16 4
PPG Site 107, 18	8 Chapel Avenu	e, Jersey Ci	ity, NJ			
						J
Resul	t RL	MDL	Units	DF	Analyzed By Method	
	0.45	0.36	mg/kg mv %	1 1 1	12/14/20 18:21 EB SW846 3060A/719 12/09/20 15:25 ER ASTM D1498-76M 12/09/20 16:09 BG SM2540 G 18TH	И
	JD17335-8 SO - Soil PPG Site 107, 18 Resul lent 0.42 J H2 284	SO - Soil PPG Site 107, 18 Chapel Avenue Result RL lent 0.42 J 0.45 H2 284	JD17335-8 SO - Soil PPG Site 107, 18 Chapel Avenue, Jersey Ci Result RL MDL lent 0.42 J 0.45 0.36 H2 284	JD17335-8 SO - Soil PPG Site 107, 18 Chapel Avenue, Jersey City, NJ Result RL MDL Units lent 0.42 J 0.45 0.36 mg/kg H2 284 mv	JD17335-8 SO - Soil Date 2 PPG Site 107, 18 Chapel Avenue, Jersey City, NJ Result RL MDL Units DF lent 0.42 J 0.45 0.36 mg/kg 1 H2 284 mv 1	JD17335-8 SO - Soil PPG Site 107, 18 Chapel Avenue, Jersey City, NJ Result RL MDL Units DF Analyzed By Method lent 0.42 J 0.45 0.36 mg/kg 1 12/14/20 18:21 EB SW846 3060A/719 H2 284 mv 1 12/09/20 15:25 ER ASTM D1498-76N

Report of Analysis

(a) Temp of pH Reading: 24.5 Deg. C



JD17335

			Repo	rt of Ai	nalysis			Page 1 of 1
Client Sample ID: Lab Sample ID:	SW-B35 JD17335	,				Date S	Sampled: 12/08/20	
Matrix:	SO - Soil	l					Received: 12/08/20 nt Solids: 88.3	
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ity, NJ			
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By M	lethod
Chromium, Hexava	lent	1.4	0.44	0.35	mg/kg	1	12/18/20 16:44 RI SV	W846 3060A/7196A

Report of Analysis





JD17335

Client Sample ID: Lab Sample ID: Matrix:	SW-B390 JD17335 SO - Soil	-9				Date 1	Sampled: 12/08/20 Received: 12/08/20 nt Solids: 82.6	4.18 4
Project:	PPG Site	e 107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			
General Chemistry	7							J
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent	ND	0.48	0.38	mg/kg	1	12/14/20 18:21 EB SW846 3060A/719	6A
Redox Potential Vs	H2	279			mv	1	12/09/20 15:27 ER ASTM D1498-76M	1
Solids, Percent		82.6			%	1	12/09/20 16:09 BG SM2540 G 18TH F	ED MOD
pH ^a		8.26 J			su	1	12/09/20 16:17 ER SW846 9045D	

Report of Analysis

Page 1 of 1

(a) Temp of pH Reading: 24.5 Deg. C



JD17335

			-		v		5
Client Sample ID:	SW-B39	(2.0-2.5)					
Lab Sample ID:	JD17335	-9R				Date S	Sampled: 12/08/20
Matrix:	SO - Soi	l				Date I	Received: 12/08/20
						Percer	nt Solids: 82.6
Project:	PPG Site	107, 18 Ch	apel Avenue	, Jersey Ci	ity, NJ		
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	0.93	0.48	0.38	mg/kg	1	12/18/20 16:44 RI SW846 3060A/7196A

Report of Analysis

JD17335

4.19 4

Client Sample ID: Lab Sample ID: Matrix:	SW-B39(JD17335 SO - Soil	-10				Date 1	Sampled: 12/08/20 Received: 12/08/20 nt Solids: 88.1	4.20
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ	1 01 00		
General Chemistry	7							J
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent	0.98	0.46	0.36	mg/kg	1	12/14/20 18:21 EB SW846 3060A/719	6A
Redox Potential Vs	H2	294			mv	1	12/09/20 14:52 ER ASTM D1498-76M	1
Solids, Percent		88.1			%	1	12/09/20 16:09 BG SM2540 G 18TH F	ED MOD
pH ^a		8.34 J			su	1	12/09/20 15:20 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.4 Deg. C



JD17335

			Repo	rt of Ai	nalysis		Page 1 of 1
Client Sample ID: Lab Sample ID:	SW-B39(JD17335-	-				Date S	Sampled: 12/08/20
Matrix:	SO - Soil					Date I	Received: 12/08/20 nt Solids: 88.1
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ity, NJ	1 01 000	
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	1.8	0.44	0.35	mg/kg	1	12/18/20 16:44 RI SW846 3060A/719

JD17335

4.21 4

Client Sample ID: Lab Sample ID: Matrix:	SW-B38(JD17335 SO - Soil	-12				Date 1	Sampled: 12/08/20 Received: 12/08/20 nt Solids: 86.8	4.22 4
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			
General Chemistry								
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexaval	ent	ND	0.46	0.37	mg/kg	1	12/14/20 18:25 EB SW846 3060A/7196A	
Redox Potential Vs I	H2	309			mv	1	12/09/20 14:55 ER ASTM D1498-76M	
Solids, Percent		86.8			%	1	12/09/20 16:09 BG SM2540 G 18TH ED I	MOD
pH ^a		8.11 J			su	1	12/09/20 15:26 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.3 Deg. C



JD17335

Client Sample ID: Lab Sample ID: Matrix:	SW-B38(JD17335 SO - Soil	-12R				Date I	Sampled: 12/08/20 Received: 12/08/20 nt Solids: 86.8
Project:	PPG Site	107, 18 Cha	apel Avenue	, Jersey Ci	ty, NJ		
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	0.83	0.46	0.36	mg/kg	1	12/18/20 16:44 RI SW846 3060A/7196A

Report of Analysis

JD17335

4.23 4

Client Sample ID: Lab Sample ID: Matrix:	SW-B370 JD17335 SO - Soil	-13				Date 1	Sampled: 12/08/20 Received: 12/08/20 nt Solids: 90.3
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ		
General Chemistry							_
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexaval	ent	ND	0.43	0.34	mg/kg	1	12/14/20 18:25 EB SW846 3060A/7196A
Redox Potential Vs	H2	314			mv	1	12/09/20 15:00 ER ASTM D1498-76M
Solids, Percent		90.3			%	1	12/09/20 16:09 BG SM2540 G 18TH ED M
pH ^a		8.02 J			su	1	12/09/20 15:29 ER SW846 9045D

Report of Analysis

(a) Temp of pH Reading: 24.7 Deg. C



JD17335

			Repo	rt of A1	nalysis		Page 1 of 1
Client Sample ID: Lab Sample ID:	SW-B37 JD17335					Date S	Sampled: 12/08/20
Matrix:	SO - Soi	l					Received: 12/08/20 nt Solids: 90.3
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ity, NJ		
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	1.5	0.44	0.35	mg/kg	1	12/18/20 16:50 RI SW846 3060A/7196/

JD17335

4.25 4

Client Sample ID: Lab Sample ID: Matrix:	SW-B37(JD17335 SO - Soil	-14				Date 1	Sampled: 12/08/20 Received: 12/08/20 nt Solids: 89.2	4.26 4
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			
General Chemistry							Y	
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexaval	ent	2.5	0.45	0.36	mg/kg	1	12/14/20 18:25 EB SW846 3060A/7196	A
Redox Potential Vs	H2	317			mv	1	12/09/20 15:02 ER ASTM D1498-76M	
Solids, Percent		89.2			%	1	12/09/20 16:09 BG SM2540 G 18TH EI	D MOD
pH ^a		7.88 J			su	1	12/09/20 15:32 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.5 Deg. C



JD17335

			Repo	rt of Ai	nalysis		Page 1 of 1
Client Sample ID: Lab Sample ID:	SW-B37 JD17335					Date S	Sampled: 12/08/20
Matrix:	SO - Soi	l					Received: 12/08/20 nt Solids: 89.2
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ity, NJ		
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	2.0	0.44	0.35	mg/kg	1	12/18/20 16:50 RI SW846 3060A/7190

JD17335

4.27 4

1	SW-B36(JD17335 SO - Soil	-15				Date 1	Sampled: 12/08/20 Received: 12/08/20 nt Solids: 91.9	
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			
General Chemistry								
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexaval	ent	ND	0.42	0.34	mg/kg	1	12/14/20 18:25 EB SW846 3060A/7196A	
Redox Potential Vs I	42	313			mv	1	12/09/20 15:05 ER ASTM D1498-76M	
Solids, Percent		91.9			%	1	12/09/20 16:09 BG SM2540 G 18TH ED MOD)
pH ^a		8.33 J			su	1	12/09/20 15:35 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.4 Deg. C



JD17335

		(0, 0, 0, 5)								
Client Sample ID:		` '								
Lab Sample ID:	JD17335	-15R				Date S	Sampled: 12/08/20			
Matrix:	SO - Soi	l				Date Received: 12/08/20				
						Percer	nt Solids: 91.9			
Project:	PPG Site 107, 18 Chapel Avenue, Jersey City, NJ									
General Chemistry	7									
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method			
Chromium, Hexava	lent	0.56	0.42	0.33	mg/kg	1	12/18/20 16:50 RI SW846 3060A/7196A			

Report of Analysis

RL = Reporting Limit MDL = Method Detection Limit 4.29 4

Client Sample ID: Lab Sample ID: Matrix:	SW-B38 JD17335 SO - Soi	-16				Date 1	Sampled: 12/08/20 Received: 12/08/20 nt Solids: 84.1	4.30 4
Project:	PPG Site	e 107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			
General Chemistry	,							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent	0.44 J	0.47	0.38	mg/kg	1	12/14/20 18:25 EB SW846 3060A/7196A	
Redox Potential Vs	H2	305			mv	1	12/09/20 15:07 ER ASTM D1498-76M	
Solids, Percent		84.1			%	1	12/09/20 16:09 BG SM2540 G 18TH ED	MOD
pH ^a		8.43 J			su	1	12/09/20 15:38 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.3 Deg. C



Page 1 of 1

JD17335

			Repo	rt of A1	nalysis		Page 1 of 1
Client Sample ID:	SW-B38(8.0-8.5)					
Lab Sample ID:	JD17335-	16R				Date S	Sampled: 12/08/20
Matrix:	SO - Soil					Date I	Received: 12/08/20
						Percer	nt Solids: 84.1
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ		
General Chemistry							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	1.1	0.47	0.37	mg/kg	1	12/18/20 16:50 RI SW846 3060A/719



4.31

4

Client Sample ID: Lab Sample ID: Matrix:	SW-B36(2.0-2.5)Date Sampled:12/08/20JD17335-17Date Sampled:12/08/20SO - SoilDate Received:12/08/20PPG Site 107, 18 Chapel Avenue, Jersey City, NJPercent Solids:85.0									
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ		nt Solids: 85.0			
General Chemistry										
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method			
Chromium, Hexava	lent	0.44 J	0.47	0.37	mg/kg	1	12/14/20 18:25 EB SW846 3060A/7196A			
Redox Potential Vs	H2	316			mv	1	12/09/20 15:08 ER ASTM D1498-76M			
Solids, Percent		85			%	1	12/09/20 16:09 BG SM2540 G 18TH ED MO			
pH ^a		7.97 J			su	1	12/09/20 15:50 ER SW846 9045D			

Report of Analysis

(a) Temp of pH Reading: 24.4 Deg. C



JD17335

			Repo	rt of Ai	nalysis			Page 1 of 1
Client Sample ID:		-						
Lab Sample ID:	JD17335	-17R					Sampled: 12/08/20	
Matrix:	SO - Soil					Date 1	Received: 12/08/20	
						Percer	nt Solids: 85.0	
Project:	PPG Site	107, 18 Cha	ipel Avenue	, Jersey Ci	ity, NJ			
General Chemistry	,							
Analyte		Result	RL	MDL	Units	DF	Analyzed By M	ethod
Chromium, Hexava	lent	ND	0.47	0.37	mg/kg	1	12/18/20 16:50 RI SW	V846 3060A/7196

JD17335

4.33 4

Client Sample ID: Lab Sample ID: Matrix:	DUP-010 JD17335 SO - Soi					Date 1	Sampled: 12/08/20 Received: 12/08/20 nt Solids: 85.6	4.34 4
Project:	PPG Site	e 107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava		ND	0.45	0.36	mg/kg	1	12/14/20 18:25 EB SW846 3060A/7196A	
Redox Potential Vs Solids, Percent	H2	278 85.6			mv %	1	12/09/20 15:13 ER ASTM D1498-76M 12/09/20 16:09 BG SM2540 G 18TH ED M	OD
pH ^a		7.84 J			70 SU	1	12/09/20 15:53 ER SW846 9045D	UD

Report of Analysis

(a) Temp of pH Reading: 24.5 Deg. C

JD17335



Client Sample ID: Lab Sample ID: Matrix: Project:	JD17335 SO - Soi		pel Avenue	, Jersey Ci	ty, NJ	Date Sampled:12/08/20Date Received:12/08/20Percent Solids:85.6		
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent	ND	0.46	0.36	mg/kg	1	12/18/20 16:50 RI SW846 3060A/7196A	

Report of Analysis



JD17335

4.35 4

Client Sample ID: Lab Sample ID: Matrix:	JD17335	,				Date I	Sampled: 12/08/20 Received: 12/08/20 nt Solids: n/a
Project:		e 107, 18 Cha	pel Avenue,	Jersey Cit	y, NJ		
General Chemistry	y						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava Redox Potential Vs pH ^a		ND 368 4.32 J	0.010	0.0058	mg/l mv su	1 1 1	12/08/20 22:54 EB SW846 7196A 12/09/20 10:38 ER ASTM D1498-76 12/11/20 09:39 RS SM4500H+ B-11

Report of Analysis

(a) Sample received out of holding time for pH analysis. Temp of pH Reading: 12. Deg. C



JD17335

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4.36

4



PPG Site 107

DATA QUALITY ASSESSMENT

18 Chapel Avenue Jersey City, New Jersey

Miscellaneous Analyses SDG # JD17544 Analyses Performed By: SGS Accutest Dayton, New Jersey

Report #39875R Review Level: Tier II Project: 30065658.0003

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # JD17544 for samples collected in association with the PPG Industries Site at 18 Chapel Avenue, NJ. The review was conducted as a Tier II 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			Analysis
Sample ID	Lab ID	Matrix	Collection Date	Parent Sample	MISC
FB(20201210)	JD17544-1	Soil	12/10/2020		Х
MSA-BC26(4.0-4.5)	JD17544-2	Soil	12/10/2020		Х
MSA-B2425(3.25-3.75)	JD17544-4	Soil	12/10/2020		Х
MSA-B2425(6.0-6.5)	JD17544-5	Soil	12/10/2020		Х
MSA-C2425(3.5-4.0)	JD17544-6	Soil	12/10/2020		Х
MSA-C2425(5.5-6.0)	JD17544-7	Soil	12/10/2020		Х

Notes:

MISC - Miscellaneous analysis includes Hexavalent Chromium, Sulfide, TOC, Ferrous Iron and pH.

ANALYTICAL DATA PACKAGE DOCUMENTATION

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

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

Note:

QA - Quality Assurance

10. Sample ID MSA-B2425(2.75-3.25) was listed in chain of custody. But this sample was not analyzed as per communication from project team.

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 7196A, 9045D, ASTM D1498-76M, SM4500S2-A-11 and LLOYD KAHN 1988 MOD. Data were reviewed in accordance with USEPA Region 2 SOP HW-2b, Revision 15 (December 2012), and NJ DEP Data Quality Assessment and Data Usability Evaluation Technical Guidance, New Jersey Department of Environmental Protection, Site Remediation Program (April 2014).

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.

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.

DATA REVIEW REPORT

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	Soil	21 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. Matrix Spike (MS)/Post-Digestion Spike (PDS)/Laboratory Duplicate Analysis

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

3.1 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 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.

MS analysis was performed on sample IDs MSA-BC26(4.0-4.5) and MSA-B2425(3.25-.3.75). Samples associated with the MS exhibiting recoveries outside of the control limits are presented in the following table.

Sample Location	Analyte	Initial Spike Recovery	Reanalysis Spike Recovery
MSA-BC26(4.0-4.5)	Hexavalent Chromium, Soluble	< 50%	-
MSA-B2425(3.25-3.75)	Hexavalent Chromium, Soluble	< 50%	-

The criteria used to evaluate spike recoveries are presented in the following table. The qualifications are applied to the parent sample results only. In the event of a recovery outside of the control limits, the MS must be reanalyzed.

DATA REVIEW REPORT

Control limit	Sample Result	Qualification ¹	
	Non-detect	UJ-	
Spike recovery $\ge 50\%$ but < 75%	Detect	J-	
0.1	Non-detect	R	
Spike recovery < 50%	Detect	R	
Spike recovery > 125%	Non-detect	No Action	
Spike recovery > 125% but ≤ 150%	Detect	J+	
Spike recovery > 150%	Detect	R	

Notes:

¹ If recoveries are < 50% or > 150% for both insoluble and soluble spikes, associated data will be rejected ("R"); otherwise qualify associated data if one of the spikes is outside the < 50% or > 150% limits.

The original analyses of the field samples are usable with appropriate qualification. No sample results were rejected.

3.2 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 four times the RL. A control limit of 50% 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.

The laboratory duplicate analysis was performed on sample IDs MSA-B2425(3.25-3.75) and MSA-BC26(4.0-4.5). The laboratory duplicate analysis exhibited a RPD within the control limit.

4. 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 30% for water 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 two times the RL is applied for water matrices.

A filed duplicate sample was not collected for the samples from this SDG.

5. 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.

6. 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.

HEXAVALENT CHROMIUM: SW-846 7196A	Rep	orted		mance ptable	Not Required
	No	Yes	No	Yes	
Spectrophotometer					
Tier II Validation					
Holding Times		X		Х	
Reporting limits (units)		Х		Х	
Blanks	I		-		1
A. Instrument Blanks	Х				X
B. Method Blanks		Х		Х	
C. Equipment/Field Blanks		Х		Х	
Laboratory Control Sample (LCS)		Х		Х	
Matrix Spike (MS) %R		Х	Х		
Matrix Spike Duplicate (MSD) %R	Х				Х
MS/MSD Precision (RPD)	Х				Х
Field/Lab Duplicate (RPD)		Х		Х	
Dilution Factor		Х		Х	
Total vs Dissolved %D	Х				Х

DATA VALIDATION CHECKLIST FOR HEXAVALENT CHROMIUM

Notes:

%R Percent recovery

RPD Relative percent difference

%RSD Relative percent deviation

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 SW 846 9045D	Soil	24 hours of receipt at laboratory	Cool to <6°C
Ferrous Iron by ASTM D3872-86	Soil	24hours from collection to analysis	Cool to <6 °C
Sulfide SM4500S2- A-11	Soil	7 days from collection to analysis	Cool to <6°C
Total Organic Carbon LLOYD KAHN 1988 MOD	Soil	28 days from collection to analysis	Cool to <6°C

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

Sample ID	Method	Holding Time	Criteria
	pH by SW 846 9045D	9 days	24 hours of receipt at laboratory
MSA-B2425(3.25-3.75)	Ferrous Iron by ASTM D3872-86	20 days	24 hours of receipt at laboratory
	Sulfide SM4500S2- A-11	20 days	7 days from collection to analysis
FB(20201210)	pH by SW 846 9045D	9 days	24 hours of receipt at laboratory
MSA-BC26(4.0-4.5)	pH by SW 846 9045D	9 days	24 hours of receipt at laboratory
MSA-B2425(3.25-3.75)	pH by SW 846 9045D	9 days	24 hours of receipt at laboratory
MSA-B2425(6.0-6.5)	pH by SW 846 9045D	9 days	24 hours of receipt at laboratory
MSA-C2425(3.5-4.0)	pH by SW 846 9045D	9 days	24 hours of receipt at laboratory
MSA-C2425(5.5-6.0)	pH by SW 846 9045D	9 days	24 hours of receipt at laboratory

Sample results associated with sample locations analyzed outside holding time were qualified, as specified in the table below. All other holding times were met.

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

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.

DATA REVIEW REPORT

3. 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 ± the RL is applied.

The laboratory duplicate analysis was performed on sample ID MSA-BC26(4.0-4.5) for pH. The laboratory duplicate analysis exhibited an acceptable RPD.

4. MS/MSD Analysis

All 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. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

MS analysis was not performed on samples from this SDG.

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 30% for water 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 two times the RL is applied for water matrices.

A filed duplicate sample was not collected for the samples from this SDG.

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.

General Chemistry: SW 8469045D, ASTM D3872-86, SM4500S2-A-11 and LLOYD KAHN	Rep	orted		mance ptable	Not Required				
1988 MOD	No	Yes	No	Yes	rtoquirou				
Miscellaneous Instrumentation									
Tier II Validation									
Holding times		Х	Х						
Reporting limits (units)		X		X					
Blanks									
A. Instrument Blanks	Х				Х				
B. Method blanks		Х		Х					
C. Field blanks		X		Х					
Laboratory Control Sample (LCS) %R		Х		Х					
Laboratory Control Sample Duplicate (LCSD) %R	Х				Х				
LCS/LCSD Precision (RPD)	Х				Х				
Matrix Spike (MS) %R	Х				Х				
Matrix Spike Duplicate (MSD) %R	Х				Х				
MS/MSD Precision (RPD)	Х				Х				
Field/Lab Duplicate (RPD)		Х		Х					
Dilution Factor		Х		Х					

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

Notes:

%R Percent recovery

RPD Relative percent difference

VALIDATION PERFORMED BY: Prashanth K

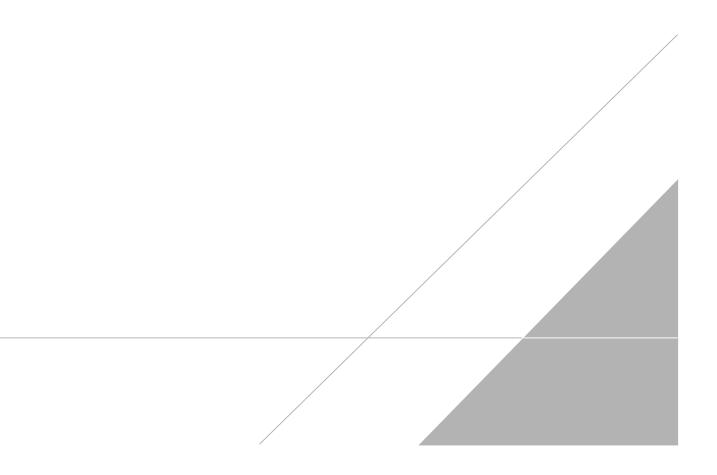
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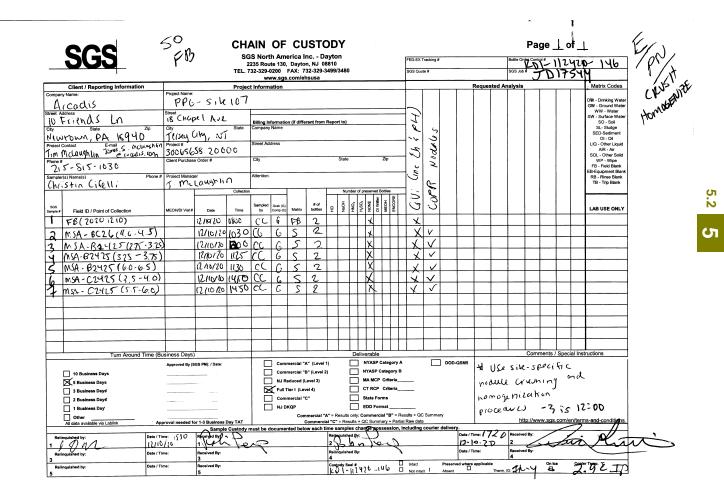
DATE: January 13, 2021

PEER REVIEW: Rachelle Borne

DATE: January 13, 2021

CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS





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

JD17544: Chain of Custody Page 1 of 17



Client Sample ID: Lab Sample ID: Matrix:	FB(20201210) JD17544-1 AQ - Field Blank Soil PPG Site 107, 18 Chapel Avenue, Jersey City, NJ				Date Sampled: 12/10/20 Date Received: 12/10/20 Percent Solids: n/a		
Project:	PPG Site	e 107, 18 Cha	ipel Avenue,	Jersey Cit	y, nj		
General Chemistry	ý						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava Redox Potential Vs pH ^a		ND 401 4.35 J	0.010	0.0058	mg/l mv su	1 1 1	12/10/20 22:42 EB SW846 7196A 12/11/20 10:23 ER ASTM D1498-76 12/15/20 10:32 DG SM4500H+ B-11

Report of Analysis

(a) Sample received out of holding time for pH analysis. Temp of pH Reading: 6. Deg. C



4.1 4

Client Sample ID: Lab Sample ID: Matrix:	MSA-BC JD17544 SO - Soi					Date 1	Sampled: 12/10/20 Received: 12/10/20 nt Solids: 87.0
Project:	PPG Site	e 107, 18 Chaj	pel Avenue	, Jersey Ci	ty, NJ		
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	ND UJ	0.46	0.37	mg/kg	1	12/21/20 10:40 RI SW846 3060A/7196A
Redox Potential Vs	H2	306			mv	1	12/19/20 16:50 ER ASTM D1498-76M
Solids, Percent		87			%	1	12/20/20 16:20 BG SM2540 G 18TH ED MOD
pH ^a		8.43 J			su	1	12/19/20 16:44 ER SW846 9045D

Report of Analysis

(a) Temp of pH Reading: 25. Deg. C



			Repo	rt of Ar	nalysis		Page 1 of 1
Client Sample ID:		C26(4.0-4.5)					
Lab Sample ID:	JD17544						Sampled: 12/10/20
Matrix:	SO - Soi	1					Received: 12/10/20
						Percei	nt Solids: 87.0
Project:	PPG Site	e 107, 18 Chap	el Avenue	, Jersey Ci	ty, NJ		
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	ND UJ	0.47	0.37	mg/kg	1	12/29/20 11:23 RI SW846 3060A/7196

4.3 4

Client Sample ID: Lab Sample ID: Matrix:	MSA-B2425(3.25- JD17544-4 SO - Soil	3.75)			Date 1	Sampled: 12/10/20 Received: 12/10/20 nt Solids: 86.3	4.4
Project:	PPG Site 107, 18 0	Chapel Avenue	e, Jersey Ci	ity, NJ			
General Chemistry							
Analyte	Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexaval	ent ND UJ	0.47	0.37	mg/kg	1	12/21/20 10:44 RI SW846 3060A/7196A	1
Redox Potential Vs	H2 307			mv	1	12/19/20 16:51 ER ASTM D1498-76M	
Solids, Percent	86.3			%	1	12/20/20 16:20 BG SM2540 G 18TH ED	MOD
pH ^a	8.86 J			su	1	12/19/20 16:47 ER SW846 9045D	

pH a

(a) Temp of pH Reading: 25.1 Deg. C

JD17544



Page 1 of 1

Report of Analysis

Client Sample ID: Lab Sample ID: Matrix:	MSA-B2425(3.25-3. JD17544-4R SO - Soil	75)		Date Sampled: 12/10/20 Date Received: 12/10/20 Percent Solids: 86.3			
Project: General Chemistry	PPG Site 107, 18 Ch	apel Avenue	, Jersey Ci	ity, NJ			
Analyte	Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent 0.41 J	0.46	0.37	mg/kg	1	12/29/20 11:20 RI SW846 3060A/7196A	

Report of Analysis

RL = Reporting Limit MDL = Method Detection Limit



Page 1 of 1

4.5

4

Client Sample ID: Lab Sample ID: Matrix:	MSA-B2425(3.25-3.75) JD17544-4RT SO - Soil				Date F	Sampled: 12/10/20
Project:	PPG Site 107, 18 Chape	el Avenue	, Jersey Ci	ty, NJ	Tercer	nt Solids: 86.3
General Chemistry	,					
Analyte	Result	RL	MDL	Units	DF	Analyzed By Method
Iron, Ferrous ^a Sulfide Screen ^b Total Organic Carbo	1.1 J NEGATIVE on ^c 38900	0.20 R 120	0.092 90	% mg/kg	1 1 1	12/30/20 13:00 MP ASTM D3872-86 12/30/20 13:00 MP SM4500S2- A-11 01/05/21 17:39 BM LLOYD KAHN 1988 MOD

Report of Analysis

(a) The ferrous iron test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(b) The sulfide screen test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(c) Analysis done out of holding time.



Client Sample ID: Lab Sample ID: Matrix: Project:	mple ID: JD17544-5 : SO - Soil						Sampled: 12/10/20 Received: 12/10/20 nt Solids: 89.7
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava Redox Potential Vs Solids, Percent pH ^a		6.0 310 89.7 8.32 J	0.44	0.35	mg/kg mv % su	1 1 1 1	12/21/20 10:44 RI SW846 3060A/7196A 12/19/20 16:56 ER ASTM D1498-76M 12/20/20 16:20 BG SM2540 G 18TH ED MOD 12/19/20 16:50 ER SW846 9045D

Report of Analysis

(a) Temp of pH Reading: 25. Deg. C



JD17544

Client Sample ID: Lab Sample ID: Matrix: Project:	JD17544 SO - Soil			, Jersey Ci	Date Sampled:12/10/20Date Received:12/10/20Percent Solids:89.7		
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	2.5	0.44	0.35	mg/kg	1	12/29/20 11:23 RI SW846 3060A/7196A

Report of Analysis



4.8 4

Client Sample ID: Lab Sample ID: Matrix:	JD17544 SO - Soi	1				Date 1	Sampled: 12/10/20 Received: 12/10/20 nt Solids: 78.3	4.9 4
Project: General Chemistry		e 107, 18 Cha	ipel Avenue	, Jersey Ci	ty, NJ			
General Chemistry								
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent	3.8	0.50	0.40	mg/kg	1	12/21/20 10:44 RI SW846 3060A/7196A	
Redox Potential Vs	H2	300			mv	1	12/19/20 17:05 ER ASTM D1498-76M	
Solids, Percent		78.3			%	1	12/20/20 16:20 BG SM2540 G 18TH ED M	(OD
pH ^a		8.28 J			su	1	12/19/20 16:53 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 25.2 Deg. C



JD17544

Client Sample ID: Lab Sample ID: Matrix: Project:	JD17544 SO - Soil			, Jersey Ci	ity, NJ	Date Sampled: 12/10/20 Date Received: 12/10/20 Percent Solids: 78.3			
General Chemistry	7								
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method		
Chromium, Hexava	lent	7.1	0.50	0.40	mg/kg	1	12/29/20 11:23 RI SW846 3060A/7196A		

Report of Analysis

RL = **Reporting Limit** MDL = Method Detection Limit



JD17544

4.10 4

Client Sample ID: Lab Sample ID: Matrix:	MSA-C2 JD17544 SO - Soi					Date 1	Sampled: 12/10/20 Received: 12/10/20 nt Solids: 91.8
Project:	PPG Site	e 107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ		
General Chemistry							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	0.44	0.44	0.35	mg/kg	1	12/21/20 10:44 RI SW846 3060A/7196A
Redox Potential Vs	H2	293			mv	1	12/19/20 17:08 ER ASTM D1498-76M
Solids, Percent		91.8			%	1	12/20/20 16:20 BG SM2540 G 18TH ED MOD
pH ^a		8.66 J			su	1	12/19/20 16:56 ER SW846 9045D

Report of Analysis

(a) Temp of pH Reading: 25.2 Deg. C



Client Sample ID: Lab Sample ID: Matrix: Project:	JD17544 SO - Soi			, Jersey Ci	Date Sampled:12/10/20Date Received:12/10/20Percent Solids:91.8			
General Chemistry	,							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent	0.67	0.44	0.35	mg/kg	1	12/29/20 11:23 RI SW846 3060A/7196A	

Report of Analysis



JD17544

4.12 4



PPG Site 107

DATA QUALITY ASSESSMENT

18 Chapel Avenue Jersey City, New Jersey

Miscellaneous Analyses SDG # JD17650 Analyses Performed By: SGS Accutest Dayton, New Jersey

Report #39876R Review Level: Tier II Project: 30065658.0003

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # JD17650 for samples collected in association with the PPG Industries Site at 18 Chapel Avenue, NJ. The review was conducted as a Tier II 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		Analysis
Sample ID	Lab ID	Matrix	Collection Date	Parent Sample	MISC
FB(20201211)	JD17650-1	Soil	12/11/2020		Х
SW-B40(8.0-8.5)	JD17650-2	Soil	12/11/2020		Х
SW-B40(10.0-10.5)	JD17650-3	Soil	12/11/2020		Х
MSA-BC30(2.75-3.25)	JD17650-4	Soil	12/11/2020		Х
SW-B41(9.0-9.5)	JD17650-5	Soil	12/11/2020		Х
SW-B35(0.0-0.5)	JD17650-6	Soil	12/11/2020		Х
SW-B35(2.0-2.5)	JD17650-7	Soil	12/11/2020		Х
SW-B35(4.0-4.5)	JD17650-8	Soil	12/11/2020		Х
SW-B40(2.0-2.5)	JD17650-9	Soil	12/11/2020		Х
SW-B41(2.0-2.5)	JD17650-10	Soil	12/11/2020		Х
SW-B41(4.0-4.5)	JD17650-11	Soil	12/11/2020		Х

Notes:

MISC - Miscellaneous analysis includes Hexavalent Chromium, Sulfide, TOC, Ferrous Iron and pH.

ANALYTICAL DATA PACKAGE DOCUMENTATION

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

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

Note:

QA - Quality Assurance

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 7196A, 9045D, ASTM D1498-76M, SM4500S2-A-11 and LLOYD KAHN 1988 MOD. Data were reviewed in accordance with USEPA Region 2 SOP HW-2b, Revision 15 (December 2012), and NJ DEP Data Quality Assessment and Data Usability Evaluation Technical Guidance, New Jersey Department of Environmental Protection, Site Remediation Program (April 2014).

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.

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.

DATA REVIEW REPORT

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	Soil	21 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. Matrix Spike (MS)/Post-Digestion Spike (PDS)/Laboratory Duplicate Analysis

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

3.1 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 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.

MS analysis was performed on sample IDs MSA-BC30(2.75-3.25) and SW-B35(0.0-0.5). Samples associated with the MS exhibiting recoveries outside of the control limits are presented in the following table.

Sample Location	Analyte	Initial Spike Recovery	Reanalysis Spike Recovery
MSA-BC30(2.75-3.25)	Hexavalent Chromium, Soluble	< 50%	< 50%
SW-B35(0.0-0.5)	Hexavalent Chromium, Soluble	< 50%	< 50%

The criteria used to evaluate spike recoveries are presented in the following table. The qualifications are applied to the parent sample results only. In the event of a recovery outside of the control limits, the MS must be reanalyzed.

DATA REVIEW REPORT

Control limit	Sample Result	Qualification ¹	
	Non-detect	UJ-	
Spike recovery \geq 50% but < 75%	Detect	J-	
0.1	Non-detect	R	
Spike recovery < 50%	Detect	R	
Spike recovery > 125%	Non-detect	No Action	
Spike recovery > 125% but ≤ 150%	Detect	J+	
Spike recovery > 150%	Detect	R	

Notes:

¹ If recoveries are < 50% or > 150% for both insoluble and soluble spikes, associated data will be rejected ("R"); otherwise qualify associated data if one of the spikes is outside the < 50% or > 150% limits.

The original analyses of the field samples are usable with appropriate qualification. No sample results were rejected.

3.2 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 four times the RL. A control limit of 50% 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.

The laboratory duplicate analysis was performed on sample IDs MSA-BC30(2.75-3.25) and SW-B35(0.0-0.5). The laboratory duplicate analysis exhibited a RPD within the control limit.

4. 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 30% for water 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 two times the RL is applied for water matrices.

A filed duplicate sample was not collected for the samples from this SDG.

5. 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.

6. 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.

HEXAVALENT CHROMIUM: SW-846 7196A	Rep	orted		mance ptable	Not Required	
	No	Yes	No	Yes		
Spectrophotometer						
Tier II Validation						
Holding Times		X		Х		
Reporting limits (units)		Х		Х		
Blanks		-			•	
A. Instrument Blanks	Х				Х	
B. Method Blanks		Х		Х		
C. Equipment/Field Blanks		Х		Х		
Laboratory Control Sample (LCS)		Х		Х		
Matrix Spike (MS) %R		Х	Х			
Matrix Spike Duplicate (MSD) %R	Х				X	
MS/MSD Precision (RPD)	Х				X	
Field/Lab Duplicate (RPD)		Х		Х		
Dilution Factor		Х		Х		
Total vs Dissolved %D	Х				Х	

DATA VALIDATION CHECKLIST FOR HEXAVALENT CHROMIUM

Notes:

%R Percent recovery

RPD Relative percent difference

%RSD Relative percent deviation

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 SW 846 9045D	Soil	24 hours of receipt at laboratory	Cool to <6°C
Ferrous Iron by ASTM D3872-86	Soil	24hours from collection to analysis	Cool to <6 °C
Sulfide SM4500S2- A-11	Soil	7 days from collection to analysis	Cool to <6°C
Total Organic Carbon LLOYD KAHN 1988 MOD	Soil	28 days from collection to analysis	Cool to <6°C

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

Sample ID	Method	Holding Time	Criteria
	pH by SW 846 9045D	8 days	24 hours of receipt at laboratory
MSA-BC30(2.75-3.25)	Ferrous Iron by ASTM D3872-86	19 days	24 hours of receipt at laboratory
	Sulfide SM4500S2- A-11	19 days	7 days from collection to analysis
	pH by SW 846 9045D	4 days	24 hours of receipt at laboratory
SW-B35(0.0-0.5)	Ferrous Iron by ASTM D3872-86	18 days	24 hours of receipt at laboratory
	Sulfide SM4500S2- A-11	18 days	7 days from collection to analysis
FB(20201211)	pH by SW 846 9045D	4 days	24 hours of receipt at laboratory
SW-B40(8.0-8.5)	pH by SW 846 9045D	4 days	24 hours of receipt at laboratory
SW-B40(10.0-10.5)	pH by SW 846 9045D	4 days	24 hours of receipt at laboratory
SW-B41(9.0-9.5)	pH by SW 846 9045D	8 days	24 hours of receipt at laboratory
SW-B35(2.0-2.5)	pH by SW 846 9045D	4 days	24 hours of receipt at laboratory
SW-B35(4.0-4.5)	pH by SW 846 9045D	4 days	24 hours of receipt at laboratory
SW-B40(2.0-2.5)	pH by SW 846 9045D	4 days	24 hours of receipt at laboratory
SW-B41(2.0-2.5)	pH by SW 846 9045D	4 days	24 hours of receipt at laboratory
SW-B41(4.0-4.5)	pH by SW 846 9045D	4 days	24 hours of receipt at laboratory

Sample results associated with sample locations analyzed outside holding time were qualified, as specified in the table below. All other holding times were met.

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

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.

DATA REVIEW REPORT

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. 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 ± the RL is applied.

The laboratory duplicate analysis was performed on sample ID SW-B41(9.0-9.5) for the total organic carbon and samples FB(20201211) and SW-B40(8.0-8.5) for pH. The laboratory duplicate analysis exhibited acceptable RPDs.

4. MS/MSD Analysis

All 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. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

MS analysis was performed on sample ID MSA-BC30(2.75-3.25) for total organic carbon. The MS analysis 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 30% for water 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 two times the RL is applied for water matrices.

A filed duplicate sample was not collected for the samples from this SDG.

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 VALIDATION CHECKLIST FOR GENERAL CHEMISTRY						
General Chemistry: SW 8469045D, ASTM D3872-86, SM4500S2-A-11 and LLOYD KAHN		orted		mance otable	Not Required	
1988 MOD	No	Yes	No	Yes	Nequireu	
Miscellaneous Instrumentation						
Tier II Validation						
Holding times		X	X			
Reporting limits (units)		X		Х		
Blanks						
A. Instrument Blanks	Х				Х	
B. Method blanks		X		Х		
C. Field blanks		Х		Х		
Laboratory Control Sample (LCS) %R		Х		Х		
Laboratory Control Sample Duplicate (LCSD) %R	Х				Х	
LCS/LCSD Precision (RPD)	Х				Х	
Matrix Spike (MS) %R		X		Х		
Matrix Spike Duplicate (MSD) %R	Х				Х	
MS/MSD Precision (RPD)	Х				Х	
Field/Lab Duplicate (RPD)		Х		Х		

Х

Х

Notes:

Dilution Factor

%R Percent recovery

RPD Relative percent difference

VALIDATION PERFORMED BY: Prashanth K

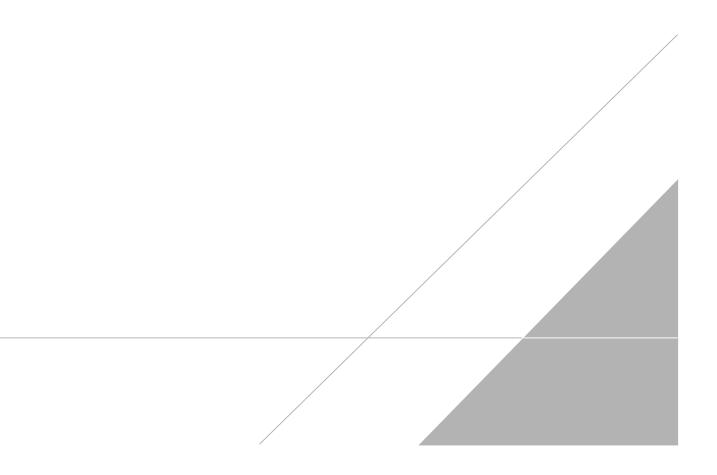
SIGNATURE:

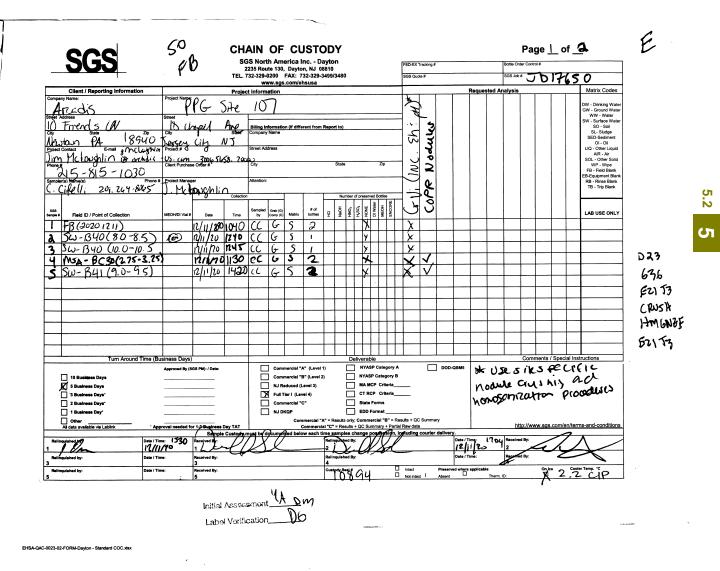
DATE: January 13, 2021

PEER REVIEW: Rachelle Borne

DATE: January 13, 2021

CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS





JD17650: Chain of Custody Page 1 of 12

606	CHAIN OF CUSTOD SGS North America Inc Dayton							-											Paç	ge <u>(</u>	<u>}</u> of	<u>2</u>		
363			2	2235 Roi	ute 130	, Dayte	on, NJ O	8810						FED-EX 1	•				Bottle Ord		18			
			TEL.		-0200 ww.sgs		732-329- hsusa	3499/	3480				1	SGS Quo	te #				SGS Job	i .	Ū	וס	76	50
Client / Reporting Information	Project Name		Projec	t Inform	nation												Reque	sted A	nalysis				Mat	rix Codes
Arcadis	Project Name	PPG	- S.	He	1	0	7	5						<i>K</i>)*									GW - 0	Drinking Water Ground Water
10 Friends LN 1		Chapel Are Billing Information (If different from F						Repor	to)					.,									SW - 5	W - Water Surface Water SO - Soil
Newtown PA 18940	ersey	city	NJ	Company	/ Name									43	100								SED	Sludge D-Sediment OI - Oil
Tim Mclaughin Inclaughlinger	meer# 0 Miculis -	300563 US COM	58.200	Greet Ad	loress									Ť	boule									Other Liquid
Phone # 215-815-1030	lient Purchas	e Order #		City					State			Zip		ž	-9								w	Other Solid P - Wipe
Sampler(s) Name(s)	roiect Manag	Attention:												Ú	\leq								EB-Equ	Field Blank Jipment Blank Rinse Blank
C. C. 12 11: 201,264.805D	M	Attention: MClaughlin collection							r of press				5	PR PR									Trip Blank	
805									_	TT	1	- 2	П	ر م	Q									
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<u>6</u> Sin - 1335(0.0-0.5)		12/11/20	0940	CC	Ġ	S	2				(x	×									
7 Su - 335(20-25)		12/11/20	0945	CC	6	5	2							X	メ									
8 pen-13 35(4.0-4.5)		12/11/20	0455	CC	G	5	2		_	k			\square	×	×									
<u> B 40(20-15)</u>		12/11/20	1355	CC	G	5	a		_		1	_		Y	\star									
10 Sw - B41 (20-2.52		12/1,20	1410	CC	G	5	2		_	ĻΡ		_	$\left \right $	X	\times		1						_	
1 DW- DY 1 (4.0-4.5)		1/10	1400	\mathcal{C}	6	5	2			L X		_	\square	X	\times		-					_	_	
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Ali data available via Lablink * Approval	sevel needed for 1-3 Business Day TAT Commercia Sample Cuptody must be doodmented below each tij				I "C" =	Results	+ QC S	umma	ry + Pa	rtial Ra	aw data				•	http	://www	.sgs.c	om/en/te	erms-apd-	conditions			
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EHSA-QAC-0023-02-FORM-Dayton - Standard COC.xisx

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JD17650: Chain of Custody Page 2 of 12





Client Sample ID: Lab Sample ID: Matrix:	·	-1 ld Blank Soil	Date Sampled: 12/11/20 Date Received: 12/11/20 Percent Solids: n/a					
Project:		107, 18 Cha	pel Avenue,	Jersey Cit	y, NJ			
General Chemistry								
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava Redox Potential Vs pH ^a		ND 401 7.79 J	0.010	0.0058	mg/l mv su	1 1 1	12/11/20 22:15 EB SW846 7196A 12/15/20 12:27 ER ASTM D1498-76 12/15/20 12:41 ER SM4500H+ B-11	

Report of Analysis

(a) Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 24.9 Deg. C



Page 1 of 1

4 4

Lab Sample ID: J	SW-B40(8.0-8.5) D17650-2 SO - Soil		Date Sampled:12/11/20Date Received:12/11/20Percent Solids:82.5						
Project: I	PPG Site 107, 18 Cha	apel Avenue	, Jersey Ci	ty, NJ			4		
General Chemistry									
Analyte	Result	RL	MDL	Units	DF	Analyzed By Method			
Chromium, Hexavale	nt 1.4	0.47	0.37	mg/kg	1	12/15/20 11:58 RI SW846 3060A/7196A			
Redox Potential Vs H 2	2 288			mv	1	12/15/20 12:55 ER ASTM D1498-76M			
Solids, Percent	82.5			%	1	12/14/20 16:42 BG SM2540 G 18TH ED	MOD		
pH ^a	8.30 J			su	1	12/15/20 12:41 ER SW846 9045D			

Report of Analysis

(a) Temp of pH Reading: 24.4 Deg. C



			Repo	rt of Ai	nalysis		I	age 1 of 1
Client Sample ID: Lab Sample ID:	SW-B40 JD17650	,				Data S	Sampled: 12/11/20	
Matrix:	SO - Soil						Received: 12/11/20	
						Percer	nt Solids: 82.5	
Project:	PPG Site	107, 18 Cha	ipel Avenue	, Jersey Ci	ity, NJ			
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Met	hod
Chromium, Hexava	lent	2.3	0.47	0.38	mg/kg	1	12/21/20 16:25 RI SW8	46 3060A/7196A

Report of Analysis

RL = **Reporting Limit** MDL = Method Detection Limit

SGS

4.3 4

Client Sample ID: Lab Sample ID: Matrix:	SW-B40 JD17650 SO - Soi	-	Date 1	Sampled: 12/11/20 Received: 12/11/20 nt Solids: 82.9	4.4			
Project:	PPG Site	e 107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			
General Chemistry								
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent	0.62	0.50	0.40	mg/kg	1	12/15/20 11:58 RI SW846 3060A/7196/	A
Redox Potential Vs	H2	332			mv	1	12/15/20 13:56 ER ASTM D1498-76M	
Solids, Percent		82.9			%	1	12/14/20 16:42 BG SM2540 G 18TH ED) MOD
pH ^a		8.47 J			su	1	12/15/20 12:29 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.6 Deg. C



JD17650

Client Sample ID:	SW-B40(10.0-10.5)					
Lab Sample ID:	JD17650	-3R				Date S	Sampled: 12/11/20
Matrix:	SO - Soil					Date 1	Received: 12/11/20
						Percer	nt Solids: 82.9
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ		
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
		0.93	0.47	0.37	mg/kg		

Report of Analysis

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4.5

4



JD17650

Client Sample ID: Lab Sample ID: Matrix:	JD17650 SO - Soi	l		Date 1	Sampled: 12/11/20 Received: 12/11/20 nt Solids: 89.3	4.6 4		
Project:	PPG Site	e 107, 18 Cha	pel Avenue	e, Jersey Ci	ty, NJ		I	
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent	ND UJ	0.45	0.36	mg/kg	1	12/21/20 12:07 RI SW846 3060A/7196A	
Redox Potential Vs	H2	297			mv	1	12/19/20 17:11 ER ASTM D1498-76M	
Solids, Percent		89.3			%	1	12/20/20 16:20 BG SM2540 G 18TH ED M	OD
pH ^a		8.40 J			su	1	12/19/20 16:59 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 25.2 Deg. C



JD17650

Client Sample ID: Lab Sample ID: Matrix:	MSA-BC30(2.7 JD17650-4T SO - Soil	5-3.25)			Date 1	Sampled: 12/11/20 Received: 12/11/20 nt Solids: 89.3
Project: General Chemistry	PPG Site 107, 1	8 Chapel Aven	ue, Jersey C	ity, NJ		
Analyte	Resu	lt RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent ND (JJ 0.44	0.35	mg/kg	1	12/29/20 13:30 SH SW846 3060A/7196A

Report of Analysis

RL = **Reporting Limit** MDL = Method Detection Limit



JD17650

4.7 4

Client Sample ID: Lab Sample ID: Matrix:	MSA-BC JD17650 SO - Soil			Date I	Sampled: 12/11/20		
Project:	PPG Site	107, 18 Chape	l Avenue	, Jersey Ci	ty, NJ	1 01 000	
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Iron, Ferrous ^a Sulfide Screen ^b		1.1 J NEGATIVE	0.20 R	0.092	%	1 1	12/30/20 13:00 MP ASTM D3872-86 12/30/20 13:00 MP SM4500S2- A-11
Total Organic Carbo	on ^c	40900	110	87	mg/kg	1	01/05/21 18:45 BM LLOYD KAHN 1988 MOD

Report of Analysis

(a) The ferrous iron test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(b) The sulfide screen test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(c) Analysis done out of holding time.



			Repo	rt of Ar	nalysis		Page	e 1 of 1
Client Sample ID: Lab Sample ID: Matrix:	SW-B41 JD17650 SO - Soi	-5				Date 1	Sampled: 12/11/20 Received: 12/11/20 nt Solids: 80.6	4.9
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			
General Chemistry	,							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Methoo	1
Chromium, Hexava Redox Potential Vs Solids, Percent pH ^a		ND 327 80.6 7.80 J	0.48	0.38	mg/kg mv % su	1 1 1 1	12/21/20 12:08 RI SW846 3 12/19/20 17:15 ER ASTM D 12/20/20 16:20 BG SM2540 12/19/20 17:02 ER SW846 9	G 18TH ED MOD

(a) Temp of pH Reading: 25.2 Deg. C



JD17650

			Repo	rt of Ai	nalysis		Page 1 of	1
Client Sample ID:		· /						
Lab Sample ID:	JD17650					Date S	Sampled: 12/11/20	
Matrix:	SO - Soi	l				Date I	Received: 12/11/20	
						Percer	nt Solids: 80.6	
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ity, NJ			
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent	2.7	0.48	0.38	mg/kg	1	12/29/20 13:32 SH SW846 3060A/	7196A

Report of Analysis



4.10 4

		-		v		8	
Client Sample ID: Lab Sample ID:	SW-B35(0.0-0.5) JD17650-6				Date S	Sampled: 12/11/20	4.11
Matrix:	SO - Soil				Date 1	Received: 12/11/20	
					Perce	nt Solids: 91.3	4
Project:	PPG Site 107, 18 Ch	apel Avenue	e, Jersey Ci	ity, NJ			
General Chemistry Analyte	Result	RL	MDL	Units	DF	Analyzed By Method	_
Chromium, Hexava Redox Potential Vs		0.43	0.34	mg/kg mv	1 1	12/15/20 11:50 RI SW846 3060A/7 12/15/20 14:07 ER ASTM D1498-7	
Solids, Percent	91.3			%	1	12/14/20 16:42 BG SM2540 G 18TI	H ED MOD
pH ^a	8.21 J			su	1	12/15/20 12:26 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.6 Deg. C



JD17650

		· · · · · ·	-		-		
Client Sample ID:							
Lab Sample ID:	JD17650	-6R				Date S	Sampled: 12/11/20
Matrix:	SO - Soil					Date 1	Received: 12/11/20
						Percer	nt Solids: 91.3
Project:	PPG Site	107, 18 Cha	apel Avenue	, Jersey Ci	ty, NJ		
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	26.7 J	0.44	0.35	mg/kg	1	12/21/20 16:19 RI SW846 3060A/7196A

Page 1 of 1

4.12

4



JD17650

Client Sample ID: Lab Sample ID: Matrix:	SW-B35((JD17650- SO - Soil	-6RU			Date F	Sampled: 12/11/20 Received: 12/11/20 nt Solids: 91.3	
Project:	PPG Site	107, 18 Chape	l Avenue	, Jersey Cit	ty, NJ	Turci	
General Chemistry	,						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Iron, Ferrous ^a Sulfide Screen ^b Total Organic Carbo		0.42 J NEGATIVE 69400	0.20 R 110	0.092 85	% mg/kg	1 1 1	12/29/20 09:45 MP ASTM D3872-86 12/29/20 09:45 MP SM4500S2- A-11 12/29/20 18:26 BM LLOYD KAHN 1988 MOD

Report of Analysis

(a) The ferrous iron test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(b) The sulfide screen test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(c) Analysis done out of holding time.



Client Sample ID: Lab Sample ID: Matrix:	SW-B35(JD17650 SO - Soil	-7				Date 1	Sampled: 12/11/20 Received: 12/11/20 nt Solids: 92.2	4.14 4
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			-
General Chemistry								
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexaval	ent	17.4	0.43	0.34	mg/kg	1	12/15/20 11:58 RI SW846 3060A/7196A	
Redox Potential Vs	H2	342			mv	1	12/15/20 14:09 ER ASTM D1498-76M	
Solids, Percent		92.2			%	1	12/14/20 16:42 BG SM2540 G 18TH ED M	IOD
pH ^a		8.14 J			su	1	12/15/20 12:23 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.6 Deg. C



JD17650

			Repo	rt of Ai	nalysis		Page 1 of 1
Client Sample ID: Lab Sample ID:	SW-B35 JD17650					Date S	ampled: 12/11/20
Matrix:	SO - Soil					Date F	Received: $12/11/20$ at Solids: 92.2
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ity, NJ	1 41 441	
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	17.0	0.43	0.34	mg/kg	1	12/21/20 16:25 RI SW846 3060A/719

RL = **Reporting Limit** MDL = Method Detection Limit



4.15

4

Client Sample ID: Lab Sample ID: Matrix:	SW-B35 JD17650 SO - Soi					Date 1	Sampled: 12/11/20 Received: 12/11/20 nt Solids: 89.1	4.16 4
Project:	PPG Site	e 107, 18 Cha	apel Avenue	, Jersey Ci	ty, NJ			
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava		10.1	0.46	0.37	mg/kg	1	12/15/20 11:58 RI SW846 3060A/7196A	1
Redox Potential Vs Solids, Percent	H2	339 89.1			mv %	1 1	12/15/20 14:15 ER ASTM D1498-76M 12/14/20 16:42 BG SM2540 G 18TH ED	MOD
pH ^a		8.33 J			su	1	12/15/20 12:20 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.6 Deg. C



JD17650

			L		J		8
Client Sample ID:	SW-B35	(4.0-4.5)					
Lab Sample ID:	JD17650	-8R				Date S	Sampled: 12/11/20
Matrix:	SO - Soi	l				Date I	Received: 12/11/20
						Percer	nt Solids: 89.1
Project:	PPG Site	107, 18 Cha	ipel Avenue	, Jersey Ci	ty, NJ		
General Chemistry	y						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	25.9	0.45	0.36	mg/kg	1	12/21/20 16:25 RI SW846 3060A/7196A

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4.17

4



Client Sample ID: Lab Sample ID: Matrix:	SW-B40(2 JD17650- SO - Soil	,				Date 1	Sampled: 12/11/20 Received: 12/11/20 nt Solids: 89.0	4.18
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			
General Chemistry								_
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexaval	ent	1.3	0.46	0.36	mg/kg	1	12/15/20 11:58 RI SW846 3060A/71	196A
Redox Potential Vs I	H2	330			mv	1	12/15/20 14:17 ER ASTM D1498-76	M
Solids, Percent		89			%	1	12/14/20 16:42 BG SM2540 G 18TH	ED MOD
pH ^a		8.16 J			su	1	12/15/20 12:17 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.5 Deg. C



JD17650

			Repo	rt of A1	nalysis			Page 1 of 1
Client Sample ID:								
Lab Sample ID:	JD17650	-9R				Date S	Sampled: 12/11/20	
Matrix:	SO - Soi	l				Date H	Received: 12/11/20	
						Percer	nt Solids: 89.0	
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ity, NJ			
General Chemistry	7							1
Analyte		Result	RL	MDL	Units	DF	Analyzed By M	lethod
Chromium, Hexava	lent	8.1	0.44	0.35	mg/kg	1	12/21/20 16:25 RI S	W846 3060A/7196A

Report of Analysis

JD17650

4.19 4

Client Sample ID: Lab Sample ID: Matrix:	SW-B410 JD17650 SO - Soil	-10				Date 1	Sampled: 12/11/20 Received: 12/11/20 nt Solids: 86.0	4.20 4
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			
General Chemistry								
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent	0.66	0.48	0.38	mg/kg	1	12/15/20 11:58 RI SW846 3060A/7196A	4
Redox Potential Vs	H2	317			mv	1	12/15/20 12:49 ER ASTM D1498-76M	
Solids, Percent		86			%	1	12/14/20 16:42 BG SM2540 G 18TH ED	MOD
pH ^a		7.72 J			su	1	12/15/20 12:47 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.6 Deg. C

JD17650

			Repo	rt of An	ıalysis		Page 1 of 1
Client Sample ID: Lab Sample ID:	SW-B41(JD17650					Date §	Sampled: 12/11/20
Matrix:	SO - Soil	i					Received: 12/11/20 nt Solids: 86.0
Project:	PPG Site	e 107, 18 Chaj	pel Avenue	, Jersey Ci	ty, NJ		
General Chemistry	ſ						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexaval	lent	ND	0.46	0.36	mg/kg	1	12/21/20 16:25 RI SW846 3060A/7196A



JD17650

			-		v		
Client Sample ID:	SW-B41(4.0	0-4.5)					4
Lab Sample ID:	JD17650-11					Date S	Sampled: 12/11/20
Matrix:	SO - Soil					Date F	Received: 12/11/20
						Percer	nt Solids: 87.5
Project:	PPG Site 10	7, 18 Chape	l Avenue,	Jersey Cit	y, NJ		
General Chemistry Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent N	ID	0.45	0.36	mg/kg	1	12/15/20 11:58 RI SW846 3060A/7196A
Redox Potential Vs	H2 3	33			mv	1	12/15/20 12:52 ER ASTM D1498-76M
Solids, Percent	8	7.5			%	1	12/14/20 16:42 BG SM2540 G 18TH ED MOD
pH ^a	7	.66 <mark>J</mark>			su	1	12/15/20 12:44 ER SW846 9045D

Report of Analysis

(a) Temp of pH Reading: 24.6 Deg. C



			Керо		141 y 515		
Client Sample ID:	SW-B41(4.0-4.5)					
Lab Sample ID:	JD17650	-11R				Date S	Sampled: 12/11/20
Matrix:	SO - Soil					Date I	Received: 12/11/20
						Percer	nt Solids: 87.5
Project:	PPG Site	107, 18 Cha	apel Avenue,	, Jersey Ci	ty, NJ		I
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	0.51	0.46	0.36	mg/kg	1	12/21/20 16:25 RI SW846 3060A/7196A

Report of Analysis

JD17650

4.23 4



PPG Site 107

DATA QUALITY ASSESSMENT

18 Chapel Avenue Jersey City, New Jersey

Metals and Miscellaneous Analyses

SDG # JD17729

Analyses Performed By: SGS Accutest Dayton, New Jersey and Orlando, FL

Report #39877R Review Level: Tier II Project: 30065658.003

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # JD17729 for samples collected in association with the PPG Site 107 at 18 Chapel Avenue, NJ. The review was conducted as a Tier II 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:

0			Sample Collection		Analysis	
Sample ID	Lab ID	Matrix	Date	Parent Sample	МЕТ	MISC
MSA-B2122(3.25-3.75)	JD17729-1	Soil	12/14/2020		х	х
MSA-B2122(3.25-3.75)	JD17729-1R	Soil	12/14/2020		х	
MSA-B2122(3.25-3.75)	JD17729-1RT	Soil	12/14/2020			х
DUP (20201214)	JD17729-2	Soil	12/14/2020	MSA-C2223(5.0-5.5)	х	х
DUP (20201214)	JD17729-2R	Soil	12/14/2020	MSA-C2223(5.0-5.5)	х	
MSA-B2223(4.0-4.5)	JD17729-3	Soil	12/14/2020		х	х
MSA-B2223(4.0-4.5)	JD17729-3R	Soil	12/14/2020		х	
MSA-B2122(6.0-6.5)	JD17729-4	Soil	12/14/2020		х	х
MSA-B2122(6.0-6.5)	JD17729-4R	Soil	12/14/2020		х	
MSA-B2223(3.0-3.5)	JD17729-5	Soil	12/14/2020		х	x
MSA-B2223(3.0-3.5)	JD17729-5R	Soil	12/14/2020		х	
MSA-C2223(5.0-5.5)	JD17729-6	Soil	12/14/2020		х	х
MSA-C2223(5.0-5.5)	JD17729-6R	Soil	12/14/2020		х	
MSA-C2223(4.0-4.5)	JD17729-7	Soil	12/14/2020		х	х
MSA-C2223(4.0-4.5)	JD17729-7R	Soil	12/14/2020		х	
FB (20201204)	JD17729-10	Soil	12/14/2020		Х	Х

ANALYTICAL DATA PACKAGE DOCUMENTATION

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

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

Note:

QA - Quality Assurance

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 7196A, 9056A, ASTM D1498-76, EPS 300/SW846 9056A, SM4500S2-F-11, , SM5310 B-11 and SM4500H+ B-11. Data were reviewed in accordance with USEPA Region 2 SOP HW-2b, Revision 15 (December 2012), and NJDEP Data Quality Assessment and Data Usability Evaluation Technical Guidance, New Jersey Department of Environmental Protection, Site Remediation Program (April 2014).

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) critieria. The analyte may or may not be present in the sample.
 - RA The result was rejected due to deficiencies but is considered usable for decision-making purposes.

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.

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

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. Matrix Spike (MS)/Laboratory Duplicate Analysis

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

3.1 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 the established acceptance limits of 75% to 125% in both the soluble and insoluble spike 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 MSA-B2122(3.25-3.75).

All analytes associated with MS recoveries were within control limits with the exception of the following analytes present in the table below.

Sample Location	Analyte	Initial Spike Recovery	Reanalysis Spike Recovery	
SW-B43 (6.0-6.5)	Hexavalent Chromium, Soluble	< 50%	< 50%	

The criteria used to evaluate spike recoveries are presented in the following table. The qualifications are applied to the parent sample results only. In the event of a recovery outside of the control limits, the MS must be reanalyzed.

Control limit	Sample Result	Qualification ¹
	Non-detect	UJ-
Spike recovery ≥ 50% but < 75%	Detect	J-
0.1	Non-detect	R/RA
Spike recovery < 50%	Detect	R/RA
Spike recovery > 125%	Non-detect	No Action
Spike recovery > 125% but ≤ 150%	Detect	J+
Spike recovery > 150%	Detect	R

Notes:

¹ If recoveries are < 50% or > 150% for both insoluble and soluble spikes, associated data will be rejected ("R"); otherwise qualify associated data if one of the spikes is outside the < 50% or > 150% limits.

Consistent with practices on the PPG remediation program, since the source sample used for MS analysis exhibited a reducing environment, both detected and non-detected hexavalent chromium results from the original analysis were determined to be rejected but acceptable for use ("RA" qualifier).

3.2 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 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.

The laboratory duplicate analysis performed on sample MSA-B2122(3.25-3.75) exhibited RPDs within the control limit.

4. 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 30% for water 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.

Sample ID/Duplicate ID	Analyte	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD
MSA-C2223(5.0-5.5) / DUP(20201214)	Chromium, Hexavalent	U	1.2	AC

Results for duplicate samples are summarized in the following table.

The RPD between parent and duplicate sample was acceptable.

5. 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.

8. 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.

HEXAVALENT CHROMIUM: SW-846 7196A	Reported		Performance Acceptable		Not	
	No	Yes	No	Yes	Required	
Spectrophotometer						
Tier II Validation						
Holding Times		Х		х		
Reporting limits (units)		Х		х		
Blanks						
A. Instrument Blanks	x				х	
B. Method Blanks		Х		х		
C. Equipment/Field Blanks		Х		х		
Laboratory Control Sample (LCS)		Х		х		
Matrix Spike (MS) %R		Х	x			
Matrix Spike Duplicate (MSD) %R	х				Х	
MS/MSD Precision (RPD)	x				Х	
Field/Lab Duplicate (RPD)		Х		х		
Dilution Factor		Х		х		
Total vs Dissolved %D		X		x		

DATA VALIDATION CHECKLIST FOR HEXAVALENT CHROMIUM

%R Percent recovery

RPD Relative percent difference

%RSD Relative percent deviation

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	Soil	QAPP: 24 hours of receipt at laboratory	Cool to <6°C
Oxidation-Reduction Potential by ASTM D1498-76	Soil	Not applicable	Cool to <6°C
Sulfide by SM4500S2-F-11	Soil	7 days from collection to analysis	Cool to <6°C
Total Organic Carbon (TOC) by SM5310B-11	Soil	28 days from collection to analysis	Cool to <6°C
Iron, Ferrous by ASTM D3872-86	Soil	24 hours of receipt at laboratory	Cool to <6°C

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

Sample ID	Holding Time	Criteria	
MSA-B2122(3.25-3.75)			
DUP(20201214)			
MSA-B2223(4.0-4.5)			
MSA-B2122(6.0-6.5) MSA-B2223(3.0-3.5)	24 hours of respirit at laboratory	Analysis completed greater than two times holding time	
	24 hours of receipt at laboratory		
MSA-C2223(5.0-5.5)			
MSA-C2223(4.0-4.5)			
FB(20201204)			
MSA-B2122(3.25-3.75)	24 hours of receipt at laboratory	Analysis completed greater than two times holding time	
MSA-B2122(3.25-3.75)	7 days from collection to analysis	Analysis completed greater than two times holding time	

Sample results associated with sample locations analyzed by analytical method pH by SM4500H+B, SM4500S2-F-11 and ASTM D3872-86 were qualified, as specified in the table below. All other holding times were met.

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

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. 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.

3.1 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.

MS/MSD analysis was not performed on any of the samples from this SDG.

3.2 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 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 one times the RL is applied for water matrices.

The laboratory duplicate analysis performed on samples MSA-B2122(3.25-3.75) and FB(20201204) for redox and pH and on sample MSA-B2223(3.0-3.5) for solids, percent, exhibited acceptable RPDs.

4. 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 30% for water 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.

Sample ID/Duplicate ID	Analyte	Sample Result (ug/l)	Duplicate Result (ug/l)	RPD
	Redox Potential Vs H2	292	338	15 %
MSA-C2223(5.0-5.5) / DUP(20201214)	Solids, Percent	85.9	83.4	3 %
	рН	8.73	8.91	2 %

Results for duplicate samples are summarized in the following table.

The RPDs between parent and duplicate sample were acceptable.

5. 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 and pH were not reported in the analytical report.

6. 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 VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: SM4500H+B, SM4500S2-	Rep	orted		Performance Acceptable		
F-11, SM4500S2-F-11 and SM5310B-11	No	Yes	No	Yes	Required	
Miscellaneous Instrumentation						
Tier II Validation						
Holding times		x	x			
Reporting limits (units)		x		x		
Blanks						
A. Instrument Blanks	x				Х	
B. Method blanks		X		x		
C. Equipment blanks	x				Х	
Laboratory Control Sample (LCS) %R		Х		Х		
Laboratory Control Sample Duplicate (LCSD) %R	Х				Х	
LCS/LCSD Precision (RPD)	Х				Х	
Matrix Spike (MS) %R		Х		Х		
Matrix Spike Duplicate (MSD) %R		Х		Х		
MS/MSD Precision (RPD)		Х		Х		
Field/Lab Duplicate (RPD)		Х		Х		
Dilution Factor		Х		Х		

%R Percent recovery

RPD Relative percent difference

VALIDATION PERFORMED BY: Bhagyashree Fulzele

SIGNATURE:

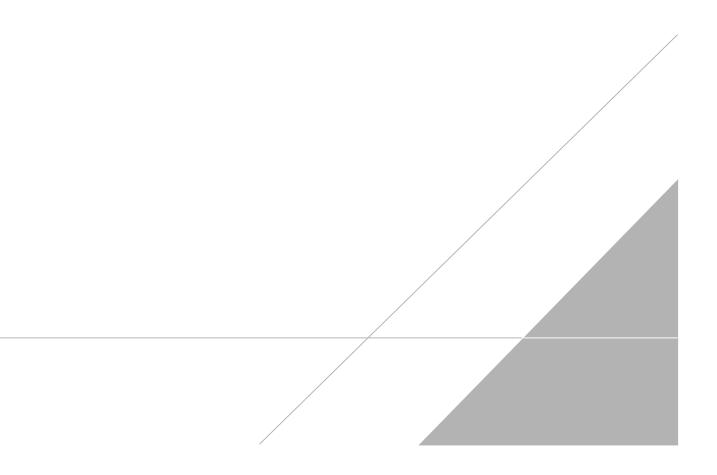
Bfutxele

DATE: January 12, 2020

PEER REVIEW: Rachelle Borne

DATE: January 13, 2020

CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS



SGS	好	CHAIN OF CUSTODY SGS North America Inc Dayton 2235 Route 130, Dayton, NJ 08810		Page 1 of 1
		TEL. 732-329-0200 FAX: 732-329-3499/3480 www.sgs.com/ehsusa	SGS Quote # SGS Job #	JD 17729
Client / Reporting Informati Company Name:	Project Name:	Project Information	Requested Analysis	Matrix Codes
Arcadis	PPG S	+e 107		DW - Drinking Water GW - Ground Water WW - Water
10 Friends LN	18 Chepel Are	Billing Information (If different from Report to)	Ξžγ	SW - Surface Water SO - Soil
The whown PA 18	F40 Jersen City NS	State Company Name		SL-Sludge SED-Sediment OI - Oil
Protect Contact E-mail Smcl Sim Hclaurstillin Quru	Wohin Project # 300/25/658.	Street Address		LIQ - Other Liquid AIR - Air SOL - Other Solid
215-815-10	30	City State Zig		WP - Wipe FB - Field Blank EB-Equipment Blank
J Wites (24) 87	Prove & Project Manager 3-444 5 McLaughlin	Attention:		RB - Rinse Blank TB - Trip Blank
Sense Field ID / Point of Collection		Time Sampled Grab (G) by Comp (C) Matrix bottles \overrightarrow{P} \overrightarrow{P} \overrightarrow{P} \overrightarrow{P} \overrightarrow{P}		
2 111 2020	(3.15-3.K) 1. / M/22 /4 Z.M JIM/20	ISS SM C S N X		<u>J30</u>
3 M.A - 3:02		15 5A 6 3 2 X		
Y MEA-62122	760-0-03) 12/14/20	340 51 63 2 1	× ×	
<u>5 M5A-132225</u>	<u>(5,0-35)</u> (2/14/2010	20 JM G S R X		
7 MSA - (3223)	4.0-45) 12/19/201	215 74 6 5 2 4		
8 MSA-C22233		30 5M (- 5 2 X		
10 FIZZADOUZ	2.75-325 (2/14/2011 >			
19/13/00/2012				
Tum Around	Time (Business Days)	Deliverable		Comments / Special Instructions
10 Business Days	Approved By (SQS PM): / Dete:	Commercial "A" (Level 1) NYASP Cate Commercial "B" (Level 2) NYASP Cate		
5 Business Days		NJ Reduced (Level 3) MA MCP Cr	teria	
3 Business Days'		Commercial "C"		
1 Business Day Other		NJ DKQP EDD Forma Commercial "A" = Results only; Commercial	B" = Results + QC Summary	
Al data available via Lablink	Approval needed for 1-3 Business Day Sample Cu Date / Time: , Received By:	TAT Commercial "C" = Results + QC Summery stody must be open and below each time samples come posses		://www.sgs.com/en/terme-and-conditions
1 Relinquisted by:	12/04/20/13401	they to 2 fifter	//////////////////////////////////////	Japan
Relinguished by:	Date / Time: Received By:		Intact Preserved where applicable	On Ice Cooler Temp. "C
5	5	14.2)	Not intact Absent Therm. ID:	Z, 6 Cj
				2,000/1
			Littlet Assessment MK 3	<i>iii</i> t
		d_{i}	Littlet Assemblier to the Art of Market State St	-
-0023-02-FORM-Daylon - Standard COC.stax				-
		·		

3

JD17729: Chain of Custody Page 1 of 7



5.2

G

DATA OF KNOWN QUALITY CONFORMANCE/NON-CONFORMANCE SUMMARY QUESTIONNAIRE

Laboratory Name: Accutest, Dayton, NJ

Client: Arcadis

Project Number: AGMPAL77493 Sampling Dates: 12/14/2020

	PPG Site 107, 18 Chapel Avenue, Jersey
Project Location:	City, NJ

JD17729-1, JD17729-2, JD17729-3, JD17729-4, JD17729-5, JD17729-6, JD17729-7, JD17729-10, Laboratory Sample ID(s): JD17729-1R, JD17729-2R, JD17729-3R, JD17729-4R, JD17729-5R, JD17729-6R, JD17729-7R, JD17729-1RT

Methods Used: ASTM D1498-76M, SM2540 G 18TH ED MOD, SW846 3060A/7196A, SW846 9045D, SW846 7196A, SM4500H+ B-11, LLOYD KAHN 1988 MOD, SM4500S2- A-11, ASTM D3872-86

1	For each analytical method referenced in this laboratory report package, were all specified QA/QC performance criteria followed, including the requirement to explain any criteria falling outside of acceptable guidelines, as specified in the NJDEP Data of Known Quality performance standards?	✓ Yes 🗌 No
1A	Were the method specified handling, preservation, and holding time requirements met?	✓ Yes 🗌 No
1B	EPH Method: Was the EPH method conducted without significant modifications (see Section 11.3 of respective DKQ methods)	☐ Yes ☐ No ✓ N/A
2	Were all samples received by the laboratory in a condition consistent with that described on the associated chain-of-custody document(s)?	✓ Yes 🗌 No
3	Were samples received at an appropriate temperature (4+/- 2 Deg C)	✓ Yes 🗌 No
4	Were all QA/QC performance criteria specified in NJDEP DKQP standards achieved? See section 5.7	🗌 Yes 🗹 No
5	a) Were Reporting limits specified or referenced on the chain-of-custody or communicated to the laboratory prior to sample receipt?	✓ Yes □ No ✓ Yes □ No
	b) b) Were these limits met?	✓ Yes □ No
6	For each analytical method referenced in this laboratory report package, were result reported for all constituents identified in the method-specific analyte lists presented in the DKQP documents and/or site-specific QAPP?	N/A ✓ Yes No
7	Are project-specific matrix spikes and/or laboratory duplicates included in this data set?	✓ Yes 🗌 No

Notes: For all questions to which the response was "No" (with the exception of question #7) see the Case Narrative in the technical report for additional information If the answer to question #1, #1A or #1B is "No", the data package does not meet the requirements for "Data of Known Quality"

Generated by vickyp on 01/06/2021 12:44



			Page 1 of 1					
Client Sample ID: Lab Sample ID:	MSA-B212 JD17729-1	22(3.25-3.75)			Data (Sampled: 12/14/20	<u>4</u>
Matrix:	SO - Soil					Date I Date I Percer	4	
Project:	PPG Site 1	07, 18 Chap	el Avenue	, Jersey Ci	ty, NJ	1 01 00	nt Solids: 80.5	
General Chemistry								
Analyte		Result	RL	MDL	Units	DF	Analyzed By M	Method
Chromium, Hexaval	ent	ND	0.49	0.39	mg/kg	1	12/23/20 11:59 RI S	SW846 3060A/7196A RA
Redox Potential Vs	H2	222			mv	1	12/22/20 15:13 ER A	ASTM D1498-76M
Solids, Percent		80.5			%	1	12/22/20 11:45 RI S	SM2540 G 18TH ED MOD
pH ^a		7.22 J			su	1	12/22/20 15:07 ER S	SW846 9045D

(a) Temp of pH Reading: 25.2 Deg. C



		Kepo	rt of Al	larysis		Page	e 1 01 1
Client Sample ID: Lab Sample ID: Matrix:	MSA-B2122(3.25-3. JD17729-1R SO - Soil	75)			Date 1	Sampled: 12/14/20 Received: 12/14/20 nt Solids: 80.5	4.2
Project:	PPG Site 107, 18 Ch	apel Avenue	e, Jersey Ci	ity, NJ	1 01 00		
General Chemistry	,						
Analyte	Result	RL	MDL	Units	DF	Analyzed By Method	l
Chromium, Hexava	lent ND	0.48	0.38	mg/kg	1	12/31/20 14:06 JOO SW846 30	060A/7196A RA

Report of Analysis

RL = **Reporting Limit** MDL = Method Detection Limit



JD17729

Client Sample ID: Lab Sample ID: Matrix:	MSA-B21 JD17729- SO - Soil	1RT				Date I	Sampled: 12/14/20 Received: 12/14/20 nt Solids: 80.5	4.3
Project:	PPG Site	107, 18 Chapel	Avenue	, Jersey Ci	ty, NJ	reitei		4
General Chemistry								
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Iron, Ferrous ^a Sulfide Screen ^b		1.5 J NECATIVE	0.20	0.092	%	1 1	01/05/21 13:24 MP ASTM D3872-86 01/05/21 13:24 MP SM4500S2-A-11 R	
Total Organic Carbo	on ^c	30800	120	96	mg/kg	1	01/05/21 23:32 BM LLOYD KAHN 1988 M	OD

Report of Analysis

(a) The ferrous iron test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(b) The sulfide screen test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(c) Analysis done out of holding time.



Client Sample ID: Lab Sample ID: Matrix: Project:	DUP(20) JD17729 SO - Soi PPG Site	-2	pel Avenue	, Jersey Ci	Date 1	Sampled: 12/14/20 Received: 12/14/20 nt Solids: 83.4	4.4 4	
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava Redox Potential Vs Solids, Percent pH ^a		2.7 190 83.4 8.91 J	0.46	0.37	mg/kg mv % su	1 1 1 1	12/23/20 12:03 RI SW846 3060A/7196A 12/22/20 15:15 ER ASTM D1498-76M 12/22/20 11:45 RI SM2540 G 18TH ED M0 12/22/20 15:10 ER SW846 9045D	DD

Report of Analysis

(a) Temp of pH Reading: 25.2 Deg. C



JD17729

			Repo	port of Analysis					
Client Sample ID:	DUP(202	01214)							
Lab Sample ID:	JD17729	-2R				Date S	Sampled: 12/14/20		
Matrix:	SO - Soil					Date I	Received: 12/14/20		
						Percer	nt Solids: 83.4		
Project:	PPG Site	PG Site 107, 18 Chapel Avenue, Jersey City, NJ							
General Chemistry	,								
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method		
Chromium, Hexava	lent	ND	0.47	0.37	mg/kg	1	12/31/20 14:06 JOO SW846 3060A/719		

JD17729

4.5 4

Client Sample ID: Lab Sample ID: Matrix: Project:	JD17729 SO - Soi	-	pel Avenue	, Jersey Ci	Date 1	Sampled: 12/14/20 Received: 12/14/20	4.6 4	
General Chemistry	y							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava Redox Potential Vs Solids, Percent pH ^a		3.5 220 84.7 8.23 J	0.47	0.37	mg/kg mv % su	1 1 1 1	12/23/20 12:03 RI SW846 3060A/7196A 12/22/20 15:19 ER ASTM D1498-76M 12/22/20 11:45 RI SM2540 G 18TH ED MC 12/22/20 15:13 ER SW846 9045D	DD

Report of Analysis

(a) Temp of pH Reading: 24.9 Deg. C

JD17729

Client Sample ID: Lab Sample ID: Matrix:	MSA-B2 JD17729 SO - Soil	•			Date Sampled: 12/14/20 Date Received: 12/14/20 Percent Solids: 84.7		
Project: General Chemistry		107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ		
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	1.3	0.47	0.37	mg/kg	1	12/31/20 14:06 JOO SW846 3060A/7196A

Report of Analysis

RL = **Reporting Limit** MDL = Method Detection Limit

JD17729

4.7 4

Client Sample ID: Lab Sample ID: Matrix:	MSA-B2 JD17729 SO - Soi	-			Date 1	Sampled: 12/14/20 Received: 12/14/20 nt Solids: 74.7	4.8 4	
Project:	PPG Site	e 107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			
General Chemistry								
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent	ND	0.52	0.41	mg/kg	1	12/23/20 12:03 RI SW846 3060A/7196A	
Redox Potential Vs	H2	214			mv	1	12/22/20 15:24 ER ASTM D1498-76M	
Solids, Percent		74.7			%	1	12/22/20 11:45 RI SM2540 G 18TH ED	MOD
pH ^a		7.78 J			su	1	12/22/20 15:16 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 25.1 Deg. C



Client Sample ID: Lab Sample ID: Matrix:	MSA-B2 JD17729 SO - Soi					Date 1	Sampled: 12/14/20 Received: 12/14/20 nt Solids: 74.7
Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ General Chemistry							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	ND	0.52	0.41	mg/kg	1	12/31/20 14:06 JOO SW846 3060A/7196A

Report of Analysis

RL = Reporting Limit MDL = Method Detection Limit



4.9 **4**

Client Sample ID: Lab Sample ID: Matrix: Project:	JD17729 SO - Soi	-	pel Avenue	, Jersey Ci	ty, NJ	Date 1	Sampled: 12/14/20 Received: 12/14/20 nt Solids: 84.6	4.10 4
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava Redox Potential Vs Solids, Percent pH ^a		0.42 J 241 84.6 8.24 J	0.47	0.37	mg/kg mv % su	1 1 1 1	12/23/20 12:03 RI SW846 3060A/7196A 12/22/20 15:29 ER ASTM D1498-76M 12/22/20 11:45 RI SM2540 G 18TH ED 1 12/22/20 15:19 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 25.1 Deg. C



Client Sample ID:	MSA-B2	223(3.0-3.5)							
Lab Sample ID:	JD17729	-5R				Date S	Sampled: 12/14/20		
Matrix:	SO - Soil	O - Soil					Date Received: 12/14/20		
						Percer	nt Solids: 84.6		
Project:	PPG Site	PPG Site 107, 18 Chapel Avenue, Jersey City, NJ							
General Chemistry	7								
		Result	RL	MDL	Units	DF	Analyzed By Method		
Analyte		Kesuit	KL	MDL	Onto		Analyzeu by Methou		

Report of Analysis

RL = Reporting Limit MDL = Method Detection Limit

Page 1 of 1



23 of 155

Client Sample ID: Lab Sample ID: Matrix: Project:	JD17729 SO - Soi	-	pel Avenue	e, Jersey Ci	ty, NJ	Date 1	Sampled: 12/14/20 Received: 12/14/20 nt Solids: 85.9	4.12 4
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava Redox Potential Vs Solids, Percent pH ^a		1.5 240 85.9 8.73	0.46	0.36	mg/kg mv % su	1 1 1 1	12/23/20 12:03 RI SW846 3060A/7196A 12/22/20 15:31 ER ASTM D1498-76M 12/22/20 11:45 RI SM2540 G 18TH ED M 12/22/20 15:22 ER SW846 9045D	OD

Report of Analysis

(a) Temp of pH Reading: 25. Deg. C



Client Sample ID:	MSA-C22	223(5.0-5.5)						
Lab Sample ID:	JD17729-	JD17729-6R				Date Sampled: 12/14/20		
Matrix:	SO - Soil	SO - Soil				Date Received: 12/14/20		
						Percer	nt Solids: 85.9	
Project:	PPG Site 107, 18 Chapel Avenue, Jersey City, NJ							
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	

Report of Analysis

RL = Reporting Limit MDL = Method Detection Limit



4.13 4

Client Sample ID: Lab Sample ID: Matrix:	MSA-C2 JD17729 SO - Soi	-				Date 1	Sampled: 12/14/20 Received: 12/14/20	4.14 A
Project:	PPG Site	e 107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			
General Chemistry								
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent	0.59	0.47	0.37	mg/kg	1	12/23/20 12:03 RI SW846 3060A/7196A	
Redox Potential Vs	H2	231			mv	1	12/22/20 15:35 ER ASTM D1498-76M	
Solids, Percent		83.6			%	1	12/22/20 11:45 RI SM2540 G 18TH ED MO	D
pH ^a		8.64 J			su	1	12/22/20 15:25 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 25.1 Deg. C





Client Sample ID:	MSA-C2	223(4.0-4.5)						
Lab Sample ID:	JD17729	-7R				Date Sampled: 12/14/20		
Matrix:	SO - Soil					Date Received: 12/14/20		
						Percer	nt Solids: 83.6	
Project:	PPG Site	PPG Site 107, 18 Chapel Avenue, Jersey City, NJ						
General Chemistry	,							
		Result	RL	MDL	Units	DF	Analyzed By Method	
Analyte		Kesuit	n				illiaiyzea Dy intentoa	

Report of Analysis





Client Sample ID: Lab Sample ID: Matrix:	FB(20201 JD17729- AQ - Fiel	- /				Date I	Sampled: 12/14/20 Received: 12/14/20 nt Solids: n/a
Project:		107, 18 Chaj	pel Avenue,	Jersey Cit	y, NJ		
General Chemistry							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexaval Redox Potential Vs I pH ^a		ND 414 6.35	0.010	0.0058	mg/l mv su	1 1 1	12/14/20 22:09 EB SW846 7196A 12/18/20 15:10 ER ASTM D1498-76 12/18/20 15:00 ER SM4500H+ B-11

Report of Analysis

(a) Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 25. Deg. C

JD17729

4.16 4



PPG Site 107

DATA QUALITY ASSESSMENT

18 Chapel Avenue Jersey City, New Jersey

Metals and Miscellaneous Analyses

SDG # JD17885

Analyses Performed By: SGS Accutest Dayton, New Jersey.

Report # 39878R Review Level: Tier II Project: 30065658.003

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # JD17885 for samples collected in association with the PPG Site 107 at 18 Chapel Avenue, NJ. The review was conducted as a Tier II 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 Collection		Anal	ysis
Sample ID	Lab ID	Matrix	Date	Parent Sample	МЕТ	MISC
SW-B40(7.5-8.0)	JD17885-2	Soil	12/15/2020		х	х
SW-B40(12.0-12.5)	JD17885-3	Soil	12/15/2020		х	х
SW-B40(14.0-14.5)	JD17885-4	Soil	12/15/2020		х	х
MSA-C2122(12.0-12.5)	JD17885-5	Soil	12/15/2020		x	х
MSA-C2122(12.0-12.5)	JD17885-5R	Soil	12/15/2020		х	х
MSA-C2122(12.0-12.5)	JD17885-5RT	Soil	12/15/2020		х	х
DUP03(20201215)	JD17885-6	Soil	12/15/2020	SW-B40 (6.0-6.5)	х	х
SW-B39(16.0-16.5)	JD17885-7	Soil	12/15/2020		х	х
SW-B31(6.5-7.0)	JD17885-8	Soil	12/16/2020		х	х
SW-B32(8.5-9.0)	JD17885-9	Soil	12/16/2020		х	х
SW-B31(4.5-5.0)	JD17885-10	Soil	12/16/2020		х	х
SW-B32(6.5-7.0)	JD17885-11	Soil	12/16/2020		х	х
SW-B39(11.0-11.5)	JD17885-12	Soil	12/16/2020		х	х
FB(20201216)	JD17885-13	Soil	12/16/2020		х	х
SW-B39(15.5-16.0)	JD17885-14	Soil	12/16/2020		х	х
SW-B39(13.0-13.5)	JD17885-15	Soil	12/16/2020		х	х
SW-B39(13.0-13.5)	JD17885-15R	Soil	12/16/2020		x	х

ANALYTICAL DATA PACKAGE DOCUMENTATION

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

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

Note:

QA - Quality Assurance

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 7196A, 9056A, ASTM D1498-76, EPS 300/SW846 9056A, SM4500S2-F-11, SM5310 B-11 and SM4500H+ B-11. Data were reviewed in accordance with USEPA Region 2 SOP HW-2b, Revision 15 (December 2012), and NJDEP Data Quality Assessment and Data Usability Evaluation Technical Guidance, New Jersey Department of Environmental Protection, Site Remediation Program (April 2014).

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) critieria. 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

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.

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

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. Matrix Spike (MS)/Laboratory Duplicate Analysis

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

3.1 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 the established acceptance limits of 75% to 125% in both the soluble and insoluble spike 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 IDs SW-B40(7.5-8.0) exhibited an acceptable recovery.

Samples associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Location	Analyte	Initial Spike Recovery	Reanalysis Spike Recovery
MSA-C2122(12.0-12.5)	Hexavalent Chromium, Soluble	< 50%	AC

The criteria used to evaluate spike recoveries are presented in the following table. The qualifications are applied to the parent sample results only. In the event of a recovery outside of the control limits, the MS must be reanalyzed.

Control limit	Sample Result	Qualification ¹	
	Non-detect	UJ-	
Spike recovery ≥ 50% but < 75%	Detect	J-	
Spike recovery < 50%	Non-detect	R	
	Detect	R	
Spike recovery > 125%	Non-detect	No Action	
Spike recovery > 125% but \leq 150%	Detect	J+	
Spike recovery > 150%	Detect	R	

Notes:

¹ If recoveries are < 50% or > 150% for both insoluble and soluble spikes, associated data will be rejected ("R"); otherwise qualify associated data if one of the spikes is outside the < 50% or > 150% limits.

The original analyses of the field samples are usable with appropriate qualification. No sample results were rejected.

3.2 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 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.

The laboratory duplicate analysis performed on sample IDs SW-B40(7.5-8.0) and MSA-C2122(12.0-12.5) exhibited RPDs within the control limit.

4. 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 30% for water 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 (mg/kg)	Duplicate Result (mg/kg)	RPD
SW-B40(7.5-8.0) / DUP03(20201215)	Chromium, Hexavalent	0.65	U	AC

The RPD between the parent and duplicate sample was acceptable.

5. 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.

8. 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.

HEXAVALENT CHROMIUM: SW-846 7196A	Rep	Reported		rmance ptable	Not
	No	Yes	No	Yes	Required
Spectrophotometer					
Tier II Validation					
Holding Times		Х		х	
Reporting limits (units)		Х		х	
Blanks					
A. Instrument Blanks	x				х
B. Method Blanks		Х		х	
C. Equipment/Field Blanks		Х		х	
Laboratory Control Sample (LCS)		Х		х	
Matrix Spike (MS) %R		Х	x		
Matrix Spike Duplicate (MSD) %R	х				Х
MS/MSD Precision (RPD)	x				Х
Field/Lab Duplicate (RPD)		Х		х	
Dilution Factor		Х		х	
Total vs Dissolved %D		X		x	

DATA VALIDATION CHECKLIST FOR HEXAVALENT CHROMIUM

%R Percent recovery

RPD Relative percent difference

%RSD Relative percent deviation

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	Soil	QAPP: 24 hours of receipt at laboratory	Cool to <6°C
Oxidation-Reduction Potential by ASTM D1498-76	Soil	Not applicable	Cool to <6°C
Sulfide by SM4500S2-F-11	Soil	7 days from collection to analysis	Cool to <6°C
Total Organic Carbon (TOC) by SM5310B-11	Soil	28 days from collection to analysis	Cool to <6°C
Iron, Ferrous by ASTM D3872-86	Soil	24 hours of receipt at laboratory	Cool to <6°C

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

Sample ID	Holding Time	Criteria		
SW-B40(7.5-8.0)				
SW-B40(12.0-12.5)				
SW-B40(14.0-14.5)				
MSA-C2122(12.0-12.5)	(12.0-12.5)			
DUP03(20201215) SW-B39(16.0-16.5) SW-B31(6.5-7.0) 24 hours of receipt at laboratory				
	Analysis completed greater than two times			
		holding time		
SW-B32(8.5-9.0)				
SW-B31(4.5-5.0)				
SW-B32(6.5-7.0)				
SW-B39(11.0-11.5)				
FB(20201216)				
MSA-C2122(12.0-12.5)	24 hours of receipt at laboratory	Analysis completed greater than two times holding time		
MSA-C2122(12.0-12.5)	7 days from collection to analysis	Analysis completed greater than two times holding time		

Sample results associated with sample locations analyzed by analytical method pH by SM4500H+B, SM4500S2-F-11 and ASTM D3872-86 were qualified, as specified in the table below. All other holding times were met.

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

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. 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.

3.1 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.

MS/MSD analysis was not performed on any of the samples from this SDG.

3.2 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 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 one times the RL is applied for water matrices.

The laboratory duplicate analysis performed on samples MSA-B2122(3.25-3.75) and FB(20201204) for the redox and pH analysis and on sample MSA-B2223(3.0-3.5) for solids, percent, exhibited acceptable RPDs.

4. 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 30% for water 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 (ug/l)	Duplicate Result (ug/l)	RPD
	Redox Potential Vs H2	259	238	8 %
SW-B40(7.5-8.0) / DUP03(20201215)	Solids, Percent	90.9	90.6	AC
· · · · · ·	рН	8.57	8.73	2 %

The RPDs between the parent and duplicate sample were acceptable.

5. 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 and pH were not reported in the analytical report.

6. 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 VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: SM4500H+B, SM4500S2-	Reported		Performance Acceptable		Not Required	
F-11, SM4500S2-F-11 and SM5310B-11	No	Yes	No	Yes	Required	
Miscellaneous Instrumentation						
Tier II Validation						
Holding times		x	x			
Reporting limits (units)		x		x		
Blanks						
A. Instrument Blanks	х				х	
B. Method blanks		Х		X		
C. Equipment blanks	х				х	
Laboratory Control Sample (LCS) %R		Х		Х		
Laboratory Control Sample Duplicate (LCSD) %R	Х				Х	
LCS/LCSD Precision (RPD)	Х				Х	
Matrix Spike (MS) %R	Х				Х	
Matrix Spike Duplicate (MSD) %R	Х				Х	
MS/MSD Precision (RPD)	Х				Х	
Field/Lab Duplicate (RPD)		Х		Х		
Dilution Factor		Х		Х		

Notes:

%R Percent recovery

RPD Relative percent difference

VALIDATION PERFORMED BY: Bhagyashree Fulzele

SIGNATURE:

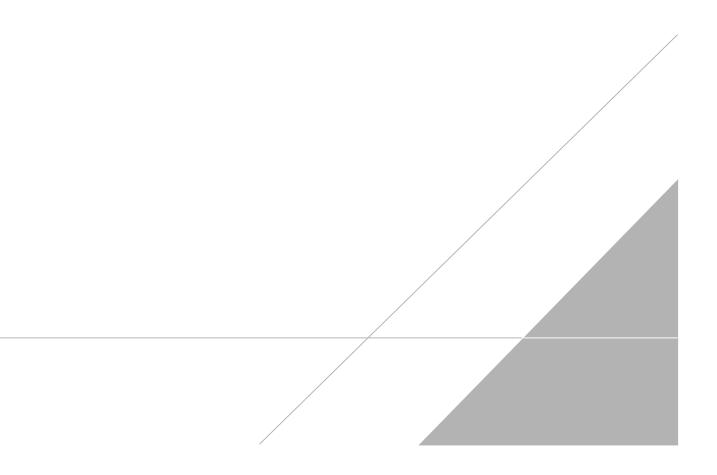
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DATE: January 12, 2020

PEER REVIEW: Rachelle Borne

DATE: January 13, 2020

CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS



	CO CHA	IN OF CUSTO	ŊY			Pag	e _ of 1_	RUSE
SGS	>	North America Inc Day	ton	FED-EX Tracking #	19	Bottle Order Control	2520-141	Nomogenit
		35 Route 130, Dayton, NJ 0881 2-329-0200 FAX: 732-329-349	9/3480	SGS Quote #		SASSIGN S	N17885	No
Client / Reporting Information	Project	www.sgs.com/ehsusa			Reque	sted Analysis	Matrix Codes	E
Company Name:	Project Name:	107		*			DW - Drinking Water GW - Ground Water	PN -
Street Address	Street			H			WW - Water SW - Surface Water SO - Soil	
10 Friends W	18 Chipel Ane State	Billing Information (if different from Re Company Name	port to)	~ ~			SL- Sludge SED-Sediment OI - Oil	
Newton PA 18940	Jersey City NS	Street Address		Nodule			LIQ - Other Liquid AIR - Air	
Project Contact E-mail Jin McLauphin Barcauphin	5 com 30005658 100	2	State Zip	Uhd Vhd			SOL - Other Solid WP - Wipe FB - Field Blank	
Phone# 0 215-815-1030	Client Pulchase Older *			FE			EB-Equipment Blank RB - Rinse Blank	x
Sampler(s) Name(s) Phone Mater (20) 893 444	# Project Manager 2 J. Mc Linghim	Attention:		58			TB - Trip Blank	
5712700 (01)01000	Collection		Number of preserved Bottles	200				
SGS Sample # Field ID / Point of Collection	MEOH/DI Viai # Date Time	6) [0	HOI HOI HOI			+ + + +	LAB USE ONLY	-
FB(2001215)	12/15/20 1230	JMG52		XX		+ $+$ $+$ $+$		1
2 SW-740(7.5-8.0)	1/15/20 1050	TM (FS)		×				_
3 BW -B40(R.O-R.S) 12/12/29/115	JME SI		X				-
$q D \omega - 6 40 (14.0-14.5)$ < MSA - (19)20 (12.0-11.4)	12/15/20 0940	JMGS Q	¥	XY				-
6 DUP03 (20201215	12/15/20-	JMGSI	X	X		+		-
7 811-339 (16.0-16.3	5 1210 20 0 655	JH GS I	X	12-				
8 Stu - 1331 10.5-10.	0 1216/200957	MG SI		X				_
9 Sw- 132 (7.8-92	12/11/2010944	JM 6 S I		X				-
10 DW = B22(11.5 - 11.1)	12/16/20 0900	JM651	X	×				-
12 Sw- B39 (11. 0-11.	5 12/16/200940	JMG 3 1	Deliverable	X		Com	nents / Special Instructions	1
Turn Around Time	(Büsiness Days) / / Approved By (SGS PM): / Date:	Commercial "A" (Level 1) NYASP Category		DOD-QSM5			
10 Business Days		Commercial "B" (Level 2 NJ Reduced (Level 3)	MA MCP Criteria	в			ment 3A/KI	
5 Business Days 3 Business Days*		Full Tier I (Level 4)	CT RCP Criteria_					
2 Business Days'		Commercial "C"	EDD Format			Label Verific	ation	
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1 (12) 12	416/20/ 11201 PAL	m	2 Ally U	×	Date / Time:	Received By:	U S	7
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Client / Reporting Information		Project	Informa								_			Re	queste	d Analys	is	<u> </u>		Matrix Codes
Arcadis		-SHE 1	07									l s								DW - Drinking Water GW - Ground Water WW - Water
2 French M State PA 18940	18 Chape	State	Billing Info Company N	ormation (lame	if differe	ent from	Report	0)			-*/ H	in-lulo								SW - Surface Water SO - Soil SL- Sludge SED-Sediment OI - Oil
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215-815-1030	Client Purchase Orde	(# (#	City				S	ate		Zip	_ <u>`</u>									WP - Wipe FB - Field Blank EB-Equipment Blank
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s		Date Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles		HON (ONE)		MEOH BOORE	TC	5								LAB USE ONLY
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5 5 - B 3 (13.0 - 13.5)	12/	16/20 0945	711	6	5	д	$\left \right $	+	X	++-	X	+	~		_	-				
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Other					Com	merci e l "	A'' = Re:	ults on	y; Comm	rcial "B" =	= Results +	QC Sun	nmary						miention	ma and conditions
All data available via Lablink App	roval needed for 1-3	Business Day ToT Sample Custody m		ocumente	C d belo	ommerci	al "C" =	Results	change	nmary + P. ossessio	artial Raw	data ng coui	rier delive		15	20		ww.sgs.co	invervier	ms-and-conditions
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DATA OF KNOWN QUALITY CONFORMANCE/NON-CONFORMANCE SUMMARY QUESTIONNAIRE

Laboratory Name:	Accutest, Dayton, NJ	Client:	Arcadis
Project Location:	PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	Project Number: Sampling Dates:	AGMPAL77493 12/15/2020, 12/16/2020
Laboratory Sample ID(s):	JD17885-5R, JD17885-15R, JD17885-5RT, JD1 JD17885-6, JD17885-7, JD17885-8, JD17885-9, 13, JD17885-14, JD17885-15		

Methods Used: SW846 3060A/7196A, SM4500S2- A-11, ASTM D3872-86, LLOYD KAHN 1988 MOD, ASTM D1498-76M, SM2540 G 18TH ED MOD, SW846 9045D, SW846 7196A, SM4500H+ B-11

1	For each analytical method referenced in this laboratory report package, were all specified QA/QC performance criteria followed, including the requirement to explain any criteria falling outside of acceptable guidelines, as specified in the NDER Date of Knewn Quidity acceptable guidelines.	☑ Yes	🗆 No
	NJDEP Data of Known Quality performance standards?		
1A	Were the method specified handling, preservation, and holding time requirements met?	🗆 Yes	☑ No
	EPH Method: Was the EPH method conducted without significant modifications		
	(see Section 11.3 of respective DKQ methods)	□ Yes	□ No
1B	(
		⊡ N	I/A
	Were all samples received by the laboratory in a condition consistent with that		
2	described on the associated chain-of-custody document(s)?	⊡ Yes	□ No
2			
	Were samples received at an appropriate temperature (4+/- 2 Deg C)		
3		Yes	🗆 No
3			I/A
4	Were all QA/QC performance criteria specified in NJDEP DKQP standards achieved?	🗆 Yes	☑ No
	a) Were Reporting limits specified or referenced on the chain-of-custody or	Yes	🗆 No
5	communicated to the laboratory prior to sample receipt?	Yes	🗆 No
	b) Were these limits met?		
		✓ Yes	□ No
		□ N	I/A
6	For each analytical method referenced in this laboratory report package, were result reported for all constituents identified in the method-specific analyte lists presented in the DKQP documents and/or site-specific QAPP?	☑ Yes	🗆 No
7	Are project-specific matrix spikes and/or laboratory duplicates included in this data set?	☑ Yes	🗆 No

For all questions to which the response was "No" (with the exception of question #7) see the Case Narrative in the technical report for additional information Notes: If the answer to question #1, #1A or #1B is "No", the data package does not meet the requirements for "Data of Known Quality"

Generated by jadons on 01/06/2021 14:56



Client Sample ID: Lab Sample ID: Matrix:	SW-B40(JD17885 SO - Soil	-2			Date Sampled: 12/15/20 Date Received: 12/16/20 Percent Solids: 90.9					
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			4		
General Chemistry										
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method			
Chromium, Hexaval	ent	0.65	0.44	0.35	mg/kg	1	12/21/20 13:31 RI SW846 3060A/7196A			
Redox Potential Vs	H2	259			mv	1	12/18/20 17:31 ER ASTM D1498-76M			
Solids, Percent		90.9			%	1	12/20/20 16:20 BG SM2540 G 18TH ED MO	OD		
pH ^a		8.57 J			su	1	12/18/20 17:18 ER SW846 9045D			

Report of Analysis

(a) Temp of pH Reading: 25.2 Deg. C



JD17885

Client Sample ID: Lab Sample ID: Matrix: Project:	JD17885 SO - Soi		npel Avenue	, Jersey Ci	Date 1	Sampled: 12/15/20 Received: 12/16/20 nt Solids: 83.4	4.2 4	
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava Redox Potential Vs Solids, Percent pH ^a		1.8 256 83.4 8.88 J	0.49	0.39	mg/kg mv % su	1 1 1 1	12/21/20 13:38 RI SW846 3060A/7196A 12/18/20 17:33 ER ASTM D1498-76M 12/20/20 16:20 BG SM2540 G 18TH ED 1 12/18/20 17:21 ER SW846 9045D	MOD

Report of Analysis

(a) Temp of pH Reading: 24.3 Deg. C

JD17885

Client Sample ID: Lab Sample ID: Matrix: Project:	JD17885 SO - Soi	_	Avenue	, Jersey Ci	Date Sampled: 12/15/20 Date Received: 12/16/20 Percent Solids: 79.4				
General Chemistry	7								
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method		
Chromium, Hexava Redox Potential Vs Solids, Percent pH ^a		ND 125 79.4 11.00 J	0.52	0.41	mg/kg mv % su	1 1 1 1	12/21/20 13:38 RI SW846 3060A/7196/ 12/18/20 18:02 ER ASTM D1498-76M 12/20/20 16:20 BG SM2540 G 18TH ED 12/18/20 17:24 ER SW846 9045D	_	

Report of Analysis

(a) Temp of pH Reading: 24.6 Deg. C



Client Sample ID: Lab Sample ID: Matrix:	MSA-C2122 JD17885-5 SO - Soil	2(12.0-12.	5)		Date I	Sampled: 12/15/20 Received: 12/16/20 nt Solids: 90.9	4.4	
Project:	PPG Site 10	7, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			
General Chemistry	7						,	
Analyte	R	esult	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent 3.	.3 <mark>J</mark>	0.43	0.34	mg/kg	1	12/23/20 12:44 RI SW846 3060A/7196A	4
Redox Potential Vs	H2 23	35			mv	1	12/22/20 15:39 ER ASTM D1498-76M	
Solids, Percent	9	0.9			%	1	12/22/20 11:45 RI SM2540 G 18TH ED	MOD
pH ^a	8	.76 J			su	1	12/22/20 15:31 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 25. Deg. C





			1000		iai y 515		ruge i oi i
Client Sample ID:	MSA-C2	122(12.0-12.	.5)				
Lab Sample ID:	JD17885					Date S	Sampled: 12/15/20
Matrix:	SO - Soil					Date 1	Received: 12/16/20
						Percer	nt Solids: 90.9
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ		
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	2.1 J	0.43	0.34	mg/kg	1	12/29/20 12:35 RI SW846 3060A/7196A

Report of Analysis

RL = Reporting Limit MDL = Method Detection Limit



4.5 4

Client Sample ID: Lab Sample ID: Matrix:	MSA-C2 JD17885 SO - Soil		Date 1	Sampled: 12/15/20 Received: 12/16/20 nt Solids: 90.9			
Project:	PPG Site	107, 18 Chapel	Avenue	, Jersey Ci	ty, NJ	10100	
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Iron, Ferrous ^a Sulfide Screen ^b		0.91 J NEGATIVE	0.20	0.092	%	1 1	12/30/20 13:00 MP ASTM D3872-86 12/30/20 13:00 MP SM4500S2-A-11 R
Total Organic Carb	on ^c	24200	110	85	mg/kg	1	01/05/21 22:43 BM LLOYD KAHN 1988 MOD

Report of Analysis

(a) The ferrous iron test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(b) The sulfide screen test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(c) Analysis done out of holding time.



JD17885

Client Sample ID: Lab Sample ID: Matrix:	DUP03(2020 JD17885-6 SO - Soil	1215)		Date Sampled: 12/15/20 Date Received: 12/16/20 Percent Solids: 90.6				
Project:	PPG Site 107	, 18 Chape	l Avenue,	Jersey Cit	ty, NJ			
General Chemistry								
Analyte	Re	sult	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent NI)	0.44	0.35	mg/kg	1	12/21/20 13:38 RI SW846 3060A/7196A	
Redox Potential Vs	H2 23	8			mv	1	12/18/20 18:17 ER ASTM D1498-76M	
Solids, Percent	90	.6			%	1	12/20/20 16:20 BG SM2540 G 18TH ED MC	
pH ^a	8.7	/3 J			su	1	12/18/20 17:36 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.5 Deg. C





Client Sample ID: Lab Sample ID: Matrix: Project:	JD17885 SO - Soi		ipel Avenue	, Jersey Ci	Date Sampled: 12/16/20 Date Received: 12/16/20 Percent Solids: 65.5				
General Chemistry	y								
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method		
Chromium, Hexava Redox Potential Vs Solids, Percent pH ^a		ND 251 65.5 8.27 J	0.62	0.49	mg/kg mv % su	1 1 1 1	12/21/20 13:38 RI SW846 3060A/7196/ 12/18/20 18:19 ER ASTM D1498-76M 12/20/20 16:20 BG SM2540 G 18TH ED 12/18/20 17:39 ER SW846 9045D	-	

Report of Analysis

(a) Temp of pH Reading: 24.6 Deg. C



JD17885

Client Sample ID: Lab Sample ID: Matrix:	SW-B31(6. JD17885-8 SO - Soil					Date 1	Sampled: 12/16/20 Received: 12/16/20 nt Solids: 82.0	4.9
Project:	PPG Site 1	07, 18 Chaj	pel Avenue	, Jersey Ci	ty, NJ			
General Chemistry							J	
Analyte	1	Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexaval	ent ().42 J	0.48	0.38	mg/kg	1	12/21/20 13:38 RI SW846 3060A/7196	A
Redox Potential Vs	H2 2	238			mv	1	12/18/20 18:23 ER ASTM D1498-76M	
Solids, Percent	8	82			%	1	12/20/20 16:20 BG SM2540 G 18TH E	D MOD
pH ^a	7	7.63 J			su	1	12/18/20 17:42 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 25.1 Deg. C



JD17885

Client Sample ID: Lab Sample ID: Matrix:	SW-B32 JD17885 SO - Soi	-				Date 1	Sampled: 12/16/20 Received: 12/16/20 nt Solids: 84.3	>
Project:	PPG Site	e 107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent	11.9	0.48	0.38	mg/kg	1	12/21/20 13:38 RI SW846 3060A/7196A	
Redox Potential Vs	H2	243			mv	1	12/18/20 18:24 ER ASTM D1498-76M	
Solids, Percent		84.3			%	1	12/20/20 16:20 BG SM2540 G 18TH ED MOI)
pH ^a		7.74 J			su	1	12/18/20 17:45 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.7 Deg. C



Page 1 of 1

JD17885

Lab Sample ID:	SW-B31(4.5-5.0) ID17885-10 SO - Soil					Sampled: 12/16/20 Received: 12/16/20	4.11
	PPG Site 107, 18 Cha	pel Avenue	e, Jersey Ci	ty, NJ		nt Solids: 89.6	4
General Chemistry							
Analyte	Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexavale	nt 0.80	0.43	0.34	mg/kg	1	12/21/20 13:38 RI SW846 3060A/7196A	1
Redox Potential Vs H	2 311			mv	1	12/18/20 16:57 ER ASTM D1498-76M	
Solids, Percent	89.6			%	1	12/20/20 16:20 BG SM2540 G 18TH ED	MOD
pH ^a	7.71 J			su	1	12/18/20 17:06 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.7 Deg. C



Client Sample ID: Lab Sample ID: Matrix:	SW-B32(JD17885 SO - Soil	-11				Date 1	Sampled: 12/16/20 Received: 12/16/20 nt Solids: 85.1	4.12
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava		0.41 J	0.47	0.37	mg/kg	1	12/21/20 13:38 RI SW846 3060A/7196/	4
Redox Potential Vs Solids, Percent	H2	299 85.1			mv %	1	12/18/20 16:59 ER ASTM D1498-76M	MOD
pH ^a		7.76 J			70 SU	1	12/20/20 16:20 BG SM2540 G 18TH ED 12/18/20 17:09 ER SW846 9045D	MOD

Report of Analysis

(a) Temp of pH Reading: 24.2 Deg. C



JD17885

Client Sample ID: Lab Sample ID: Matrix:	SW-B39 JD17885 SO - Soi					Date 1	Sampled: 12/16/20 Received: 12/16/20 nt Solids: 88.5	4.13
Project:	PPG Site	e 107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			
General Chemistry								
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava		1.3	0.46	0.36	mg/kg	1	12/21/20 13:38 RI SW846 3060A/7196A	
Redox Potential Vs	H2	241			mv	1	12/18/20 17:04 ER ASTM D1498-76M	
Solids, Percent		88.5			%	1	12/20/20 16:20 BG SM2540 G 18TH ED MOI	D
pH ^a		9.67 J			su	1	12/18/20 17:12 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.6 Deg. C





Client Sample ID: Lab Sample ID: Matrix:	FB(2020 JD17885 AQ - Fie	,				Date I	Sampled: 12/16/20 Received: 12/16/20 nt Solids: n/a
Project:	PPG Site	107, 18 Cha	pel Avenue,	Jersey Cit	y, NJ		
General Chemistry							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexaval Redox Potential Vs I pH ^a		ND 419 6.65 J	0.010	0.0058	mg/l mv su	1 1 1	12/16/20 19:23 EB SW846 7196A 12/18/20 16:09 ER ASTM D1498-76 12/18/20 15:53 ER SM4500H+ B-11

Report of Analysis

(a) Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 25. Deg. C



Lab Sample ID:	SW-B39(15.5-16.0) JD17885-14 SO - Soil				Date 1	Sampled: 12/16/20 Received: 12/16/20 nt Solids: 54.4
Project:	PPG Site 107, 18 Ch	apel Avenue	, Jersey Ci	ty, NJ		· · · · · · · · · · · · · · · · · · ·
General Chemistry						_
Analyte	Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexavale	ent ND	0.74	0.59	mg/kg	1	12/21/20 13:38 RI SW846 3060A/7196A
Redox Potential Vs H	I2 143			mv	1	12/18/20 17:17 ER ASTM D1498-76M
Solids, Percent	54.4			%	1	12/20/20 16:20 BG SM2540 G 18TH ED MOD
pH ^a	7.84 J			su	1	12/18/20 17:15 ER SW846 9045D

Report of Analysis

(a) Temp of pH Reading: 24.3 Deg. C



JD17885

Client Sample ID: Lab Sample ID: Matrix: Project:	JD17885 SO - Soi		ipel Avenue	, Jersey Ci	ty, NJ	Date 1	Sampled: 12/16/20 Received: 12/16/20 nt Solids: 85.5	4.16 4
General Chemistry	ÿ							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava Redox Potential Vs Solids, Percent pH ^a		ND 239 85.5 8.70 J	0.45	0.36	mg/kg mv % su	1 1 1 1	12/23/20 12:45 RI SW846 3060A/7196A 12/22/20 15:37 ER ASTM D1498-76M 12/22/20 11:45 RI SM2540 G 18TH ED 12/22/20 15:28 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 25. Deg. C



JD17885

Client Sample ID:	SW-B39(13.0-13.5)					
Lab Sample ID:	JD17885-	-15R				Date S	Sampled: 12/16/20
Matrix:	SO - Soil					Date 1	Received: 12/16/20
						Percer	nt Solids: 85.5
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ		
General Chemistry	,						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
	lent	0.41 J	0.47	0.37	mg/kg		

Report of Analysis



4.17 4



PPG Site 107

DATA QUALITY ASSESSMENT

18 Chapel Avenue Jersey City, New Jersey

Metals and Miscellaneous Analyses

SDG # JD17981

Analyses Performed By: SGS Accutest Dayton, New Jersey.

Report # 39879R Review Level: Tier II Project: 30065658.003

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # JD17981 for samples collected in association with the PPG Site 107 at 18 Chapel Avenue, NJ. The review was conducted as a Tier II 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 Collection		Anal	ysis
Sample ID	Lab ID	Matrix	Date	Parent Sample	МЕТ	MISC
SW-B35(8.25-8.75)	JD17981-2	Soil	12/18/2020		х	х
SW-B35(8.25-8.75)	JD17981-2R	Soil	12/18/2020		х	х
SW-B35(8.25-8.75)	JD17981-2RT	Soil	12/18/2020		х	х
SW-B35(10.5-11.0)	JD17981-3	Soil	12/18/2020		х	х
SW-B35(10.5-11.0)	JD17981-3R	Soil	12/18/2020		х	х
SW-B35(10.5-11.0)	JD17981-3RT	Soil	12/18/2020		х	х
SW-B36(6.5-7.0)	JD17981-4	Soil	12/18/2020		х	х
SW-B36(6.5-7.0)	JD17981-4R	Soil	12/18/2020		х	х
DUP04(20201218)	JD17981-5	Soil	12/18/2020		х	х
DUP04(20201218)	JD17981-5R	Soil	12/18/2020	SW-B36(6.5-7.0)	x	x

ANALYTICAL DATA PACKAGE DOCUMENTATION

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

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

Note:

QA - Quality Assurance

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 7196A, 9056A, ASTM D1498-76, EPS 300/SW846 9056A, SM4500S2-F-11, SM5310 B-11 and SM4500H+ B-11. Data were reviewed in accordance with USEPA Region 2 SOP HW-2b, Revision 15 (December 2012), and NJDEP Data Quality Assessment and Data Usability Evaluation Technical Guidance, New Jersey Department of Environmental Protection, Site Remediation Program (April 2014).

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) critieria. 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

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.

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

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. Matrix Spike (MS)/Laboratory Duplicate Analysis

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

3.1 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 the established acceptance limits of 75% to 125% in both the soluble and insoluble spike 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 IDs SW-B35(8.25-8.75) and SW-B35(10.5-11.0).

Samples associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Location	Analyte	Initial Spike Recovery	Reanalysis Spike Recovery
SW-B35(8.25-8.75)	Hexavalent Chromium, Soluble	< 50%	< 50%
SW-B35(10.5-11.0)	Hexavalent Chromium, Soluble	< 50%	< 50%

The criteria used to evaluate spike recoveries are presented in the following table. The qualifications are applied to the parent sample results only. In the event of a recovery outside of the control limits, the MS must be reanalyzed.

Control limit	Sample Result	Qualification ¹	
0 11	Non-detect	UJ-	
Spike recovery ≥ 50% but < 75%	Detect	J-	
0.11	Non-detect	R	
Spike recovery < 50%	Detect	R	
Spike recovery > 125%	Non-detect	No Action	
Spike recovery > 125% but ≤ 150%	Detect	J+	
Spike recovery > 150%	Detect	R	

Notes:

¹ If recoveries are < 50% or > 150% for both insoluble and soluble spikes, associated data will be rejected ("R"); otherwise qualify associated data if one of the spikes is outside the < 50% or > 150% limits.

The original analyses of the field samples are usable with appropriate qualification. No sample results were rejected.

3.2 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 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.

The laboratory duplicate analysis performed on sample IDs SW-B35(8.25-8.75) and SW-B35(10.5-11.0) exhibited RPDs within the control limit.

4. 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 30% for water 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 (mg/kg)	Duplicate Result (mg/kg)	RPD
SW-B36(6.5-7.0) / DUP04(20201218)	Chromium, Hexavalent	3.5	1.2	NC

Field duplicate RPD for compound chromium, hexavalent between parent and duplicate SW-B36(6.5-7.0) / DUP04(20201218) sample was greater than the laboratory control limit, the compound in the associated sample pair was qualified as estimated.

5. 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.

8. 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.

HEXAVALENT CHROMIUM: SW-846 7196A	Reported		Performance Acceptable		Not	
	No	Yes	No	Yes	Required	
Spectrophotometer						
Tier II Validation						
Holding Times		Х		х		
Reporting limits (units)		Х		х		
Blanks						
A. Instrument Blanks	x				Х	
B. Method Blanks		Х		x		
C. Equipment/Field Blanks		Х		х		
Laboratory Control Sample (LCS)		Х		х		
Matrix Spike (MS) %R		Х	X			
Matrix Spike Duplicate (MSD) %R	x				Х	
MS/MSD Precision (RPD)	x				Х	
Field/Lab Duplicate (RPD)		Х	Х			
Dilution Factor		Х		Х		
Total vs Dissolved %D		x		х		

DATA VALIDATION CHECKLIST FOR HEXAVALENT CHROMIUM

%R Percent recovery

RPD Relative percent difference

%RSD Relative percent deviation

GENERAL CHEMISTRY ANALYSES

1. Holding Times

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

Method		Holding Time	Preservation
pH by SM4500H+B	Soil	QAPP: 24 hours of receipt at laboratory	Cool to <6°C
Oxidation-Reduction Potential by ASTM D1498-76	Soil	Not applicable	Cool to <6°C
Sulfide by SM4500S2-F-11	Soil	7 days from collection to analysis	Cool to <6°C
Total Organic Carbon (TOC) by SM5310B-11	Soil	28 days from collection to analysis	Cool to <6°C
Iron, Ferrous by ASTM D3872-86	Soil	24 hours of receipt at laboratory	Cool to <6°C

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

Sample ID	Holding Time	Criteria	
FB(20201218)			
SW-B35(8.25-8.75)			
SW-B35(10.5-11.0)	24 hours of receipt at laboratory	Analysis completed greater than two times holding time	
SW-B36(6.5-7.0)			
DUP04(20201218)			
SW-B35(8.25-8.75)	24 hours of receipt at laboratory	Analysis completed greater than two times holding time	
SW-B35(10.5-11.0)	7 days from collection to analysis	Analysis completed greater than two times holding time	

Sample results associated with sample locations analyzed by analytical method pH by SM4500H+B, SM4500S2-F-11 and ASTM D3872-86 were qualified, as specified in the table below. All other holding times were met.

	Qualification		
Criteria	Criteria Detected Analytes		
Analysis completed less than two times holding time	J	UJ	
Analysis completed greater than two times holding time	J	R	

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. 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.

3.1 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.

MS/MSD analysis was not performed on any of the samples from this SDG.

3.2 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 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 one times the RL is applied for water matrices.

The laboratory duplicate analysis performed on sample IDs SW-B35(8.25-8.75) and SW-B35(10.5-11.0) for redox and pH, exhibited acceptable RPDs.

4. 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 30% for water 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 (ug/l)	Duplicate Result (ug/I)	RPD
	Redox Potential Vs H2	246	269	AC
SW-B36(6.5-7.0) / DUP04(20201218)	Solids, Percent	91.2	91.5	AC
	рН	8.49	8.45	AC

The RPDs between the parent and duplicate were acceptable.

5. 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 and pH were not reported in the analytical report.

6. 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 VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: SM4500H+B, SM4500S2-	Reported		Performance Acceptable		Not	
F-11, SM4500S2-F-11 and SM5310B-11	No	Yes	No	Yes	Required	
Miscellaneous Instrumentation						
Tier II Validation						
Holding times		x	x			
Reporting limits (units)		x		x		
Blanks						
A. Instrument Blanks	х				х	
B. Method blanks		х		X		
C. Equipment blanks	х				х	
Laboratory Control Sample (LCS) %R		Х		Х		
Laboratory Control Sample Duplicate (LCSD) %R	Х				Х	
LCS/LCSD Precision (RPD)	Х				Х	
Matrix Spike (MS) %R	Х				Х	
Matrix Spike Duplicate (MSD) %R	Х				Х	
MS/MSD Precision (RPD)	Х				Х	
Field/Lab Duplicate (RPD)		Х		Х		
Dilution Factor		Х		Х		

Notes:

%R Percent recovery

RPD Relative percent difference

VALIDATION PERFORMED BY: Bhagyashree Fulzele

SIGNATURE:

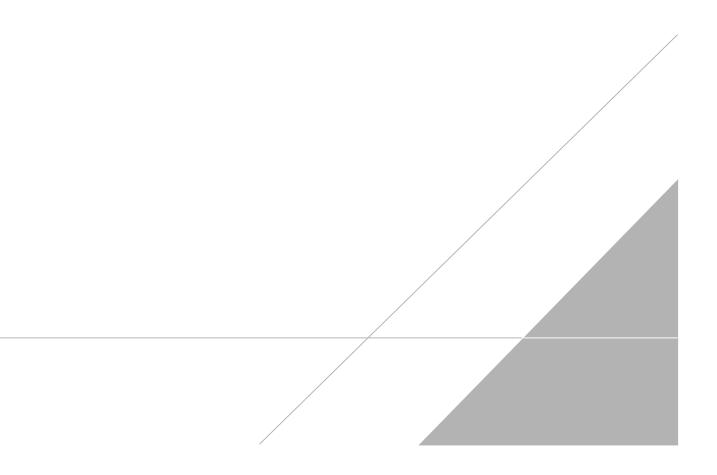
Bfutxele

DATE: January 13, 2020

PEER REVIEW: Rachelle Borne

DATE: January 13, 2020

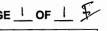
CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS



SGS X	CHAIN OF CUSTODY SGS North America Inc Dayton 2235 Route 130, Dayton, NJ 06810 TEL. 732-329-0200 FAX 732-329-3499 www.sgs.com/ehsusa	SGS Job # JD 17981
Company Name Alicadis Note Address Alicadis Notation PA 18940 Pore 10 PA 18940 Pore 10 PA 18940 Proce 10 Part of Collection Field ID / Point of Collection	Project Name: Project Name: PPG - Site 107 Street (8 Chapel Are, Chy State Tecsey City N3 State Sta	Metrix Code DW - Drinking W GW - Ground W WW - Water SV - Surface W SO - Soil SL - Shudge SE-Sedimen OI - Oil LiQ - Other Light RR - Air SOL - Other Sur PFS-Field Bian RB - Rinse Bian RB - R
 SL - B35[8:25-8:5]/K SU - B35[10.5 - 110] SU - B35[10.5 - 110] BW - B35(10.5 - 11.0) BW - B35(10.5 - 11.0) SU - B36(0.5 - 10.0) SU - B36(0.5 - 10.0) SU - B36(0.5 - 10.0) 	KIISIO INIC INIC INIC 1/8/10 INIC INIC INIC INIC 1/8/10 INIC INIC INIC INIC 3 12/18/10 INIC INIC INIC 1 1/8/10 INIC INIC 2 1/8/10 INIC INIC 3 1/8/10 INIC INIC	D43
Turnaround Time (Business days) Std. 10 Business Days 5 Day RUSH 2 Day RUSH 1 Day RUSH ether Emergency & Rush T/A data available via LabLink	NJ Reduced EDD Format Commercial "C" Other Other NJ Date of Known Quality Protocol Reporting Commercial "A" = Results Only; Commercial "S" = Results + QC Summary NJ Reduced of Results + QC Summary + Date fRew data Sample invec semple Custody guergZe documented below sech time samples Charge posseption, including courier delivery.	ABEL VERIFICATION
Relinquistant Of Bampier: Date Time: Relinquistant by Bampier: Dete Time: Relinquistant by: Date Time: Form:SM088-03C (revised 2/12/18)	9L0 14/63 Received By: 12/10/2008 1 10 10 10	4

JD17981: Chain of Custody Page 1 of 4

SGS



5.2

G

DATA OF KNOWN QUALITY CONFORMANCE/NON-CONFORMANCE SUMMARY QUESTIONNAIRE

	Laboratory Name:	Accutest, Dayton, NJ	Client: Arcadis		
	Project Location:	PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	Project Number: AGMPAL7	7493	
			Sampling Dates: 12/18/2020)	
Labo	oratory Sample ID(s):	JD17981-1, JD17981-2, JD17981-3, JD17981- 4R, JD17981-5R, JD17981-2RT, JD17981-3R		7981-3R, J	D17981-
	Methods Used:	ASTM D1498-76, SW846 7196A, SM4500H+ I SW846 3060A/7196A, SW846 9045D, LLOYD 86			
1	specified explain ar	analytical method referenced in this laborato QA/QC performance criteria followed, incluo ny criteria falling outside of acceptable guide ata of Known Quality performance standards	ling the requirement to elines, as specified in the	☑ Yes	🗆 No
1A	Were the met?	method specified handling, preservation, an	d holding time requirements	🗌 Yes	☑ No
1B		od: Was the EPH method conducted withou on 11.3 of respective DKQ methods)	t significant modifications	□ Yes ☑ N	□ No N/A
2		amples received by the laboratory in a cond on the associated chain-of-custody docume		☑ Yes	🗆 No
3	Were sam	ples received at an appropriate temperature	(4+/- 2 Deg C)	⊻ Yes	□ No
4	Were all G achieved?	QA/QC performance criteria specified in NJD	EP DKQP standards	🗌 Yes	☑ No
5	, ,	orting limits specified or referenced on the c cated to the laboratory prior to sample receipt	,	✓ Yes✓ Yes	No No
	b) b) Were th	nese limits met?		☑ Yes	🗆 No
				□ N	N/A
6	reported f	analytical method referenced in this laborato or all constituents identified in the method-s QP documents and/or site-specific QAPP?		⊡ Yes	🗆 No
7	Are projec set?	ct-specific matrix spikes and/or laboratory d	uplicates included in this data	⊡ Yes	🗆 No

For all questions to which the response was "No" (with the exception of question #7) see the Case Narrative in the technical report for additional information If the answer to question #1, #1A or #1B is "No", the data package does not meet the requirements for "Data of Known Quality" Notes:

Generated by jadons on 01/06/2021 14:53

5.3 S



Client Sample ID: Lab Sample ID: Matrix:	FB(2020 JD17981 AQ - Fie	- /				Date I	Sampled: 12/18/20 Received: 12/18/20 nt Solids: n/a
Project:		107, 18 Char	pel Avenue,	Jersey Cit	y, NJ		
General Chemistry							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexaval Redox Potential Vs∃ pH ª		ND 495 6.71 J	0.010	0.0058	mg/l mv su	1 1 1	12/18/20 23:09 EB SW846 7196A 12/21/20 17:43 ER ASTM D1498-76 12/21/20 17:27 ER SM4500H+ B-11

Report of Analysis

(a) Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 24.5 Deg. C

JD17981

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Page 1 of 1

Client Sample ID: Lab Sample ID: Matrix:	SW-B35(JD17981 SO - Soil	-2	.75)				Date 1	Sampled: 12/18/20 Received: 12/18/20 nt Solids: 84.1
Project:	PPG Site	107, 1	8 Chap	el Avenue	, Jersey Ci	ty, NJ		
General Chemistry	7							
Analyte		Resul	lt	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	ND	UJ	0.47	0.37	mg/kg	1	12/23/20 10:20 RI SW846 3060A/7196A
Redox Potential Vs	H2	311				mv	1	12/22/20 11:11 ER ASTM D1498-76M
Solids, Percent		84.1				%	1	12/22/20 15:37 BG SM2540 G 18TH ED N
pH ^a		7.65	J			su	1	12/21/20 17:30 ER SW846 9045D

Report of Analysis

(a) Temp of pH Reading: 24.6 Deg. C



Client Sample ID: Lab Sample ID: Matrix:	SW-B35 JD17981 SO - Soi					Date I	Sampled: 12/18/20 Received: 12/18/20 nt Solids: 84.1
Project: General Chemistry		e 107, 18 Chape	el Avenue	, Jersey Ci	ty, NJ		
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	ND UJ	0.47	0.37	mg/kg	1	12/29/20 17:21 RI SW846 3060A/7196A

Report of Analysis



Page 1 of 1

4.3

4

Client Sample ID: Lab Sample ID: Matrix:	SW-B35(JD17981- SO - Soil					Date 1	Sampled: 12/18/20
Project:	PPG Site	107, 18 Chapel	Avenue	, Jersey Ci	ty, NJ	1 61 61	nt Solids: 84.1
General Chemistry	, ,						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Iron, Ferrous ^a Sulfide Screen ^b		1.3 J NEGATIVE	0.20	0.092	%	1 1	12/30/20 13:00 MP ASTM D3872-86 12/30/20 13:00 MP SM4500S2-A-11 R
Total Organic Carbo	on ^c	69600	120	92	mg/kg	1	01/05/21 13:53 BM LLOYD KAHN 1988 MOD

Report of Analysis

(a) The ferrous iron test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(b) The sulfide screen test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(c) Analysis done out of holding time.



Client Sample ID: Lab Sample ID: Matrix:	SW-B350 JD17981 SO - Soil	-3	.0)				Date 1	Sampled: 12/18/20 Received: 12/18/20 nt Solids: 78.4	4.5 4
Project:	PPG Site	107, 18	Chape	l Avenue	, Jersey Ci	ty, NJ			
General Chemistry	7								
Analyte		Result		RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent	ND	UJ	0.50	0.40	mg/kg	1	12/23/20 10:28 RI SW846 3060A/7196A	
Redox Potential Vs	H2	240				mv	1	12/22/20 11:18 ER ASTM D1498-76M	
Solids, Percent		78.4				%	1	12/22/20 15:37 BG SM2540 G 18TH ED M	OD
pH ^a		7.23	J			su	1	12/21/20 17:33 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.7 Deg. C



JD17981

Page 1 of 1

Client Sample ID:	SW-B35(10.5-11.0					
Lab Sample ID:	JD17981-	-3R				Date S	Sampled: 12/18/20
Matrix:	SO - Soil					Date 1	Received: 12/18/20
						Percer	nt Solids: 78.4
Project:	PPG Site	107, 18 0	Chapel Avenue	, Jersey Ci	ity, NJ		
General Chemistry							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
			0.50	0.40			

Report of Analysis

RL = Reporting Limit MDL = Method Detection Limit

4.6 **4**

Page 1 of 1

Percent Solids: 78.4 Project: PPG Site 107, 18 Chapel Avenue, Jersey City, NJ General Chemistry Analyte Result RL MDL Units DF Analyzed By Method Iron, Ferrous ^a 0.72 J 0.20 0.092 % 1 12/30/20 13:00 MP ASTM D3872-86 Sulfide Screen ^b NEGATIVE 1 12/30/20 13:00 MP SM450052-A-11	Client Sample ID: Lab Sample ID: Matrix:	SW-B35(10.3 JD17981-3R SO - Soil	-				Date Sar Date Ree	ceived: 12/	/18/20 /18/20	-	4.7
Analyte Result RL MDL Units DF Analyzed By Method Iron, Ferrous ^a 0.72 J 0.20 0.092 % 1 12/30/20 13:00 MP ASTM D3872-86	Project:	PPG Site 107	7, 18 Chapel A	Avenue, J	lersey City	, NJ	Percent	Solids: 78.	4		4
Iron, Ferrous ^a 0.72 J 0.20 0.092 % 1 12/30/20 13:00 MP ASTM D3872-86	General Chemistry										I
	Analyte	Re	esult	RL	MDL	Units	DF	Analyzed	By	Method	
Total Organic Carbon c 4250 130 99 mg/kg 1 01/04/21 20:08 BM LLOYD KAHN 1	Sulfide Screen ^b	N	EGATIVE			_	1	12/30/20 13:0	0 MP	SM4500S2- A-11	R

Report of Analysis

(a) The ferrous iron test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(b) The sulfide screen test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(c) Analysis done out of holding time.



Client Sample ID: Lab Sample ID: Matrix:	SW-B36(JD17981 SO - Soil	-4				Date 1	Sampled: 12/18/20 Received: 12/18/20 nt Solids: 91.2	4.8
Project:	PPG Site	e 107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			
General Chemistry								
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent	1.7	0.43	0.34	mg/kg	1	12/23/20 10:28 RI SW846 3060A/7196A	
Redox Potential Vs	H2	246			mv	1	12/22/20 11:23 ER ASTM D1498-76M	
Solids, Percent		91.2			%	1	12/22/20 15:37 BG SM2540 G 18TH ED MO	OD
pH ^a		8.49 J			su	1	12/21/20 17:36 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.9 Deg. C



			Repo	rt of Ar	nalysis		Page 1 of 1
Client Sample ID:	SW-B36	(6.5-7.0)					
Lab Sample ID:	JD17981	-4R				Date S	Sampled: 12/18/20
Matrix:	SO - Soi	l				Date H	Received: 12/18/20
						Percer	nt Solids: 91.2
Project:	PPG Site	e 107, 18 Chaj	pel Avenue	, Jersey Ci	ty, NJ		
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	3.5 J	0.44	0.35	mg/kg	1	12/29/20 17:28 RI SW846 3060A/7196A



JD17981

4.9 4

Client Sample ID:DUP04(20201218)Lab Sample ID:JD17981-5Matrix:SO - SoilProject:PPG Site 107, 18 Chapel Avenue, Jersey City, NJ							Sampled: 12/18/20 Received: 12/18/20 nt Solids: 91.5	4.10 4
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava Redox Potential Vs Solids, Percent pH ^a		2.0 269 91.5 8.45 J	0.44	0.35	mg/kg mv % su	1 1 1 1	12/23/20 10:28 RI SW846 3060A/7196A 12/22/20 11:31 ER ASTM D1498-76M 12/22/20 15:37 BG SM2540 G 18TH ED 12/21/20 17:39 ER SW846 9045D	

(a) Temp of pH Reading: 24.7 Deg. C

JD17981



Report of Analysis

SGS North America Inc.

	Report of Analysis											
Client Sample ID:	-	-										
Lab Sample ID:	JD17981-	-5R				Date S	Sampled: 12/18/20					
Matrix:	SO - Soil					Date I	Received: 12/18/20					
						Percer	nt Solids: 91.5					
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ							
General Chemistry	7											
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method					
Chromium, Hexava	lent	1.2 J	0.43	0.34	mg/kg	1	12/29/20 17:28 RI SW846 3060A/719					

JD17981

4.11 4



PPG Site 107

DATA QUALITY ASSESSMENT

18 Chapel Avenue Jersey City, New Jersey

Metals and Miscellaneous Analyses

SDG # JD18055

Analyses Performed By: SGS Accutest Dayton, New Jersey

Report #39880R Review Level: Tier II Project: 30065658.003

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # JD18055 for samples collected in association with the PPG Site 107 at 18 Chapel Avenue, NJ. The review was conducted as a Tier II 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 Collection		Anal	lysis
Sample ID	Lab ID	Matrix	Date	Parent Sample	MET	MISC
SW-B37(9.0-9.5)	JD18055-1	Soil	12/21/2020		х	х
SW-B37(9.0-9.5)	JD18055-1R	Soil	12/21/2020		х	х
SW-B37(9.0-9.5)	JD18055-1RT	Soil	12/21/2020		х	х
SW-B37(10.0-10.5)	JD18055-2	Soil	12/21/2020		х	х
SW-B37(10.0-10.5)	JD18055-2R	Soil	12/21/2020		х	х
SW-B37(12.0-12.5)	JD18055-3	Soil	12/21/2020		х	х
SW-B37(12.0-12.5)	JD18055-3R	Soil	12/21/2020		х	х
SW-B37(14.0-14.5)	JD18055-4	Soil	12/21/2020		х	х
SW-B37(14.0-14.5)	JD18055-4R	Soil	12/21/2020		х	х
SW-B37(15.0-15.5)	JD18055-5	Soil	12/21/2020		х	х
SW-B37(15.0-15.5)	JD18055-5R	Soil	12/21/2020		х	х
SW-B36(9.5-10.0)	JD18055-6	Soil	12/21/2020		х	х
SW-B36(9.5-10.0)	JD18055-6R	Soil	12/21/2020		х	х
SW-B36(9.5-10.0)	JD18055-6RT	Soil	12/21/2020		х	х
SW-B36(11.0-11.5)	JD18055-7	Soil	12/21/2020		х	х
SW-B36(11.0-11.5)	JD18055-7R	Soil	12/21/2020		х	х
SW-B40(16.0-16.5)	JD18055-8	Soil	12/21/2020		х	х
SW-B40(16.0-16.5)	JD18055-8R	Soil	12/21/2020		х	х
FB(20201221)	JD18055-9	Soil	12/21/2020		х	х
SW-B36(12.0-12.5)	JD18055-10	Soil	12/21/2020		х	х
SW-B36(12.0-12.5)	JD18055-10R	Soil	12/21/2020		х	x

ANALYTICAL DATA PACKAGE DOCUMENTATION

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

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

Note:

QA - Quality Assurance

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 7196A, 9056A, ASTM D1498-76, EPS 300/SW846 9056A, SM4500S2-F-11, , SM5310 B-11 and SM4500H+ B-11. Data were reviewed in accordance with USEPA Region 2 SOP HW-2b, Revision 15 (December 2012), and NJDEP Data Quality Assessment and Data Usability Evaluation Technical Guidance, New Jersey Department of Environmental Protection, Site Remediation Program (April 2014).

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) critieria. 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

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.

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

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. Matrix Spike (MS)/Laboratory Duplicate Analysis

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

3.1 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 the established acceptance limits of 75% to 125% in both the soluble and insoluble spike 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 SW-B37(9.0-9.5) and SW-B36(9.5-10.0).

Samples associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Location	Analyte	Initial Spike Recovery	Reanalysis Spike Recovery
SW-B37(9.0-9.5)	Hexavalent Chromium, Soluble	< 50%	AC
SW-B36(9.5-10.0)	Hexavalent Chromium, Soluble	AC	<50%

The criteria used to evaluate spike recoveries are presented in the following table. The qualifications are applied to the parent sample results only. In the event of a recovery outside of the control limits, the MS must be reanalyzed.

Control limit	Sample Result	Qualification ¹
0 1	Non-detect	UJ-
Spike recovery ≥ 50% but < 75%	Detect	J-
0.11	Non-detect	R
Spike recovery < 50%	Detect	R
Spike recovery > 125%	Non-detect	No Action
Spike recovery > 125% but ≤ 150%	Detect	J+
Spike recovery > 150%	Detect	R

Notes:

¹ If recoveries are < 50% or > 150% for both insoluble and soluble spikes, associated data will be rejected ("R"); otherwise qualify associated data if one of the spikes is outside the < 50% or > 150% limits.

The original analyses of the field samples are usable with appropriate qualification. No sample results were rejected.

3.2 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 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.

The laboratory duplicate analysis performed on sample IDs SW-B37(9.0-9.5) and SW-B36(9.5-10.0) and exhibited RPDs within the control limit.

4. 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 30% for water 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 was not collected form this SDG.

5. 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.

8. 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.

HEXAVALENT CHROMIUM: SW-846 7196A	Rep	orted		rmance ptable	Not
	No	Yes	No	Yes	Required
Spectrophotometer					
Tier II Validation					
Holding Times		Х		х	
Reporting limits (units)		Х		х	
Blanks					
A. Instrument Blanks	x				х
B. Method Blanks		Х		х	
C. Equipment/Field Blanks		Х		х	
Laboratory Control Sample (LCS)		Х		х	
Matrix Spike (MS) %R		Х	x		
Matrix Spike Duplicate (MSD) %R	х				Х
MS/MSD Precision (RPD)	x				х
Field/Lab Duplicate (RPD)		Х		Х	
Dilution Factor		Х		Х	
Total vs Dissolved %D		X		х	

DATA VALIDATION CHECKLIST FOR HEXAVALENT CHROMIUM

%R Percent recovery

RPD Relative percent difference

%RSD Relative percent deviation

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	Soil	QAPP: 24 hours of receipt at laboratory	Cool to <6°C
Oxidation-Reduction Potential by ASTM D1498-76	Soil	Not applicable	Cool to <6°C
Sulfide by SM4500S2-F-11	Soil	7 days from collection to analysis	Cool to <6°C
Total Organic Carbon (TOC) by SM5310B-11	Soil	28 days from collection to analysis	Cool to <6°C
Iron, Ferrous by ASTM D3872-86	Soil	24 hours of receipt at laboratory	Cool to <6°C

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

Sample ID	Holding Time	Criteria				
SW-B37(9.0-9.5)						
SW-B37(10.0-10.5)						
SW-B37(12.0-12.5)						
SW-B37(14.0-14.5)						
SW-B37(15.0-15.5)	24 hours of receipt at loboratory	Analysis completed greater than two times				
SW-B36(9.5-10.0)	24 hours of receipt at laboratory	holding time				
SW-B36(11.0-11.5)						
SW-B40(16.0-16.5)						
FB(20201221)						
SW-B36(12.0-12.5)						
SW-B37(9.0-9.5)	24 hours of respirit at laboratory	Analysis completed greater than two times				
SW-B36(9.5-10.0)	24 hours of receipt at laboratory	holding time				
SW-B37(9.0-9.5)	7 days from collection to analysis	Analysis completed greater than two times				
SW-B36(9.5-10.0)		holding time				

Sample results associated with sample locations analyzed by analytical method pH by SM4500H+B, SM4500S2-F-11 and ASTM D3872-86 were qualified, as specified in the table below. All other holding times were met.

	Qualification					
	Detected Analytes	Non-detect Analytes				
Analysis completed less than two times holding time	J	UJ				
Analysis completed greater than two times holding time	J	R				

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. 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.

3.1 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 analysis performed on sample ID SW-B37(9.0-9.5) for ferrous iron exhibited an acceptable recovery.

3.2 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 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 one times the RL is applied for water matrices.

The laboratory duplicate analysis performed on sample ID SW-B37(9.0-9.5) for iron, ferrous exhibited an acceptable RPD.

The laboratory duplicate analysis performed on sample IDs SW-B37(9.0-9.5), SW-B36(9.5-10.0), SW-B36(11.0-11.5) and FB(20201221) for redox potential, percent solid and pH exhibited acceptable RPDs.

4. 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 30% for water 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 was not collected from any of the samples from this SDG.

5. 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 and pH were not reported in the analytical report.

6. 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 VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: SM4500H+B, SM4500S2-	Rep	orted	Perfor Acce	Not Required	
F-11, SM4500S2-F-11 and SM5310B-11	No	Yes	No	Yes	Required
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		x	x		
Reporting limits (units)		x		x	
Blanks					
A. Instrument Blanks	Х				х
B. Method blanks		X		x	
C. Equipment blanks	Х				х
Laboratory Control Sample (LCS) %R		Х		Х	
Laboratory Control Sample Duplicate (LCSD) %R	Х				Х
LCS/LCSD Precision (RPD)	Х				Х
Matrix Spike (MS) %R		Х		Х	
Matrix Spike Duplicate (MSD) %R	Х				Х
MS/MSD Precision (RPD)	Х				Х
Field/Lab Duplicate (RPD)		Х		Х	
Dilution Factor		Х		Х	

%R Percent recovery

RPD Relative percent difference

VALIDATION PERFORMED BY: Bhagyashree Fulzele

SIGNATURE:

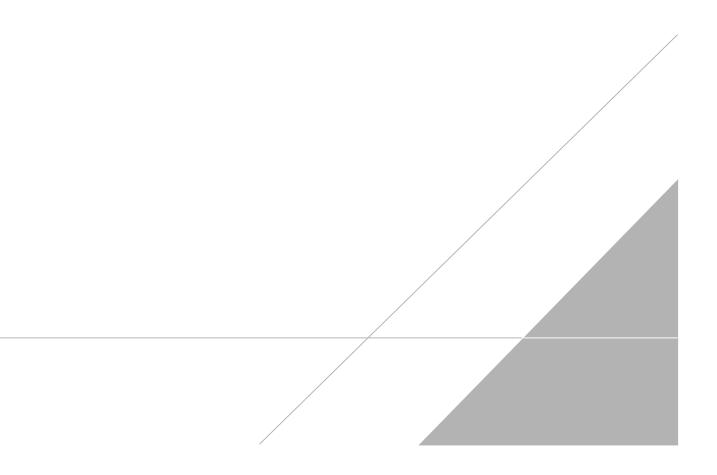
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DATE: January 12, 2020

PEER REVIEW: Rachelle Borne

DATE: January 13, 2020

CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS



SGS	Sofb		2235 F	N OF North Amer Route 130, 1 -329-0200 www.sgs.c	rica Inc Dayton FAX	- Dayton NJ 0881 732-329-	10	Y				EX Track	ing #			Bo	P	iontrol # []	2520		
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Company Name AFCGOIS Street Address	Project Name:	PPG	Site	- 10	7						≯	4								DW - Drinking GW - Ground	Water Water
10 Friends (N	IA C	habel	tre	Billing Inform	mation (if different	from R	Report to))	AUNION .										WW - Wa SW - Surface	Water
City State PA 18940 Newtown PA 18940 Project Contact	City Jerse Project #	y city	NJ	Company Nar Street Addres	me							d								SO - So SL- Sludg SED-Sedim Ol - Oil	je nent
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# Field ID / Point of Collection	MEOH/DI Vial	# Date	Time		Matrix	# of bottles	HCI NaOH	HN03 H2SO4	NONE DI Wal	MEOH) 2								LAB USE O	
(SW-B37(9.0-9.5)		12/21/20	1050		25	2			X		V	V								1743	-
1 [SW-B5719.0-9.5]-MS		12/2020	1050	CC	Ş	2			X		V	V								080	
Sw-B37(9.0-9.5)-MSD		12/2/10	1050	22	S	2	_		X	$\left \right $		1								1100	_
2 SU-B87(10.0-10.5)		n/21/10	1035	Cc	S	1		ļ.	X		\mathbf{V}	-								CY	-
3 54-827 (12.0-8.5)		12/11/20	1145	CC	S			_	X	$\left \right $	V	 									7
4 SW-B37(140-M.S)	+	1/21/20		ČC	S	2	-		×	┝╌┼╌┤	V	V				_					
5 50-887 (15.0-15.5) 6 (34-836 (9.5-10.0)	+	12/21/20	1055	ec	S	1	-		X		V.	,									
(SU-B36(9.5-10.0)-MS	+	12/21/20	0930	CC	S	2		- -	X		V	V.									
5W-B36(9.5-10.0)-MSC	. <u>+</u>	12/21/20		CC	S	2	-	-	X	+	V	V	-			_	+				
7 54-834(11.0-11.5)			0930		s s	2			×		V	V				_	+				
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JD18055: Chain of Custody Page 1 of 7



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Sampler(s) Name(s) Cristin Cifch; 201 2099 Lab	Project Manager	aughlim		Attention:									<u>(inc</u>	3									EB-Equipment Blank RB- Rinse Blank TB-Trip Blank
Lab Sample # Field ID / Point of Collection	MEOH/DI Vial #	Collec	tion Time	Sampled b	y Matrix	# of bottles	₽	NaOH HNO3 HNO3	X	NONE DI Water	EOH EOH		<u>G</u>	Nodula									LAB USE ONLY
8 54-840 (16.0-46.5)		12/21/70	12.50		S	1	Ĩ	žΞ	Ŧ	ž a	2 0	<u>'</u>	X	<						+	+		LAB USE UNLT
9 ER (20201221)	1	12/21/20	0200	Cc	FB	2	+	+					$\hat{\mathbf{x}}$				+	-		+-			
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Form:SM088-03C (revised 2/12/18)

http://www.sgs.com/en/terms-and-conditions.

JD18055: Chain of Custody Page 2 of 7



5.2

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DATA OF KNOWN QUALITY CONFORMANCE/NON-CONFORMANCE SUMMARY QUESTIONNAIRE

Laboratory Name:	Accutest, Dayton, NJ	Client:	Arcadis
Project Location:	PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	Project Number: Sampling Dates:	
	JD18055-1R, JD18055-2R, JD18055-3R, JD180 JD18055-8R, JD18055-10R, JD18055-1, JD180 JD18055-6, JD18055-7, JD18055-8, JD18055-9,	5-2, JD18055-3, JD	018055-4, JD18055-5,

Methods Used: SW846 3060A/7196A, ASTM D1498-76M, SM2540 G 18TH ED MOD, SW846 9045D, SW846 7196A, SM4500H+ B-11, LLOYD KAHN 1988 MOD, SM4500S2- A-11, ASTM D3872-86

1	For each analytical method referenced in this laboratory report package, were all specified QA/QC performance criteria followed, including the requirement to explain any criteria falling outside of acceptable guidelines, as specified in the NJDEP Data of Known Quality performance standards?	☑ Yes	🗆 No
1A	Were the method specified handling, preservation, and holding time requirements met?	🗌 Yes	☑ No
1B	EPH Method: Was the EPH method conducted without significant modifications (see Section 11.3 of respective DKQ methods)	🗆 Yes	🗆 No
		✓ N	I/A
2	Were all samples received by the laboratory in a condition consistent with that described on the associated chain-of-custody document(s)?	☑ Yes	🗆 No
3	Were samples received at an appropriate temperature (4+/- 2 Deg C)	☑ Yes	🗆 No
			I/A
4	Were all QA/QC performance criteria specified in NJDEP DKQP standards achieved?	□ Yes	☑ No
5	a) Were Reporting limits specified or referenced on the chain-of-custody or communicated to the laboratory prior to sample receipt?	✓ Yes✓ Yes	□ No □ No
	b) b) Were these limits met?	☑ Yes	🗆 No
			I/A
6	For each analytical method referenced in this laboratory report package, were result reported for all constituents identified in the method-specific analyte lists presented in the DKQP documents and/or site-specific QAPP?	⊡ Yes	□ No
7	Are project-specific matrix spikes and/or laboratory duplicates included in this data set?	☑ Yes	🗆 No

Notes: For all questions to which the response was "No" (with the exception of question #7) see the Case Narrative in the technical report for additional information If the answer to question #1, #1A or #1B is "No", the data package does not meet the requirements for "Data of Known Quality"

Generated by jadons on 01/06/2021 13:22



				Repo	rt of Ar	nalysis			Page 1 of 1
Client Sample ID: Lab Sample ID: Matrix:	SW-B37(JD18055 SO - Soil	-1					Date 1	Sampled: 12/21/20 Received: 12/21/20 nt Solids: 89.2	
Project:	PPG Site	107, 18	Chape	Avenue	, Jersey Ci	ty, NJ	1 0100		
General Chemistry	7								
Analyte		Result		RL	MDL	Units	DF	Analyzed By I	Method
Chromium, Hexava Redox Potential Vs Solids, Percent pH ^a		0.89 254 89.2 7.85	J	0.44	0.35	mg/kg mv % su	1 1 1 1	12/24/20 11:50 JOO 5 12/23/20 13:18 ER / 12/23/20 16:27 BG 5 12/23/20 13:30 ER 5	ASTM D1498-76M SM2540 G 18TH ED MOD

(a) Temp of pH Reading: 24.4 Deg. C



			Repo	rt of Ai	nalysis		Page 1 of 1
Client Sample ID:	SW-B37(9.0-9.5)					
Lab Sample ID:	JD18055-	-1R				Date S	Sampled: 12/21/20
Matrix:	SO - Soil					Date 1	Received: 12/21/20
						Percer	nt Solids: 89.2
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ity, NJ		
General Chemistry							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	0.66 ^J	0.44	0.35	mg/kg	1	12/30/20 13:45 JOO SW846 3060A/7196

RL = **Reporting Limit**



JD18055

4.2

4

Client Sample ID: Lab Sample ID: Matrix:	SW-B37(JD18055 SO - Soil	-1RT				Date I	Sampled: 12/21/20
Project:	PPG Site	107, 18 Chapel	Avenue,	, Jersey Cit	ty, NJ		
General Chemistry	r						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Iron, Ferrous ^a Sulfide Screen ^b Total Organic Carbo	on ^c	0.60 J NEGATIVE 7770	0.20 110	0.092 87	% mg/kg	1 1 1	01/05/21 13:24 MP ASTM D3872-86 01/05/21 13:24 MP <u>SM4500S2 A-11</u> R 01/05/21 14:51 BM LLOYD KAHN 1988 MOD

Report of Analysis

(a) The ferrous iron test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(b) The sulfide screen test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(c) Analysis done out of holding time.



Client Sample ID: Lab Sample ID: Matrix:	SW-B37 JD18055 SO - Soi					Date 1	Sampled: 12/21/20 Received: 12/21/20 nt Solids: 81.6
Project:	PPG Site	e 107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ	Teree	
General Chemistry	,						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	1.9	0.48	0.38	mg/kg	1	12/24/20 11:50 JOO SW846 3060A/7196A
Redox Potential Vs	H2	269			mv	1	12/23/20 13:48 ER ASTM D1498-76M
Solids, Percent		81.6			%	1	12/22/20 15:37 BG SM2540 G 18TH ED MOD
pH ^a		7.87 J			su	1	12/23/20 13:36 ER SW846 9045D

Report of Analysis

(a) Temp of pH Reading: 24.3 Deg. C



Page 1 of 1

Client Sample ID:	SW-B37(10.0-10.5)					
Lab Sample ID:	JD18055					Date S	Sampled: 12/21/20
Matrix:	SO - Soil					Date 1	Received: 12/21/20
						Percer	nt Solids: 81.6
Project:	PPG Site	107, 18 Cha	ipel Avenue	, Jersey Ci	ty, NJ		
General Chemistry							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method

Report of Analysis

RL = **Reporting Limit** MDL = Method Detection Limit



JD18055

4.5

4

Client Sample ID: Lab Sample ID: Matrix:	SW-B37(12. JD18055-3 SO - Soil	0-12.5)			4.6			
Project:	PPG Site 10	7, 18 Chape	Avenue,	Jersey Cit	y, NJ			
General Chemistry								I
Analyte	R	esult	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexaval	ent 2.	2	0.49	0.38	mg/kg	1	12/24/20 11:50 JOO SW846 3060A/7190	6A
Redox Potential Vs I	12 29) 0			mv	1	12/23/20 13:50 ER ASTM D1498-76M	[
Solids, Percent	80	0.8			%	1	12/22/20 15:37 BG SM2540 G 18TH E	D MOD
pH ^a	8.	01 J			su	1	12/23/20 13:39 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.5 Deg. C



JD18055

Client Sample ID:	SW-B37(12.0-12.5)					
Lab Sample ID:	JD18055-	-3R				Date S	Sampled: 12/21/20
Matrix:	SO - Soil					Date 1	Received: 12/21/20
						Percer	nt Solids: 80.8
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ		
General Chemistry	,						
		Result	RL	MDL	Units	DF	Analyzed By Method
Analyte		Kesuit	KL	MDL	Cinto	21	Maryzed by Method

Report of Analysis

JD18055

4.7 4

Lab Sample ID:	SW-B37(14.0-14.5) JD18055-4 SO - Soil				Sampled: 12/21/20 Received: 12/21/20 nt Solids: 83.3	4.8 4	
Project:	PPG Site 107, 18 Cl	hapel Avenue	e, Jersey Ci	ty, NJ			
General Chemistry							
Analyte	Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexaval	ent 2.3	0.46	0.37	mg/kg	1	12/24/20 11:50 JOO SW846 3060A/7196A	
Redox Potential Vs H	H2 301			mv	1	12/23/20 13:54 ER ASTM D1498-76M	
Solids, Percent	83.3			%	1	12/23/20 16:27 BG SM2540 G 18TH ED	MOD
pH ^a	7.91 J			su	1	12/23/20 13:42 ER SW846 9045D	

Report of Analysis

Page 1 of 1

(a) Temp of pH Reading: 24.3 Deg. C



			•		U		<u> </u>
Client Sample ID:	SW-B37	(14.0-14.5)					
Lab Sample ID:	JD18055	-4R				Date S	Sampled: 12/21/20
Matrix:	SO - Soi	l				Date I	Received: 12/21/20
						Percer	nt Solids: 83.3
Project:	PPG Site	e 107, 18 Cha	apel Avenue	, Jersey Ci	ity, NJ		
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	1.7	0.48	0.38	mg/kg	1	12/30/20 13:45 JOO SW846 3060A/7196A

Report of Analysis

JD18055

4.9 4

Client Sample ID: Lab Sample ID:	SW-B37(15.0-1 JD18055-5	5.5)		Date Sampled: 12/21/20 Date Received: 12/21/20					
Matrix:	SO - Soil					Percei	4		
Project: PPG Site 107, 18 Chapel Avenue, Jersey Cit									
General Chemistry								J	
Analyte	Resu	lt 1	RL	MDL	Units	DF	Analyzed By Method		
Chromium, Hexaval	ent 2.8		0.49	0.39	mg/kg	1	12/24/20 11:50 JOO SW846 3060A/719	96A	
Redox Potential Vs I	12 283				mv	1	12/23/20 14:02 ER ASTM D1498-76M	Л	
Solids, Percent	79.4				%	1	12/22/20 15:37 BG SM2540 G 18TH	ED MOD	
pH ^a	7.68	1.1			su	1	12/23/20 13:45 ER SW846 9045D		

Report of Analysis

(a) Temp of pH Reading: 24.6 Deg. C



			Repo	rt of Ai	nalysis		Page 1 of 1
Client Sample ID:		15.0-15.5)					
Lab Sample ID:	JD18055						Sampled: 12/21/20
Matrix:	SO - Soil					Date I	Received: 12/21/20
						Percer	nt Solids: 79.4
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ity, NJ		
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	2.1	0.50	0.39	mg/kg	1	12/30/20 13:45 JOO SW846 3060A/7196/

Report of Analysis

RL = **Reporting Limit** MDL = Method Detection Limit

4.11 4

Client Sample ID: Lab Sample ID: Matrix:	SW-B36 JD18055 SO - Soi						Date 1	Sampled: 12/21/20 Received: 12/21/20 nt Solids: 87.4	4.12
Project:	PPG Site	e 107, 18 C	hapel .	Avenue	, Jersey Ci	ty, NJ			
General Chemistry	7							J	
Analyte		Result		RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent	0.80 J		0.45	0.36	mg/kg	1	12/24/20 11:50 JOO SW846 3060A/7196	A
Redox Potential Vs	H2	269				mv	1	12/23/20 14:05 ER ASTM D1498-76M	
Solids, Percent		87.4				%	1	12/23/20 16:27 BG SM2540 G 18TH EI	D MOD
pH ^a		7.76	J			su	1	12/23/20 13:57 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.3 Deg. C



SGS

			•		·		
Client Sample ID:	SW-B36(9.5-10.0)					
Lab Sample ID:	JD18055-	6R				Date S	Sampled: 12/21/20
Matrix:	SO - Soil					Date I	Received: 12/21/20
						Percer	nt Solids: 87.4
Project:	PPG Site	107, 18 Cha	apel Avenue	, Jersey Ci	ity, NJ		
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	2.3 J	0.45	0.35	mg/kg	1	12/30/20 13:45 JOO SW846 3060A/7196A

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4.13

4



Client Sample ID: Lab Sample ID: Matrix:	SW-B36(JD18055 SO - Soil			Date 1	Sampled: 12/21/20 Received: 12/21/20 nt Solids: 87.4		
Project:	PPG Site	107, 18 Chape	Avenue	, Jersey Ci	ty, NJ	10100	
General Chemistry	7						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Iron, Ferrous ^a Sulfide Screen ^b		0.74 J NEGATIVE	0.20	0.092	%	1 1	01/05/21 13:24 MP ASTM D3872-86 0 1/05/21 13:24 MP SM4500S2- A-11 R
Total Organic Carbo	on ^c	6510	110	89	mg/kg	1	01/06/21 00:29 BM LLOYD KAHN 1988 MOD

Report of Analysis

(a) The ferrous iron test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(b) The sulfide screen test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(c) Analysis done out of holding time.



Client Sample ID: Lab Sample ID: Matrix:	SW-B360 JD18055 SO - Soil	-			Date 1	Sampled: 12/21/20 Received: 12/21/20	4.15	
Project:	PPG Site	107, 18 Cha	pel Avenue	e, Jersey Ci	ty, NJ	Perce	nt Solids: 83.7	4
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava Redox Potential Vs Solids, Percent pH ^a		1.8 217 83.7 8.88	0.47	0.37	mg/kg mv % su	1 1 1	12/24/20 11:50 JOO SW846 3060A/7196A 12/23/20 15:36 ER ASTM D1498-76M 12/23/20 16:27 BG SM2540 G 18TH ED N 12/23/20 15:41 ER SW846 9045D	MOD

Report of Analysis

(a) Temp of pH Reading: 25.2 Deg. C

JD18055

r			•		v		
Client Sample ID:	SW-B36	(11.0-11.5)					
Lab Sample ID:	JD18055					Date S	Sampled: 12/21/20
Matrix:	SO - Soi	l				Date 1	Received: 12/21/20
						Percer	nt Solids: 83.7
Project:	PPG Site	e 107, 18 Cha	ipel Avenue	, Jersey Ci	ty, NJ		
General Chemistry	y						
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	llent	2.0	0.46	0.37	mg/kg	1	12/30/20 13:45 JOO SW846 3060A/7196A

Report of Analysis

30 of 170 SGS

JD18055

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4.16

4

Client Sample ID: Lab Sample ID: Matrix: Project:	JD18055 SO - Soi	-	pel Avenue	, Jersey Ci	Date 1	Sampled: 12/21/20 Received: 12/21/20 nt Solids: 76.5	4.17 4	
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava Redox Potential Vs Solids, Percent pH ^a		ND 100 76.5 10.56 J	0.51	0.40	mg/kg mv % su	1 1 1 1	12/24/20 11:50 JOO SW846 3060A/7196A 12/23/20 14:19 ER ASTM D1498-76M 12/22/20 15:37 BG SM2540 G 18TH ED M0 12/23/20 14:00 ER SW846 9045D	DD

Report of Analysis

(a) Temp of pH Reading: 24.4 Deg. C



JD18055



Client Sample ID:	SW-B40(16.0-16.5)							
Lab Sample ID:	JD18055-	-8R				Date S	Sampled: 12/21/20		
Matrix:	SO - Soil	SO - Soil				Date Received: 12/21/20			
						Percer	nt Solids: 76.5		
Project:	PPG Site	107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ				
General Chemistry	7								
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method		

Report of Analysis

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4.18

4

RL = **Reporting Limit** MDL = Method Detection Limit



Client Sample ID: Lab Sample ID: Matrix:	FB(2020 JD18055 AQ - Fie	,				Date I	Sampled: 12/21/20 Received: 12/21/20 nt Solids: n/a
Project:		e 107, 18 Chap	el Avenue,	Jersey Cit	y, NJ		
General Chemistry							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexaval Redox Potential Vs I pH ^a		ND 427 7.09 J	0.010	0.0058	mg/l mv su	1 1 1	12/21/20 21:15 EB SW846 7196A 12/23/20 15:09 ER ASTM D1498-76 12/23/20 15:07 ER SM4500H+ B-11

Report of Analysis

(a) Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 25.2 Deg. C

JD18055

4.19 4

Client Sample ID: Lab Sample ID: Matrix:	SW-B36 JD18055 SO - Soi	-10	5)					Sampled: 12/21/20 Received: 12/21/20	4.20
Project:	PPG Site	107, 18	Chapel	Avenue	, Jersey Ci	ty, NJ	Percer	nt Solids: 84.0	4
General Chemistry	7								
Analyte		Result		RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava Redox Potential Vs		1.0 225		0.47	0.37	mg/kg mv	1 1	12/24/20 11:50 JOO SW846 3060A/7196A 12/23/20 13:24 ER ASTM D1498-76M	
Solids, Percent pH ^a		84 8.68	J			% su	1 1	12/22/20 15:37 BG SM2540 G 18TH ED N 12/23/20 13:33 ER SW846 9045D	MOD

Report of Analysis

(a) Temp of pH Reading: 24.5 Deg. C



Client Sample ID: Lab Sample ID: Matrix:	JD18055 SO - Soi	1				Date I	Sampled: 12/21/20 Received: 12/21/20 nt Solids: 84.0
Project: General Chemistry		e 107, 18 Cha	apel Avenue	, Jersey Ci	ty, NJ		
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	ND	0.47	0.38	mg/kg	1	12/30/20 13:45 JOO SW846 3060A/7196A

Report of Analysis

RL = **Reporting Limit** MDL = Method Detection Limit







PPG Site 107

DATA QUALITY ASSESSMENT

18 Chapel Avenue Jersey City, New Jersey

Metals and Miscellaneous Analyses

SDG # JD18116

Analyses Performed By: SGS Accutest Dayton, New Jersey

Report #39881R Review Level: Tier II Project: 30065658.003

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # JD18116 for samples collected in association with the PPG Site 107 at 18 Chapel Avenue, NJ. The review was conducted as a Tier II 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 Collection	lection Barant Sample		lysis
Sample ID	Lab ID	Matrix	Date	Parent Sample	МЕТ	MISC
SW-B38(14.0-14.5)	JD18116-1	Soil	12/21/2020		х	х
SW-B38(14.0-14.5)	JD18116-1R	Soil	12/21/2020		х	х
SW-B38(13.0-13.5)	JD18116-2	Soil	12/21/2020		х	x
SW-B38(13.0-13.5)	JD18116-2R	Soil	12/21/2020		х	х
SW-B38(11.0-11.5)	JD18116-3	Soil	12/21/2020		х	x
SW-B38(11.0-11.5)	JD18116-3R	Soil	12/21/2020		х	х
DUP05(20201221)	JD18116-4	Soil	12/21/2020	SW-B38 (13.0-13.5)	х	x
DUP05(20201221)	JD18116-4R	Soil	12/21/2020	SW-B38 (13.0-13.5)	х	х
FB(20201221)	JD18116-5	Soil	12/22/2020		х	х
SW-B38(15.0-15.5)	JD18116-6	Soil	12/22/2020		х	x
SW-B38(15.0-15.5)	JD18116-6R	Soil	12/22/2020		х	х
SW-B38(15.0-15.5)	JD18116-6RT	Soil	12/22/2020		x	x

ANALYTICAL DATA PACKAGE DOCUMENTATION

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

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

Note:

QA - Quality Assurance

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 7196A, 9056A, ASTM D1498-76, EPS 300/SW846 9056A, SM4500S2-F-11, , SM5310 B-11 and SM4500H+ B-11. Data were reviewed in accordance with USEPA Region 2 SOP HW-2b, Revision 15 (December 2012), and NJDEP Data Quality Assessment and Data Usability Evaluation Technical Guidance, New Jersey Department of Environmental Protection, Site Remediation Program (April 2014).

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) critieria. 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

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.

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

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. Matrix Spike (MS)/Laboratory Duplicate Analysis

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

3.1 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 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 SW-B38(14.0-14.5).

Samples associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Location	Sample Location Analyte		Reanalysis Spike Recovery
SW-B38(14.0-14.5)	Hexavalent Chromium, Soluble	< 50%	< 50%

The criteria used to evaluate spike recoveries are presented in the following table. The qualifications are applied to the parent sample results only. In the event of a recovery outside of the control limits, the MS must be reanalyzed.

Control limit	Sample Result	Qualification ¹
	Non-detect	UJ-
Spike recovery ≥ 50% but < 75%	Detect	J-
0 '' 	Non-detect	R
Spike recovery < 50%	Detect	R
Spike recovery > 125%	Non-detect	No Action
Spike recovery > 125% but \leq 150%	Detect	J+
Spike recovery > 150%	Detect	R

Notes:

¹ If recoveries are < 50% or > 150% for both insoluble and soluble spikes, associated data will be rejected ("R"); otherwise qualify associated data if one of the spikes is outside the < 50% or > 150% limits.

The original analyses of the field samples are usable with appropriate qualification. No sample results were rejected.

3.2 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 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 ± the RL is used.

The laboratory duplicate analysis performed on sample ID SW-B38(14.0-14.5) exhibited an RPD within the control limit.

4. 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 30% for water 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.

Sample ID/Duplicate ID	Analyte	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD
SW-B38 (13.0-13.5) /DUP05(20201221)	Chromium, Hexavalent	U	0.69	AC

Results for duplicate samples are summarized in the following table.

The RPD between the parent and duplicate sample was acceptable.

5. 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.

8. 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.

HEXAVALENT CHROMIUM: SW-846 7196A	Rep	orted		rmance ptable	Not	
	No	Yes	No	Yes	Required	
Spectrophotometer						
Tier II Validation						
Holding Times		Х		х		
Reporting limits (units)		Х		х		
Blanks						
A. Instrument Blanks	x				х	
B. Method Blanks		Х		х		
C. Equipment/Field Blanks		Х		х		
Laboratory Control Sample (LCS)		Х		х		
Matrix Spike (MS) %R		Х	x			
Matrix Spike Duplicate (MSD) %R	х				Х	
MS/MSD Precision (RPD)	x				х	
Field/Lab Duplicate (RPD)		Х		Х		
Dilution Factor		Х		Х		
Total vs Dissolved %D		X		х		

DATA VALIDATION CHECKLIST FOR HEXAVALENT CHROMIUM

%R Percent recovery

RPD Relative percent difference

%RSD Relative percent deviation

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	Soil	QAPP: 24 hours of receipt at laboratory	Cool to <6°C
Oxidation-Reduction Potential by ASTM D1498-76	Soil	Not applicable	Cool to <6°C
Sulfide by SM4500S2-F-11	Soil	7 days from collection to analysis	Cool to <6°C
Total Organic Carbon (TOC) by SM5310B-11	Soil	28 days from collection to analysis	Cool to <6°C
Iron, Ferrous by ASTM D3872-86	Soil	24 hours of receipt at laboratory	Cool to <6°C

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

Sample ID	Holding Time	Criteria		
SW-B38(14.0-14.5)				
SW-B38(13.0-13.5)		Analysis completed greater than two times holding time		
SW-B38(11.0-11.5)	24 hours of respirit at loboratory			
DUP05(20201221)	24 hours of receipt at laboratory			
FB(20201221)				
SW-B38(15.0-15.5)				
SW-B38(15.0-15.5)	24 hours of receipt at laboratory	Analysis completed greater than two times holding time		
SW-B38(15.0-15.5)	7 days from collection to analysis	Analysis completed greater than two times holding time		

Sample results associated with sample locations analyzed by analytical method pH by SM4500H+B, SM4500S2-F-11 and ASTM D3872-86 were qualified, as specified in the table below. All other holding times were met.

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

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. 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.

3.1 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.

MS/MSD analysis was not performed on any of the samples from this SDG.

3.2 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 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 one times the RL is applied for water matrices.

The laboratory duplicate analysis performed on sample ID SW-B38(14.0-14.5) for redox potential and pH exhibited acceptable RPDs.

4. 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 30% for water 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.

Sample ID/Duplicate ID	Analyte	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD
	Redox Potential Vs H2	371	371	0 %
SW-B38 (13.0-13.5) /DUP05(20201221)	Solids, Percent	88.3	88.4	0 %
	pH a	7.58	7.72	2 %

Results for duplicate samples are summarized in the following table.

The RPDs between the parent and duplicate samples were acceptable.

5. 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 and pH were not reported in the analytical report.

6. 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 VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: SM4500H+B, SM4500S2-	Rep	orted	Perfor Acce	Not Required	
F-11, SM4500S2-F-11 and SM5310B-11	No	Yes	No	Yes	Required
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		x	x		
Reporting limits (units)		x		x	
Blanks					
A. Instrument Blanks	х				х
B. Method blanks		X		X	
C. Equipment blanks	х				х
Laboratory Control Sample (LCS) %R		Х		Х	
Laboratory Control Sample Duplicate (LCSD) %R	Х				Х
LCS/LCSD Precision (RPD)	Х				Х
Matrix Spike (MS) %R	Х				Х
Matrix Spike Duplicate (MSD) %R	Х				Х
MS/MSD Precision (RPD)	Х				Х
Field/Lab Duplicate (RPD)		Х		Х	
Dilution Factor		Х		Х	

Notes:

%R Percent recovery

RPD Relative percent difference

VALIDATION PERFORMED BY: Bhagyashree Fulzele

SIGNATURE:

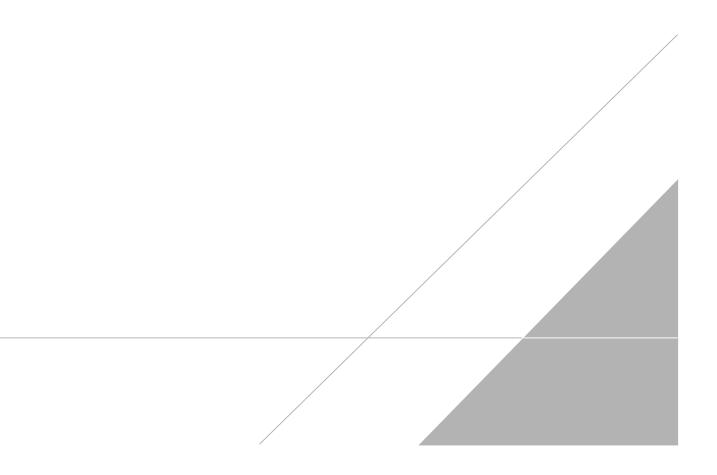
Bfutxele

DATE: January 13, 2020

PEER REVIEW: Rachelle Borne

DATE: January 13, 2020

CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS



000	5° CHAIN OF CUS		F	PAGE 1 OF 1
<u>363</u>	SGS North America Inc D 2235 Route 130, Dayton, NJ	08810 FED-EX Trackin	ng # Bottle Orde	-112420-146
	TEL. 732-329-0200 FAX 732- www.sgs.com/ehsusa	000 44000 #	SGS Job #	JD18116
Cillent / Reporting in Strike Inst	ect Name:		prosted Analysis (see TEST COL	DE sheet) Matrix Codes
Company Name	PG Site 107	*		DW - Drinking Water GW - Ground Water
Arcadis Street Address Street	et at 1.4	Гd		WW - Water SW - Surface Water
10 Friends LN 1/8 City State Zip City	State Company Name	erent from Report to)	3	SO - Soil SL- Sludge SED-Sediment
Wey town PA 18940 Je	Arsey City NJ Street Address			OI - Oil LIQ - Other Liquid
The Mc/GUChlin SmcLauphin	om 30065658,2000	State Zip		AIR - Air SOL - Other Solid
$\begin{array}{c} \begin{array}{c} \text{Phone #} \\ \text{Phone #} \\ Als $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $$	nit Purchase Order # City			WP - Wipe FB-Field Blank EB-Equipment Blank
Sampler(s) Name(s) / / Phone # Proj	ect Manager Attention:			RB- Rinse Blank TB-Trip Blank
Christin Citelli 201, 24, 8015	J. McLaughtin Collection	Number of preserved bottles	5	
Lab Sample		of HHCI HISSO4 HEICH MECH HISSO4		LAB USE ONLY
# Field ID / Point of Collection ME	COH/DI Vial # Date Time Sampled by Matrix bc			
$\frac{1}{5}$ $\frac{5}{5}$ $\frac{-338(14.0 - 14.5)}{-13.5}$				
a 5 (u - 1338 (13.0 - 13.5)) z < (u - 1338 (1.0 - 11.5))	2/21/20 1515 66 5	2 X X X	,	
4 NUPOS (20201221)	1421/20 - CC 5 à	2		
5 FB (20201222)	12/22/201400 CC FB 3			
6 SW - B38(15.0-15.5)	1/22/20 0900 CC S			
INITIAL ASESSMENT_KGB		-++++++++++++++++++++++++++++++++++++++		
		-++++++++++++++++++++++++++++++++++++++		
LABEL VERIFICATION				
Turnaround Time (Business days)	proved by (SGS Project Manager)/Date: Commercial "A	Data Deliverable Information	Comments / S	special Instructions
App	Commercial "B	" (Level 2) NYASP Category B		
□ 5 Day RUSH	FULLT1 (Leve	3+4) State Forms EDD Format		
2 Day RUSH	Commercial "C	" Other Cnown Quality Protocol Reporting		
☐ 1 Day RUSH	Commercial "A" = Results	Only; Commercial "B" = Results + QC Summary		
Emergency & Rush T/A data available via LabLink	NJ Reduced = Results +	C Summary + Partial Baw data e samples change possession, including courie	Sample inventory is verified u	
Relinquished by Sampler: 1140 1240 20	D 1 Received By Day and	2 Sul In		al
Relinquished by Sampler: Date Time:	Received By:	Relinquished By:	Date Time: Received	
Relinquished by: Date Time:	Received By: 5	Custody Seal # Intact Not intact	Preserved where applicable	On Ice Cooler Temp.
		-90 -	an (an 1997) - 1982 - 1983 - 1983 - 1983 - 1983 - 1983 - 1983 - 1983 - 1983 - 1983 - 1983 - 1983 - 1983 - 1983	124 2.8 CIP

Form:SM088-03C (revised 2/12/18)

http://www.sgs.com/en/terms-and-conditions.

JD18116: Chain of Custody Page 1 of 5



5.2

G

DATA OF KNOWN QUALITY CONFORMANCE/NON-CONFORMANCE SUMMARY QUESTIONNAIRE

Laboratory Name: Accutest, Dayton, NJ

Client: Arcadis

Project Location:	PPG Site 107, 18 Chapel Avenue, Jersey City, NJ	Project Number: AGMPAL77493			
		Sampling Dates: 12/21/2020			
Laboratory Sample ID(s):	JD18116-1, JD18116-2, JD18116-3, JD18116-4, JD18116-5, JD18116-6, JD18116-1R, JD181 s): 2R, JD18116-3R, JD18116-4R, JD18116-6R, JD18116-6RT				

Methods Used: ASTM D1498-76M, SM2540 G 18TH ED MOD, SW846 3060A/7196A, SW846 9045D, SW846 7196A, SM4500H+ B-11, LLOYD KAHN 1988 MOD, SM4500S2- A-11, ASTM D3872-86

1	For each analytical method referenced in this laboratory report package, were all specified QA/QC performance criteria followed, including the requirement to explain any criteria falling outside of acceptable guidelines, as specified in the NJDEP Data of Known Quality performance standards?	√ Yes	🗌 No
1A	Were the method specified handling, preservation, and holding time requirements met?	✓ Yes	🗌 No
1B	EPH Method: Was the EPH method conducted without significant modifications (see Section 11.3 of respective DKQ methods)	⊡Yes ⊽r	No N/A
2	Were all samples received by the laboratory in a condition consistent with that described on the associated chain-of-custody document(s)?	✓ Yes	No No
3	Were samples received at an appropriate temperature (4+/- 2 Deg C)	√ Yes	No N/A
4	Were all QA/QC performance criteria specified in NJDEP DKQP standards achieved? See section 5.6	🗌 Yes	✓ No
5	a) Were Reporting limits specified or referenced on the chain-of-custody or communicated to the laboratory prior to sample receipt?	√ Yes √ Yes	No No
	b) b) Were these limits met?	√ Yes	No No
6	For each analytical method referenced in this laboratory report package, were result reported for all constituents identified in the method-specific analyte lists presented in the DKQP documents and/or site-specific QAPP?	√ Yes	No
7	Are project-specific matrix spikes and/or laboratory duplicates included in this data set?	🗌 Yes	✓ No

Notes: For all questions to which the response was "No" (with the exception of question #7) see the Case Narrative in the technical report for additional information If the answer to question #1, #1A or #1B is "No", the data package does not meet the requirements for "Data of Known Quality"

Generated by vickyp on 01/06/2021 12:49



Lab Sample ID: Matrix:	JD18116- SO - Soil	-		L. C		Date 1	Sampled: 12/21/20 Received: 12/22/20 nt Solids: 80.2	4.1 4
	PPG Sile	107, 18 Cha	pei Avenue	, Jersey CI	ly, inj			
General Chemistry								
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexaval	ent	1.6	0.52	0.41	mg/kg	1	12/29/20 15:48 RI SW846 3060A/7196A	1
Redox Potential Vs H	H2	374			mv	1	12/29/20 13:24 ER ASTM D1498-76M	
Solids, Percent		80.2			%	1	12/23/20 16:27 BG SM2540 G 18TH ED	MOD
pH ^a		7.29 J			su	1	12/29/20 13:21 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 25.3 Deg. C



Client Sample ID:	SW-B38	(14.0-14.5)									
Lab Sample ID:	JD18116	-1R				Date S	Sampled: 12/21/20				
Matrix:	SO - Soil	l				Date I	Received: 12/22/20				
						Percer	nt Solids: 80.2				
Project:	PPG Site	PG Site 107, 18 Chapel Avenue, Jersey City, NJ									
General Chemistry	Ţ										
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method				

Report of Analysis



4.2 **4**

Client Sample ID: Lab Sample ID: Matrix: Project:	JD18116 SO - Soi		pel Avenue	, Jersey Ci	Date 1	Sampled: 12/21/20 Received: 12/22/20 nt Solids: 88.3	4.3 4	
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava Redox Potential Vs Solids, Percent pH ^a		0.59 371 88.3 7.58 J	0.47	0.37	mg/kg mv % su	1 1 1 1	12/29/20 15:48 RI SW846 3060A/7196A 12/29/20 13:26 ER ASTM D1498-76M 12/23/20 16:27 BG SM2540 G 18TH ED N 12/29/20 13:24 ER SW846 9045D	ИОD

Report of Analysis

(a) Temp of pH Reading: 25.1 Deg. C



JD18116

Client Sample ID: Lab Sample ID: Matrix:	SW-B38 JD18116 SO - Soi					Date 1	Sampled: 12/21/20 Received: 12/22/20 nt Solids: 88.3
Project: General Chemistry		e 107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ		
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexava	lent	ND	0.44	0.35	mg/kg	1	01/02/21 15:20 JOO SW846 3060A/7196A

Report of Analysis

JD18116

4.4 4

Client Sample ID: Lab Sample ID: Matrix: Project:	JD18116 SO - Soi	-	ipel Avenue	, Jersey Ci	Date 1	Sampled: 12/21/20 Received: 12/22/20 nt Solids: 89.5	4.5 4	
General Chemistry	y							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava Redox Potential Vs Solids, Percent pH ^a		0.96 367 89.5 8.02 J	0.45	0.36	mg/kg mv % su	1 1 1 1	12/29/20 15:48 RI SW846 3060A/7196 12/29/20 13:28 ER ASTM D1498-76M 12/23/20 16:27 BG SM2540 G 18TH EI 12/29/20 13:27 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 24.6 Deg. C



JD18116

Client Sample ID:	SW-B38(11.0-11.5)							
Lab Sample ID:	JD18116	-3R			Date Sampled: 12/21/20				
Matrix:	SO - Soil					Date Received: 12/22/20			
						Percer	nt Solids: 89.5		
Project:	PPG Site	PPG Site 107, 18 Chapel Avenue, Jersey City, NJ							
General Chemistry	7								
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method		

Report of Analysis

RL = **Reporting Limit** MDL = Method Detection Limit



JD18116

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4.6

4

Client Sample ID: Lab Sample ID: Matrix:	DUP05() JD18116 SO - Soi	-				Date 1	Sampled: 12/21/20 Received: 12/22/20 nt Solids: 88.4	4.7 4
Project:	PPG Site	e 107, 18 Cha	pel Avenue	, Jersey Ci	ty, NJ			
General Chemistry	,							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent	0.58	0.46	0.36	mg/kg	1	12/29/20 15:48 RI SW846 3060A/7196	БА
Redox Potential Vs	H2	371			mv	1	12/29/20 13:31 ER ASTM D1498-76M	
Solids, Percent		88.4			%	1	12/23/20 16:27 BG SM2540 G 18TH E	D MOD
pH ^a		7.72 J			su	1	12/29/20 13:30 ER SW846 9045D	

Report of Analysis

(a) Temp of pH Reading: 25.1 Deg. C

JD18116

Client Sample ID:	DUP05(2	20201221)							
Lab Sample ID:	JD18116	-4R			Date Sampled: 12/21/20				
Matrix:	SO - Soil	l				Date Received: 12/22/20			
						Percer	nt Solids: 88.4		
Project:	PPG Site	PPG Site 107, 18 Chapel Avenue, Jersey City, NJ							
General Chemistry	Ÿ								
Analyta		Result	RL	MDL	Units	DF	Analyzed By Method		
Analyte									

Report of Analysis

RL = **Reporting Limit** MDL = Method Detection Limit



JD18116

4.8 4

Client Sample ID: Lab Sample ID: Matrix: Project:	·	,	pel Avenue,	Jersey Cit	Date 1	Sampled: 12/21/20 Received: 12/22/20 nt Solids: n/a	
General Chemistry							J
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method
Chromium, Hexaval Redox Potential Vs I pH ^b		ND 339 6.72 J	0.010	0.0058	mg/l mv su	1 1 1	12/22/20 22:59 EB SW846 7196A 12/23/20 15:21 ER ASTM D1498-76 12/23/20 15:10 ER SM4500H+ B-11

Report of Analysis

(a) Analysis done out of holding time.

(b) Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 25.1 Deg. C

JD18116

			Repo	rt of Ai	nalysis			Page 1 of 1
Client Sample ID: Lab Sample ID:	SW-B38() JD18116-	15.0-15.5) 6				Date S	Sampled: 12/21/20	4.10
Matrix:	SO - Soil						Received: 12/22/20 nt Solids: 85.0	4
Project:	PPG Site	107, 18 Chap	el Avenue	e, Jersey Ci	ty, NJ			
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By I	Method
Chromium, Hexava	lent	ND UJ	0.46	0.36	mg/kg	1	12/29/20 15:45 RI	SW846 3060A/7196A
Redox Potential Vs	H2	276			mv	1	12/23/20 14:25 ER	ASTM D1498-76M
Solids, Percent		85			%	1	12/23/20 16:27 BG	SM2540 G 18TH ED MOD
pH ^a		8.44 J			su	1	12/23/20 14:03 ER	SW846 9045D

(a) Temp of pH Reading: 24.8 Deg. C

JD18116

			-		•			
Client Sample ID:	SW-B38	(15.0-15.5)						
Lab Sample ID:	JD18116	-6R			Date Sampled: 12/21/20			
Matrix:	SO - Soi	l			Date Received: 12/22/20			
						Percer	nt Solids: 85.0	
Project:	PPG Site	e 107, 18 Chap	oel Avenue	, Jersey Ci	ty, NJ			
General Chemistry	,							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Chromium, Hexava	lent	ND UJ	0.46	0.36	mg/kg	1	01/02/21 15:20 JOO SW846 3060A/7196A	

Report of Analysis

RL = Reporting Limit MDL = Method Detection Limit



4.11 4

Client Sample ID: Lab Sample ID: Matrix:	SW-B38(JD18116 SO - Soil					Date 1	Sampled: 12/21/20 Received: 12/22/20 nt Solids: 85.0	
Project:	PPG Site 107, 18 Chapel Avenue, Jersey City, NJ							
General Chemistry	7							
Analyte		Result	RL	MDL	Units	DF	Analyzed By Method	
Iron, Ferrous ^a Sulfide Screen ^b		0.84 ^J NEGATIVE	0.20	0.092	%	1 1	01/05/21 13:24 MP ASTM D3872-86 01/05/21 13:24 MP <u>SM4500S2 A-11</u> R	
Total Organic Carbo	on ^c	37500	120	91	mg/kg	1	01/05/21 16:29 BM LLOYD KAHN 1988 MOD	

Report of Analysis

(a) The ferrous iron test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(b) The sulfide screen test was analyzed after completion of Cr6 testing (outside of normal hold times for this parameter) in order to provide more information about the possible impact of the sample matrix on Cr6 recoveries.

(c) Analysis done out of holding time.

