

Chemical Analysis Report

NW-DIST-2021-06-18-03

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Holmes Run**
Request ID: **RQ-2021-06-21-23**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 208
Pensacola, FL 32502-5794
Attn: Myranda Butler

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 14-JUL-2021 13:49

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored background.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical groups are included in this report: Metals and Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited by the Florida Department of Health Environmental Laboratory Certification Program or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Gum Creek Downstream of Bess Nook Rd.

Collection Date/Time: 06/17/2021 12:50

Field ID: G3NW0452

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2256001	EPA 180.1 Rev. 2.0	Turbidity	4.8		NTU	P399959	
	EPA 300.0 Rev. 2.1	Chloride	2.7		mg Cl/L	P400506	
		Sulfate	0.31	I	mg SO4/L	P400507	
		Color (true)	180		PCU	P399956	
	SM 2120 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P400372	
	SM 2540 C-2011	TDS	37		mg/L	P400344	
	SM 2540 D-2011	TSS	4	I	mg/L	P400171	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P400375	
2256003	EPA 350.1 Rev. 2.0	Ammonia-N	0.044		mg N/L	P400335	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.81		mg N/L	P400320	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.010		mg N/L	P400029	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P400298	
	SM 5310 B-2011	Organic Carbon	17		mg C/L	P400361	
2256005	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P399949	
2256021	EPA 200.7 Rev. 4.4	Barium	8.7		ug/L	P399987	
		Calcium	1.34		mg/L	P399987	
		Iron	1.30E+03		ug/L	P399987	
		Magnesium	0.48		mg/L	P399987	
		Potassium	0.39	I	mg/L	P399987	
		Sodium	1.1	I	mg/L	P399987	
		Zinc	5.4	I	ug/L	P399987	
	EPA 200.8 Rev. 5.4	Aluminum	466		ug/L	P399987	
		Antimony	0.050	U	ug/L	P399987	
		Arsenic	0.54		ug/L	P399987	
		Boron**	10.5		ug/L	P399987	
		Cadmium	0.020	U	ug/L	P399987	
		Chromium	0.49	I	ug/L	P399987	
		Copper	0.58	I	ug/L	P400451	
		Lead	0.91		ug/L	P399987	
		Nickel	0.50	U	ug/L	P399987	
		Selenium	0.20	U	ug/L	P399987	
		Silver	0.010	U	ug/L	P399987	
		Thallium	0.10	U	ug/L	P399987	
	SM 2340B	Hardness	5.3		mg/L	P399987	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 06/30/2021.

Sample Location: Sikes Creek Upstream of Harris Stevenson Rd. Collection Date/Time: 06/17/2021 13:50

Field ID: G3NW0450

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2256023	EPA 200.7 Rev. 4.4	Barium	12.2		ug/L	P399987	
		Calcium	6.54		mg/L	P399987	
		Iron	800		ug/L	P399987	
		Magnesium	0.79		mg/L	P399987	
		Potassium	0.37	I	mg/L	P399987	
		Sodium	1.1	I	mg/L	P399987	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P399987	
		Aluminum	301		ug/L	P399987	
		Antimony	0.050	U	ug/L	P399987	
		Arsenic	0.56		ug/L	P399987	
		Boron**	10.5		ug/L	P399987	
		Cadmium	0.020	U	ug/L	P399987	
		Chromium	0.61	I	ug/L	P399987	
		Copper	0.48	I	ug/L	P400451	
		Lead	0.57		ug/L	P400451	
		Nickel	0.50	U	ug/L	P399987	
		Selenium	0.20	U	ug/L	P399987	
		Silver	0.010	U	ug/L	P399987	
		Thallium	0.10	U	ug/L	P399987	
	SM 2340B	Hardness	19.6		mg/L	P399987	

Ref. Method and Comment:

EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 07/01/2021.

Sample Location: Bay Branch Upstream of Hwy 331

Collection Date/Time: 06/17/2021 10:15

Field ID: G3NW0171

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2256002	EPA 180.1 Rev. 2.0	Turbidity	6.7		NTU	P399959	
	EPA 300.0 Rev. 2.1	Chloride	3.8		mg Cl/L	P400506	
		Sulfate	1.1		mg SO4/L	P400507	
		Color (true)	200		PCU	P399957	
	SM 2320 B-2011	Total Alkalinity	7.1		mg CaCO3/L	P400372	
	SM 2540 C-2011	TDS	40		mg/L	P400344	
	SM 2540 D-2011	TSS	6	I	mg/L	P400171	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P400375	
2256004	EPA 350.1 Rev. 2.0	Ammonia-N	0.024		mg N/L	P400335	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.60		mg N/L	P400320	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.024		mg N/L	P400029	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P400298	
	SM 5310 B-2011	Organic Carbon	11		mg C/L	P400361	
2256006	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P399949	
2256022	EPA 200.7 Rev. 4.4	Barium	11.5		ug/L	P399987	
		Calcium	4.05		mg/L	P399987	
		Iron	1.30E+03		ug/L	P399987	
		Magnesium	0.86		mg/L	P399987	
		Potassium	0.30	U	mg/L	P399987	
		Sodium	2.0		mg/L	P399987	
		Zinc	7.2	I	ug/L	P399987	
		Aluminum	380		ug/L	P399987	
	EPA 200.8 Rev. 5.4	Antimony	0.050	U	ug/L	P399987	
		Arsenic	0.62		ug/L	P399987	
		Boron**	12.0		ug/L	P399987	
		Cadmium	0.020	U	ug/L	P399987	
		Chromium	0.51	I	ug/L	P399987	
		Copper	0.40	U	ug/L	P399987	
		Lead	0.56		ug/L	P399987	
		Nickel	0.50	U	ug/L	P399987	
		Selenium	0.20	U	ug/L	P399987	
		Silver	0.010	U	ug/L	P399987	
		Thallium	0.10	U	ug/L	P399987	
		Hardness	13.7		mg/L	P399987	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 06/30/2021.

Sample Location: Sikes Creek Upstream of Bonifay Gritney Rd. Collection Date/Time: 06/17/2021 13:30

Field ID: G3NW0159

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2255995	EPA 180.1 Rev. 2.0	Turbidity	9.2		NTU	P399958	
	EPA 300.0 Rev. 2.1	Chloride	3.2		mg Cl/L	P400506	
		Sulfate	0.41	I	mg SO4/L	P400507	
		Color (true)	150		PCU	P399956	
	SM 2320 B-2011	Total Alkalinity	15		mg CaCO3/L	P400371	
	SM 2540 C-2011	TDS	58		mg/L	P400344	
	SM 2540 D-2011	TSS	8	I	mg/L	P400171	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P400374	
2255997	EPA 350.1 Rev. 2.0	Ammonia-N	0.040		mg N/L	P400335	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.72		mg N/L	P400318	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.060		mg N/L	P400029	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P400298	
	SM 5310 B-2011	Organic Carbon	15		mg C/L	P400361	
2255999	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P399949	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Panther Creek Upstream of SR280

Collection Date/Time: 06/17/2021 11:00

Field ID: G3NW0061

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2255996	EPA 180.1 Rev. 2.0	Turbidity	5.1	A	NTU	P399959	
	EPA 300.0 Rev. 2.1	Chloride	3.2		mg Cl/L	P400506	
		Sulfate	0.50		mg SO4/L	P400507	
	SM 2120 B-2011	Color (true)	120		PCU	P399956	
	SM 2320 B-2011	Total Alkalinity	1.6	I	mg CaCO3/L	P400372	
	SM 2540 C-2011	TDS	20	I	mg/L	P400344	
	SM 2540 D-2011	TSS	6	I	mg/L	P400171	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P400375	
2255998	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P400335	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.41		mg N/L	P400320	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P400029	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P400298	
	SM 5310 B-2011	Organic Carbon	7.0		mg C/L	P400361	
2256000	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P399949	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P399958

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P399959

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P399987

Component	Result	Code	Units
Barium	1.0	U	ug/L
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P399987

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	2.00		ug/L
Lead	0.20	U	ug/L
Nickel	0.77	I	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P400451

Component	Result	Code	Units
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400506

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400507

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P400335

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400318

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400320

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P400029

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P400298

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P399949

Component	Result	Code	Units
O-Phosphate-P	0.004	U	mg P/L

Reference Method: SM 2120 B-2011
Batch ID: P399956

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B-2011
Batch ID: P399957

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P400371

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2320 B-2011
Batch ID: P400372

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-2011
Batch ID: P400344

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P400171

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P400374

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-2011
Batch ID: P400375

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P400361

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P399987

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	102		P	85 - 115
Calcium	109		P	85 - 115
Iron	110		P	85 - 115
Magnesium	111		P	85 - 115
Potassium	103		P	85 - 115
Sodium	103		P	85 - 115
Zinc	98.5		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P399987

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	102		P	85 - 115
Antimony	102		P	85 - 115
Arsenic	105		P	85 - 115
Boron	106		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	99.9		P	85 - 115
Copper	101		P	85 - 115
Lead	114		P	85 - 115
Nickel	103		P	85 - 115
Selenium	103		P	85 - 115
Silver	99.6		P	85 - 115
Thallium	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P400451

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Copper	108		P	80 - 120
Lead	103		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400506

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400507

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P400335

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.6		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400318

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	108		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400320

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	107		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P400029

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P400298

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P399949

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.3		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P399956

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.7		P	85 - 115

Reference Method: SM 2120 B-2011
Batch ID: P399957

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	100		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P400371

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	94 - 106

Reference Method: SM 2320 B-2011
Batch ID: P400372

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	94 - 106

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P400374

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.0		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P400375

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P400361

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P399987

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2255313	Barium	101		P	80 - 120
2255313	Calcium	104		P	80 - 120
2255313	Iron	108		P	80 - 120
2255313	Magnesium	107		P	80 - 120
2255313	Potassium	107		P	80 - 120
2255313	Sodium	100		P	80 - 120
2255313	Zinc	97.8		P	80 - 120
2255626	Barium	103	104	P/P	80 - 120
2255626	Calcium	111	111	P/P	80 - 120
2255626	Iron	112	112	P/P	80 - 120
2255626	Magnesium	113	112	P/P	80 - 120
2255626	Potassium	109	108	P/P	80 - 120
2255626	Sodium	110	107	P/P	80 - 120
2255626	Zinc	98.4	99.6	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P399987

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2255313	Aluminum	104		P	80 - 120
2255313	Antimony	102		P	80 - 120
2255313	Arsenic	103		P	80 - 120
2255313	Boron	109		P	80 - 120
2255313	Cadmium	100		P	80 - 120
2255313	Chromium	99.5		P	80 - 120
2255313	Copper	104		P	80 - 120
2255313	Lead	118		P	80 - 120
2255313	Nickel	102		P	80 - 120
2255313	Selenium	102		P	80 - 120
2255313	Silver	100		P	80 - 120
2255313	Thallium	105		P	80 - 120
2255626	Aluminum	102	102	P/P	80 - 120
2255626	Antimony	102	101	P/P	80 - 120
2255626	Arsenic	104	102	P/P	80 - 120
2255626	Boron	105	106	P/P	80 - 120
2255626	Cadmium	99.0	98.8	P/P	80 - 120
2255626	Chromium	99.8	98.8	P/P	80 - 120
2255626	Copper	103	101	P/P	80 - 120
2255626	Lead	116	115	P/P	80 - 120
2255626	Nickel	101	101	P/P	80 - 120
2255626	Selenium	102	101	P/P	80 - 120
2255626	Silver	101	100	P/P	80 - 120
2255626	Thallium	105	104	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P400451

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2255346	Copper	106	109	P/P	80 - 120
2255346	Lead	104	104	P/P	80 - 120
2255828	Copper	107		P	80 - 120
2255828	Lead	104		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400506

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2255816	Chloride	98.6		P	90 - 110
2256031	Chloride	96.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400507

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2255816	Sulfate	95.8		P	90 - 110
2256031	Sulfate	97.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P400335

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2255945	Ammonia-N	96.0	95.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P400029

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2255945	NO2NO3-N	96.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P400298

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2255926	Total-P	103	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P399949

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2256038	O-Phosphate-P	93.7	94.5	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P400374

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2255491	Fluoride	98.2	97.2	P/P	92 - 107

Reference Method: SM 4500 F-C-2011
Batch ID: P400375

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2256032	Fluoride	99.6	99.6	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P400361

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2255871	Organic Carbon	96.4	97.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P399958

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255870	Turbidity	0.438	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P399959

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255996	Turbidity	0.987	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P399987

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255626	Barium	0.818	Spike	P	0 - 20
2255626	Calcium	0.0361	Spike	P	0 - 20
2255626	Iron	0.0727	Spike	P	0 - 20
2255626	Magnesium	0.296	Spike	P	0 - 20
2255626	Potassium	1.28	Spike	P	0 - 20
2255626	Sodium	2.36	Spike	P	0 - 20
2255626	Zinc	1.20	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P399987

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255626	Aluminum	0.0119	Spike	P	0 - 20
2255626	Antimony	1.45	Spike	P	0 - 20
2255626	Arsenic	1.74	Spike	P	0 - 20
2255626	Boron	0.622	Spike	P	0 - 20
2255626	Cadmium	0.112	Spike	P	0 - 20
2255626	Chromium	1.00	Spike	P	0 - 20
2255626	Copper	1.55	Spike	P	0 - 20
2255626	Lead	1.23	Spike	P	0 - 20
2255626	Nickel	0.737	Spike	P	0 - 20
2255626	Selenium	0.706	Spike	P	0 - 20
2255626	Silver	0.321	Spike	P	0 - 20
2255626	Thallium	1.00	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P400451

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255346	Copper	2.93	Spike	P	0 - 20
2255346	Lead	0.0120	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400506

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2256031	Chloride	0.439	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400507

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2256031	Sulfate	0.675	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P400335

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255945	Ammonia-N	0.192	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400318

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2254666	Kjeldahl Nitrogen	1.03	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400320

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2256269	Kjeldahl Nitrogen	0.437	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P400029

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255945	NO2NO3-N	0.191	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P400298

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255926	Total-P	1.05	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P399949

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2256038	O-Phosphate-P	0.850	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B-2011
Batch ID: P399956

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255866	Color (true)	0.361	Sample	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P399957

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2256031	Color (true)	5.55	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P400371

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255491	Total Alkalinity	0.858	Sample	P	0 - 5.2

Reference Method: SM 2320 B-2011
Batch ID: P400372

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2256032	Total Alkalinity	0.267	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P400344

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2256032	TDS	0.612	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P400374

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255491	Fluoride	0.919	Spike	P	0 - 2.1

Reference Method: SM 4500 F-C-2011
Batch ID: P400375

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2256032	Fluoride	0.0	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P400361

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2255871	Organic Carbon	0.441	Spike	P	0 - 20

Quality Assurance Report Precision

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A106176

Included Lab Sample IDs: 2255999, 2256000, 2256005, 2256006

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.1	97.6	P/P	90 - 110

Reference Method: SM 2120 B-2011

Run ID: A106177

Included Lab Sample IDs: 2255995, 2255996, 2256001, 2256002

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	101	P/P	90 - 115
Color (true)	101	101	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A106178

Included Lab Sample IDs: 2255995, 2255996, 2256001, 2256002

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	98.5	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A106207

Included Lab Sample IDs: 2255997, 2255998, 2256003, 2256004

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A106231

Included Lab Sample IDs: 2256021, 2256022, 2256023

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	96.3	96.9	P/P	90 - 110
Calcium	99.5	99.6	P/P	90 - 110
Iron	99.5	100	P/P	90 - 110
Magnesium	98.6	98.7	P/P	90 - 110
Potassium	97.3	97.4	P/P	90 - 110
Sodium	98.0	98.4	P/P	90 - 110
Zinc	97.3	97.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A106346

Included Lab Sample IDs: 2255997, 2255998, 2256003, 2256004

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.6	97.9	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A106356

Included Lab Sample IDs: 2256021, 2256022, 2256023

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	97.5	96.5	P/P	90 - 110
Antimony	97.9	96.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A106356

Included Lab Sample IDs: 2256021, 2256022, 2256023

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	98.0	97.8	P/P	90 - 110
Boron	101	97.2	P/P	90 - 110
Cadmium	96.3	95.4	P/P	90 - 110
Chromium	94.7	95.4	P/P	90 - 110
Copper	96.6	98.1	P/P	90 - 110
Nickel	96.8	97.5	P/P	90 - 110
Selenium	97.7	94.9	P/P	90 - 110
Silver	97.5	96.6	P/P	90 - 110
Thallium	94.0	92.1	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A106360

Included Lab Sample IDs: 2255997, 2255998, 2256003, 2256004

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.5	97.1	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A106363

Included Lab Sample IDs: 2255995, 2255996, 2256001, 2256002

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	99.2	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A106363

Included Lab Sample IDs: 2255995, 2255996, 2256001, 2256002

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A106366

Included Lab Sample IDs: 2255997, 2255998, 2256003, 2256004

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	99.2	P/P	90 - 110
Total-P	99.2	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A106377

Included Lab Sample IDs: 2256021, 2256022

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	107	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A106393

Included Lab Sample IDs: 2255997

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A106393

Included Lab Sample IDs: 2255997

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A106395

Included Lab Sample IDs: 2255998, 2256003, 2256004

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.0	99.6	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A106423

Included Lab Sample IDs: 2255995, 2255996, 2256001, 2256002

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	101	P/P	90 - 110
Chloride	101	100	P/P	90 - 110
Sulfate	100	99.6	P/P	90 - 110
Sulfate	99.6	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A106446

Included Lab Sample IDs: 2256021, 2256023

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	102	103	P/P	90 - 110
Lead	98.2	97.0	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					0.438	
	Turbidity					0.987	
EPA 200.7 Rev. 4.4	Barium	102	101	103	104		0.818
	Calcium	109	104	111	111		0.0361
	Iron	110	108	112	112		0.0727
	Magnesium	111	107	113	112		0.296
	Potassium	103	107	109	108		1.28
	Sodium	103	100	110	107		2.36
	Zinc	98.5	97.8	98.4	99.6		1.20
EPA 200.8 Rev. 5.4	Aluminum	102	102	102	104		0.0119
	Antimony	102	102	101	102		1.45
	Arsenic	105	104	102	103		1.74
	Boron	106	105	106	109		0.622
	Cadmium	101	99.0	98.8	100		0.112
	Chromium	99.9	99.8	98.8	99.5		1.00
	Copper	101	103	101	104		1.55
	Copper	108	106	109	107		2.93
	Lead	114	116	115	118		1.23
	Lead	103	104	104	104		0.0120
	Nickel	103	101	101	102		0.737
	Selenium	103	102	101	102		0.706
	Silver	99.6	101	100	100		0.321
	Thallium	103	105	104	105		1.00
EPA 300.0 Rev. 2.1	Chloride	102	96.3	98.6		0.439	
	Sulfate	96.9	97.6	95.8		0.675	
EPA 350.1 Rev. 2.0	Ammonia-N	98.6	96.0	95.8			0.192
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	108					1.03
	Kjeldahl Nitrogen	107					0.437
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.0	96.0				0.191
EPA 365.1 Rev. 2.0	Total-P	104	103	102			1.05
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.3	93.7	94.5			0.850
SM 2120 B-2011	Color (true)	99.7				0.361	
	Color (true)	100				5.55	
SM 2320 B-2011	Total Alkalinity	103				0.858	
	Total Alkalinity	102				0.267	
SM 2540 C-2011	TDS					0.612	
SM 4500 F-C-2011	Fluoride	98.0	98.2	97.2			0.919
	Fluoride	101	99.6	99.6			0.0
SM 5310 B-2011	Organic Carbon	96.0	96.4	97.0			0.441

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2255995, 2255996, 2256001, 2256002
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2256021, 2256022, 2256023
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2256021, 2256022, 2256023
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2255995, 2255996, 2256001, 2256002
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2255995, 2255996, 2256001, 2256002
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2255997, 2255998, 2256003, 2256004
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2255997, 2255998, 2256003, 2256004
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2255997, 2255998, 2256003, 2256004

Reference Method Descriptions

Method	Description	Associated Samples
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2255997, 2255998, 2256003, 2256004
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2255999, 2256000, 2256005, 2256006
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2255995, 2255996, 2256001, 2256002
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2255995, 2255996, 2256001, 2256002
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2256021, 2256022, 2256023
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2255995, 2255996, 2256001, 2256002
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2255995, 2255996, 2256001, 2256002
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2255995, 2255996, 2256001, 2256002
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2255997, 2255998, 2256003, 2256004

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	06/18/2021			06/18/2021 15:08	Sarah A Nixon	2255995, 2255996, 2256001, 2256002
EPA 200.7 Rev. 4.4	06/18/2021	06/21/2021 13:15	Elliott D. Healy	06/22/2021 18:16	Josef B Mick	2256021
	06/18/2021	06/21/2021 13:15	Elliott D. Healy	06/22/2021 18:22	Josef B Mick	2256022
	06/18/2021	06/21/2021 13:15	Elliott D. Healy	06/22/2021 18:30	Josef B Mick	2256023
EPA 200.8 Rev. 5.4	06/18/2021	06/21/2021 13:15	Elliott D. Healy	06/29/2021 18:02	Alexander Thompson	2256021
	06/18/2021	06/21/2021 13:15	Elliott D. Healy	06/29/2021 18:12	Alexander Thompson	2256022
	06/18/2021	06/21/2021 13:15	Elliott D. Healy	06/29/2021 18:21	Alexander Thompson	2256023
	06/18/2021	06/21/2021 13:15	Elliott D. Healy	06/30/2021 15:36	Alexander Thompson	2256021
	06/18/2021	06/21/2021 13:15	Elliott D. Healy	06/30/2021 15:42	Alexander Thompson	2256022
	06/18/2021	07/01/2021 13:10	Elliott D. Healy	07/03/2021 01:11	Alexander Thompson	2256021
	06/18/2021	07/01/2021 13:10	Elliott D. Healy	07/03/2021 01:17	Alexander Thompson	2256023
EPA 300.0 Rev. 2.1	06/18/2021			07/01/2021 21:08	Lipi Saha	2255995
	06/18/2021			07/01/2021 21:20	Lipi Saha	2255996
	06/18/2021			07/01/2021 21:56	Lipi Saha	2256001
	06/18/2021			07/01/2021 22:08	Lipi Saha	2256002
EPA 350.1 Rev. 2.0	06/18/2021			06/29/2021 13:06	Roberta Tatti	2255997
	06/18/2021			06/29/2021 13:07	Roberta Tatti	2255998
	06/18/2021			06/29/2021 13:08	Roberta Tatti	2256003
	06/18/2021			06/29/2021 13:10	Roberta Tatti	2256004
EPA 351.2 Rev. 2.0	06/18/2021	06/29/2021 12:54	Benjamin T. Nordmann	06/30/2021 12:56	Letuzia M De Oliveira	2255997
	06/18/2021	06/29/2021 12:54	Benjamin T. Nordmann	06/30/2021 18:04	Letuzia M De Oliveira	2255998
	06/18/2021	06/29/2021 12:54	Benjamin T. Nordmann	06/30/2021 18:06	Letuzia M De Oliveira	2256003
	06/18/2021	06/29/2021 12:54	Benjamin T. Nordmann	06/30/2021 18:08	Letuzia M De Oliveira	2256004
EPA 353.2 Rev. 2.0	06/18/2021			06/22/2021 09:55	Beverly Y. Sanders	2255997
	06/18/2021			06/22/2021 09:56	Beverly Y. Sanders	2255998
	06/18/2021			06/22/2021 09:57	Beverly Y. Sanders	2256003
	06/18/2021			06/22/2021 09:59	Beverly Y. Sanders	2256004
EPA 365.1 Rev. 2.0	06/18/2021	06/28/2021 17:29	Madeline Gruver	06/30/2021 10:42	Shengyu Ding	2255997
	06/18/2021	06/28/2021 17:29	Madeline Gruver	06/30/2021 10:50	Shengyu Ding	2255998
	06/18/2021	06/28/2021 17:29	Madeline Gruver	06/30/2021 10:51	Shengyu Ding	2256003
	06/18/2021	06/28/2021 17:29	Madeline Gruver	06/30/2021 10:52	Shengyu Ding	2256004
EPA 365.1 Rev. 2.0 dissolved	06/18/2021			06/18/2021 15:48	Ping Hua	2255999, 2256000
	06/18/2021			06/18/2021 15:49	Ping Hua	2256005
	06/18/2021			06/18/2021 15:50	Ping Hua	2256006
SM 2120 B-2011	06/18/2021			06/18/2021 15:45	Sarah A Nixon	2255995, 2255996
	06/18/2021			06/18/2021 15:54	Sarah A Nixon	2256001
	06/18/2021			06/18/2021 15:55	Sarah A Nixon	2256002
SM 2320 B-2011	06/18/2021			06/29/2021 19:36	Dale L. Simmons	2255995
	06/18/2021			06/29/2021 21:40	Dale L. Simmons	2255996
	06/18/2021			06/29/2021 21:49	Dale L. Simmons	2256001

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-2011	06/18/2021			06/29/2021 22:00	Dale L. Simmons	2256002
SM 2340B	06/18/2021			06/22/2021 18:16	Josef B Mick	2256021
	06/18/2021			06/22/2021 18:22	Josef B Mick	2256022
	06/18/2021			06/22/2021 18:30	Josef B Mick	2256023
	06/18/2021			06/22/2021 14:06	Yijie Li	2255995, 2255996, 2256001, 2256002
SM 2540 C-2011	06/18/2021			06/22/2021 14:15	Yijie Li	2255995, 2255996, 2256001, 2256002
SM 2540 D-2011	06/18/2021			06/29/2021 19:36	Dale L. Simmons	2255995
SM 4500 F-C-2011	06/18/2021			06/29/2021 21:40	Dale L. Simmons	2255996
	06/18/2021			06/29/2021 21:49	Dale L. Simmons	2256001
	06/18/2021			06/29/2021 22:00	Dale L. Simmons	2256002
	06/18/2021			06/29/2021 06:16	Madeline Gruver	2255997
SM 5310 B-2011	06/18/2021			06/29/2021 06:28	Madeline Gruver	2255998
	06/18/2021			06/29/2021 06:41	Madeline Gruver	2256003
	06/18/2021			06/29/2021 06:54	Madeline Gruver	2256004
	06/18/2021					