Chemical Analysis Report

NE-DIST-2021-04-29-01

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

Event Description: **Nassau North West**
Request ID: **RQ-2021-04-19-30**
Customer: **NE-DIST**
Project ID: **SMP**

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Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant Date Certified: 24-MAY-2021 13:40

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: UNNAMED BRANCH @ CR125 **Collection Date/Time: 04/28/2021 10:05**

Field ID: 19010123 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2243648	EPA 200.7 Rev. 4.4	Barium	23.2		ug/L	P398008	
		Calcium	6.42		mg/L	P398008	
		Iron	1.30E+03		ug/L	P398008	
		Magnesium	2.26		mg/L	P398008	
		Manganese	29.0		ug/L	P398008	
		Potassium	0.63	I	mg/L	P398008	
		Sodium	5.3		mg/L	P398008	
		Zinc	8.1	I	ug/L	P398008	
	EPA 200.8 Rev. 5.4	Aluminum	303		ug/L	P398008	
		Antimony	0.050	U	ug/L	P398254	
		Arsenic	0.68		ug/L	P398254	
		Beryllium	0.024	I	ug/L	P398008	
		Boron**	15.7		ug/L	P398254	
		Cadmium	0.020	U	ug/L	P398254	
		Chromium	0.62	I	ug/L	P398254	
		Copper	0.40	U	ug/L	P398254	
		Lead	0.41		ug/L	P398254	
		Nickel	0.60	I	ug/L	P398254	
		Selenium	0.40	U	ug/L	P398254	
		Silver	0.010	U	ug/L	P398008	
		Thallium	0.10	U	ug/L	P398254	
	SM 2340B	Hardness	25.3		mg/L	P398008	

Sample Location: DAUGHTERY BR @ CREWS RD **Collection Date/Time: 04/28/2021 11:05**

Field ID: 19010136 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2243637	EPA 180.1 Rev. 2.0	Turbidity	4.5		NTU	P397430	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P398375	
		Sulfate	1.0		mg SO4/L	P398377	
	SM 2120 B-2011	Color (true)	150		PCU	P397439	
	SM 2320 B-2011	Total Alkalinity	17		mg CaCO3/L	P398015	
	SM 2540 C-2011	TDS	106		mg/L	P397911	
	SM 2540 D-2011	TSS	4	I	mg/L	P397790	
	SM 4500 F-C-2011	Fluoride	0.056	I	mg F/L	P397576	
2243638	EPA 350.1 Rev. 2.0	Ammonia-N	0.040		mg N/L	P398133	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.62	J	mg N/L	P397759	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	2.9		mg N/L	P397640	
	EPA 365.1 Rev. 2.0	Total-P	0.041		mg P/L	P397675	
	SM 5310 B-2011	Organic Carbon	13		mg C/L	P397803	
2243639	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.025		mg P/L	P397421	
2243647	EPA 200.7 Rev. 4.4	Barium	63.5		ug/L	P398008	
		Calcium	8.17		mg/L	P398008	
		Iron	730		ug/L	P398008	
		Magnesium	4.39		mg/L	P398008	
		Manganese	20.9		ug/L	P398008	
		Potassium	0.82	I	mg/L	P398008	
		Sodium	8.4		mg/L	P398008	
		Zinc	11	I	ug/L	P398008	
	EPA 200.8 Rev. 5.4	Aluminum	292		ug/L	P398008	
		Antimony	0.050	U	ug/L	P398254	
		Arsenic	0.42		ug/L	P398254	
		Beryllium	0.106		ug/L	P398008	
		Boron**	13.6		ug/L	P398254	
		Cadmium	0.048	I	ug/L	P398254	
		Chromium	0.63	I	ug/L	P398254	
		Copper	0.40	U	ug/L	P398254	
		Lead	0.39	I	ug/L	P398254	
		Nickel	1.1	I	ug/L	P398254	
		Selenium	0.40	U	ug/L	P398254	
		Silver	0.010	U	ug/L	P398008	
		Thallium	0.10	U	ug/L	P398254	
	SM 2340B	Hardness	38.5		mg/L	P398008	

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: Refer to the Lab Analysis Report for an explanation of QC Codes.

Sample Location: FB04282021 **Collection Date/Time: 04/28/2021 11:15**

Field ID: FB04282021 Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2243640	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P397430	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P398375	
		Sulfate	0.20	U	mg SO4/L	P398377	
	SM 2120 B-2011	Color (true)	2.5	U	PCU	P397439	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P398015	
	SM 2540 C-2011	TDS	15	U	mg/L	P397911	
	SM 2540 D-2011	TSS	2	U	mg/L	P397790	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P397576	
2243641	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P398133	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P397759	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P397640	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P397675	
	SM 5310 B-2011	Organic Carbon	0.50	U	mg C/L	P397803	
2243642	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P397421	
2243649	EPA 200.7 Rev. 4.4	Barium	1.0	U	ug/L	P398008	
		Calcium	0.075	U	mg/L	P398008	
		Iron	30	U	ug/L	P398008	
		Magnesium	0.040	U	mg/L	P398008	
		Manganese	1.0	U	ug/L	P398008	
		Potassium	0.30	U	mg/L	P398008	
		Sodium	0.50	U	mg/L	P398008	
		Zinc	5.0	U	ug/L	P398008	
	EPA 200.8 Rev. 5.4	Aluminum	5.0	U	ug/L	P398008	
		Antimony	0.050	U	ug/L	P398254	
		Arsenic	0.050	U	ug/L	P398254	
		Beryllium	0.010	U	ug/L	P398008	
		Boron**	2.0	U	ug/L	P398254	
		Cadmium	0.020	U	ug/L	P398254	
		Chromium	0.40	U	ug/L	P398254	
		Copper	0.40	U	ug/L	P398254	
		Lead	0.20	U	ug/L	P398254	
		Nickel	0.50	U	ug/L	P398254	
		Selenium	0.40	U	ug/L	P398254	
		Silver	0.010	U	ug/L	P398008	
		Thallium	0.10	U	ug/L	P398254	
	SM 2340B	Hardness	0.35	U	mg/L	P398008	

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

Sample Location: MOCCASIN CREEK @ MOCCASIN CREEK CIR. E. **Collection Date/Time: 04/28/2021 11:45**

Field ID: 19010121 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2243654	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P397430	
	EPA 300.0 Rev. 2.1	Chloride	5.0		mg Cl/L	P398427	
		Sulfate	0.20	U	mg SO4/L	P398428	
	SM 2120 B-2011	Color (true)	500		PCU	P397439	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P398015	
	SM 2540 C-2011	TDS	76		mg/L	P397911	
	SM 2540 D-2011	TSS	2	I	mg/L	P397790	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P397576	
2243655	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P398133	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.88		mg N/L	P397973	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P397640	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P397675	
	SM 5310 B-2011	Organic Carbon	47		mg C/L	P397804	
2243656	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P397421	

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P397430

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P398008

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
Manganese	1.0	U	ug/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: P398008

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Beryllium	0.010	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P398254

Component	Result	Code	Units
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	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.40	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398375

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398377

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398427

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398428

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398133

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P397759

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P397973

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P397640

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P397675

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P397421

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

Reference Method: SM 2120 B-2011
Batch ID: P397439

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P398015

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO3/L

Reference Method: SM 2540 C-2011
Batch ID: P397911

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P397790

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P397576

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P397803

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

Reference Method: SM 5310 B-2011
Batch ID: P397804

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: P398008

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	103		P	85 - 115
Calcium	112		P	85 - 115
Iron	106		P	85 - 115
Magnesium	106		P	85 - 115
Manganese	105		P	85 - 115
Potassium	103		P	85 - 115
Sodium	108		P	85 - 115
Zinc	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P398008

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.7		P	85 - 115
Beryllium	94.6		P	85 - 115
Silver	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P398254

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Antimony	94.1		P	85 - 115
Arsenic	98.8		P	85 - 115
Boron	97.0		P	85 - 115
Cadmium	99.2		P	85 - 115
Chromium	95.3		P	85 - 115
Copper	95.0		P	85 - 115
Lead	90.5		P	85 - 115
Nickel	95.2		P	85 - 115
Selenium	96.7		P	85 - 115
Thallium	97.5		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398375

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398377

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398427

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.9		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398428

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398133

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P397759

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P397973

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P397640

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	97.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P397675

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P397421

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.4		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P397439

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	103		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P398015

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.9		P	93 - 104

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P397576

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.2		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P397803

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.2		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P397804

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.4		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P398008

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243833	Barium	101		P	80 - 120
2243833	Calcium	108		P	80 - 120
2243833	Iron	107		P	80 - 120
2243833	Magnesium	102		P	80 - 120
2243833	Manganese	104		P	80 - 120
2243833	Potassium	104		P	80 - 120
2243833	Sodium	103		P	80 - 120
2243833	Zinc	105		P	80 - 120
2243979	Barium	102	103	P/P	80 - 120
2243979	Calcium	112	111	P/P	80 - 120
2243979	Iron	107	108	P/P	80 - 120
2243979	Magnesium	107	108	P/P	80 - 120
2243979	Manganese	104	105	P/P	80 - 120
2243979	Potassium	102	103	P/P	80 - 120
2243979	Sodium	105	104	P/P	80 - 120
2243979	Zinc	101	101	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P398008

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243833	Aluminum	99.0		P	80 - 120
2243833	Beryllium	99.0		P	80 - 120
2243833	Silver	103		P	80 - 120
2243979	Aluminum	117	108	P/P	80 - 120
2243979	Beryllium	110	93.3	P/P	80 - 120
2243979	Silver	106	105	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P398254

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243340	Antimony	93.0	92.4	P/P	80 - 120
2243340	Arsenic	98.9	98.3	P/P	80 - 120
2243340	Boron	100	99.7	P/P	80 - 120
2243340	Cadmium	101	100	P/P	80 - 120
2243340	Chromium	95.2	95.3	P/P	80 - 120
2243340	Copper	98.2	97.4	P/P	80 - 120
2243340	Lead	92.5	92.6	P/P	80 - 120
2243340	Nickel	96.0	95.5	P/P	80 - 120
2243340	Selenium	95.6	95.7	P/P	80 - 120
2243340	Thallium	101	102	P/P	80 - 120
2243647	Antimony	95.9		P	80 - 120
2243647	Arsenic	103		P	80 - 120
2243647	Boron	101		P	80 - 120
2243647	Cadmium	103		P	80 - 120
2243647	Chromium	96.5		P	80 - 120
2243647	Copper	100		P	80 - 120
2243647	Lead	93.3		P	80 - 120
2243647	Nickel	97.6		P	80 - 120
2243647	Selenium	99.3		P	80 - 120
2243647	Thallium	102		P	80 - 120

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398375

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243583	Chloride	99.9		P	90 - 110
2243616	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398377

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243583	Sulfate	98.8		P	90 - 110
2243616	Sulfate	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398427

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243654	Chloride	99.5		P	90 - 110
2244094	Chloride	99.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398428

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243654	Sulfate	100		P	90 - 110
2244094	Sulfate	99.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398133

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243618	Ammonia-N	93.2	93.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P397759

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243638	Kjeldahl Nitrogen	115	107	F/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P397973

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2245012	Kjeldahl Nitrogen	99.1	92.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P397640

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243727	NO2NO3-N	93.5	94.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P397675

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P397675

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243596	Total-P	104	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P397421

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243728	O-Phosphate-P	93.4	94.6	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P397576

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243829	Fluoride	101	101	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P397803

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243469	Organic Carbon	95.5	96.4	P/P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P397804

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2243830	Organic Carbon	95.3	96.4	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P397430

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243614	Turbidity	4.76	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P398008

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243979	Barium	0.361	Spike	P	0 - 20
2243979	Calcium	0.328	Spike	P	0 - 20
2243979	Iron	0.350	Spike	P	0 - 20
2243979	Magnesium	0.441	Spike	P	0 - 20
2243979	Manganese	0.273	Spike	P	0 - 20
2243979	Potassium	1.04	Spike	P	0 - 20
2243979	Sodium	0.221	Spike	P	0 - 20
2243979	Zinc	0.0603	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P398008

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243979	Aluminum	7.42	Spike	P	0 - 20
2243979	Beryllium	15.6	Spike	P	0 - 20
2243979	Silver	1.14	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P398254

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243340	Antimony	0.650	Spike	P	0 - 20
2243340	Arsenic	0.638	Spike	P	0 - 20
2243340	Boron	0.597	Spike	P	0 - 20
2243340	Cadmium	1.05	Spike	P	0 - 20
2243340	Chromium	0.0842	Spike	P	0 - 20
2243340	Copper	0.831	Spike	P	0 - 20
2243340	Lead	0.0389	Spike	P	0 - 20
2243340	Nickel	0.551	Spike	P	0 - 20
2243340	Selenium	0.114	Spike	P	0 - 20
2243340	Thallium	0.498	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398375

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243583	Chloride	1.20	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398377

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243583	Sulfate	1.46	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398427

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2244094	Chloride	2.57	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398428

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2244094	Sulfate	5.54	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398133

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243618	Ammonia-N	0.421	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P397759

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243638	Kjeldahl Nitrogen	5.03	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P397973

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245012	Kjeldahl Nitrogen	3.53	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P397640

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243727	NO2NO3-N	0.519	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P397675

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243596	Total-P	1.25	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P397421

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243728	O-Phosphate-P	1.28	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P397439

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243771	Color (true)	0.628	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P398015

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243829	Total Alkalinity	0.128	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P397911

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243771	TDS	2.55	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P397576

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243829	Fluoride	0.0	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P397803

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243469	Organic Carbon	0.649	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P397804

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2243830	Organic Carbon	0.689	Spike	P	0 - 20

* 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: A105087
Included Lab Sample IDs: 2243639, 2243642, 2243656

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	100	P/P	90 - 110
O-Phosphate-P	100	101	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A105090
Included Lab Sample IDs: 2243637, 2243640, 2243654

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

Reference Method: SM 2120 B-2011
Run ID: A105091
Included Lab Sample IDs: 2243637, 2243640, 2243654

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	90 - 115
Color (true)	103	102	P/P	90 - 115

Reference Method: SM 4500 F-C-2011
Run ID: A105140
Included Lab Sample IDs: 2243637, 2243640, 2243654

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A105164
Included Lab Sample IDs: 2243638, 2243641, 2243655

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	96.0	95.5	P/P	90 - 110
NO2NO3-N	97.5	96.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A105214
Included Lab Sample IDs: 2243638, 2243641, 2243655

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

Reference Method: SM 5310 B-2011
Run ID: A105235
Included Lab Sample IDs: 2243638, 2243641, 2243655

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.8	96.9	P/P	90 - 110
Organic Carbon	96.9	96.9	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A105283
Included Lab Sample IDs: 2243638, 2243641

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.2	93.4	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A105344
Included Lab Sample IDs: 2243637, 2243640, 2243654

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	97.4	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A105387
Included Lab Sample IDs: 2243647, 2243648, 2243649

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	102	104	P/P	90 - 110
Barium	104	102	P/P	90 - 110
Calcium	104	105	P/P	90 - 110
Calcium	105	100	P/P	90 - 110
Iron	103	103	P/P	90 - 110
Iron	103	98.9	P/P	90 - 110
Magnesium	103	103	P/P	90 - 110
Magnesium	103	98.7	P/P	90 - 110
Manganese	103	105	P/P	90 - 110
Manganese	105	104	P/P	90 - 110
Potassium	100	103	P/P	90 - 110
Potassium	103	98.0	P/P	90 - 110
Sodium	101	97.5	P/P	90 - 110
Sodium	99.9	101	P/P	90 - 110
Zinc	103	103	P/P	90 - 110
Zinc	103	99.7	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A105391
Included Lab Sample IDs: 2243647, 2243648, 2243649

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Beryllium	101	103	P/P	90 - 110
Beryllium	103	103	P/P	90 - 110
Silver	103	103	P/P	90 - 110
Silver	103	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A105402
Included Lab Sample IDs: 2243638, 2243641, 2243655

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.3	99.0	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A105428
Included Lab Sample IDs: 2243647, 2243648, 2243649

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	103	101	P/P	90 - 110
Aluminum	105	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A105442
Included Lab Sample IDs: 2243655

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.9	94.1	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A105480
Included Lab Sample IDs: 2243647, 2243648, 2243649

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	94.3	95.9	P/P	90 - 110
Antimony	95.9	96.2	P/P	90 - 110
Antimony	96.2	95.3	P/P	90 - 110
Arsenic	101	100	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Boron	98.8	99.5	P/P	90 - 110
Boron	98.8	98.8	P/P	90 - 110
Boron	99.5	97.8	P/P	90 - 110
Cadmium	101	100	P/P	90 - 110
Cadmium	98.3	99.1	P/P	90 - 110
Cadmium	99.1	101	P/P	90 - 110
Chromium	95.7	97.3	P/P	90 - 110
Chromium	96.2	95.4	P/P	90 - 110
Chromium	97.3	96.2	P/P	90 - 110
Copper	95.7	95.9	P/P	90 - 110
Copper	97.5	95.7	P/P	90 - 110
Copper	97.8	97.5	P/P	90 - 110
Lead	95.0	95.5	P/P	90 - 110
Lead	95.5	96.5	P/P	90 - 110
Lead	96.5	95.8	P/P	90 - 110
Nickel	95.7	96.1	P/P	90 - 110
Nickel	97.8	95.7	P/P	90 - 110
Nickel	98.1	97.8	P/P	90 - 110
Selenium	101	102	P/P	90 - 110
Selenium	101	99.9	P/P	90 - 110
Selenium	102	101	P/P	90 - 110
Thallium	91.2	93.7	P/P	90 - 110
Thallium	91.9	91.2	P/P	90 - 110
Thallium	93.7	92.6	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A105509
Included Lab Sample IDs: 2243637, 2243640, 2243654

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A105509
Included Lab Sample IDs: 2243637, 2243640, 2243654

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	102	P/P	90 - 110
Chloride	100	102	P/P	90 - 110
Sulfate	100	102	P/P	90 - 110
Sulfate	102	102	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		
						LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						4.76	
EPA 200.7 Rev. 4.4	Barium	103	101	102	103			0.361
	Calcium	112	108	112	111			0.328
	Iron	106	107	107	108			0.350
	Magnesium	106	102	107	108			0.441
	Manganese	105	104	104	105			0.273
	Potassium	103	104	102	103			1.04
	Sodium	108	103	105	104			0.221
	Zinc	104	105	101	101			0.0603
EPA 200.8 Rev. 5.4	Aluminum	99.7	117	108	99.0			7.42
	Antimony	94.1	93.0	92.4	95.9			0.650
	Arsenic	98.8	98.9	98.3	103			0.638
	Beryllium	94.6	110	93.3	99.0			15.6
	Boron	97.0	100	99.7	101			0.597
	Cadmium	99.2	101	100	103			1.05
	Chromium	95.3	95.2	95.3	96.5			0.0842
	Copper	95.0	98.2	97.4	100			0.831
	Lead	90.5	92.5	92.6	93.3			0.0389
	Nickel	95.2	96.0	95.5	97.6			0.551
	Selenium	96.7	95.6	95.7	99.3			0.114
	Silver	104	106	105	103			1.14
	Thallium	97.5	101	102	102			0.498
EPA 300.0 Rev. 2.1	Chloride	102	99.9	102			1.20	
	Chloride	99.9	99.5	99.5			2.57	
	Sulfate	102	98.8	102			1.46	
	Sulfate	100	99.0	100			5.54	
EPA 350.1 Rev. 2.0	Ammonia-N	100	93.2	93.8				0.421
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	115	107				5.03
	Kjeldahl Nitrogen	99.5	99.1	92.5				3.53
EPA 353.2 Rev. 2.0	NO2NO3-N	97.0	93.5	94.0				0.519
EPA 365.1 Rev. 2.0	Total-P	106	104	105				1.25
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.4	93.4	94.6				1.28
SM 2120 B-2011	Color (true)	103					0.628	
SM 2320 B-2011	Total Alkalinity	98.9					0.128	
SM 2540 C-2011	TDS						2.55	
SM 4500 F-C-2011	Fluoride	98.2	101	101				0.0
SM 5310 B-2011	Organic Carbon	95.2	95.5	96.4				0.649
	Organic Carbon	95.4	95.3	96.4				0.689

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2243637, 2243640, 2243654
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2243647, 2243648, 2243649
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2243647, 2243648, 2243649
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2243637, 2243640, 2243654
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2243637, 2243640, 2243654
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2243638, 2243641, 2243655
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2243638, 2243641, 2243655
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2243638, 2243641, 2243655
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2243638, 2243641, 2243655

Reference Method Descriptions

Method	Description	Associated Samples
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2243639, 2243642, 2243656
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2243637, 2243640, 2243654
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2243637, 2243640, 2243654
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2243647, 2243648, 2243649
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2243637, 2243640, 2243654
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2243637, 2243640, 2243654
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2243637, 2243640, 2243654
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2243638, 2243641, 2243655

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	04/29/2021			04/29/2021 17:28	Yen Ta	2243637, 2243640, 2243654
EPA 200.7 Rev. 4.4	04/29/2021	05/11/2021 17:00	Elliott D. Healy	05/12/2021 18:39	Betina Topolski	2243649
	04/29/2021	05/11/2021 17:00	Elliott D. Healy	05/12/2021 20:27	Betina Topolski	2243647
	04/29/2021	05/11/2021 17:00	Elliott D. Healy	05/12/2021 20:35	Betina Topolski	2243648
EPA 200.8 Rev. 5.4	04/29/2021	05/11/2021 17:00	Elliott D. Healy	05/12/2021 19:22	McKinley C Carter	2243649
	04/29/2021	05/11/2021 17:00	Elliott D. Healy	05/12/2021 20:47	McKinley C Carter	2243647
	04/29/2021	05/11/2021 17:00	Elliott D. Healy	05/12/2021 20:55	McKinley C Carter	2243648
	04/29/2021	05/11/2021 17:00	Elliott D. Healy	05/13/2021 22:34	Alexander Thompson	2243649
	04/29/2021	05/11/2021 17:00	Elliott D. Healy	05/14/2021 00:09	Alexander Thompson	2243647
	04/29/2021	05/11/2021 17:00	Elliott D. Healy	05/14/2021 00:19	Alexander Thompson	2243648
	04/29/2021	05/17/2021 10:05	Alexander Thompson	05/17/2021 16:35	Alexander Thompson	2243649
	04/29/2021	05/17/2021 10:05	Alexander Thompson	05/17/2021 18:20	Alexander Thompson	2243648
	04/29/2021	05/17/2021 10:05	Alexander Thompson	05/17/2021 21:22	Alexander Thompson	2243647
EPA 300.0 Rev. 2.1	04/29/2021			05/18/2021 05:30	Lipi Saha	2243637
	04/29/2021			05/18/2021 05:49	Lipi Saha	2243640
	04/29/2021			05/18/2021 19:40	Lipi Saha	2243654
EPA 350.1 Rev. 2.0	04/29/2021			05/12/2021 13:53	Julia Storbeck	2243638
	04/29/2021			05/12/2021 13:54	Julia Storbeck	2243641
	04/29/2021			05/12/2021 13:56	Julia Storbeck	2243655
EPA 351.2 Rev. 2.0	04/29/2021	05/06/2021 13:48	Benjamin T. Nordmann	05/07/2021 17:17	Virginia P. Brown	2243638
	04/29/2021	05/06/2021 13:48	Benjamin T. Nordmann	05/07/2021 17:22	Virginia P. Brown	2243641
	04/29/2021	05/11/2021 13:04	Benjamin T. Nordmann	05/14/2021 14:13	Virginia P. Brown	2243655
EPA 353.2 Rev. 2.0	04/29/2021			05/04/2021 11:29	Beverly Y. Sanders	2243641
	04/29/2021			05/04/2021 11:30	Beverly Y. Sanders	2243655
	04/29/2021			05/04/2021 12:52	Beverly Y. Sanders	2243638
EPA 365.1 Rev. 2.0	04/29/2021	05/05/2021 14:05	Yen Ta	05/06/2021 10:42	Shengyu Ding	2243641
	04/29/2021	05/05/2021 14:05	Yen Ta	05/06/2021 10:44	Shengyu Ding	2243638
	04/29/2021	05/05/2021 14:05	Yen Ta	05/06/2021 10:45	Shengyu Ding	2243655
EPA 365.1 Rev. 2.0 dissolved	04/29/2021			04/29/2021 14:29	Blanca Fach	2243639
	04/29/2021			04/29/2021 14:30	Blanca Fach	2243656
	04/29/2021			04/29/2021 14:37	Blanca Fach	2243642
SM 2120 B-2011	04/29/2021			04/29/2021 16:41	Sarah A Nixon	2243640
	04/29/2021			04/29/2021 17:13	Sarah A Nixon	2243637, 2243654
SM 2320 B-2011	04/29/2021			05/11/2021 17:49	Dale L. Simmons	2243637
	04/29/2021			05/11/2021 17:54	Dale L. Simmons	2243640
	04/29/2021			05/11/2021 17:58	Dale L. Simmons	2243654
SM 2340B	04/29/2021			05/12/2021 18:39	Betina Topolski	2243649
	04/29/2021			05/12/2021 20:27	Betina Topolski	2243647
	04/29/2021			05/12/2021 20:35	Betina Topolski	2243648
SM 2540 C-2011	04/29/2021			05/04/2021 15:06	Yijie Li	2243637, 2243640, 2243654

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2540 D-2011	04/29/2021			05/04/2021 15:06	Yijie Li	2243637, 2243640, 2243654
SM 4500 F-C-2011	04/29/2021			05/03/2021 19:02	Dale L. Simmons	2243637
	04/29/2021			05/03/2021 19:11	Dale L. Simmons	2243640
	04/29/2021			05/03/2021 19:17	Dale L. Simmons	2243654
SM 5310 B-2011	04/29/2021			05/06/2021 05:01	Madeline Gruver	2243638
	04/29/2021			05/06/2021 05:11	Madeline Gruver	2243641
	04/29/2021			05/06/2021 06:50	Madeline Gruver	2243655