

Chemical Analysis Report

NE-DIST-2019-07-18-03

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

Event Description: **Melrose Lakes**
Request ID: **RQ-2019-07-15-08**
Customer: **NE-DIST**
Project ID: **SMP**

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Date Certified: 14-AUG-2019 12:08



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: LAKE SUGGS CTR

Collection Date/Time: 07/17/2019 10:35

Field ID: 20030922

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2104358	EPA 180.1 Rev. 2.0	Turbidity	0.70		NTU	P367529	
	EPA 300.0 Rev. 2.1	Chloride	8.3		mg Cl/L	P367755	
		Sulfate	0.64		mg SO4/L	P367757	
		Color (true)	590		PCU	P367594	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P367937	
	SM 2540 C-97	TDS	121		mg/L	P367742	
	SM 2540 D-97	TSS	2	U	mg/L	P367655	
	SM 4500 F-C-97	Fluoride	0.049	I	mg F/L	P367940	
2104360	EPA 350.1 Rev. 2.0	Ammonia-N	1.2		mg N/L	P368182	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.9		mg N/L	P367835	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P367686	
	EPA 365.1 Rev. 2.0	Total-P	0.18		mg P/L	P367695	
	SM 5310 B-00	Organic Carbon	44		mg C/L	P367727	
2104362	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.14		mg P/L	P367523	
2104374	EPA 200.7 Rev. 4.4	Barium	14.1		ug/L	P367698	
		Calcium	2.47		mg/L	P367698	
		Iron	930		ug/L	P367698	
		Magnesium	1.70		mg/L	P367698	
		Potassium	2.2		mg/L	P367698	
		Sodium	4.9		mg/L	P367698	
		Zinc	5.0	U	ug/L	P367698	
	EPA 200.8 Rev. 5.4	Aluminum	425		ug/L	P367698	
		Antimony	0.050	U	ug/L	P367698	
		Arsenic	0.95		ug/L	P367698	
		Boron**	19.2		ug/L	P367698	
		Cadmium	0.020	U	ug/L	P367698	
		Chromium	0.63	I	ug/L	P367698	
		Copper	0.40	U	ug/L	P367698	
		Lead	0.54		ug/L	P367698	
		Nickel	0.61	I	ug/L	P367698	
		Selenium	0.20	U	ug/L	P367698	
		Silver	0.010	U	ug/L	P367698	
		Thallium	0.10	U	ug/L	P367698	

Sample Location: LAKE ROSA CENTER

Collection Date/Time: 07/17/2019 11:40

Field ID: G2NE1130

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2104364	EPA 180.1 Rev. 2.0	Turbidity	0.60		NTU	P367529	
	EPA 300.0 Rev. 2.1	Chloride	9.5		mg Cl/L	P367755	
		Sulfate	7.4		mg SO4/L	P367757	
	SM 2120 B	Color (true)	6.9	A	PCU	P367595	
	SM 2320 B-97	Total Alkalinity	3.9		mg CaCO3/L	P367937	
	SM 2540 C-97	TDS	31		mg/L	P367742	
	SM 2540 D-97	TSS	2	U	mg/L	P367953	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P367940	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P368182	
2104366	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.28		mg N/L	P367835	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P367686	
	EPA 365.1 Rev. 2.0	Total-P	0.007		mg P/L	P367695	
	SM 5310 B-00	Organic Carbon	3.1		mg C/L	P367727	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P367523	
2104368	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P367523	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: ROSS LAKE CENTER

Collection Date/Time: 07/17/2019 11:15

Field ID: 20030454

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2104359	EPA 180.1 Rev. 2.0	Turbidity	0.65		NTU	P367529	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P367755	
		Sulfate	11		mg SO4/L	P367757	
		Color (true)	480		PCU	P367595	
	SM 2320 B-97	Total Alkalinity	2.3	I	mg CaCO3/L	P367937	
	SM 2540 C-97	TDS	89		mg/L	P367742	
	SM 2540 D-97	TSS	2	U	mg/L	P367655	
	SM 4500 F-C-97	Fluoride	0.077	I	mg F/L	P367940	
2104361	EPA 350.1 Rev. 2.0	Ammonia-N	0.23		mg N/L	P368182	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P367835	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.012		mg N/L	P367686	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P367695	
	SM 5310 B-00	Organic Carbon	33		mg C/L	P367727	
2104363	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.11		mg P/L	P367523	
2104375	EPA 200.7 Rev. 4.4	Barium	8.9		ug/L	P367698	
		Calcium	2.08		mg/L	P367698	
		Iron	800		ug/L	P367698	
		Magnesium	1.50		mg/L	P367698	
		Potassium	1.5		mg/L	P367698	
		Sodium	5.9		mg/L	P367698	
		Zinc	5.0	U	ug/L	P367698	
	EPA 200.8 Rev. 5.4	Aluminum	419		ug/L	P367698	
		Antimony	0.050	U	ug/L	P367698	
		Arsenic	0.89		ug/L	P367698	
		Boron**	18.0		ug/L	P367698	
		Cadmium	0.020	U	ug/L	P367698	
		Chromium	0.75	I	ug/L	P367698	
		Copper	0.40	U	ug/L	P367698	
		Lead	0.33	I	ug/L	P367698	
		Nickel	0.56	I	ug/L	P367698	
		Selenium	0.20	U	ug/L	P367698	
		Silver	0.010	U	ug/L	P367698	
		Thallium	0.10	U	ug/L	P367698	

Sample Location: GOOSE LAKE

Collection Date/Time: 07/17/2019 12:45

Field ID: 20030980

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2104365	EPA 180.1 Rev. 2.0	Turbidity	0.90		NTU	P367529	
	EPA 300.0 Rev. 2.1	Chloride	8.8		mg Cl/L	P367755	
		Sulfate	0.40	I	mg SO4/L	P367757	
	SM 2120 B	Color (true)	440		PCU	P367595	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P367937	
	SM 2540 C-97	TDS	90		mg/L	P367742	
	SM 2540 D-97	TSS	2	U	mg/L	P367655	
	SM 4500 F-C-97	Fluoride	0.048	I	mg F/L	P367940	
2104367	EPA 350.1 Rev. 2.0	Ammonia-N	0.62		mg N/L	P368182	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.9		mg N/L	P367835	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P367686	
	EPA 365.1 Rev. 2.0	Total-P	0.22		mg P/L	P367695	
	SM 5310 B-00	Organic Carbon	31		mg C/L	P367727	
2104369	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.18		mg P/L	P367523	

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P367529

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P367698

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: P367698

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	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367755

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367757

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P368182

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367835

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P367686

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P367695

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P367523

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

Reference Method: SM 2120 B
Batch ID: P367594

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P367595

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P367937

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

Reference Method: SM 2540 C-97
Batch ID: P367742

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P367655

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P367953

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P367940

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P367727

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: P367698

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	102		P	85 - 115
Calcium	111		P	85 - 115
Iron	106		P	85 - 115
Magnesium	112		P	85 - 115
Potassium	110		P	85 - 115
Sodium	114		P	85 - 115
Zinc	99.9		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P367698

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.9		P	85 - 115
Antimony	96.7		P	85 - 115
Arsenic	105		P	85 - 115
Boron	104		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	99.8		P	85 - 115
Copper	103		P	85 - 115
Lead	93.0		P	85 - 115
Nickel	103		P	85 - 115
Selenium	106		P	85 - 115
Silver	99.3		P	85 - 115
Thallium	94.2		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367755

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367757

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P368182

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367835

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	95.6		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P367686

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P367695

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P367523

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.3		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P367594

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Reference Method: SM 2120 B
Batch ID: P367595

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

Reference Method: SM 2320 B-97
Batch ID: P367937

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P367940

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.1		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P367727

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P367698

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2104146	Barium	98.7		P	80 - 120
2104146	Calcium	101		P	80 - 120
2104146	Iron	102		P	80 - 120
2104146	Magnesium	101		P	80 - 120
2104146	Potassium	108		P	80 - 120
2104146	Sodium	102		P	80 - 120
2104146	Zinc	96.6		P	80 - 120
2104526	Barium	102	102	P/P	80 - 120
2104526	Calcium	109	108	P/P	80 - 120
2104526	Iron	105	104	P/P	80 - 120
2104526	Magnesium	111	110	P/P	80 - 120
2104526	Potassium	112	110	P/P	80 - 120
2104526	Sodium	109	108	P/P	80 - 120
2104526	Zinc	102	98.8	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P367698

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2104146	Aluminum	102		P	80 - 120
2104146	Antimony	101		P	80 - 120
2104146	Arsenic	108		P	80 - 120
2104146	Boron	107		P	80 - 120
2104146	Cadmium	106		P	80 - 120
2104146	Chromium	100		P	80 - 120
2104146	Copper	100		P	80 - 120
2104146	Lead	94.6		P	80 - 120
2104146	Nickel	101		P	80 - 120
2104146	Selenium	106		P	80 - 120
2104146	Silver	102		P	80 - 120
2104146	Thallium	98.9		P	80 - 120
2104526	Aluminum	102	101	P/P	80 - 120
2104526	Antimony	98.3	98.1	P/P	80 - 120
2104526	Arsenic	106	105	P/P	80 - 120
2104526	Boron	104	104	P/P	80 - 120
2104526	Cadmium	104	102	P/P	80 - 120
2104526	Chromium	102	101	P/P	80 - 120
2104526	Copper	104	104	P/P	80 - 120
2104526	Lead	95.3	94.1	P/P	80 - 120
2104526	Nickel	103	102	P/P	80 - 120
2104526	Selenium	105	105	P/P	80 - 120
2104526	Silver	99.9	99.7	P/P	80 - 120
2104526	Thallium	105	95.9	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367755

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2104174	Chloride	102	105	P/P	90 - 110
2104358	Chloride	100		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367757

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2104174	Sulfate	102	105	P/P	90 - 110
2104358	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P368182

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2104366	Ammonia-N	104	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367835

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2104308	Kjeldahl Nitrogen	95.8	99.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P367686

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2104318	NO2NO3-N	99.0	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P367695

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2104308	Total-P	100	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P367523

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2104368	O-Phosphate-P	97.8	97.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P367940

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2104532	Fluoride	97.4	98.1	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P367727

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2104551	Organic Carbon	99.5	100	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P367529

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104347	Turbidity	6.25	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P367698

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104526	Barium	0.707	Spike	P	0 - 20
2104526	Calcium	0.704	Spike	P	0 - 20
2104526	Iron	0.721	Spike	P	0 - 20
2104526	Magnesium	0.554	Spike	P	0 - 20
2104526	Potassium	1.56	Spike	P	0 - 20
2104526	Sodium	0.135	Spike	P	0 - 20
2104526	Zinc	2.75	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P367698

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104526	Aluminum	1.33	Spike	P	0 - 20
2104526	Antimony	0.221	Spike	P	0 - 20
2104526	Arsenic	1.27	Spike	P	0 - 20
2104526	Boron	0.412	Spike	P	0 - 20
2104526	Cadmium	1.73	Spike	P	0 - 20
2104526	Chromium	0.485	Spike	P	0 - 20
2104526	Copper	0.0103	Spike	P	0 - 20
2104526	Lead	1.37	Spike	P	0 - 20
2104526	Nickel	1.58	Spike	P	0 - 20
2104526	Selenium	0.399	Spike	P	0 - 20
2104526	Silver	0.207	Spike	P	0 - 20
2104526	Thallium	9.19	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367755

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104174	Chloride	2.18	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367757

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104174	Sulfate	2.07	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P368182

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104366	Ammonia-N	2.86	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367835

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104308	Kjeldahl Nitrogen	2.25	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P367686

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104318	NO2NO3-N	0.506	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P367695

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104308	Total-P	1.52	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P367523

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104368	O-Phosphate-P	0.821	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P367594

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104314	Color (true)	4.13	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P367595

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104364	Color (true)	9.55	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P367937

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104532	Total Alkalinity	0.0177	Sample	P	0 - 2.8

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P367742

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104347	TDS	0.598	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P367655

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104347	TSS	5.41	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P367940

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104532	Fluoride	0.509	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P367727

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2104551	Organic Carbon	0.636	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A92877

Included Lab Sample IDs: 2104362, 2104363, 2104368, 2104369

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.6	100	P/P	90 - 110
O-Phosphate-P	99.8	102	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A92878

Included Lab Sample IDs: 2104358, 2104359, 2104364, 2104365

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	101	P/P	95 - 105

Reference Method: SM 2120 B

Run ID: A92901

Included Lab Sample IDs: 2104358, 2104359, 2104364, 2104365

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A92926

Included Lab Sample IDs: 2104360, 2104361, 2104367

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A92931

Included Lab Sample IDs: 2104366

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	97.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A92937

Included Lab Sample IDs: 2104360, 2104361, 2104366, 2104367

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	99.5	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A92945

Included Lab Sample IDs: 2104360, 2104361, 2104366, 2104367

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.8	98.5	P/P	90 - 110
Organic Carbon	99.8	99.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A92954

Included Lab Sample IDs: 2104358, 2104359, 2104364, 2104365

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	101	P/P	90 - 110
Chloride	101	101	P/P	90 - 110
Chloride	102	100	P/P	90 - 110
Sulfate	102	101	P/P	90 - 110
Sulfate	102	99.9	P/P	90 - 110
Sulfate	99.9	102	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A92966

Included Lab Sample IDs: 2104374, 2104375

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	103	103	P/P	90 - 110
Barium	103	103	P/P	90 - 110
Calcium	102	98.1	P/P	90 - 110
Calcium	102	102	P/P	90 - 110
Iron	102	97.5	P/P	90 - 110
Iron	103	102	P/P	90 - 110
Magnesium	102	97.5	P/P	90 - 110
Magnesium	103	102	P/P	90 - 110
Potassium	102	98.3	P/P	90 - 110
Potassium	103	102	P/P	90 - 110
Sodium	106	108	P/P	90 - 110
Sodium	108	106	P/P	90 - 110
Zinc	101	102	P/P	90 - 110
Zinc	102	99.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A93028

Included Lab Sample IDs: 2104360, 2104361, 2104366, 2104367

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

Reference Method: SM 2320 B-97

Run ID: A93033

Included Lab Sample IDs: 2104358, 2104359, 2104364, 2104365

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

Reference Method: SM 4500 F-C-97

Run ID: A93033

Included Lab Sample IDs: 2104358, 2104359, 2104364, 2104365

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A93145

Included Lab Sample IDs: 2104360, 2104361, 2104366, 2104367

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	103	105	P/P	90 - 110
Ammonia-N	103	104	P/P	90 - 110
Ammonia-N	104	103	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A93176

Included Lab Sample IDs: 2104374, 2104375

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	103	104	P/P	90 - 110
Antimony	96.3	97.3	P/P	90 - 110
Arsenic	106	107	P/P	90 - 110
Boron	107	104	P/P	90 - 110
Cadmium	103	103	P/P	90 - 110
Chromium	103	105	P/P	90 - 110
Copper	106	107	P/P	90 - 110
Lead	99.8	100	P/P	90 - 110
Nickel	104	105	P/P	90 - 110
Silver	100	101	P/P	90 - 110
Thallium	94.4	94.4	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A93257

Included Lab Sample IDs: 2104374, 2104375

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Selenium	99.2	98.5	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	MS
EPA 180.1 Rev. 2.0	Turbidity							6.25	
EPA 200.7 Rev. 4.4	Barium	102			98.7	102	102		0.707
	Calcium	111			101	109	108		0.704
	Iron	106			102	105	104		0.721
	Magnesium	112			101	111	110		0.554
	Potassium	110			108	112	110		1.56
	Sodium	114			102	109	108		0.135
	Zinc	99.9			96.6	102	98.8		2.75
EPA 200.8 Rev. 5.4	Aluminum	99.9			102	102	101		1.33
	Antimony	96.7			101	98.3	98.1		0.221
	Arsenic	105			108	106	105		1.27
	Boron	104			107	104	104		0.412
	Cadmium	101			106	104	102		1.73
	Chromium	99.8			100	102	101		0.485
	Copper	103			100	104	104		0.0103
	Lead	93.0			94.6	95.3	94.1		1.37
	Nickel	103			101	103	102		1.58
	Selenium	106			106	105	105		0.399
	Silver	99.3			102	99.9	99.7		0.207
	Thallium	94.2			98.9	105	95.9		9.19
EPA 300.0 Rev. 2.1	Chloride	101			102	105	100		2.18
	Sulfate	102			102	105	102		2.07
EPA 350.1 Rev. 2.0	Ammonia-N	104			104	101			2.86
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	95.6			95.8	99.2			2.25
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100			99.0	98.5			0.506
EPA 365.1 Rev. 2.0	Total-P	99.0			100	98.6			1.52
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.3			97.8	97.0			0.821
SM 2120 B	Color (true)	101						4.13	
	Color (true)	100						9.55	
SM 2320 B-97	Total Alkalinity	103						0.0177	
SM 2540 C-97	TDS							0.598	
SM 2540 D-97	TSS							5.41	
SM 4500 F-C-97	Fluoride	98.1			97.4	98.1			0.509
SM 5310 B-00	Organic Carbon	98.6			99.5	100			0.636

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2104358, 2104359, 2104364, 2104365
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2104374, 2104375
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2104374, 2104375
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2104358, 2104359, 2104364, 2104365
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2104358, 2104359, 2104364, 2104365
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2104360, 2104361, 2104366, 2104367
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2104360, 2104361, 2104366, 2104367
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2104360, 2104361, 2104366, 2104367

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2104360, 2104361, 2104366, 2104367
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2104362, 2104363, 2104368, 2104369
SM 2120 B / E31780	True Color measured at 450 nm	2104358, 2104359, 2104364, 2104365
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2104358, 2104359, 2104364, 2104365
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2104358, 2104359, 2104364, 2104365
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2104358, 2104359, 2104364, 2104365
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2104358, 2104359, 2104364, 2104365
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2104360, 2104361, 2104366, 2104367

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	07/18/2019			07/18/2019 15:51	Rosalyn Ballman	2104358, 2104359, 2104364, 2104365
EPA 200.7 Rev. 4.4	07/18/2019	07/22/2019 15:20	Elliott D. Healy	07/23/2019 14:32	Betina Topolski	2104374
	07/18/2019	07/22/2019 15:20	Elliott D. Healy	07/23/2019 15:20	Betina Topolski	2104375
EPA 200.8 Rev. 5.4	07/18/2019	07/22/2019 15:20	Elliott D. Healy	07/31/2019 11:19	Robert K Palmer	2104374
	07/18/2019	07/22/2019 15:20	Elliott D. Healy	07/31/2019 11:28	Robert K Palmer	2104375
	07/18/2019	07/22/2019 15:20	Elliott D. Healy	08/02/2019 16:01	Robert K Palmer	2104374
	07/18/2019	07/22/2019 15:20	Elliott D. Healy	08/02/2019 16:10	Robert K Palmer	2104375
EPA 300.0 Rev. 2.1	07/18/2019			07/22/2019 15:27	Jhamieka S. Greenwood	2104358
	07/18/2019			07/22/2019 18:41	Jhamieka S. Greenwood	2104359
	07/18/2019			07/22/2019 18:53	Jhamieka S. Greenwood	2104364
	07/18/2019			07/22/2019 19:29	Jhamieka S. Greenwood	2104365
EPA 350.1 Rev. 2.0	07/18/2019			07/30/2019 16:38	Virginia P. Brown	2104366
	07/18/2019			07/30/2019 18:35	Virginia P. Brown	2104360
	07/18/2019			07/30/2019 18:44	Virginia P. Brown	2104361
	07/18/2019			07/30/2019 18:47	Virginia P. Brown	2104367
EPA 351.2 Rev. 2.0	07/18/2019	07/24/2019 13:45	Adrian Shelby	07/25/2019 14:18	Joseph Suarez	2104360
	07/18/2019	07/24/2019 13:45	Adrian Shelby	07/25/2019 14:19	Joseph Suarez	2104361
	07/18/2019	07/24/2019 13:45	Adrian Shelby	07/25/2019 14:22	Joseph Suarez	2104367
	07/18/2019	07/24/2019 13:45	Adrian Shelby	07/25/2019 14:41	Joseph Suarez	2104366
EPA 353.2 Rev. 2.0	07/18/2019			07/22/2019 10:29	Beverly Y. Sanders	2104360
	07/18/2019			07/22/2019 10:30	Beverly Y. Sanders	2104361
	07/18/2019			07/22/2019 10:31	Beverly Y. Sanders	2104366
	07/18/2019			07/22/2019 10:32	Beverly Y. Sanders	2104367
EPA 365.1 Rev. 2.0	07/18/2019	07/19/2019 12:30	Sima Feizi	07/22/2019 09:11	Lipi Saha	2104360
	07/18/2019	07/19/2019 12:30	Sima Feizi	07/22/2019 09:12	Lipi Saha	2104361
	07/18/2019	07/19/2019 12:30	Sima Feizi	07/22/2019 09:14	Lipi Saha	2104367
	07/18/2019	07/19/2019 12:30	Sima Feizi	07/22/2019 12:04	Lipi Saha	2104366
EPA 365.1 Rev. 2.0 dissolved	07/18/2019			07/18/2019 15:26	Jhamieka S. Greenwood	2104368
	07/18/2019			07/18/2019 15:51	Jhamieka S. Greenwood	2104362, 2104369
	07/18/2019			07/18/2019 15:52	Jhamieka S. Greenwood	2104363
SM 2120 B	07/18/2019			07/18/2019 17:19	Madeline Funaro	2104358, 2104359
	07/18/2019			07/18/2019 17:20	Madeline Funaro	2104365
	07/18/2019			07/18/2019 17:25	Madeline Funaro	2104364
SM 2320 B-97	07/18/2019			07/24/2019 20:47	Dale L. Simmons	2104358
	07/18/2019			07/24/2019 20:57	Dale L. Simmons	2104359
	07/18/2019			07/24/2019 21:10	Dale L. Simmons	2104364
	07/18/2019			07/24/2019 21:20	Dale L. Simmons	2104365
SM 2540 C-97	07/18/2019			07/19/2019 14:53	Rosalyn Ballman	2104358, 2104359, 2104364, 2104365
SM 2540 D-97	07/18/2019			07/19/2019 14:53	Rosalyn Ballman	2104358, 2104359, 2104365
	07/18/2019			07/24/2019 11:00	Blanca Fach	2104364

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 4500 F-C-97	07/18/2019			07/24/2019 20:47	Dale L. Simmons	2104358
	07/18/2019			07/24/2019 20:57	Dale L. Simmons	2104359
	07/18/2019			07/24/2019 21:10	Dale L. Simmons	2104364
	07/18/2019			07/24/2019 21:20	Dale L. Simmons	2104365
SM 5310 B-00	07/18/2019			07/23/2019 00:59	Madeline Funaro	2104360
	07/18/2019			07/23/2019 01:11	Madeline Funaro	2104361
	07/18/2019			07/23/2019 01:48	Madeline Funaro	2104366
	07/18/2019			07/23/2019 02:00	Madeline Funaro	2104367