

Chemical Analysis Report

SW-DIST-2021-01-14-01

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

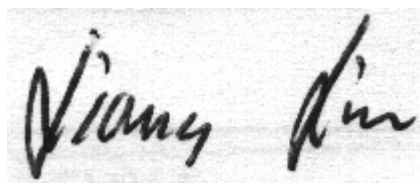
Event Description: **Run 13 Polk Lakes**
Request ID: **RQ-2021-01-11-22**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
Attn: Ben Paswater

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Liang Lin, Environmental Administrator

Date Certified: 04-FEB-2021 16:10

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 group are included in this report: 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 Ida @ Center

Collection Date/Time: 01/13/2021 13:20

Field ID: G3SW0043

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2219230	EPA 180.1 Rev. 2.0	Turbidity	2.5	A	NTU	P392434	
	EPA 300.0 Rev. 2.1	Chloride	35		mg Cl/L	P392556	
	SM 2120 B-2011	Color (true)	28		PCU	P392430	
	SM 2320 B-2011	Total Alkalinity	73		mg CaCO3/L	P392584	
	SM 2540 C-2011	TDS	156		mg/L	P392810	
	SM 2540 D-2011	TSS	4	I	mg/L	P392969	
	SM 4500 F-C-2011	Fluoride	0.14		mg F/L	P392586	
2219234	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P393174	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.97	J	mg N/L	P392900	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.01	I	mg N/L	P392666	
	EPA 365.1 Rev. 2.0	Total-P	0.050		mg P/L	P392648	
	SM 5310 B-2011	Organic Carbon	8.4		mg C/L	P392644	
2219238	EPA 300.0 Rev. 2.1 dissolved	Sulfate	20		mg SO4/L	P392561	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P392427	

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: Lake Gordon - Center

Collection Date/Time: 01/13/2021 13:55

Field ID: G3SW0095

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2219231	EPA 180.1 Rev. 2.0	Turbidity	0.80		NTU	P392434	
	EPA 300.0 Rev. 2.1	Chloride	10		mg Cl/L	P392556	
	SM 2120 B-2011	Color (true)	13		PCU	P392430	
	SM 2320 B-2011	Total Alkalinity	39		mg CaCO3/L	P392584	
	SM 2540 C-2011	TDS	72		mg/L	P392810	
	SM 2540 D-2011	TSS	2	U	mg/L	P392969	
	SM 4500 F-C-2011	Fluoride	0.084	I	mg F/L	P392586	
2219235	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P393174	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.36		mg N/L	P392900	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P392667	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P392648	
	SM 5310 B-2011	Organic Carbon	3.8		mg C/L	P392644	
2219239	EPA 300.0 Rev. 2.1 dissolved	Sulfate	6.5		mg SO4/L	P392561	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P392427	

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: Lake Whistler @ Center

Collection Date/Time: 01/13/2021 12:05

Field ID: G3SW0100

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2219232	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P392434	
	EPA 300.0 Rev. 2.1	Chloride	33		mg Cl/L	P392556	
	SM 2120 B-2011	Color (true)	13		PCU	P392430	
	SM 2320 B-2011	Total Alkalinity	17	A	mg CaCO3/L	P392584	
	SM 2540 C-2011	TDS	121		mg/L	P392810	
	SM 2540 D-2011	TSS	2	I	mg/L	P392969	
	SM 4500 F-C-2011	Fluoride	0.20		mg F/L	P392586	
2219236	EPA 350.1 Rev. 2.0	Ammonia-N	0.052		mg N/L	P393174	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.65		mg N/L	P393021	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.20		mg N/L	P392667	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P392648	
	SM 5310 B-2011	Organic Carbon	5.6		mg C/L	P392644	
2219240	EPA 300.0 Rev. 2.1 dissolved	Sulfate	38		mg SO4/L	P392561	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P392427	

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: Lake Van @ Center

Collection Date/Time: 01/13/2021 11:10

Field ID: G4SW0106

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2219233	EPA 180.1 Rev. 2.0	Turbidity	5.1		NTU	P392434	
	EPA 300.0 Rev. 2.1	Chloride	23		mg Cl/L	P392556	
	SM 2120 B-2011	Color (true)	91		PCU	P392430	
	SM 2320 B-2011	Total Alkalinity	12		mg CaCO3/L	P392584	
	SM 2540 C-2011	TDS	104		mg/L	P392810	
	SM 2540 D-2011	TSS	6	I	mg/L	P392969	
	SM 4500 F-C-2011	Fluoride	0.27		mg F/L	P392586	
2219237	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P393175	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.79		mg N/L	P393021	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.013		mg N/L	P392667	
	EPA 365.1 Rev. 2.0	Total-P	0.077		mg P/L	P392648	
	SM 5310 B-2011	Organic Carbon	11		mg C/L	P392644	
2219241	EPA 300.0 Rev. 2.1 dissolved	Sulfate	19		mg SO4/L	P392561	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.032		mg P/L	P392427	

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: P392434

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P392556

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1 dissolved
Batch ID: P392561

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393174

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393175

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P392900

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393021

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392666

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392667

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P392648

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392427

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

Reference Method: SM 2120 B-2011
Batch ID: P392430

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P392584

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

Reference Method: SM 2540 C-2011
Batch ID: P392810

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P392969

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P392586

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P392644

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P392556

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1 dissolved
Batch ID: P392561

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393174

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393175

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P392900

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393021

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392666

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	102		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392667

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	103		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P392648

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392427

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.7		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P392430

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

Reference Method: SM 2320 B-2011
Batch ID: P392584

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	95.2		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P392586

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P392644

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	101		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P392556

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2219064	Chloride	99.8		P	90 - 110
2219212	Chloride	98.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1 dissolved

Batch ID: P392561

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2219064	Sulfate	106		P	90 - 110
2219212	Sulfate	106		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P393174

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2219234	Ammonia-N	97.2	97.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P393175

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2219268	Ammonia-N	97.2	97.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P392900

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2219234	Kjeldahl Nitrogen	108	114	P/F	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P393021

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2219236	Kjeldahl Nitrogen	106	97.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P392666

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2219061	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P392667

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2219235	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P392648

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2219101	Total-P	105	107	P/P	90 - 110

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392427

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2219103	O-Phosphate-P	99.3	98.6	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P392586

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2219232	Fluoride	101	102	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P392644

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2219337	Organic Carbon	101	100	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P392434

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219230	Turbidity	5.65	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P392556

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219064	Chloride	0.304	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1 dissolved

Batch ID: P392561

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219064	Sulfate	0.759	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P393174

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219234	Ammonia-N	0.272	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P393175

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219268	Ammonia-N	0.0	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P392900

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219234	Kjeldahl Nitrogen	3.48	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P393021

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219236	Kjeldahl Nitrogen	5.45	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P392666

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219061	NO2NO3-N	0.0	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392667

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219235	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P392648

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219101	Total-P	1.40	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392427

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219103	O-Phosphate-P	0.470	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P392430

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219212	Color (true)	4.56	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P392584

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219232	Total Alkalinity	6.97	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P392810

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219065	TDS	5.32	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P392586

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219232	Fluoride	0.934	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P392644

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219337	Organic Carbon	0.447	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: A103069

Included Lab Sample IDs: 2219238, 2219239, 2219240, 2219241

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

Reference Method: SM 2120 B-2011

Run ID: A103071

Included Lab Sample IDs: 2219230, 2219231, 2219232, 2219233

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A103072

Included Lab Sample IDs: 2219230, 2219231, 2219232, 2219233

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	101	P/P	95 - 105

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A103125

Included Lab Sample IDs: 2219230, 2219231, 2219232, 2219233

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	103	P/P	90 - 110
Chloride	103	102	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1 dissolved

Run ID: A103125

Included Lab Sample IDs: 2219238, 2219239, 2219240, 2219241

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

Reference Method: SM 2320 B-2011

Run ID: A103129

Included Lab Sample IDs: 2219230, 2219231, 2219232, 2219233

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.9	92.6	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A103129

Included Lab Sample IDs: 2219230, 2219231, 2219232, 2219233

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

Reference Method: SM 5310 B-2011

Run ID: A103143

Included Lab Sample IDs: 2219234, 2219235, 2219236, 2219237

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A103152

Included Lab Sample IDs: 2219234, 2219235, 2219236, 2219237

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	102	P/P	90 - 110
NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A103160

Included Lab Sample IDs: 2219237

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A103211

Included Lab Sample IDs: 2219234, 2219235, 2219236

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A103273

Included Lab Sample IDs: 2219234, 2219235

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	97.2	P/P	90 - 110
Kjeldahl Nitrogen	100	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A103298

Included Lab Sample IDs: 2219236, 2219237

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	91.1	97.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A103329

Included Lab Sample IDs: 2219234, 2219235, 2219236, 2219237

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	96.7	97.0	P/P	90 - 110
Ammonia-N	97.0	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	
					LCS	MS
EPA 180.1 Rev. 2.0	Turbidity				5.65	
EPA 300.0 Rev. 2.1	Chloride	103	99.8	98.8	0.304	
EPA 300.0 Rev. 2.1 dissolved	Sulfate	105	106	106	0.759	
EPA 350.1 Rev. 2.0	Ammonia-N	99.4	97.2	97.6		0.272
	Ammonia-N	98.6	97.2	97.2		0.0
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	108	114		3.48
	Kjeldahl Nitrogen	100	106	97.4		5.45
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	102		0.0
	NO2NO3-N	103	102	102		0.0
EPA 365.1 Rev. 2.0	Total-P	105	105	107		1.40
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.7	99.3	98.6		0.470
SM 2120 B-2011	Color (true)	101			4.56	
SM 2320 B-2011	Total Alkalinity	95.2			6.97	
SM 2540 C-2011	TDS				5.32	
SM 4500 F-C-2011	Fluoride	101	101	102		0.934
SM 5310 B-2011	Organic Carbon	101	101	100		0.447

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2219230, 2219231, 2219232, 2219233
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2219230, 2219231, 2219232, 2219233
EPA 300.0 Rev. 2.1 dissolved	Sulfate, dissolved, in filtered, aqueous matrices	2219238, 2219239, 2219240, 2219241
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2219234, 2219235, 2219236, 2219237
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2219234, 2219235, 2219236, 2219237
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2219234, 2219235, 2219236, 2219237
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2219234, 2219235, 2219236, 2219237
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2219238, 2219239, 2219240, 2219241
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2219230, 2219231, 2219232, 2219233
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2219230, 2219231, 2219232, 2219233
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2219230, 2219231, 2219232, 2219233
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2219230, 2219231, 2219232, 2219233
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2219230, 2219231, 2219232, 2219233
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2219234, 2219235, 2219236, 2219237

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	01/14/2021			01/14/2021 14:53	Yen Ta	2219230, 2219231, 2219232, 2219233
EPA 300.0 Rev. 2.1	01/14/2021			01/16/2021 15:04	Julia Storbeck	2219230
	01/14/2021			01/16/2021 15:16	Julia Storbeck	2219231
	01/14/2021			01/16/2021 15:52	Julia Storbeck	2219232
	01/14/2021			01/16/2021 16:04	Julia Storbeck	2219233
EPA 300.0 Rev. 2.1 dissolved	01/14/2021			01/16/2021 16:17	Julia Storbeck	2219238
	01/14/2021			01/16/2021 16:29	Julia Storbeck	2219239
	01/14/2021			01/16/2021 16:41	Julia Storbeck	2219240
	01/14/2021			01/16/2021 16:53	Julia Storbeck	2219241
EPA 350.1 Rev. 2.0	01/14/2021			01/31/2021 14:48	Ping Hua	2219234
	01/14/2021			01/31/2021 15:05	Ping Hua	2219235
	01/14/2021			01/31/2021 15:06	Ping Hua	2219236
	01/14/2021			01/31/2021 15:32	Ping Hua	2219237
EPA 351.2 Rev. 2.0	01/14/2021	01/26/2021 12:35	Yen Ta	01/27/2021 15:14	Julia Storbeck	2219234
	01/14/2021	01/26/2021 12:35	Yen Ta	01/27/2021 15:34	Julia Storbeck	2219235
	01/14/2021	01/27/2021 13:10	Yen Ta	01/28/2021 18:16	Julia Storbeck	2219236
	01/14/2021	01/27/2021 13:10	Yen Ta	01/28/2021 18:22	Julia Storbeck	2219237
EPA 353.2 Rev. 2.0	01/14/2021			01/21/2021 09:49	Beverly Y. Sanders	2219234
	01/14/2021			01/21/2021 09:56	Beverly Y. Sanders	2219235
	01/14/2021			01/21/2021 10:03	Beverly Y. Sanders	2219236
	01/14/2021			01/21/2021 10:04	Beverly Y. Sanders	2219237
EPA 365.1 Rev. 2.0	01/14/2021	01/20/2021 18:21	Madeline Gruver	01/21/2021 12:41	Lipi Saha	2219237
	01/14/2021	01/20/2021 18:21	Madeline Gruver	01/25/2021 12:43	Shengyu Wang	2219234
	01/14/2021	01/20/2021 18:21	Madeline Gruver	01/25/2021 12:44	Shengyu Wang	2219235
	01/14/2021	01/20/2021 18:21	Madeline Gruver	01/25/2021 12:45	Shengyu Wang	2219236
EPA 365.1 Rev. 2.0 dissolved	01/14/2021			01/14/2021 14:55	Blanca Fach	2219238, 2219239
	01/14/2021			01/14/2021 14:56	Blanca Fach	2219240
	01/14/2021			01/14/2021 14:57	Blanca Fach	2219241
SM 2120 B-2011	01/14/2021			01/14/2021 16:33	Benjamin T. Nordmann	2219230
	01/14/2021			01/14/2021 16:34	Benjamin T. Nordmann	2219231, 2219232
	01/14/2021			01/14/2021 16:35	Benjamin T. Nordmann	2219233
SM 2320 B-2011	01/14/2021			01/15/2021 23:15	Dale L. Simmons	2219232
	01/14/2021			01/16/2021 00:08	Dale L. Simmons	2219230
	01/14/2021			01/16/2021 00:20	Dale L. Simmons	2219231
	01/14/2021			01/16/2021 00:33	Dale L. Simmons	2219233
SM 2540 C-2011	01/14/2021			01/19/2021 14:52	Yijie Li	2219230, 2219231, 2219232, 2219233
SM 2540 D-2011	01/14/2021			01/19/2021 14:52	Yijie Li	2219230, 2219231, 2219232, 2219233
SM 4500 F-C-2011	01/14/2021			01/15/2021 23:04	Dale L. Simmons	2219232
	01/14/2021			01/16/2021 00:08	Dale L. Simmons	2219230
	01/14/2021			01/16/2021 00:20	Dale L. Simmons	2219231

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 4500 F-C-2011	01/14/2021			01/16/2021 00:33	Dale L. Simmons	2219233
SM 5310 B-2011	01/14/2021			01/20/2021 03:57	Touraj Touran	2219234
	01/14/2021			01/20/2021 04:11	Touraj Touran	2219235
	01/14/2021			01/20/2021 04:23	Touraj Touran	2219236
	01/14/2021			01/20/2021 04:35	Touraj Touran	2219237