

Chemical Analysis Report

NW-DIST-2023-06-07-01

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Twin Lakes**
Request ID: **RQ-2023-06-05-58**
Customer: **NW-DIST**
Project ID: **SMP**

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

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

Certified by: Colin Wright, Program Administrator

Date Certified: 23-JUN-2023 12:51

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light gray rectangular 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: Kell Aire Lake

Collection Date/Time: 06/06/2023 12:00

Field ID: G3NW0217

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2415187	DEP SOP: NU-094-1	Color (true)	36	A	PCU	P430942	
	EPA 180.1 Rev. 2.0	Turbidity	23		NTU	P430945	
	EPA 300.0 Rev. 2.1	Chloride	24		mg Cl/L	P431031	
		Sulfate	8.0		mg SO4/L	P431033	
	SM 2320 B-2011	Total Alkalinity	49		mg CaCO3/L	P431144	
	SM 2540 C-2015	TDS	123		mg/L	P431306	
	SM 2540 D-2015	TSS	11	I	mg/L	P431089	
	SM 4500-F- C-2011	Fluoride	0.085	I	mg F/L	P431629	
2415192	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P430997	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P431047	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P431134	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P431003	
	SM 5310 B-2011	Organic Carbon	7.9		mg C/L	P431041	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample. The PQL was elevated because of sample matrix interference.

Sample Location: Twin Lake South Lobe

Collection Date/Time: 06/06/2023 10:40

Field ID: G3NW0448

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2415188	DEP SOP: NU-094-1	Color (true)	59		PCU	P430939	
	EPA 180.1 Rev. 2.0	Turbidity	3.2		NTU	P430945	
	EPA 300.0 Rev. 2.1	Chloride	25	A	mg Cl/L	P431032	
		Sulfate	7.6	A	mg SO4/L	P431034	
	SM 2320 B-2011	Total Alkalinity	63		mg CaCO3/L	P431144	
	SM 2540 C-2015	TDS	140		mg/L	P431306	
	SM 2540 D-2015	TSS	8	I	mg/L	P431089	
	SM 4500-F- C-2011	Fluoride	0.11		mg F/L	P431629	
2415193	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P430997	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.93		mg N/L	P431047	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P431134	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P431005	
	SM 5310 B-2011	Organic Carbon	12		mg C/L	P431041	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Coleman Lake

Collection Date/Time: 06/06/2023 12:12

Field ID: G3NW0216

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2415189	DEP SOP: NU-094-1	Color (true)	34		PCU	P430942	
	EPA 180.1 Rev. 2.0	Turbidity	29		NTU	P430945	
	EPA 300.0 Rev. 2.1	Chloride	23		mg Cl/L	P431032	
		Sulfate	7.9		mg SO4/L	P431034	
	SM 2320 B-2011	Total Alkalinity	49		mg CaCO3/L	P431144	
	SM 2540 C-2015	TDS	123		mg/L	P431306	
	SM 2540 D-2015	TSS	18		mg/L	P431089	
	SM 4500-F- C-2011	Fluoride	0.084	I	mg F/L	P431629	
2415194	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P430997	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.3		mg N/L	P431047	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P431134	
	EPA 365.1 Rev. 2.0	Total-P	0.22		mg P/L	P431005	
	SM 5310 B-2011	Organic Carbon	8.0		mg C/L	P431041	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Twin Lake Eastern Lake

Collection Date/Time: 06/06/2023 11:05

Field ID: G3NW0449

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2415190	DEP SOP: NU-094-1	Color (true)	29		PCU	P430939	
	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P430945	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P431032	
		Sulfate	6.9		mg SO4/L	P431034	
	SM 2320 B-2011	Total Alkalinity	54		mg CaCO3/L	P431144	
	SM 2540 C-2015	TDS	99		mg/L	P431306	
	SM 2540 D-2015	TSS	2	I	mg/L	P431089	
	SM 4500-F- C-2011	Fluoride	0.051	I	mg F/L	P431629	
2415195	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P430997	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.61		mg N/L	P431047	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P431134	
	EPA 365.1 Rev. 2.0	Total-P	0.042		mg P/L	P431005	
	SM 5310 B-2011	Organic Carbon	6.9		mg C/L	P431041	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Twin Lake

Collection Date/Time: 06/06/2023 11:21

Field ID: G3NW0215

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2415191	DEP SOP: NU-094-1	Color (true)	68		PCU	P430939	
	EPA 180.1 Rev. 2.0	Turbidity	5.2		NTU	P430945	
	EPA 300.0 Rev. 2.1	Chloride	41		mg Cl/L	P431032	
		Sulfate	11		mg SO4/L	P431034	
	SM 2320 B-2011	Total Alkalinity	69		mg CaCO3/L	P431144	
	SM 2540 C-2015	TDS	166		mg/L	P431306	
	SM 2540 D-2015	TSS	51		mg/L	P431089	
	SM 4500-F- C-2011	Fluoride	0.16		mg F/L	P431629	
2415196	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P430997	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P431047	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P431134	
	EPA 365.1 Rev. 2.0	Total-P	0.65		mg P/L	P431005	
	SM 5310 B-2011	Organic Carbon	14		mg C/L	P431041	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P430939

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: DEP SOP: NU-094-1
Batch ID: P430942

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P430945

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P431031

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P431032

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P431033

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P431034

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P430997

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P431047

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P431134

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P431003

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P431005

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

Reference Method: SM 2320 B-2011
Batch ID: P431144

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

Reference Method: SM 2540 C-2015
Batch ID: P431306

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P431089

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P431629

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P431041

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P430939

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.7		P	90 - 110

Reference Method: DEP SOP: NU-094-1
Batch ID: P430942

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P430945

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	97.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P431031

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P431032

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P431033

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P431034

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P430997

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P431047

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P431134

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: P431003

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P431005

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

Reference Method: SM 2320 B-2011
Batch ID: P431144

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	92 - 105

Reference Method: SM 2540 C-2015
Batch ID: P431306

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	94.5		P	90 - 110

Reference Method: SM 2540 D-2015
Batch ID: P431089

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	95.9		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P431629

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.4		P	94 - 106

Reference Method: SM 5310 B-2011
Batch ID: P431041

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P431031

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2415070	Chloride	101		P	90 - 110
2415114	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P431032

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2415188	Chloride	105		P	90 - 110
2415432	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P431033

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2415070	Sulfate	90.7		P	90 - 110
2415114	Sulfate	91.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P431034

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2415188	Sulfate	94.5		P	90 - 110
2415432	Sulfate	96.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P430997

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2415177	Ammonia-N	96.2	97.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P431047

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2415180	Kjeldahl Nitrogen	103	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P431134

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2415177	NO2NO3-N	98.0	97.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P431003

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2415179	Total-P	104	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P431005

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: P431005

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2415195	Total-P	105	105	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P431629

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2415722	Fluoride	99.1	99.7	P/P	94 - 106

Reference Method: SM 5310 B-2011
Batch ID: P431041

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2415177	Organic Carbon	94.7	98.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P430939

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2415175	Color (true)	3.88	Sample	P	0 - 20

Reference Method: DEP SOP: NU-094-1
Batch ID: P430942

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2415187	Color (true)	12.9	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P430945

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2415069	Turbidity	0.913	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P431031

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2415070	Chloride	2.51	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P431032

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2415188	Chloride	0.692	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P431033

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2415070	Sulfate	2.30	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P431034

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2415188	Sulfate	1.03	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P430997

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2415177	Ammonia-N	0.758	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P431047

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2415180	Kjeldahl Nitrogen	1.38	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P431134

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2415177	NO2NO3-N	0.519	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P431003

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2415179	Total-P	1.23	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P431005

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2415195	Total-P	0.218	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P431144

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2415722	Total Alkalinity	2.63	Sample	P	0 - 3.9

Reference Method: SM 2540 C-2015
Batch ID: P431306

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2414566	TDS	5.76	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P431629

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2415722	Fluoride	0.500	Spike	P	0 - 1.9

Reference Method: SM 5310 B-2011
Batch ID: P431041

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2415177	Organic Carbon	1.99	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 300.0 Rev. 2.1

Run ID: A119605

Included Lab Sample IDs: 2415187, 2415188, 2415189, 2415190, 2415191

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	95.7	96.1	P/P	90 - 110
Chloride	96.1	95.8	P/P	90 - 110
Sulfate	97.6	97.7	P/P	90 - 110
Sulfate	97.7	97.7	P/P	90 - 110

Reference Method: DEP SOP: NU-094-1

Run ID: A119640

Included Lab Sample IDs: 2415187, 2415188, 2415189, 2415190, 2415191

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	98.8	P/P	90 - 110
Color (true)	101	101	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A119642

Included Lab Sample IDs: 2415187, 2415188, 2415189, 2415190, 2415191

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	97.5	97.5	P/P	95 - 105

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A119665

Included Lab Sample IDs: 2415192, 2415193, 2415194, 2415195, 2415196

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.2	98.4	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A119681

Included Lab Sample IDs: 2415192, 2415193, 2415194, 2415195, 2415196

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.2	99.7	P/P	90 - 110
Organic Carbon	99.7	99.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A119689

Included Lab Sample IDs: 2415192, 2415193, 2415194, 2415196

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A119703

Included Lab Sample IDs: 2415195

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A119723

Included Lab Sample IDs: 2415192, 2415193, 2415194, 2415195, 2415196

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	101	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A119730

Included Lab Sample IDs: 2415187, 2415188, 2415189, 2415190, 2415191

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.6	95.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A119801

Included Lab Sample IDs: 2415192, 2415193, 2415194, 2415195, 2415196

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.6	98.2	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A119960

Included Lab Sample IDs: 2415187, 2415188, 2415189, 2415190, 2415191

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	102	P/P	90 - 110
Fluoride	102	101	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
DEP SOP: NU-094-1	Color (true)	98.7			3.88	
	Color (true)	102			12.9	
EPA 180.1 Rev. 2.0	Turbidity	97.2			0.913	
EPA 300.0 Rev. 2.1	Chloride	98.3	101	101	2.51	
	Chloride	99.8	105	103	0.692	
	Sulfate	96.6	90.7	91.6	2.30	
	Sulfate	98.8	94.5	96.9	1.03	
EPA 350.1 Rev. 2.0	Ammonia-N	95.8	96.2	97.2		0.758
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	103	105		1.38
EPA 353.2 Rev. 2.0	NO2NO3-N	100	98.0	97.0		0.519
EPA 365.1 Rev. 2.0	Total-P	101	104	106		1.23
	Total-P	102	105	105		0.218
SM 2320 B-2011	Total Alkalinity	100			2.63	
SM 2540 C-2015	TDS	94.5			5.76	
SM 2540 D-2015	TSS	95.9				
SM 4500-F- C-2011	Fluoride	98.4	99.1	99.7		0.500
SM 5310 B-2011	Organic Carbon	97.2	94.7	98.2		1.99

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2415187, 2415188, 2415189, 2415190, 2415191
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2415187, 2415188, 2415189, 2415190, 2415191
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2415187, 2415188, 2415189, 2415190, 2415191
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2415187, 2415188, 2415189, 2415190, 2415191
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2415192, 2415193, 2415194, 2415195, 2415196
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2415192, 2415193, 2415194, 2415195, 2415196
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2415192, 2415193, 2415194, 2415195, 2415196
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2415192, 2415193, 2415194, 2415195, 2415196
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2415187, 2415188, 2415189, 2415190, 2415191
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2415187, 2415188, 2415189, 2415190, 2415191
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2415187, 2415188, 2415189, 2415190, 2415191
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2415187, 2415188, 2415189, 2415190, 2415191
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2415192, 2415193, 2415194, 2415195, 2415196

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	06/07/2023			06/07/2023 14:43	Chandler E Cox	2415188
	06/07/2023			06/07/2023 14:44	Chandler E Cox	2415190, 2415191
	06/07/2023			06/07/2023 15:08	Chandler E Cox	2415187
	06/07/2023			06/07/2023 15:09	Chandler E Cox	2415189
EPA 180.1 Rev. 2.0	06/07/2023			06/07/2023 13:28	Alexis Price	2415187
	06/07/2023			06/07/2023 13:29	Alexis Price	2415188
	06/07/2023			06/07/2023 13:30	Alexis Price	2415189
	06/07/2023			06/07/2023 13:31	Alexis Price	2415190
EPA 300.0 Rev. 2.1	06/07/2023			06/07/2023 13:33	Alexis Price	2415191
	06/07/2023			06/08/2023 16:14	James L Waggerby	2415187
	06/07/2023			06/08/2023 17:45	James L Waggerby	2415188
	06/07/2023			06/08/2023 18:45	James L Waggerby	2415189
EPA 350.1 Rev. 2.0	06/07/2023			06/08/2023 19:00	James L Waggerby	2415190
	06/07/2023			06/08/2023 19:15	James L Waggerby	2415191
	06/07/2023			06/08/2023 12:13	Khloe J Berg	2415192
	06/07/2023			06/08/2023 12:14	Khloe J Berg	2415193
EPA 351.2 Rev. 2.0	06/07/2023			06/08/2023 12:15	Khloe J Berg	2415194
	06/07/2023			06/08/2023 12:17	Khloe J Berg	2415195
	06/07/2023			06/08/2023 12:18	Khloe J Berg	2415196
	06/07/2023	06/09/2023 15:40	Simonne.V. Calhoun	06/14/2023 13:06	Samantha L Bates	2415192
EPA 353.2 Rev. 2.0	06/07/2023	06/09/2023 15:40	Simonne.V. Calhoun	06/14/2023 13:08	Samantha L Bates	2415193
	06/07/2023	06/09/2023 15:40	Simonne.V. Calhoun	06/14/2023 13:09	Samantha L Bates	2415194
	06/07/2023	06/09/2023 15:40	Simonne.V. Calhoun	06/14/2023 13:11	Samantha L Bates	2415195
	06/07/2023	06/09/2023 15:40	Simonne.V. Calhoun	06/14/2023 13:13	Samantha L Bates	2415196
EPA 365.1 Rev. 2.0	06/07/2023			06/12/2023 11:00	Beverly Y. Sanders	2415192
	06/07/2023			06/12/2023 11:01	Beverly Y. Sanders	2415193
	06/07/2023			06/12/2023 11:02	Beverly Y. Sanders	2415194
	06/07/2023			06/12/2023 11:03	Beverly Y. Sanders	2415195
SM 2320 B-2011	06/07/2023			06/12/2023 11:04	Beverly Y. Sanders	2415196
	06/07/2023	06/08/2023 14:40	Alexis Price	06/09/2023 11:14	Chandler E Cox	2415192
	06/07/2023	06/08/2023 14:40	Alexis Price	06/09/2023 11:36	Chandler E Cox	2415193, 2415194
	06/07/2023	06/08/2023 14:40	Alexis Price	06/09/2023 11:37	Chandler E Cox	2415196
SM 2540 C-2015	06/07/2023	06/08/2023 14:40	Alexis Price	06/09/2023 15:28	Chandler E Cox	2415195
	06/07/2023			06/11/2023 01:50	Dale L. Simmons	2415187
	06/07/2023			06/11/2023 02:01	Dale L. Simmons	2415188
	06/07/2023			06/11/2023 02:12	Dale L. Simmons	2415189
SM 2540 C-2015	06/07/2023			06/11/2023 02:23	Dale L. Simmons	2415190
	06/07/2023			06/11/2023 02:34	Dale L. Simmons	2415191
	06/07/2023			06/08/2023 15:07	Yijie Li	2415187, 2415188, 2415189, 2415190,
	06/07/2023					2415191

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2540 D-2015	06/07/2023			06/08/2023 15:07	Yijie Li	2415187, 2415188, 2415189, 2415190, 2415191
SM 4500-F- C-2011	06/07/2023			06/21/2023 18:32	Dale L. Simmons	2415187
	06/07/2023			06/21/2023 18:38	Dale L. Simmons	2415188
	06/07/2023			06/21/2023 18:58	Dale L. Simmons	2415189
	06/07/2023			06/21/2023 19:03	Dale L. Simmons	2415190
SM 5310 B-2011	06/07/2023			06/21/2023 19:09	Dale L. Simmons	2415191
	06/07/2023			06/09/2023 01:49	Elise M. Gillis	2415192
	06/07/2023			06/09/2023 02:03	Elise M. Gillis	2415193
	06/07/2023			06/09/2023 02:17	Elise M. Gillis	2415194
	06/07/2023			06/09/2023 02:31	Elise M. Gillis	2415195
	06/07/2023			06/09/2023 03:13	Elise M. Gillis	2415196