Chemical Analysis Report

SO-DIST-2021-12-01-02

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

Event Description: **2021 SMP : Highlands Lakes**
Request ID: **RQ-2021-11-22-32**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
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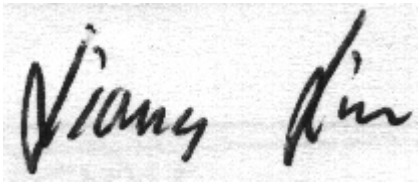
Certified by: Liang Lin, Environmental Administrator

Date Certified: 22-DEC-2021 15:09



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: Little Bonnet Lake @ Middle **Collection Date/Time: 11/30/2021 10:10**

Field ID: G4SD0169 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2292003	EPA 180.1 Rev. 2.0	Turbidity	15		NTU	P406924	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P407186	
		Sulfate	35		mg SO4/L	P407189	
	SM 2120 B-2011	Color (true)	16	J	PCU	P406898	
	SM 2320 B-2011	Total Alkalinity	33		mg CaCO3/L	P407030	
	SM 2540 C-2011	TDS	129		mg/L	P407379	
	SM 2540 D-2011	TSS	11	I	mg/L	P407348	
	SM 4500 F-C-2011	Fluoride	0.071	I	mg F/L	P407039	
2292006	EPA 350.1 Rev. 2.0	Ammonia-N	0.24		mg N/L	P407586	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.3		mg N/L	P406997	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.58		mg N/L	P406984	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P406889	
	SM 5310 B-2011	Organic Carbon	12		mg C/L	P407554	
2292009	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	UJ	mg P/L	P406903	MS

Ref. Method and Comment:
SM 2120 B-2011: The result may be biased high because of matrix interference.
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample. The PQL was elevated because of sample matrix interference.
EPA 365.1 Rev. 2.0 dissolved: Refer to the Lab Analysis Report for an explanation of QC Codes.

Sample Location: FB **Collection Date/Time: 11/30/2021 10:35**

Field ID: FB_11302021 Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2292012	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P406924	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P407186	
		Sulfate	0.20	U	mg SO4/L	P407189	
	SM 2120 B-2011	Color (true)	2.5	U	PCU	P406898	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P407030	
	SM 2540 C-2011	TDS	15	U	mg/L	P407377	
	SM 2540 D-2011	TSS	2	U	mg/L	P407346	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P407039	
2292013	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P407586	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P407066	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P406986	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P406889	
	SM 5310 B-2011	Organic Carbon	1.4		mg C/L	P407554	
2292014	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P406903	MS

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 5310 B-2011: The result was confirmed on 12/16/2021.

Sample Location: Little Red Water Lake @ Middle **Collection Date/Time: 11/30/2021 11:05**

Field ID: G4SD0171 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2292004	EPA 180.1 Rev. 2.0	Turbidity	3.8	A	NTU	P406924	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P407186	
		Sulfate	9.0		mg SO4/L	P407189	
	SM 2120 B-2011	Color (true)	62		PCU	P406898	
	SM 2320 B-2011	Total Alkalinity	9.2		mg CaCO3/L	P407030	
	SM 2540 C-2011	TDS	77		mg/L	P407379	
	SM 2540 D-2011	TSS	4	I	mg/L	P407348	
	SM 4500 F-C-2011	Fluoride	0.058	I	mg F/L	P407039	
2292007	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P407586	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.71		mg N/L	P407066	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.009	I	mg N/L	P406986	
	EPA 365.1 Rev. 2.0	Total-P	0.033		mg P/L	P406889	
	SM 5310 B-2011	Organic Carbon	11		mg C/L	P407554	
2292010	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P406903	MS

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: Bonnet Lake @ Middle **Collection Date/Time: 11/30/2021 11:50**

Field ID: G4SD0170 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2292005	EPA 180.1 Rev. 2.0	Turbidity	13		NTU	P406924	
	EPA 300.0 Rev. 2.1	Chloride	20		mg Cl/L	P407186	
		Sulfate	30		mg SO4/L	P407189	
	SM 2120 B-2011	Color (true)	27		PCU	P406898	
	SM 2320 B-2011	Total Alkalinity	23		mg CaCO3/L	P407030	
	SM 2540 C-2011	TDS	120		mg/L	P407379	
	SM 2540 D-2011	TSS	9	I	mg/L	P407348	
	SM 4500 F-C-2011	Fluoride	0.076	I	mg F/L	P407039	
2292008	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P407586	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P407066	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.42		mg N/L	P406986	
	EPA 365.1 Rev. 2.0	Total-P	0.037		mg P/L	P406889	
	SM 5310 B-2011	Organic Carbon	8.4		mg C/L	P407554	
2292011	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P406903	MS

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: P406924

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P407186

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P407189

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P407586

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406997

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P407066

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406984

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406986

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406889

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P406903

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

Reference Method: SM 2120 B-2011
Batch ID: P406898

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P407030

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

Reference Method: SM 2540 C-2011
Batch ID: P407377

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-2011
Batch ID: P407379

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P407346

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P407348

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P407039

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P407554

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: P407186

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P407189

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P407586

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406997

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P407066

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406984

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: P406986

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406889

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P406903

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.7		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2120 B-2011
Batch ID: P406898

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

Reference Method: SM 2320 B-2011
Batch ID: P407030

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.9		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P407039

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	102		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P407554

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.5		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P407186

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2291650	Chloride	98.1		P	90 - 110
2291960	Chloride	99.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P407189

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2291650	Sulfate	93.5		P	90 - 110
2291960	Sulfate	95.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P407586

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2292008	Ammonia-N	99.2	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406997

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2291950	Kjeldahl Nitrogen	108	107	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P407066

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2292100	Kjeldahl Nitrogen	103	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406984

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2291949	NO2NO3-N	99.0	99.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406986

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2292007	NO2NO3-N	101	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406889

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2292008	Total-P	102	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P406903

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2292009	O-Phosphate-P	66.7	64.4	F/F	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P407039

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2291991	Fluoride	98.9	98.9	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P407554

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2292006	Organic Carbon	97.2	97.4	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P406924

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2292004	Turbidity	2.37	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P407186

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2291650	Chloride	0.983	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P407189

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2291650	Sulfate	0.0726	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P407586

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2292008	Ammonia-N	0.900	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P406997

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2291950	Kjeldahl Nitrogen	0.799	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P407066

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2292100	Kjeldahl Nitrogen	0.637	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406984

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2291949	NO2NO3-N	0.252	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P406986

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2292007	NO2NO3-N	0.477	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P406889

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2292008	Total-P	3.46	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P406903

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2292009	O-Phosphate-P	3.51	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P406898

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2292099	Color (true)	0.546	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P407030

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2291991	Total Alkalinity	4.56	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P407377

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2291468	TDS	2.23	Sample	P	0 - 10

Reference Method: SM 2540 C-2011
Batch ID: P407379

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2291991	TDS	5.46	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P407039

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2291991	Fluoride	0.0	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P407554

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2292006	Organic Carbon	0.0944	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: SM 2120 B-2011
Run ID: A109149
Included Lab Sample IDs: 2292003, 2292004, 2292005, 2292012

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.8	101	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A109150
Included Lab Sample IDs: 2292009, 2292010, 2292011, 2292014

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.0	99.1	P/P	90 - 110
O-Phosphate-P	99.1	99.1	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A109159
Included Lab Sample IDs: 2292003, 2292004, 2292005, 2292012

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A109190
Included Lab Sample IDs: 2292006, 2292007, 2292008, 2292013

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: SM 2320 B-2011
Run ID: A109203
Included Lab Sample IDs: 2292003, 2292004, 2292005, 2292012

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.0	97.0	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A109203
Included Lab Sample IDs: 2292003, 2292004, 2292005, 2292012

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A109217
Included Lab Sample IDs: 2292006

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A109220
Included Lab Sample IDs: 2292006, 2292007, 2292008, 2292013

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A109220
Included Lab Sample IDs: 2292006, 2292007, 2292008, 2292013

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A109241
Included Lab Sample IDs: 2292007, 2292008, 2292013

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A109256
Included Lab Sample IDs: 2292003, 2292004, 2292005, 2292012

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	101	P/P	90 - 110
Sulfate	98.4	99.2	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A109430
Included Lab Sample IDs: 2292006, 2292007, 2292008, 2292013

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.5	96.4	P/P	90 - 110
Organic Carbon	96.2	95.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A109447
Included Lab Sample IDs: 2292006, 2292007, 2292008, 2292013

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	104	P/P	90 - 110
Ammonia-N	100	99.7	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					2.37	
EPA 300.0 Rev. 2.1	Chloride	98.8	98.1	99.5		0.983	
	Sulfate	96.3	93.5	95.8		0.0726	
EPA 350.1 Rev. 2.0	Ammonia-N	101	99.2	100			0.900
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	108	107			0.799
	Kjeldahl Nitrogen	106	103	104			0.637
EPA 353.2 Rev. 2.0	NO2NO3-N	102	99.0	99.5			0.252
	NO2NO3-N	102	101	100			0.477
EPA 365.1 Rev. 2.0	Total-P	104	102	106			3.46
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.7	66.7	64.4			3.51
SM 2120 B-2011	Color (true)	101				0.546	
SM 2320 B-2011	Total Alkalinity	98.9				4.56	
SM 2540 C-2011	TDS					2.23	
	TDS					5.46	
SM 4500 F-C-2011	Fluoride	102	98.9	98.9			0.0
SM 5310 B-2011	Organic Carbon	94.5	97.2	97.4			0.0944

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2292003, 2292004, 2292005, 2292012
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2292003, 2292004, 2292005, 2292012
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2292003, 2292004, 2292005, 2292012
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2292006, 2292007, 2292008, 2292013
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2292006, 2292007, 2292008, 2292013
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2292006, 2292007, 2292008, 2292013
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2292006, 2292007, 2292008, 2292013
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2292009, 2292010, 2292011, 2292014
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2292003, 2292004, 2292005, 2292012
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2292003, 2292004, 2292005, 2292012
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2292003, 2292004, 2292005, 2292012
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2292003, 2292004, 2292005, 2292012
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2292003, 2292004, 2292005, 2292012
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2292006, 2292007, 2292008, 2292013

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	12/01/2021			12/01/2021 17:34	Khloe J Berg	2292003, 2292004, 2292005, 2292012
EPA 300.0 Rev. 2.1	12/01/2021			12/07/2021 19:39	Roberta Tatti	2292003
	12/01/2021			12/07/2021 19:51	Roberta Tatti	2292004
	12/01/2021			12/07/2021 20:03	Roberta Tatti	2292005
	12/01/2021			12/07/2021 20:16	Roberta Tatti	2292012
EPA 350.1 Rev. 2.0	12/01/2021			12/14/2021 12:44	Ping Hua	2292007
	12/01/2021			12/14/2021 12:45	Ping Hua	2292008
	12/01/2021			12/14/2021 12:47	Ping Hua	2292013
	12/01/2021			12/14/2021 13:29	Ping Hua	2292006
EPA 351.2 Rev. 2.0	12/01/2021	12/03/2021 12:35	Benjamin T. Nordmann	12/06/2021 12:25	Alexandra J Mattheus	2292006
	12/01/2021	12/06/2021 12:33	Benjamin T. Nordmann	12/07/2021 11:54	Alexandra J Mattheus	2292007
	12/01/2021	12/06/2021 12:33	Benjamin T. Nordmann	12/07/2021 11:56	Alexandra J Mattheus	2292008
	12/01/2021	12/06/2021 12:33	Benjamin T. Nordmann	12/07/2021 11:57	Alexandra J Mattheus	2292013
EPA 353.2 Rev. 2.0	12/01/2021			12/03/2021 10:06	Beverly Y. Sanders	2292006
	12/01/2021			12/03/2021 10:13	Beverly Y. Sanders	2292007
	12/01/2021			12/03/2021 10:23	Beverly Y. Sanders	2292008
	12/01/2021			12/03/2021 10:24	Beverly Y. Sanders	2292013
EPA 365.1 Rev. 2.0	12/01/2021	12/02/2021 14:15	Simonne.V. Calhoun	12/06/2021 12:52	Shengyu Ding	2292013
	12/01/2021	12/02/2021 14:15	Simonne.V. Calhoun	12/06/2021 12:55	Shengyu Ding	2292008
	12/01/2021	12/02/2021 14:15	Simonne.V. Calhoun	12/06/2021 12:56	Shengyu Ding	2292006
	12/01/2021	12/02/2021 14:15	Simonne.V. Calhoun	12/06/2021 12:57	Shengyu Ding	2292007
EPA 365.1 Rev. 2.0 dissolved	12/01/2021			12/01/2021 15:04	James L Waggerby	2292009
	12/01/2021			12/01/2021 15:09	James L Waggerby	2292010
	12/01/2021			12/01/2021 15:10	James L Waggerby	2292011
	12/01/2021			12/01/2021 15:15	James L Waggerby	2292014
SM 2120 B-2011	12/01/2021			12/01/2021 16:03	Samantha L Bates	2292003, 2292004
	12/01/2021			12/01/2021 16:04	Samantha L Bates	2292005
	12/01/2021			12/01/2021 16:05	Samantha L Bates	2292012
SM 2320 B-2011	12/01/2021			12/04/2021 06:31	Dale L. Simmons	2292003
	12/01/2021			12/04/2021 06:42	Dale L. Simmons	2292004
	12/01/2021			12/04/2021 06:54	Dale L. Simmons	2292005
	12/01/2021			12/04/2021 07:02	Dale L. Simmons	2292012
SM 2540 C-2011	12/01/2021			12/03/2021 15:08	Yijie Li	2292003, 2292004, 2292005, 2292012
SM 2540 D-2011	12/01/2021			12/03/2021 15:35	Yijie Li	2292003, 2292004, 2292005, 2292012
SM 4500 F-C-2011	12/01/2021			12/04/2021 06:31	Dale L. Simmons	2292003
	12/01/2021			12/04/2021 06:42	Dale L. Simmons	2292004
	12/01/2021			12/04/2021 06:54	Dale L. Simmons	2292005
	12/01/2021			12/04/2021 07:02	Dale L. Simmons	2292012
SM 5310 B-2011	12/01/2021			12/15/2021 17:34	Khloe J Berg	2292006
	12/01/2021			12/15/2021 18:14	Khloe J Berg	2292007

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-2011	12/01/2021			12/15/2021 21:34	Khloe J Berg	2292008
	12/01/2021			12/15/2021 21:47	Khloe J Berg	2292013