

Chemical Analysis Report

SO-DIST-2020-02-04-01

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

Event Description: **Caloosa Creeks**
Request ID: **RQ-2020-02-03-62**
Customer: **SO-DIST**
Project ID: **BMAP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: Gary Snorek

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Certified by: Colin Wright, Program Administrator

Date Certified: 25-FEB-2020 10:53

A handwritten signature in black ink, appearing to read "Colin Wright", is shown 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: Orange River

Collection Date/Time: 02/03/2020 08:55

Field ID: G3SD0128

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2154146	SM 2120 B-2011	Color (true)	31		PCU	P378343	
	SM 2320 B-2011	Total Alkalinity	190		mg CaCO3/L	P378547	
	SM 2540 D-2011	TSS	2	I	mg/L	P378619	
	SM 4500 F-C-2011	Fluoride	0.18		mg F/L	P378550	
2154149	SM 5310 B-2011 dissolved	Organic Carbon	8.9		mg C/L	P378522	
2154152	EPA 350.1 Rev. 2.0	Ammonia-N	0.021		mg N/L	P378608	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.64		mg N/L	P378624	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.030		mg N/L	P378591	
	EPA 365.1 Rev. 2.0	Total-P	0.055		mg P/L	P379170	
	SM 5310 B-2011	Organic Carbon	9.2		mg C/L	P378522	
2154155	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.015		mg P/L	P378259	

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: Telegraph Creek

Collection Date/Time: 02/03/2020 09:40

Field ID: G3SD0129

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2154147	SM 2120 B-2011	Color (true)	45	A	PCU	P378343	
	SM 2320 B-2011	Total Alkalinity	253		mg CaCO3/L	P378547	
	SM 2540 D-2011	TSS	3	I	mg/L	P378619	
	SM 4500 F-C-2011	Fluoride	0.22		mg F/L	P378550	
2154150	SM 5310 B-2011 dissolved	Organic Carbon	13		mg C/L	P378522	
2154153	EPA 350.1 Rev. 2.0	Ammonia-N	0.054		mg N/L	P378608	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.69		mg N/L	P378624	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.059		mg N/L	P378591	
	EPA 365.1 Rev. 2.0	Total-P	0.058		mg P/L	P379170	
	SM 5310 B-2011	Organic Carbon	13		mg C/L	P378522	
2154156	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.040		mg P/L	P378259	

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: Hancock Creek

Collection Date/Time: 02/03/2020 11:20

Field ID: G3SD0130

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2154148	SM 2120 B-2011	Color (true)	50		PCU	P378343	
	SM 2320 B-2011	Total Alkalinity	161		mg CaCO3/L	P378548	
	SM 2540 D-2011	TSS	3	U	mg/L	P378329	
	SM 4500 F-C-2011	Fluoride	0.46		mg F/L	P378551	
2154151	SM 5310 B-2011 dissolved	Organic Carbon	12		mg C/L	P378523	
2154154	EPA 350.1 Rev. 2.0	Ammonia-N	0.034		mg N/L	P378722	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.63		mg N/L	P378625	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.031		mg N/L	P378654	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P379211	
	SM 5310 B-2011	Organic Carbon	12		mg C/L	P378523	
2154157	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.10		mg P/L	P378261	

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 350.1 Rev. 2.0
Batch ID: P378608

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P378722

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P378624

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P378625

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P378591

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P378654

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379170

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379211

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P378259

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P378261

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

Reference Method: SM 2120 B-2011
Batch ID: P378343

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P378547

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

Reference Method: SM 2320 B-2011
Batch ID: P378548

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

Reference Method: SM 2540 D-2011
Batch ID: P378329

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P378619

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P378550

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-2011
Batch ID: P378551

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P378522

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P378523

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

Reference Method: SM 5310 B-2011 dissolved
Batch ID: P378522

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

Reference Method: SM 5310 B-2011 dissolved
Batch ID: P378523

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P378608

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P378722

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P378624

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	94.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P378625

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P378591

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P378654

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379170

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379211

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P378259

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P378261

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

Reference Method: SM 2120 B-2011
Batch ID: P378343

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.7		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P378547

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 106

Reference Method: SM 2320 B-2011
Batch ID: P378548

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P378550

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.6		P	92 - 103

Reference Method: SM 4500 F-C-2011
Batch ID: P378551

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.0		P	92 - 103

Reference Method: SM 5310 B-2011
Batch ID: P378522

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.8		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P378523

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

Reference Method: SM 5310 B-2011 dissolved
Batch ID: P378522

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.8		P	85 - 115

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-2011 dissolved
Batch ID: P378523

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 350.1 Rev. 2.0
Batch ID: P378608

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2154099	Ammonia-N	98.2	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P378722

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2154285	Ammonia-N	100	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P378624

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2154093	Kjeldahl Nitrogen	98.5	110	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P378625

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2154124	Kjeldahl Nitrogen	102	99.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P378591

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2154093	NO2NO3-N	99.0	99.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P378654

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2153983	NO2NO3-N	107	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379170

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2154094	Total-P	108	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379211

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2154154	Total-P	105	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P378259

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2154155	O-Phosphate-P	95.2	91.0	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P378261

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2154333	O-Phosphate-P	93.0	97.1	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P378550

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2152630	Fluoride	94.8	95.9	P/P	89 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P378551

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2151636	Fluoride	96.4	97.8	P/P	89 - 106

Reference Method: SM 5310 B-2011
Batch ID: P378522

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2154483	Organic Carbon	97.6	99.8	P/P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P378523

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2154124	Organic Carbon	99.8	99.8	P/P	85 - 115

Reference Method: SM 5310 B-2011 dissolved
Batch ID: P378522

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2154483	Organic Carbon	97.6	99.8	P/P	85 - 115

Reference Method: SM 5310 B-2011 dissolved
Batch ID: P378523

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2154124	Organic Carbon	99.8	99.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P378608

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2154099	Ammonia-N	2.15	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P378722

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2154285	Ammonia-N	1.77	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P378624

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2154093	Kjeldahl Nitrogen	7.29	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P378625

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2154124	Kjeldahl Nitrogen	1.88	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P378591

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2154093	NO2NO3-N	0.460	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P378654

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2153983	NO2NO3-N	0.468	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379170

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2154094	Total-P	2.40	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379211

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2154154	Total-P	1.03	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P378259

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2154155	O-Phosphate-P	3.87	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P378261

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2154333	O-Phosphate-P	4.31	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P378343

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2154147	Color (true)	6.63	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P378547

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2154097	Total Alkalinity	0.437	Sample	P	0 - 2.8

Reference Method: SM 2320 B-2011
Batch ID: P378548

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2152601	Total Alkalinity	0.00688	Sample	P	0 - 2.8

Reference Method: SM 4500 F-C-2011
Batch ID: P378550

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2152630	Fluoride	0.470	Spike	P	0 - 2.5

Reference Method: SM 4500 F-C-2011
Batch ID: P378551

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2151636	Fluoride	0.940	Spike	P	0 - 2.5

Reference Method: SM 5310 B-2011
Batch ID: P378522

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2154483	Organic Carbon	1.27	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 5310 B-2011
Batch ID: P378523

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2154124	Organic Carbon	0.0447	Spike	P	0 - 20

Reference Method: SM 5310 B-2011 dissolved
Batch ID: P378522

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2154483	Organic Carbon	1.27	Spike	P	0 - 20

Reference Method: SM 5310 B-2011 dissolved
Batch ID: P378523

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2154124	Organic Carbon	0.0447	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A97311

Included Lab Sample IDs: 2154155, 2154156, 2154157

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.3	99.1	P/P	90 - 110
O-Phosphate-P	98.4	98.6	P/P	90 - 110
O-Phosphate-P	98.8	98.3	P/P	90 - 110

Reference Method: SM 2120 B-2011

Run ID: A97335

Included Lab Sample IDs: 2154146, 2154147, 2154148

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.6	103	P/P	90 - 115

Reference Method: SM 5310 B-2011

Run ID: A97392

Included Lab Sample IDs: 2154152, 2154153, 2154154

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

Reference Method: SM 5310 B-2011 dissolved

Run ID: A97392

Included Lab Sample IDs: 2154149, 2154150, 2154151

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

Reference Method: SM 2320 B-2011

Run ID: A97403

Included Lab Sample IDs: 2154146, 2154147, 2154148

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.9	102	P/P	90 - 110
Total Alkalinity	99.9	103	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A97403

Included Lab Sample IDs: 2154146, 2154147, 2154148

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	99.1	P/P	90 - 110
Fluoride	99.1	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A97411

Included Lab Sample IDs: 2154152, 2154153

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A97416

Included Lab Sample IDs: 2154152, 2154153

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A97430

Included Lab Sample IDs: 2154154

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	103	104	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A97456

Included Lab Sample IDs: 2154154

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A97484

Included Lab Sample IDs: 2154152, 2154153

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.0	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A97485

Included Lab Sample IDs: 2154154

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.3	98.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A97751

Included Lab Sample IDs: 2154152, 2154153, 2154154

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

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 350.1 Rev. 2.0	Ammonia-N	101	98.2	101		2.15
	Ammonia-N	97.0	100	102		1.77
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	94.6	98.5	110		7.29
	Kjeldahl Nitrogen	98.6	102	99.5		1.88
EPA 353.2 Rev. 2.0	NO2NO3-N	100	99.0	99.4		0.460
	NO2NO3-N	104	107	106		0.468
EPA 365.1 Rev. 2.0	Total-P	105	108	106		2.40
	Total-P	106	105	104		1.03
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	95.2	91.0		3.87
	O-Phosphate-P	98.3	93.0	97.1		4.31
SM 2120 B-2011	Color (true)	98.7			6.63	
SM 2320 B-2011	Total Alkalinity	102			0.437	
	Total Alkalinity	102			0.0068	
SM 4500 F-C-2011	Fluoride	97.6	94.8	95.9		0.470
	Fluoride	99.0	96.4	97.8		0.940
SM 5310 B-2011	Organic Carbon	96.8	97.6	99.8		1.27
	Organic Carbon	98.6	99.8	99.8		0.0447
SM 5310 B-2011 dissolved	Organic Carbon	96.8	97.6	99.8		1.27
	Organic Carbon	98.6	99.8	99.8		0.0447

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2154152, 2154153, 2154154
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2154152, 2154153, 2154154
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2154152, 2154153, 2154154
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2154152, 2154153, 2154154
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2154155, 2154156, 2154157
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2154146, 2154147, 2154148
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2154146, 2154147, 2154148
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2154146, 2154147, 2154148
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2154146, 2154147, 2154148
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2154152, 2154153, 2154154
SM 5310 B-2011 dissolved	Dissolved Nonpurgeable Organic Carbon in filtered, aqueous matrices	2154149, 2154150, 2154151

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 350.1 Rev. 2.0	02/04/2020			02/10/2020 13:26	Ping Hua	2154152
	02/04/2020			02/10/2020 13:27	Ping Hua	2154153
	02/04/2020			02/11/2020 11:50	Ping Hua	2154154
EPA 351.2 Rev. 2.0	02/04/2020	02/10/2020 11:25	Jhamieka S. Greenwood	02/11/2020 15:04	Jhamieka S. Greenwood	2154152
	02/04/2020	02/10/2020 11:25	Jhamieka S. Greenwood	02/11/2020 15:06	Jhamieka S. Greenwood	2154153
	02/04/2020	02/10/2020 11:25	Jhamieka S. Greenwood	02/11/2020 20:21	Jhamieka S. Greenwood	2154154
EPA 353.2 Rev. 2.0	02/04/2020			02/10/2020 11:35	Beverly Y. Sanders	2154152
	02/04/2020			02/10/2020 11:36	Beverly Y. Sanders	2154153
	02/04/2020			02/11/2020 11:11	Beverly Y. Sanders	2154154
EPA 365.1 Rev. 2.0	02/04/2020	02/19/2020 14:04	Yen Ta	02/20/2020 15:27	Benjamin T. Nordmann	2154152
	02/04/2020	02/19/2020 14:04	Yen Ta	02/20/2020 15:28	Benjamin T. Nordmann	2154153
	02/04/2020	02/19/2020 14:04	Yen Ta	02/20/2020 15:37	Benjamin T. Nordmann	2154154
EPA 365.1 Rev. 2.0 dissolved	02/04/2020			02/04/2020 16:19	Carlos Miranda	2154155
	02/04/2020			02/04/2020 17:02	Carlos Miranda	2154156
	02/04/2020			02/04/2020 17:12	Carlos Miranda	2154157
SM 2120 B-2011	02/04/2020			02/04/2020 17:31	Madeline Funaro	2154146
	02/04/2020			02/04/2020 17:32	Madeline Funaro	2154147
	02/04/2020			02/04/2020 17:33	Madeline Funaro	2154148
SM 2320 B-2011	02/04/2020			02/07/2020 01:34	Dale L. Simmons	2154146
	02/04/2020			02/07/2020 01:49	Dale L. Simmons	2154147
	02/04/2020			02/07/2020 06:10	Dale L. Simmons	2154148
SM 2540 D-2011	02/04/2020			02/04/2020 17:00	Blanca Fach	2154148
	02/04/2020			02/06/2020 15:50	Sima Feizi	2154146, 2154147
SM 4500 F-C-2011	02/04/2020			02/07/2020 01:34	Dale L. Simmons	2154146
	02/04/2020			02/07/2020 01:49	Dale L. Simmons	2154147
	02/04/2020			02/07/2020 03:42	Dale L. Simmons	2154148
SM 5310 B-2011	02/04/2020			02/07/2020 03:01	Madeline Funaro	2154152
	02/04/2020			02/07/2020 03:13	Madeline Funaro	2154153
	02/04/2020			02/07/2020 09:09	Madeline Funaro	2154154
SM 5310 B-2011 dissolved	02/04/2020			02/07/2020 02:34	Madeline Funaro	2154149
	02/04/2020			02/07/2020 02:46	Madeline Funaro	2154150
	02/04/2020			02/07/2020 08:25	Madeline Funaro	2154151