

Chemical Analysis Report

CEN-DIST-2018-12-11-01

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

Event Description: **Asher / Myrtle + D&B**
Request ID: **RQ-2018-12-10-19**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Mike Linger

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: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 03-JAN-2019 14:05



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 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 Asher (ASH)

Collection Date/Time: 12/10/2018 09:22

Field ID: G2CE0183

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2047766	EPA 180.1 Rev. 2.0	Turbidity	9.0		NTU	P355976	
	EPA 300.0 Rev. 2.1	Chloride	24		mg Cl/L	P356211	
		Sulfate	8.2		mg SO4/L	P356213	
	SM 2120 B	Color (true)	37	A	PCU	P355961	
	SM 2320 B-97	Total Alkalinity	36		mg CaCO3/L	P356128	
	SM 2540 C-97	TDS	111	A	mg/L	P356406	
	SM 2540 D-97	TSS	8	IA	mg/L	P356478	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P356131	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P356261	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P356093	
2047767	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P356135	
	EPA 365.1 Rev. 2.0	Total-P	0.062		mg P/L	P356176	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P356070	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P356026	
	dissolved						

Ref. Method and Comment:

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

Sample Location: Silver Lake @ Center

Collection Date/Time: 12/10/2018 10:35

Field ID: G2CE0122

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2047769	EPA 180.1 Rev. 2.0	Turbidity	0.95		NTU	P355976	
	EPA 300.0 Rev. 2.1	Chloride	47		mg Cl/L	P356211	
		Sulfate	22		mg SO4/L	P356213	
	SM 2120 B	Color (true)	6.7		PCU	P355961	
	SM 2320 B-97	Total Alkalinity	8.6		mg CaCO3/L	P356128	
	SM 2540 C-97	TDS	128		mg/L	P356406	
	SM 2540 D-97	TSS	2	U	mg/L	P356478	
	SM 4500 F-C-97	Fluoride	0.041	I	mg F/L	P356131	
2047770	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P356253	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40		mg N/L	P356093	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P356136	
	EPA 365.1 Rev. 2.0	Total-P	0.01		mg P/L	P356177	
	SM 5310 B-00	Organic Carbon	4.9		mg C/L	P356070	
2047771	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P356027	

Ref. Method and Comment:

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

Sample Location: Silver Lake @ Center

Collection Date/Time: 12/10/2018 10:39

Field ID: G2CE0122_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2047772	EPA 180.1 Rev. 2.0	Turbidity	0.80		NTU	P355976	
	EPA 300.0 Rev. 2.1	Chloride	47		mg Cl/L	P356211	
		Sulfate	22		mg SO4/L	P356213	
	SM 2120 B	Color (true)	6.6		PCU	P355961	
	SM 2320 B-97	Total Alkalinity	8.7		mg CaCO3/L	P356129	
	SM 2540 C-97	TDS	128		mg/L	P356406	
	SM 2540 D-97	TSS	2	U	mg/L	P356478	
	SM 4500 F-C-97	Fluoride	0.042	I	mg F/L	P356132	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P356253	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40		mg N/L	P356093	
2047774	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P356136	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P356177	
	SM 5310 B-00	Organic Carbon	4.8		mg C/L	P356070	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P356027	
	dissolved						

Ref. Method and Comment:

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

Sample Location: Blank_12102018

Collection Date/Time: 12/10/2018 10:45

Field ID: Blank_12102018

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2047773	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P355978	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P356211	
		Sulfate	0.20	U	mg SO4/L	P356213	
	SM 2120 B	Color (true)	2.5	U	PCU	P355961	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P356129	
	SM 2540 C-97	TDS	15	U	mg/L	P356405	
	SM 2540 D-97	TSS	2	U	mg/L	P356477	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P356132	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P356253	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P356093	
2047775	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P356135	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P356177	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P356070	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P356027	

Ref. Method and Comment:

SM 2540 D-97: 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: P355976

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P355978

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356211

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356213

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P356253

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P356261

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P356093

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P356135

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P356136

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: P356176

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P356177

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P356026

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P356027

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

Reference Method: SM 2120 B
Batch ID: P355961

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P356128

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

Reference Method: SM 2320 B-97
Batch ID: P356129

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

Reference Method: SM 2540 C-97
Batch ID: P356405

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P356406

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P356477

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P356478

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P356131

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P356132

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P356070

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: P356211

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: P356213

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P356253

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P356261

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: P356093

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: P356135

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: P356136

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: P356176

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.3		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P356177

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P356026

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P356027

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

Reference Method: SM 2120 B
Batch ID: P355961

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

Reference Method: SM 2320 B-97
Batch ID: P356128

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.5		P	98 - 107

Reference Method: SM 2320 B-97
Batch ID: P356129

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.9		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P356131

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.0		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P356132

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.5		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P356070

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.7		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356211

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2047650	Chloride	93.2		P	90 - 110
2047766	Chloride	95.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356213

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2047650	Sulfate	93.0		P	90 - 110
2047766	Sulfate	93.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P356253

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2047770	Ammonia-N	100	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P356261

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2047698	Ammonia-N	97.1	97.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P356093

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2047749	Kjeldahl Nitrogen	104	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P356135

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2047704	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P356136

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2047770	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P356176

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2047751	Total-P	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P356177

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2047770	Total-P	100	97.5	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P356026

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2047755	O-Phosphate-P	94.4	95.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P356027

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2047771	O-Phosphate-P	94.4	95.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P356131

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2047779	Fluoride	99.7	98.9	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P356132

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2047934	Fluoride	101	99.9	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P356070

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2047668	Organic Carbon	102	103	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P355976

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047778	Turbidity	2.75	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P355978

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047969	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356211

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047650	Chloride	0.647	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356213

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047650	Sulfate	1.56	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P356253

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047770	Ammonia-N	0.793	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P356261

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047698	Ammonia-N	0.317	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P356093

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047749	Kjeldahl Nitrogen	2.08	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P356135

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047704	NO2NO3-N	0.327	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P356136

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047770	NO2NO3-N	0.482	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P356176

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047751	Total-P	0.426	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P356177

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047770	Total-P	2.71	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P356026

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047755	O-Phosphate-P	1.05	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P356027

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047771	O-Phosphate-P	1.47	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P355961

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047766	Color (true)	2.89	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P356128

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047779	Total Alkalinity	0.672	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
Batch ID: P356129

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047934	Total Alkalinity	0.236	Sample	P	0 - 1.6

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P356405

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047650	TDS	5.62	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P356406

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047766	TDS	9.01	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P356131

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047779	Fluoride	0.470	Spike	P	0 - 3.5

Reference Method: SM 4500 F-C-97
Batch ID: P356132

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047934	Fluoride	0.470	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P356070

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2047668	Organic Carbon	0.438	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B

Run ID: A88283

Included Lab Sample IDs: 2047766, 2047769, 2047772, 2047773

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.9	101	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A88286

Included Lab Sample IDs: 2047766, 2047769, 2047772, 2047773

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A88299

Included Lab Sample IDs: 2047768, 2047771, 2047776, 2047777

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.9	P/P	90 - 110
O-Phosphate-P	98.9	98.3	P/P	90 - 110
O-Phosphate-P	99.4	98.9	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A88317

Included Lab Sample IDs: 2047767, 2047770, 2047774, 2047775

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A88324

Included Lab Sample IDs: 2047766, 2047769, 2047772, 2047773

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.4	99.7	P/P	90 - 110
Chloride	99.8	99.4	P/P	90 - 110
Sulfate	98.5	98.8	P/P	90 - 110
Sulfate	98.7	98.5	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A88339

Included Lab Sample IDs: 2047766, 2047769, 2047772, 2047773

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	98.7	P/P	90 - 110
Total Alkalinity	98.7	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A88339

Included Lab Sample IDs: 2047766, 2047769, 2047772, 2047773

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A88340

Included Lab Sample IDs: 2047767, 2047770, 2047774, 2047775

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A88381

Included Lab Sample IDs: 2047767, 2047770, 2047774, 2047775

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A88389

Included Lab Sample IDs: 2047770, 2047774, 2047775

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	100	P/P	90 - 110
Ammonia-N	99.6	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A88391

Included Lab Sample IDs: 2047767

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A88416

Included Lab Sample IDs: 2047767

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A88425

Included Lab Sample IDs: 2047770, 2047774, 2047775

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	99.0	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				2.75	
	Turbidity				0.0	
EPA 300.0 Rev. 2.1	Chloride	98.3	93.2	95.6	0.647	
	Sulfate	96.6	93.0	93.7	1.56	
EPA 350.1 Rev. 2.0	Ammonia-N	96.4	100	101		0.793
	Ammonia-N	101	97.1	97.6		0.317
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	104	101		2.08
EPA 353.2 Rev. 2.0	NO2NO3-N	100	102	102		0.327
	NO2NO3-N	102	104	104		0.482
EPA 365.1 Rev. 2.0	Total-P	99.3	104	104		0.426
	Total-P	103	100	97.5		2.71
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.9	94.4	95.4		1.05
	O-Phosphate-P	100	94.4	95.8		1.47
SM 2120 B	Color (true)	100			2.89	
SM 2320 B-97	Total Alkalinity	99.5			0.672	
	Total Alkalinity	99.9			0.236	
SM 2540 C-97	TDS				5.62	
	TDS				9.01	
SM 4500 F-C-97	Fluoride	99.0	99.7	98.9		0.470
	Fluoride	99.5	101	99.9		0.470
SM 5310 B-00	Organic Carbon	96.7	102	103		0.438

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2047766, 2047769, 2047772, 2047773
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2047766, 2047769, 2047772, 2047773
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2047766, 2047769, 2047772, 2047773
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2047767, 2047770, 2047774, 2047775
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2047767, 2047770, 2047774, 2047775
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2047767, 2047770, 2047774, 2047775
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2047767, 2047770, 2047774, 2047775
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2047768, 2047771, 2047776, 2047777
SM 2120 B / E31780	True Color measured at 450 nm	2047766, 2047769, 2047772, 2047773
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2047766, 2047769, 2047772, 2047773
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2047766, 2047769, 2047772, 2047773
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2047766, 2047769, 2047772, 2047773
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2047766, 2047769, 2047772, 2047773
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2047767, 2047770, 2047774, 2047775

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	12/11/2018			12/11/2018 16:59	Megan Treadwell	2047766, 2047769, 2047772, 2047773
EPA 300.0 Rev. 2.1	12/11/2018			12/14/2018 22:48	Lipi Saha	2047766
	12/11/2018			12/15/2018 01:25	Lipi Saha	2047769
	12/11/2018			12/15/2018 01:37	Lipi Saha	2047772
	12/11/2018			12/15/2018 01:49	Lipi Saha	2047773
EPA 350.1 Rev. 2.0	12/11/2018			12/14/2018 10:35	Ping Hua	2047770
	12/11/2018			12/14/2018 10:40	Ping Hua	2047774
	12/11/2018			12/14/2018 10:47	Ping Hua	2047775
	12/11/2018			12/14/2018 11:23	Ping Hua	2047767
EPA 351.2 Rev. 2.0	12/11/2018	12/13/2018 12:30	Adrian Shelby	12/17/2018 11:14	Chelsea Hernandez	2047767
	12/11/2018	12/13/2018 12:30	Adrian Shelby	12/17/2018 11:16	Chelsea Hernandez	2047770
	12/11/2018	12/13/2018 12:30	Adrian Shelby	12/17/2018 11:17	Chelsea Hernandez	2047774
	12/11/2018	12/13/2018 12:30	Adrian Shelby	12/17/2018 11:19	Chelsea Hernandez	2047775
EPA 353.2 Rev. 2.0	12/11/2018			12/12/2018 10:57	Beverly Y. Sanders	2047775
	12/11/2018			12/12/2018 11:05	Beverly Y. Sanders	2047767
	12/11/2018			12/12/2018 11:13	Beverly Y. Sanders	2047770
	12/11/2018			12/12/2018 11:21	Beverly Y. Sanders	2047774
EPA 365.1 Rev. 2.0	12/11/2018	12/14/2018 12:10	Sima Feizi	12/18/2018 11:28	Beverly Y. Sanders	2047767
	12/11/2018	12/14/2018 12:10	Sima Feizi	12/18/2018 17:23	Beverly Y. Sanders	2047770
	12/11/2018	12/14/2018 12:10	Sima Feizi	12/18/2018 17:24	Beverly Y. Sanders	2047774
	12/11/2018	12/14/2018 12:10	Sima Feizi	12/18/2018 17:25	Beverly Y. Sanders	2047775
EPA 365.1 Rev. 2.0 dissolved	12/11/2018			12/11/2018 16:31	Jhamieka S. Greenwood	2047771
	12/11/2018			12/11/2018 16:57	Jhamieka S. Greenwood	2047768
	12/11/2018			12/11/2018 16:58	Jhamieka S. Greenwood	2047776
	12/11/2018			12/11/2018 17:05	Jhamieka S. Greenwood	2047777
SM 2120 B	12/11/2018			12/11/2018 16:51	Chelsea Hernandez	2047766
	12/11/2018			12/11/2018 16:52	Chelsea Hernandez	2047769
	12/11/2018			12/11/2018 16:53	Chelsea Hernandez	2047772
	12/11/2018			12/11/2018 16:54	Chelsea Hernandez	2047773
SM 2320 B-97	12/11/2018			12/12/2018 20:40	Lauren Bottorf	2047766
	12/11/2018			12/12/2018 20:51	Lauren Bottorf	2047769
	12/11/2018			12/12/2018 23:03	Lauren Bottorf	2047772
	12/11/2018			12/12/2018 23:16	Lauren Bottorf	2047773
SM 2540 C-97	12/11/2018			12/13/2018 23:45	Yijie Li	2047766, 2047769, 2047772, 2047773
SM 2540 D-97	12/11/2018			12/13/2018 23:45	Yijie Li	2047766, 2047769, 2047772, 2047773
SM 4500 F-C-97	12/11/2018			12/12/2018 20:40	Lauren Bottorf	2047766
	12/11/2018			12/12/2018 20:51	Lauren Bottorf	2047769
	12/11/2018			12/12/2018 23:03	Lauren Bottorf	2047772
	12/11/2018			12/12/2018 23:16	Lauren Bottorf	2047773
SM 5310 B-00	12/11/2018			12/12/2018 07:36	Megan Treadwell	2047767

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-00	12/11/2018			12/12/2018 07:48	Megan Treadwell	2047770
	12/11/2018			12/12/2018 08:00	Megan Treadwell	2047774
	12/11/2018			12/12/2018 08:12	Megan Treadwell	2047775