

Chemical Analysis Report

CEN-DIST-2019-03-05-01

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

Event Description: **Louise / Shaw / Spring Garden + D&B**
Request ID: **RQ-2019-03-04-55**
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: Colin Wright, Program Administrator

Date Certified: 26-MAR-2019 09:29



NON-CONFORMANCE REPORT INCLUDED

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical group are included in this report: Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited by the Florida Department of Health Environmental Laboratory Certification Program or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Lake Louise @ Center of South Lobe

Collection Date/Time: 03/04/2019 11:15

Field ID: G2CE0065

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2067106	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P359926	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P360555	
		Sulfate	17		mg SO4/L	P360559	
	SM 2120 B	Color (true)	42	A	PCU	P359901	
	SM 2320 B-97	Total Alkalinity	14		mg CaCO3/L	P360182	
	SM 2540 C-97	TDS	83		mg/L	P360371	
	SM 2540 D-97	TSS	3	I	mg/L	P360262	
	SM 4500 F-C-97	Fluoride	0.096	I	mg F/L	P360185	
2067109	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P360170	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.80		mg N/L	P360122	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P360334	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P360142	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P360496	
2067112	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P359956	

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: Shaw Lake @ Center of North Lobe

Collection Date/Time: 03/04/2019 12:08

Field ID: G2CE0127

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2067107	EPA 180.1 Rev. 2.0	Turbidity	0.50		NTU	P359927	
	EPA 300.0 Rev. 2.1	Chloride	15		mg Cl/L	P360555	
		Sulfate	1.7		mg SO4/L	P360559	
	SM 2120 B	Color (true)	740		PCU	P359901	
	SM 2320 B-97	Total Alkalinity	1.1	I	mg CaCO3/L	P360182	
	SM 2540 C-97	TDS	152		mg/L	P360371	
	SM 2540 D-97	TSS	2	I	mg/L	P360262	
	SM 4500 F-C-97	Fluoride	0.044	I	mg F/L	P360185	
2067110	EPA 350.1 Rev. 2.0	Ammonia-N	0.047		mg N/L	P360170	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P360122	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P360334	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P360143	
	SM 5310 B-00	Organic Carbon	44		mg C/L	P360496	
2067113	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P359956	

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: Spring Garden Lake @ 800m N of Center

Collection Date/Time: 03/04/2019 13:05

Field ID: G2CE0117

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2067108	EPA 180.1 Rev. 2.0	Turbidity	3.9		NTU	P359927	
	EPA 300.0 Rev. 2.1	Chloride	370		mg Cl/L	P360555	
		Sulfate	58		mg SO4/L	P360559	
	SM 2120 B	Color (true)	21		PCU	P359902	
	SM 2320 B-97	Total Alkalinity	97		mg CaCO3/L	P360182	
	SM 2540 C-97	TDS	778		mg/L	P360371	
	SM 2540 D-97	TSS	6	I	mg/L	P360262	
	SM 4500 F-C-97	Fluoride	0.099	I	mg F/L	P360185	
2067111	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	IY	mg N/L	P360170	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.83	Y	mg N/L	P360122	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	UY	mg N/L	P360334	
	EPA 365.1 Rev. 2.0	Total-P	0.043	Y	mg P/L	P360143	
	SM 5310 B-00	Organic Carbon	6.8	Y	mg C/L	P360496	
2067114	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P359956	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

EPA 351.2 Rev. 2.0: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

EPA 353.2 Rev. 2.0: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

EPA 365.1 Rev. 2.0: Total-P: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

SM 5310 B-00: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

Sample Location: Spring Garden Lake @ 800m N of Center

Collection Date/Time: 03/04/2019 13:05

Field ID: G2CE0117_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2067115	EPA 180.1 Rev. 2.0	Turbidity	4.1		NTU	P359927	
	EPA 300.0 Rev. 2.1	Chloride	360		mg Cl/L	P360555	
		Sulfate	57		mg SO4/L	P360559	
	SM 2120 B	Color (true)	20		PCU	P359902	
	SM 2320 B-97	Total Alkalinity	97		mg CaCO3/L	P360182	
	SM 2540 C-97	TDS	758		mg/L	P360371	
	SM 2540 D-97	TSS	6	I	mg/L	P360262	
	SM 4500 F-C-97	Fluoride	0.099	I	mg F/L	P360185	
2067117	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P360170	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.74		mg N/L	P360122	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P360334	
	EPA 365.1 Rev. 2.0	Total-P	0.040		mg P/L	P360143	
	SM 5310 B-00	Organic Carbon	6.8		mg C/L	P360496	
2067119	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P359956	

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: Field Blank

Collection Date/Time: 03/04/2019 15:30

Field ID: FB_03042019

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2067116	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P359927	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P360555	
		Sulfate	0.20	U	mg SO4/L	P360559	
	SM 2120 B	Color (true)	2.5	U	PCU	P359902	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P360182	
	SM 2540 C-97	TDS	15	U	mg/L	P360368	
	SM 2540 D-97	TSS	2	U	mg/L	P360259	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P360185	
2067118	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P360170	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P360122	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P360334	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P360143	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P360496	
2067120	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P359956	

Ref. Method and Comment:

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

Non-Conformance Report

NCR ID: 7524

Event(s)

CEN-DIST-2019-03-05-01

Job(s)

TLH-2019-03-05-48

Sample(s)

2067111

Test(s)

NCR Type: SHIPPING/RECEIVING

NCR Category: Preservation Not Intact

Observation: Sample not preserved to pH < 2.

Resolution: Sample preserved in the laboratory with sulfuric acid.
Lot#SA8085170
EXP: 3/26/19

Authorized by/Date: Joshua Ayres 3/5/2019

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P359926

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P359927

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360555

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360559

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360170

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360122

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360334

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360142

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360143

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: P359956

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

Reference Method: SM 2120 B
Batch ID: P359901

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P359902

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P360182

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

Reference Method: SM 2540 C-97
Batch ID: P360368

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P360371

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P360259

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P360262

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P360185

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P360496

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: P360555

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360559

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360170

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360122

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.9		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360334

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360142

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360143

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359956

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

Reference Method: SM 2120 B
Batch ID: P359901

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2120 B
Batch ID: P359902

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	103		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P360182

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P360185

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.6		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P360496

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.3		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360555

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2066998	Chloride	102		P	90 - 110
2067091	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360559

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2066998	Sulfate	103		P	90 - 110
2067091	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360170

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2067109	Ammonia-N	97.8	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360122

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2067096	Kjeldahl Nitrogen	107	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360334

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2067109	NO2NO3-N	99.0	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360142

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2067070	Total-P	100	96.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360143

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2067111	Total-P	105	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359956

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2067112	O-Phosphate-P	94.6	96.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P360185

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2067037	Fluoride	97.1	94.8	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P360496

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2067095	Organic Carbon	96.9	95.3	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P359926

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2067068	Turbidity	3.06	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P359927

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2067154	Turbidity	3.20	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360555

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2066998	Chloride	0.351	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360559

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2066998	Sulfate	0.394	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360170

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2067109	Ammonia-N	2.31	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360122

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2067096	Kjeldahl Nitrogen	2.34	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360334

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2067109	NO2NO3-N	0.506	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360142

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2067070	Total-P	3.80	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360143

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2067111	Total-P	5.21	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359956

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2067112	O-Phosphate-P	1.78	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P359901

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2067106	Color (true)	0.386	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P359902

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2067183	Color (true)	0.279	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P360182

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2067037	Total Alkalinity	0.543	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P360368

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2066904	TDS	4.42	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P360371

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2067092	TDS	3.11	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P360185

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2067037	Fluoride	1.46	Spike	P	0 - 3.5

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P360496

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2067095	Organic Carbon	1.50	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: A89803

Included Lab Sample IDs: 2067106, 2067107, 2067108, 2067115, 2067116

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	101	P/P	90 - 115
Color (true)	101	101	P/P	90 - 115
Color (true)	101	102	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A89808

Included Lab Sample IDs: 2067106, 2067107, 2067108, 2067115, 2067116

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	100	P/P	95 - 105
Turbidity	100	99.0	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A89819

Included Lab Sample IDs: 2067112, 2067113, 2067114, 2067119, 2067120

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.2	96.2	P/P	90 - 110
O-Phosphate-P	98.3	97.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A89910

Included Lab Sample IDs: 2067109, 2067110, 2067111, 2067117, 2067118

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

Reference Method: SM 2320 B-97

Run ID: A89915

Included Lab Sample IDs: 2067106, 2067107, 2067108, 2067115, 2067116

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	103	P/P	90 - 110
Total Alkalinity	103	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A89915

Included Lab Sample IDs: 2067106, 2067107, 2067108, 2067115, 2067116

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A89925

Included Lab Sample IDs: 2067109, 2067110, 2067111, 2067117, 2067118

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	100	P/P	90 - 110
Kjeldahl Nitrogen	98.6	103	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A89946

Included Lab Sample IDs: 2067109, 2067110, 2067111, 2067117, 2067118

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A89996

Included Lab Sample IDs: 2067109, 2067110, 2067111, 2067117, 2067118

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A89999

Included Lab Sample IDs: 2067106, 2067107, 2067108, 2067115, 2067116

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	99.5	P/P	90 - 110
Chloride	102	102	P/P	90 - 110
Sulfate	103	103	P/P	90 - 110
Sulfate	103	100	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A90030

Included Lab Sample IDs: 2067109, 2067110, 2067111, 2067117, 2067118

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	90.2	93.2	P/P	90 - 110
Organic Carbon	94.4	90.2	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				3.06	
	Turbidity				3.20	
EPA 300.0 Rev. 2.1	Chloride	102	102	102	0.351	
	Sulfate	103	103	102	0.394	
EPA 350.1 Rev. 2.0	Ammonia-N	100	97.8	100		2.31
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.9	107	104		2.34
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	98.5	99.0	98.5		0.506
EPA 365.1 Rev. 2.0	Total-P	102	100	96.0		3.80
	Total-P	98.6	105	99.0		5.21
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.8	94.6	96.3		1.78
SM 2120 B	Color (true)	101			0.386	
	Color (true)	103			0.279	
SM 2320 B-97	Total Alkalinity	102			0.543	
SM 2540 C-97	TDS				4.42	
	TDS				3.11	
SM 4500 F-C-97	Fluoride	95.6	97.1	94.8		1.46
SM 5310 B-00	Organic Carbon	94.3	96.9	95.3		1.50

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2067106, 2067107, 2067108, 2067115, 2067116
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2067106, 2067107, 2067108, 2067115, 2067116
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2067106, 2067107, 2067108, 2067115, 2067116
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2067109, 2067110, 2067111, 2067117, 2067118
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2067109, 2067110, 2067111, 2067117, 2067118
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2067109, 2067110, 2067111, 2067117, 2067118
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2067109, 2067110, 2067111, 2067117, 2067118
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2067112, 2067113, 2067114, 2067119, 2067120
SM 2120 B / E31780	True Color measured at 450 nm	2067106, 2067107, 2067108, 2067115, 2067116
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2067106, 2067107, 2067108, 2067115, 2067116
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2067106, 2067107, 2067108, 2067115, 2067116
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2067106, 2067107, 2067108, 2067115, 2067116
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2067106, 2067107, 2067108, 2067115, 2067116
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2067109, 2067110, 2067111, 2067117, 2067118

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	03/05/2019			03/05/2019 17:28	Adrian Shelby	2067106, 2067107, 2067108, 2067115, 2067116
EPA 300.0 Rev. 2.1	03/05/2019			03/15/2019 15:21	Lipi Saha	2067106
	03/05/2019			03/15/2019 15:36	Lipi Saha	2067107
	03/05/2019			03/15/2019 15:51	Lipi Saha	2067108
	03/05/2019			03/15/2019 16:06	Lipi Saha	2067115
	03/05/2019			03/15/2019 16:50	Lipi Saha	2067116
EPA 350.1 Rev. 2.0	03/05/2019			03/08/2019 13:01	Ping Hua	2067109
	03/05/2019			03/08/2019 13:05	Ping Hua	2067110
	03/05/2019			03/08/2019 13:07	Ping Hua	2067111
	03/05/2019			03/08/2019 13:08	Ping Hua	2067117
	03/05/2019			03/08/2019 13:11	Ping Hua	2067118
EPA 351.2 Rev. 2.0	03/05/2019	03/08/2019 12:05	Adrian Shelby	03/11/2019 11:05	Joseph Suarez	2067109
	03/05/2019	03/08/2019 12:05	Adrian Shelby	03/11/2019 11:10	Joseph Suarez	2067110
	03/05/2019	03/08/2019 12:05	Adrian Shelby	03/11/2019 11:11	Joseph Suarez	2067111
	03/05/2019	03/08/2019 12:05	Adrian Shelby	03/11/2019 11:13	Joseph Suarez	2067117
	03/05/2019	03/08/2019 12:05	Adrian Shelby	03/11/2019 11:14	Joseph Suarez	2067118
EPA 353.2 Rev. 2.0	03/05/2019			03/12/2019 10:50	Beverly Y. Sanders	2067109
	03/05/2019			03/12/2019 10:56	Beverly Y. Sanders	2067110
	03/05/2019			03/12/2019 10:57	Beverly Y. Sanders	2067111
	03/05/2019			03/12/2019 10:58	Beverly Y. Sanders	2067117
	03/05/2019			03/12/2019 10:59	Beverly Y. Sanders	2067118
EPA 365.1 Rev. 2.0	03/05/2019	03/08/2019 12:35	Sima Feizi	03/13/2019 18:25	Rosalyn Ballman	2067109
	03/05/2019	03/08/2019 12:35	Sima Feizi	03/13/2019 18:27	Rosalyn Ballman	2067110
	03/05/2019	03/08/2019 12:35	Sima Feizi	03/13/2019 18:28	Rosalyn Ballman	2067111
	03/05/2019	03/08/2019 12:35	Sima Feizi	03/13/2019 18:29	Rosalyn Ballman	2067117
	03/05/2019	03/08/2019 12:35	Sima Feizi	03/13/2019 18:30	Rosalyn Ballman	2067118
EPA 365.1 Rev. 2.0 dissolved	03/05/2019			03/05/2019 17:52	Jhamieka S. Greenwood	2067112
	03/05/2019			03/05/2019 17:56	Jhamieka S. Greenwood	2067120
	03/05/2019			03/05/2019 18:08	Jhamieka S. Greenwood	2067114
	03/05/2019			03/05/2019 18:09	Jhamieka S. Greenwood	2067119
	03/05/2019			03/05/2019 18:11	Jhamieka S. Greenwood	2067113
SM 2120 B	03/05/2019			03/05/2019 15:32	Chelsea Hernandez	2067106
	03/05/2019			03/05/2019 15:37	Chelsea Hernandez	2067108
	03/05/2019			03/05/2019 15:38	Chelsea Hernandez	2067115
	03/05/2019			03/05/2019 15:39	Chelsea Hernandez	2067116
	03/05/2019			03/05/2019 15:56	Chelsea Hernandez	2067107
SM 2320 B-97	03/05/2019			03/09/2019 07:47	Lauren Lees	2067106
	03/05/2019			03/09/2019 07:56	Lauren Lees	2067107
	03/05/2019			03/09/2019 08:10	Lauren Lees	2067116

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-97	03/05/2019			03/09/2019 10:12	Lauren Lees	2067108
	03/05/2019			03/09/2019 10:24	Lauren Lees	2067115
SM 2540 C-97	03/05/2019			03/08/2019 15:41	Yijie Li	2067106, 2067107, 2067108, 2067115, 2067116
SM 2540 D-97	03/05/2019			03/08/2019 15:41	Yijie Li	2067106, 2067107, 2067108, 2067115, 2067116
SM 4500 F-C-97	03/05/2019			03/09/2019 07:47	Lauren Lees	2067106
	03/05/2019			03/09/2019 07:56	Lauren Lees	2067107
	03/05/2019			03/09/2019 08:10	Lauren Lees	2067116
	03/05/2019			03/09/2019 10:12	Lauren Lees	2067108
	03/05/2019			03/09/2019 10:24	Lauren Lees	2067115
SM 5310 B-00	03/05/2019			03/14/2019 04:49	Chelsea Hernandez	2067109
	03/05/2019			03/14/2019 05:33	Chelsea Hernandez	2067110
	03/05/2019			03/14/2019 05:47	Chelsea Hernandez	2067111
	03/05/2019			03/14/2019 06:01	Chelsea Hernandez	2067117
	03/05/2019			03/14/2019 06:14	Chelsea Hernandez	2067118