

Chemical Analysis Report

CEN-DIST-2019-08-08-01

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

Event Description: **Bird X2 / Faulk / Florence**
Request ID: **RQ-2019-08-05-53**
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: 26-AUG-2019 15:19



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: Bird Lake Ditch @ E side of S Fork Rd

Collection Date/Time: 08/07/2019 10:50

Field ID: G3CE0013

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2109564	EPA 180.1 Rev. 2.0	Turbidity	4.0		NTU	P368736	
	EPA 300.0 Rev. 2.1	Chloride	95		mg Cl/L	P369214	
		Sulfate	50		mg SO4/L	P369217	
	SM 2120 B	Color (true)	58	A	PCU	P368725	
	SM 2320 B-97	Total Alkalinity	229		mg CaCO3/L	P369141	
	SM 2540 C-97	TDS	476		mg/L	P368992	
	SM 2540 D-97	TSS	5	I	mg/L	P368973	
	SM 4500 F-C-97	Fluoride	0.066	I	mg F/L	P369145	
2109568	EPA 350.1 Rev. 2.0	Ammonia-N	0.18		mg N/L	P369165	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.81		mg N/L	P369196	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P368954	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P368785	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P368814	
2109572	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.067		mg P/L	P368768	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

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

Sample Location: Faulk Canal @ 50m upstream of Fiske Blvd

Collection Date/Time: 08/07/2019 10:02

Field ID: G3CE0016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2109565	EPA 180.1 Rev. 2.0	Turbidity	3.5		NTU	P368736	
	EPA 300.0 Rev. 2.1	Chloride	120		mg Cl/L	P369214	
		Sulfate	36		mg SO4/L	P369217	
	SM 2120 B	Color (true)	74		PCU	P368725	
	SM 2320 B-97	Total Alkalinity	75		mg CaCO3/L	P369142	
	SM 2540 C-97	TDS	370		mg/L	P368992	
	SM 2540 D-97	TSS	2	I	mg/L	P368973	
	SM 4500 F-C-97	Fluoride	0.075	I	mg F/L	P369146	
2109569	EPA 350.1 Rev. 2.0	Ammonia-N	0.077		mg N/L	P369165	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.93		mg N/L	P369196	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.045		mg N/L	P368954	
	EPA 365.1 Rev. 2.0	Total-P	0.052		mg P/L	P368785	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P368814	
2109573	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.024		mg P/L	P368768	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

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

Sample Location: Florence Lake @ Center

Collection Date/Time: 08/07/2019 09:19

Field ID: G3CE0012

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2109566	EPA 180.1 Rev. 2.0	Turbidity	7.6	A	NTU	P368736	
	EPA 300.0 Rev. 2.1	Chloride	210		mg Cl/L	P369214	
		Sulfate	87		mg SO4/L	P369217	
	SM 2120 B	Color (true)	310		PCU	P368725	
	SM 2320 B-97	Total Alkalinity	65		mg CaCO3/L	P369142	
	SM 2540 C-97	TDS	668		mg/L	P368992	
	SM 2540 D-97	TSS	7	I	mg/L	P368973	
	SM 4500 F-C-97	Fluoride	0.10		mg F/L	P369146	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.15		mg N/L	P369165	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P369196	
2109570	EPA 353.2 Rev. 2.0	NO2NO3-N	0.034		mg N/L	P368954	
	EPA 365.1 Rev. 2.0	Total-P	0.18		mg P/L	P368871	
	SM 5310 B-00	Organic Carbon	32		mg C/L	P368814	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.097		mg P/L	P368768	
	dissolved						

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

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

Sample Location: Bird Lake Ditches @ 75m East of FL 407

Collection Date/Time: 08/07/2019 11:10

Field ID: G3CE0014

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2109567	EPA 180.1 Rev. 2.0	Turbidity	2.6		NTU	P368736	
	EPA 300.0 Rev. 2.1	Chloride	110		mg Cl/L	P369214	
		Sulfate	52		mg SO4/L	P369217	
	SM 2120 B	Color (true)	27	A	PCU	P368726	
	SM 2320 B-97	Total Alkalinity	244		mg CaCO3/L	P369142	
	SM 2540 C-97	TDS	528		mg/L	P368992	
	SM 2540 D-97	TSS	2	U	mg/L	P368973	
	SM 4500 F-C-97	Fluoride	0.049	I	mg F/L	P369146	
2109571	EPA 350.1 Rev. 2.0	Ammonia-N	0.22		mg N/L	P369165	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.65		mg N/L	P368979	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.082		mg N/L	P368954	
	EPA 365.1 Rev. 2.0	Total-P	0.087		mg P/L	P368871	
	SM 5310 B-00	Organic Carbon	7.8		mg C/L	P368814	
2109575	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.058		mg P/L	P368768	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

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: P368736

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369214

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369217

Component	Result	Code	Units
Sulfate	0.20	U	mg SO ₄ /L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369165

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368979

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369196

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P368954

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368785

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368871

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: P368768

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

Reference Method: SM 2120 B
Batch ID: P368725

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P368726

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P369141

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

Reference Method: SM 2320 B-97
Batch ID: P369142

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

Reference Method: SM 2540 C-97
Batch ID: P368992

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P368973

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P369145

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P369146

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: P368814

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: P369214

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	95.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369217

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369165

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368979

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369196

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P368954

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	101		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368785

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368871

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P368768

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2120 B
Batch ID: P368725

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	85 - 115

Reference Method: SM 2120 B
Batch ID: P368726

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

Reference Method: SM 2320 B-97
Batch ID: P369141

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 106

Reference Method: SM 2320 B-97
Batch ID: P369142

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P369145

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.0		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P369146

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P368814

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	100		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369214

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109470	Chloride	96.0	96.7	P/P	90 - 110
2109597	Chloride	95.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369217

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109470	Sulfate	101	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369165

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109614	Ammonia-N	104	107	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368979

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109615	Kjeldahl Nitrogen	98.8	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369196

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109568	Kjeldahl Nitrogen	103	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P368954

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109540	NO2NO3-N	100	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368785

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109514	Total-P	95.2	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368871

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109571	Total-P	104	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P368768

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109573	O-Phosphate-P	94.8	95.8	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P369145

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109510	Fluoride	98.3	97.8	P/P	89 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P369146

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2110276	Fluoride	99.3	99.3	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P368814

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109514	Organic Carbon	99.8	100	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P368736

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109566	Turbidity	15.1	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369214

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109470	Chloride	0.616	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369217

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109470	Sulfate	0.283	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369165

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109614	Ammonia-N	1.77	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368979

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109615	Kjeldahl Nitrogen	0.139	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369196

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109568	Kjeldahl Nitrogen	1.59	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P368954

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109540	NO2NO3-N	0.568	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368785

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109514	Total-P	2.49	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368871

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109571	Total-P	1.40	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P368768

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109573	O-Phosphate-P	0.838	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P368725

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109564	Color (true)	2.21	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P368726

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109567	Color (true)	4.26	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P369141

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109510	Total Alkalinity	0.757	Sample	P	0 - 2.8

Reference Method: SM 2320 B-97
Batch ID: P369142

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2110276	Total Alkalinity	1.15	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P368992

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109610	TDS	0.336	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P369145

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109510	Fluoride	0.479	Spike	P	0 - 2.5

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P369146

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2110276	Fluoride	0.0	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P368814

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109514	Organic Carbon	0.536	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: A93368

Included Lab Sample IDs: 2109564, 2109565, 2109566, 2109567

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	90 - 115
Color (true)	102	102	P/P	90 - 115
Color (true)	104	103	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A93369

Included Lab Sample IDs: 2109564, 2109565, 2109566, 2109567

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	101	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A93388

Included Lab Sample IDs: 2109572, 2109573, 2109574, 2109575

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.9	100	P/P	90 - 110
O-Phosphate-P	99.3	98.9	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A93412

Included Lab Sample IDs: 2109568, 2109569, 2109570, 2109571

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A93448

Included Lab Sample IDs: 2109570, 2109571

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A93462

Included Lab Sample IDs: 2109568, 2109569, 2109570, 2109571

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A93467

Included Lab Sample IDs: 2109568, 2109569

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.4	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A93486

Included Lab Sample IDs: 2109564, 2109565, 2109566, 2109567

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	96.0	96.2	P/P	90 - 110
Sulfate	101	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A93507

Included Lab Sample IDs: 2109571

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

Reference Method: SM 2320 B-97

Run ID: A93545

Included Lab Sample IDs: 2109564, 2109565, 2109566, 2109567

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	104	P/P	90 - 110
Total Alkalinity	104	103	P/P	90 - 110
Total Alkalinity	104	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A93545

Included Lab Sample IDs: 2109564, 2109565, 2109566, 2109567

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	98.1	P/P	90 - 110
Fluoride	100	99.5	P/P	90 - 110
Fluoride	99.5	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A93563

Included Lab Sample IDs: 2109568, 2109569, 2109570, 2109571

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	105	106	P/P	90 - 110
Ammonia-N	107	109	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A93600

Included Lab Sample IDs: 2109568, 2109569, 2109570

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	104	P/P	90 - 110
Kjeldahl Nitrogen	104	104	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 SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					15.1	
EPA 300.0 Rev. 2.1	Chloride	95.9	96.0	96.7	95.7		0.616
	Sulfate	100	101	101			0.283
EPA 350.1 Rev. 2.0	Ammonia-N	104	104	107			1.77
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	110	98.8	99.0			0.139
	Kjeldahl Nitrogen	101	103	100			1.59
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	101	100	99.5			0.568
EPA 365.1 Rev. 2.0	Total-P	100	95.2	98.6			2.49
	Total-P	101	104	102			1.40
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.9	94.8	95.8			0.838
SM 2120 B	Color (true)	102				2.21	
	Color (true)	101				4.26	
SM 2320 B-97	Total Alkalinity	104				0.757	
	Total Alkalinity	104				1.15	
SM 2540 C-97	TDS					0.336	
SM 4500 F-C-97	Fluoride	97.0	98.3	97.8			0.479
	Fluoride	97.9	99.3	99.3			0.0
SM 5310 B-00	Organic Carbon	100	99.8	100			0.536

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2109564, 2109565, 2109566, 2109567
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2109564, 2109565, 2109566, 2109567
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2109564, 2109565, 2109566, 2109567
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2109568, 2109569, 2109570, 2109571
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2109568, 2109569, 2109570, 2109571
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2109568, 2109569, 2109570, 2109571
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2109568, 2109569, 2109570, 2109571
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2109572, 2109573, 2109574, 2109575
SM 2120 B / E31780	True Color measured at 450 nm	2109564, 2109565, 2109566, 2109567
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2109564, 2109565, 2109566, 2109567
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2109564, 2109565, 2109566, 2109567
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2109564, 2109565, 2109566, 2109567
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2109564, 2109565, 2109566, 2109567
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2109568, 2109569, 2109570, 2109571

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	08/08/2019			08/08/2019 17:07	Rosalyn Ballman	2109564, 2109565, 2109566, 2109567
EPA 300.0 Rev. 2.1	08/08/2019			08/15/2019 20:59	Jhamieka S. Greenwood	2109564
	08/08/2019			08/15/2019 21:11	Jhamieka S. Greenwood	2109565
	08/08/2019			08/15/2019 21:23	Jhamieka S. Greenwood	2109566
	08/08/2019			08/15/2019 21:36	Jhamieka S. Greenwood	2109567
EPA 350.1 Rev. 2.0	08/08/2019			08/15/2019 11:15	Ping Hua	2109568
	08/08/2019			08/15/2019 11:16	Ping Hua	2109569
	08/08/2019			08/15/2019 11:18	Ping Hua	2109570
	08/08/2019			08/15/2019 13:47	Ping Hua	2109571
EPA 351.2 Rev. 2.0	08/08/2019	08/13/2019 14:20	Sima Feizi	08/14/2019 11:00	Joseph Suarez	2109571
	08/08/2019	08/16/2019 14:55	Sima Feizi	08/19/2019 12:07	Joseph Suarez	2109568
	08/08/2019	08/16/2019 14:55	Sima Feizi	08/19/2019 12:12	Joseph Suarez	2109569
	08/08/2019	08/16/2019 14:55	Sima Feizi	08/19/2019 12:17	Joseph Suarez	2109570
EPA 353.2 Rev. 2.0	08/08/2019			08/13/2019 12:31	Beverly Y. Sanders	2109568
	08/08/2019			08/13/2019 12:32	Beverly Y. Sanders	2109569
	08/08/2019			08/13/2019 12:34	Beverly Y. Sanders	2109570
	08/08/2019			08/13/2019 12:35	Beverly Y. Sanders	2109571
EPA 365.1 Rev. 2.0	08/08/2019	08/09/2019 13:46	Vijayalakshmi Reddy	08/13/2019 14:08	Lipi Saha	2109568
	08/08/2019	08/09/2019 13:46	Vijayalakshmi Reddy	08/13/2019 14:09	Lipi Saha	2109569
	08/08/2019	08/12/2019 13:21	Vijayalakshmi Reddy	08/13/2019 10:32	Lipi Saha	2109571
	08/08/2019	08/12/2019 13:21	Vijayalakshmi Reddy	08/13/2019 10:39	Lipi Saha	2109570
EPA 365.1 Rev. 2.0 dissolved	08/08/2019			08/08/2019 14:29	Jhamieka S. Greenwood	2109573
	08/08/2019			08/08/2019 14:52	Jhamieka S. Greenwood	2109575
	08/08/2019			08/08/2019 14:53	Jhamieka S. Greenwood	2109572
	08/08/2019			08/08/2019 14:54	Jhamieka S. Greenwood	2109574
SM 2120 B	08/08/2019			08/08/2019 16:29	Madeline Funaro	2109564, 2109565
	08/08/2019			08/08/2019 16:35	Madeline Funaro	2109567
	08/08/2019			08/08/2019 16:56	Madeline Funaro	2109566
SM 2320 B-97	08/08/2019			08/15/2019 07:48	Dale L. Simmons	2109564
	08/08/2019			08/15/2019 10:00	Dale L. Simmons	2109565
	08/08/2019			08/15/2019 10:15	Dale L. Simmons	2109567
	08/08/2019			08/15/2019 14:02	Dale L. Simmons	2109566
SM 2540 C-97	08/08/2019			08/09/2019 15:30	Sima Feizi	2109564, 2109565, 2109566, 2109567
SM 2540 D-97	08/08/2019			08/09/2019 15:30	Sima Feizi	2109564, 2109565, 2109566, 2109567
SM 4500 F-C-97	08/08/2019			08/15/2019 07:48	Dale L. Simmons	2109564
	08/08/2019			08/15/2019 10:00	Dale L. Simmons	2109565
	08/08/2019			08/15/2019 10:15	Dale L. Simmons	2109567
	08/08/2019			08/15/2019 14:02	Dale L. Simmons	2109566
SM 5310 B-00	08/08/2019			08/09/2019 14:54	Madeline Funaro	2109568
	08/08/2019			08/09/2019 16:34	Madeline Funaro	2109569

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-00	08/08/2019			08/09/2019 16:46	Madeline Funaro	2109570
	08/08/2019			08/09/2019 16:58	Madeline Funaro	2109571