Chemical Analysis Report

WQAP-2019-02-15-01

Florida Department of Environmental Protection
Central Laboratory
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Event Description: **SMP:Highland Lakes (county)**
Request ID: **RQ-2019-02-11-62**
Customer: **WQAP**
Project ID: **SMP**

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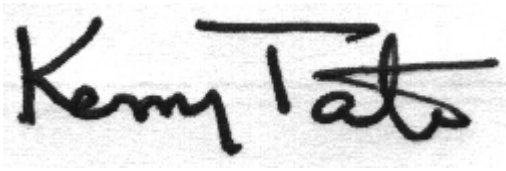
Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 05-MAR-2019 13:57



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: Huckleberry **Collection Date/Time: 02/14/2019 12:00**

Field ID: G4SD0166 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2062940	EPA 180.1 Rev. 2.0	Turbidity	17	A	NTU	P359007	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P359572	
		Sulfate	3.4		mg SO4/L	P359574	
	SM 2120 B	Color (true)	87	A	PCU	P359016	
	SM 2320 B-97	Total Alkalinity	23		mg CaCO3/L	P359382	
	SM 2540 C-97	TDS	87		mg/L	P359532	
	SM 2540 D-97	TSS	12	I	mg/L	P359438	
	SM 4500 F-C-97	Fluoride	0.081	I	mg F/L	P359389	
2062943	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P359241	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P359086	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P359515	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P359091	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P359416	
2062946	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.040		mg P/L	P359023	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample. The PQL was elevated due to sample matrix interference.
SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Little Bonnet Lake **Collection Date/Time: 02/14/2019 10:10**

Field ID: G4SD0169 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2062941	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P359007	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P359572	
		Sulfate	26		mg SO4/L	P359574	
	SM 2120 B	Color (true)	12		PCU	P359013	
	SM 2320 B-97	Total Alkalinity	34		mg CaCO3/L	P359382	
	SM 2540 C-97	TDS	120		mg/L	P359532	
	SM 2540 D-97	TSS	3	I	mg/L	P359438	
	SM 4500 F-C-97	Fluoride	0.075	I	mg F/L	P359389	
2062944	EPA 350.1 Rev. 2.0	Ammonia-N	0.064		mg N/L	P359241	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.71		mg N/L	P359088	
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.0		mg N/L	P359357	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P359091	
	SM 5310 B-00	Organic Carbon	5.4		mg C/L	P359416	
2062947	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P359023	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Bonnet Lake **Collection Date/Time: 02/14/2019 09:00**

Field ID: G4SD0170 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2062942	EPA 180.1 Rev. 2.0	Turbidity	22		NTU	P359007	
	EPA 300.0 Rev. 2.1	Chloride	21		mg Cl/L	P359572	
		Sulfate	38		mg SO4/L	P359574	
	SM 2120 B	Color (true)	12		PCU	P359016	
	SM 2320 B-97	Total Alkalinity	31		mg CaCO3/L	P359383	
	SM 2540 C-97	TDS	124		mg/L	P359533	
	SM 2540 D-97	TSS	14	I	mg/L	P359439	
	SM 4500 F-C-97	Fluoride	0.080	I	mg F/L	P359392	
2062945	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P359342	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P359088	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.62		mg N/L	P359357	
	EPA 365.1 Rev. 2.0	Total-P	0.044		mg P/L	P359092	
	SM 5310 B-00	Organic Carbon	6.8		mg C/L	P359416	
2062948	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P359023	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample. The PQL was elevated due to sample matrix interference.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P359007

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359572

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359574

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359241

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359342

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359086

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359088

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359357

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359515

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: P359091

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359092

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359023

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

Reference Method: SM 2120 B
Batch ID: P359013

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P359016

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P359382

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

Reference Method: SM 2320 B-97
Batch ID: P359383

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

Reference Method: SM 2540 C-97
Batch ID: P359532

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P359533

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P359438

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P359439

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P359389

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P359392

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P359416

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: P359572

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359574

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359241

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359342

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359086

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359088

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359357

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: P359515

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359091

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
Batch ID: P359092

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359023

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

Reference Method: SM 2120 B
Batch ID: P359013

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.5		P	85 - 115

Reference Method: SM 2120 B
Batch ID: P359016

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.3		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P359382

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

Reference Method: SM 2320 B-97
Batch ID: P359383

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

Reference Method: SM 4500 F-C-97
Batch ID: P359389

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.9		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P359392

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.4		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P359416

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.2		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359572

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062799	Chloride	97.8		P	90 - 110
2062967	Chloride	93.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359574

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062799	Sulfate	96.3		P	90 - 110
2062967	Sulfate	95.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359241

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062748	Ammonia-N	105	107	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359342

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062945	Ammonia-N	98.6	99.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359086

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062800	Kjeldahl Nitrogen	101	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359088

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062961	Kjeldahl Nitrogen	102	98.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359357

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062795	NO2NO3-N	97.5	97.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359515

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062737	NO2NO3-N	99.8	98.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359091

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062944	Total-P	102	104	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359092

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062961	Total-P	104	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359023

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062801	O-Phosphate-P	93.9	94.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P359392

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062967	Fluoride	97.6	97.6	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P359416

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062702	Organic Carbon	96.6	96.4	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P359007

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062940	Turbidity	1.75	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359572

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062799	Chloride	0.0328	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359574

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062799	Sulfate	0.283	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359241

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062748	Ammonia-N	1.53	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359342

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062945	Ammonia-N	1.14	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359086

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062800	Kjeldahl Nitrogen	2.68	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359088

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062961	Kjeldahl Nitrogen	2.98	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359357

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062795	NO2NO3-N	0.263	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359515

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062737	NO2NO3-N	0.971	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359091

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062944	Total-P	1.82	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359092

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062961	Total-P	1.04	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359023

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062801	O-Phosphate-P	0.954	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P359013

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062799	Color (true)	0.414	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P359016

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062940	Color (true)	0.611	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P359382

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062955	Total Alkalinity	0.238	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
Batch ID: P359383

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062967	Total Alkalinity	0.525	Sample	P	0 - 1.6

Quality Assurance Report
Precision

Reference Method: SM 2540 C-97
Batch ID: P359532

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062799	TDS	6.90	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P359533

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062960	TDS	4.14	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P359389

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062955	Fluoride	0.470	Spike	P	0 - 3.5

Reference Method: SM 4500 F-C-97
Batch ID: P359392

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062967	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P359416

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062702	Organic Carbon	0.221	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: EPA 180.1 Rev. 2.0
Run ID: A89446
Included Lab Sample IDs: 2062940, 2062941, 2062942

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

Reference Method: SM 2120 B
Run ID: A89448
Included Lab Sample IDs: 2062940, 2062941, 2062942

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A89450
Included Lab Sample IDs: 2062946, 2062947, 2062948

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.9	98.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A89505
Included Lab Sample IDs: 2062943, 2062944, 2062945

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A89528
Included Lab Sample IDs: 2062943

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A89532
Included Lab Sample IDs: 2062944, 2062945

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	99.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A89534
Included Lab Sample IDs: 2062943, 2062944

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	106	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A89577
Included Lab Sample IDs: 2062945

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A89577
Included Lab Sample IDs: 2062945

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A89586
Included Lab Sample IDs: 2062944, 2062945

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

Reference Method: SM 2320 B-97
Run ID: A89593
Included Lab Sample IDs: 2062940, 2062941, 2062942

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	98.6	P/P	90 - 110
Total Alkalinity	98.6	108	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A89593
Included Lab Sample IDs: 2062940, 2062941, 2062942

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	98.5	P/P	90 - 110
Fluoride	99.0	98.6	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A89603
Included Lab Sample IDs: 2062943, 2062944, 2062945

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	93.0	93.5	P/P	90 - 110
Organic Carbon	93.5	93.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A89651
Included Lab Sample IDs: 2062943

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A89674
Included Lab Sample IDs: 2062940, 2062941, 2062942

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

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

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					1.75	
EPA 300.0 Rev. 2.1	Chloride	99.5	97.8	93.9		0.0328	
	Sulfate	98.3	96.3	95.7		0.283	
EPA 350.1 Rev. 2.0	Ammonia-N	99.9	105	107			1.53
	Ammonia-N	99.1	98.6	99.9			1.14
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	101	105			2.68
	Kjeldahl Nitrogen	104	102	98.1			2.98
EPA 353.2 Rev. 2.0	NO2NO3-N	100	97.5	97.0			0.263
	NO2NO3-N	99.0	99.8	98.8			0.971
EPA 365.1 Rev. 2.0	Total-P	103	102	104			1.82
	Total-P	106	104	105			1.04
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.9	93.9	94.8			0.954
SM 2120 B	Color (true)	98.5				0.414	
	Color (true)	99.3				0.611	
SM 2320 B-97	Total Alkalinity	102				0.238	
	Total Alkalinity	102				0.525	
SM 2540 C-97	TDS					6.90	
	TDS					4.14	
SM 4500 F-C-97	Fluoride	96.9					0.470
	Fluoride	96.4	97.6	97.6			0.0
SM 5310 B-00	Organic Carbon	96.2	96.6	96.4			0.221

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2062940, 2062941, 2062942
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2062940, 2062941, 2062942
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2062940, 2062941, 2062942
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2062943, 2062944, 2062945
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2062943, 2062944, 2062945
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2062943, 2062944, 2062945
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2062943, 2062944, 2062945
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2062946, 2062947, 2062948
SM 2120 B / E31780	True Color measured at 450 nm	2062940, 2062941, 2062942
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2062940, 2062941, 2062942
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2062940, 2062941, 2062942
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2062940, 2062941, 2062942
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2062940, 2062941, 2062942
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2062943, 2062944, 2062945

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	02/15/2019			02/15/2019 16:26	Adrian Shelby	2062940, 2062941, 2062942
EPA 300.0 Rev. 2.1	02/15/2019			02/26/2019 18:00	Lipi Saha	2062940
	02/15/2019			02/26/2019 18:15	Lipi Saha	2062941
	02/15/2019			02/26/2019 18:30	Lipi Saha	2062942
EPA 350.1 Rev. 2.0	02/15/2019			02/20/2019 13:00	Adrian Shelby	2062943
	02/15/2019			02/20/2019 13:02	Adrian Shelby	2062944
	02/15/2019			02/21/2019 10:42	Ping Hua	2062945
EPA 351.2 Rev. 2.0	02/15/2019	02/18/2019 13:50	Adrian Shelby	02/19/2019 12:35	Joseph Suarez	2062943
	02/15/2019	02/18/2019 13:50	Adrian Shelby	02/19/2019 13:04	Joseph Suarez	2062944
	02/15/2019	02/18/2019 13:50	Adrian Shelby	02/19/2019 13:05	Joseph Suarez	2062945
EPA 353.2 Rev. 2.0	02/15/2019			02/22/2019 12:09	Beverly Y. Sanders	2062944
	02/15/2019			02/22/2019 12:11	Beverly Y. Sanders	2062945
	02/15/2019			02/26/2019 09:26	Beverly Y. Sanders	2062943
EPA 365.1 Rev. 2.0	02/15/2019	02/18/2019 13:35	Sima Feizi	02/20/2019 12:09	Rosalyn Ballman	2062943
	02/15/2019	02/18/2019 13:35	Sima Feizi	02/20/2019 14:24	Rosalyn Ballman	2062944
	02/15/2019	02/18/2019 13:35	Sima Feizi	02/20/2019 14:26	Rosalyn Ballman	2062945
EPA 365.1 Rev. 2.0 dissolved	02/15/2019			02/15/2019 17:44	Jhamieka S. Greenwood	2062948
	02/15/2019			02/15/2019 17:45	Jhamieka S. Greenwood	2062947
	02/15/2019			02/15/2019 17:46	Jhamieka S. Greenwood	2062946
SM 2120 B	02/15/2019			02/15/2019 16:20	Chelsea Hernandez	2062941
	02/15/2019			02/15/2019 16:50	Chelsea Hernandez	2062940
	02/15/2019			02/15/2019 16:51	Chelsea Hernandez	2062942
SM 2320 B-97	02/15/2019			02/21/2019 02:05	Dale L. Simmons	2062940
	02/15/2019			02/21/2019 02:49	Dale L. Simmons	2062941
	02/15/2019			02/21/2019 03:59	Dale L. Simmons	2062942
SM 2540 C-97	02/15/2019			02/20/2019 16:21	Yijie Li	2062940, 2062941, 2062942
SM 2540 D-97	02/15/2019			02/20/2019 16:21	Yijie Li	2062940, 2062941, 2062942
SM 4500 F-C-97	02/15/2019			02/21/2019 02:05	Dale L. Simmons	2062940
	02/15/2019			02/21/2019 02:49	Dale L. Simmons	2062941
	02/15/2019			02/21/2019 03:59	Dale L. Simmons	2062942
SM 5310 B-00	02/15/2019			02/23/2019 10:33	Julia Storbeck	2062943
	02/15/2019			02/24/2019 03:15	Julia Storbeck	2062944
	02/15/2019			02/24/2019 03:28	Julia Storbeck	2062945