Chemical Analysis Report

CEN-DIST-2019-04-25-01

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

Event Description: **Park / Gem / Ann / Asher**
Request ID: **RQ-2019-04-22-40**
Customer: **CEN-DIST**
Project ID: **SMP**

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Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 08-MAY-2019 18:44

B. Steinbock

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 GEM AT CENTER **Collection Date/Time: 04/24/2019 09:30**

Field ID: G2CE0204 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2080973	EPA 180.1 Rev. 2.0	Turbidity	4.5		NTU	P362879	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P363140	
		Sulfate	11		mg SO4/L	P363141	
	SM 2120 B	Color (true)	18		PCU	P362890	
	SM 2320 B-97	Total Alkalinity	81		mg CaCO3/L	P363360	
	SM 2540 C-97	TDS	132		mg/L	P363233	
	SM 2540 D-97	TSS	9	I	mg/L	P363123	
	SM 4500 F-C-97	Fluoride	0.060	I	mg F/L	P363364	
2080977	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P363135	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.80		mg N/L	P363097	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P363009	
	EPA 365.1 Rev. 2.0	Total-P	0.052		mg P/L	P363060	
	SM 5310 B-00	Organic Carbon	6.9		mg C/L	P363083	
2080981	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P362870	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: 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: LAKE PARK @ CENTER **Collection Date/Time: 04/24/2019 09:41**

Field ID: G2CE0009 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2080974	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P362879	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P363140	
		Sulfate	11		mg SO4/L	P363141	
	SM 2120 B	Color (true)	14		PCU	P362890	
	SM 2320 B-97	Total Alkalinity	67		mg CaCO3/L	P363360	
	SM 2540 C-97	TDS	123		mg/L	P363233	
	SM 2540 D-97	TSS	3	I	mg/L	P363123	
	SM 4500 F-C-97	Fluoride	0.065	I	mg F/L	P363364	
2080978	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P363135	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.59		mg N/L	P363187	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P363010	
	EPA 365.1 Rev. 2.0	Total-P	0.025		mg P/L	P363060	
	SM 5310 B-00	Organic Carbon	6.2		mg C/L	P363083	
2080982	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P362870	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: 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: LAKE ANN @ CENTER **Collection Date/Time: 04/24/2019 10:22**

Field ID: G2CE0097 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2080975	EPA 180.1 Rev. 2.0	Turbidity	4.4		NTU	P362879	
	EPA 300.0 Rev. 2.1	Chloride	21		mg Cl/L	P363140	
		Sulfate	16		mg SO4/L	P363141	
	SM 2120 B	Color (true)	29		PCU	P362890	
	SM 2320 B-97	Total Alkalinity	25		mg CaCO3/L	P363360	
	SM 2540 C-97	TDS	108		mg/L	P363234	
	SM 2540 D-97	TSS	8	I	mg/L	P363124	
	SM 4500 F-C-97	Fluoride	0.040	I	mg F/L	P363364	
2080979	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P363136	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.96		mg N/L	P363187	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P363010	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P363060	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P363083	
2080983	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P362872	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: 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: LAKE ASHER @ CENTER OF LAKE **Collection Date/Time: 04/24/2019 12:36**

Field ID: G2CE0130 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2080976	EPA 180.1 Rev. 2.0	Turbidity	5.4		NTU	P362879	
	EPA 300.0 Rev. 2.1	Chloride	30		mg Cl/L	P363140	
		Sulfate	9.4		mg SO4/L	P363141	
	SM 2120 B	Color (true)	60		PCU	P362890	
	SM 2320 B-97	Total Alkalinity	33		mg CaCO3/L	P363360	
	SM 2540 C-97	TDS	122		mg/L	P363234	
	SM 2540 D-97	TSS	8	I	mg/L	P363124	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P363364	
2080980	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P363137	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P363187	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P363010	
	EPA 365.1 Rev. 2.0	Total-P	0.061		mg P/L	P363060	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P363083	
2080984	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P362872	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: 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: P362879

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363140

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363141

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363135

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363136

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363137

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363097

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363187

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363009

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363010

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P363060

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P362870

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P362872

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

Reference Method: SM 2120 B
Batch ID: P362890

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P363360

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

Reference Method: SM 2540 C-97
Batch ID: P363233

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P363234

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P363123

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P363124

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P363364

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P363083

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: P363140

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363141

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363135

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363136

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363137

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: P363097

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363187

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: P363009

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363010

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P363060

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P362870

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.7		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P362872

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

Reference Method: SM 2120 B
Batch ID: P362890

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.1		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P363360

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P363364

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

Reference Method: SM 5310 B-00
Batch ID: P363083

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.4		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363140

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2080943	Chloride	99.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363141

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2080611	Sulfate	98.2		P	90 - 110
2080943	Sulfate	99.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363135

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2080978	Ammonia-N	98.5	96.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363136

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2080979	Ammonia-N	102	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363137

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2081131	Ammonia-N	101	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363097

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2080857	Kjeldahl Nitrogen	105	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363187

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2080980	Kjeldahl Nitrogen	104	95.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363009

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2080856	NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363010

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2080978	NO2NO3-N	100	102	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P363060

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2080978	Total-P	107	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P362870

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2080889	O-Phosphate-P	97.1	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P362872

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2081001	O-Phosphate-P	95.9	97.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P363364

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2080993	Fluoride	97.9	100	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P363083

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2080928	Organic Carbon	101	100	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P362879

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080946	Turbidity	12.9	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363140

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080611	Chloride	0.977	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363141

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080611	Sulfate	0.805	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363135

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080978	Ammonia-N	1.45	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363136

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080979	Ammonia-N	0.694	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363137

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2081131	Ammonia-N	0.407	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363097

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080857	Kjeldahl Nitrogen	2.14	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363187

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080980	Kjeldahl Nitrogen	4.61	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363009

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080856	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363010

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080978	NO2NO3-N	0.990	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P363060

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080978	Total-P	3.69	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P362870

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080889	O-Phosphate-P	1.53	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P362872

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2081001	O-Phosphate-P	1.86	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P362890

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080940	Color (true)	1.25	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P363360

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080993	Total Alkalinity	2.57	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P363233

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080940	TDS	2.20	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 2540 C-97
Batch ID: P363234

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080994	TDS	1.63	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P363364

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080993	Fluoride	1.95	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P363083

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080928	Organic Carbon	0.571	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 365.1 Rev. 2.0 dissolved
Run ID: A91004
Included Lab Sample IDs: 2080981, 2080982, 2080983, 2080984

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	95.7	95.1	P/P	90 - 110
O-Phosphate-P	97.1	97.5	P/P	90 - 110
O-Phosphate-P	97.5	96.6	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A91005
Included Lab Sample IDs: 2080973, 2080974, 2080975, 2080976

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

Reference Method: SM 2120 B
Run ID: A91012
Included Lab Sample IDs: 2080973, 2080974, 2080975, 2080976

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.5	101	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A91059
Included Lab Sample IDs: 2080977, 2080978, 2080979, 2080980

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	99.0	P/P	90 - 110
NO2NO3-N	99.0	100	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A91089
Included Lab Sample IDs: 2080977, 2080978, 2080979, 2080980

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.2	101	P/P	90 - 110
Organic Carbon	99.4	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A91100
Included Lab Sample IDs: 2080980

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A91103
Included Lab Sample IDs: 2080977, 2080978, 2080979

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A91105
Included Lab Sample IDs: 2080973, 2080974, 2080975, 2080976

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	102	P/P	90 - 110
Chloride	102	103	P/P	90 - 110
Sulfate	101	102	P/P	90 - 110
Sulfate	102	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A91112
Included Lab Sample IDs: 2080977, 2080978, 2080979, 2080980

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

Reference Method: SM 2320 B-97
Run ID: A91204
Included Lab Sample IDs: 2080973, 2080974, 2080975, 2080976

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.8	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A91204
Included Lab Sample IDs: 2080973, 2080974, 2080975, 2080976

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	99.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A91214
Included Lab Sample IDs: 2080977, 2080978, 2080979, 2080980

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	103	P/P	90 - 110
Kjeldahl Nitrogen	103	99.6	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					12.9	
EPA 300.0 Rev. 2.1	Chloride	99.9	99.2			0.977	
	Sulfate	100	98.2	99.7		0.805	
EPA 350.1 Rev. 2.0	Ammonia-N	103	98.5	96.9			1.45
	Ammonia-N	103	102	101			0.694
	Ammonia-N	104	101	102			0.407
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	105	101			2.14
	Kjeldahl Nitrogen	101	104	95.2			4.61
EPA 353.2 Rev. 2.0	NO2NO3-N	101	100	100			0.0
	NO2NO3-N	100	100	102			0.990
EPA 365.1 Rev. 2.0	Total-P	103	107	103			3.69
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.7	97.1	98.6			1.53
	O-Phosphate-P	97.9	95.9	97.7			1.86
SM 2120 B	Color (true)	99.1				1.25	
SM 2320 B-97	Total Alkalinity	101				2.57	
SM 2540 C-97	TDS					2.20	
	TDS					1.63	
SM 4500 F-C-97	Fluoride	97.6	97.9	100			1.95
SM 5310 B-00	Organic Carbon	99.4	101	100			0.571

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2080973, 2080974, 2080975, 2080976
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2080973, 2080974, 2080975, 2080976
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2080973, 2080974, 2080975, 2080976
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2080977, 2080978, 2080979, 2080980
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2080977, 2080978, 2080979, 2080980
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2080977, 2080978, 2080979, 2080980
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2080977, 2080978, 2080979, 2080980
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2080981, 2080982, 2080983, 2080984
SM 2120 B / E31780	True Color measured at 450 nm	2080973, 2080974, 2080975, 2080976
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2080973, 2080974, 2080975, 2080976
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2080973, 2080974, 2080975, 2080976
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2080973, 2080974, 2080975, 2080976
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2080973, 2080974, 2080975, 2080976
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2080977, 2080978, 2080979, 2080980

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	04/25/2019			04/25/2019 18:32	Julia Storbeck	2080973, 2080974, 2080975, 2080976
EPA 300.0 Rev. 2.1	04/25/2019			04/30/2019 19:54	Lipi Saha	2080973
	04/25/2019			04/30/2019 20:06	Lipi Saha	2080974
	04/25/2019			04/30/2019 20:18	Lipi Saha	2080975
	04/25/2019			04/30/2019 20:54	Lipi Saha	2080976
EPA 350.1 Rev. 2.0	04/25/2019			04/30/2019 12:15	Ping Hua	2080978
	04/25/2019			04/30/2019 12:38	Ping Hua	2080977
	04/25/2019			04/30/2019 12:48	Ping Hua	2080979
	04/25/2019			04/30/2019 13:35	Ping Hua	2080980
EPA 351.2 Rev. 2.0	04/25/2019	04/30/2019 12:15	Adrian Shelby	05/06/2019 10:09	Joseph Suarez	2080977
	04/25/2019	05/01/2019 11:45	Adrian Shelby	05/06/2019 10:19	Joseph Suarez	2080978
	04/25/2019	05/01/2019 11:45	Adrian Shelby	05/06/2019 10:24	Joseph Suarez	2080979
	04/25/2019	05/01/2019 11:45	Adrian Shelby	05/06/2019 10:25	Joseph Suarez	2080980
EPA 353.2 Rev. 2.0	04/25/2019			04/29/2019 11:04	Beverly Y. Sanders	2080977
	04/25/2019			04/29/2019 11:11	Beverly Y. Sanders	2080978
	04/25/2019			04/29/2019 11:17	Beverly Y. Sanders	2080979
	04/25/2019			04/29/2019 11:18	Beverly Y. Sanders	2080980
EPA 365.1 Rev. 2.0	04/25/2019	04/29/2019 13:45	Sima Feizi	04/30/2019 14:53	Rosalyn Ballman	2080980
	04/25/2019	04/29/2019 13:45	Sima Feizi	04/30/2019 16:26	Rosalyn Ballman	2080977
	04/25/2019	04/29/2019 13:45	Sima Feizi	04/30/2019 16:27	Rosalyn Ballman	2080978
	04/25/2019	04/29/2019 13:45	Sima Feizi	04/30/2019 16:28	Rosalyn Ballman	2080979
EPA 365.1 Rev. 2.0 dissolved	04/25/2019			04/25/2019 15:46	Jhamieka S. Greenwood	2080981
	04/25/2019			04/25/2019 15:53	Jhamieka S. Greenwood	2080982
	04/25/2019			04/25/2019 16:18	Jhamieka S. Greenwood	2080983
	04/25/2019			04/25/2019 16:19	Jhamieka S. Greenwood	2080984
SM 2120 B	04/25/2019			04/25/2019 15:06	Blanca Fach	2080973
	04/25/2019			04/25/2019 15:07	Blanca Fach	2080974
	04/25/2019			04/25/2019 15:08	Blanca Fach	2080975, 2080976
SM 2320 B-97	04/25/2019			05/04/2019 08:32	Samantha Davila	2080973
	04/25/2019			05/04/2019 08:44	Samantha Davila	2080974
	04/25/2019			05/04/2019 08:57	Samantha Davila	2080975
	04/25/2019			05/04/2019 09:10	Samantha Davila	2080976
SM 2540 C-97	04/25/2019			04/29/2019 17:35	Mariam Hanna	2080973, 2080974, 2080975, 2080976
SM 2540 D-97	04/25/2019			04/29/2019 20:05	Mariam Hanna	2080973, 2080974, 2080975, 2080976
SM 4500 F-C-97	04/25/2019			05/04/2019 08:32	Samantha Davila	2080973
	04/25/2019			05/04/2019 08:44	Samantha Davila	2080974
	04/25/2019			05/04/2019 08:57	Samantha Davila	2080975
	04/25/2019			05/04/2019 09:10	Samantha Davila	2080976
SM 5310 B-00	04/25/2019			04/29/2019 19:22	Julia Storbeck	2080979
	04/25/2019			04/29/2019 21:50	Julia Storbeck	2080977

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-00	04/25/2019			04/29/2019 22:02	Julia Storbeck	2080978
	04/25/2019			04/29/2019 22:15	Julia Storbeck	2080980