Chemical Analysis Report

CEN-DIST-2018-04-06-01

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

Event Description: **Ellen / Concord / Florida / Adelaide**
Request ID: **RQ-2018-04-02-52**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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3319 Maguire Blvd., Suite 232
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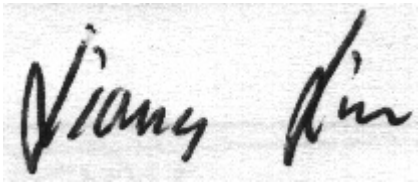
Certified by: Liang Lin, Environmental Administrator

Date Certified: 02-MAY-2018 14:05



Case Narrative

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

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

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

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

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

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

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

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

Precision is reported as relative percent difference unless otherwise noted.

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

QC Codes used in this report may include:

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

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

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

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

Sample Location: Lake Ellen @ Center (2994K1) **Collection Date/Time: 04/05/2018 10:10**

Field ID: G2CE0060 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1981962	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P342952	
	EPA 300.0 Rev. 2.1	Chloride	16		mg Cl/L	P343153	
		Sulfate	14		mg SO4/L	P343155	
	SM 2120 B	Color (true)	40	A	PCU	P342930	
	SM 2320 B-97	Total Alkalinity	10		mg CaCO3/L	P343505	RPD
	SM 2540 C-97	TDS	55		mg/L	P343220	
	SM 2540 D-97	TSS	2	I	mg/L	P343542	
	SM 4500 F-C-97	Fluoride	0.064	I	mg F/L	P343509	
1981966	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P343447	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.53		mg N/L	P343085	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P343473	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P343198	
	SM 5310 B-00	Organic Carbon	6.3		mg C/L	P343323	
1981970	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P342943	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Lake Concord at Center (2994K) **Collection Date/Time: 04/05/2018 10:42**

Field ID: G2CE0059 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1981963	EPA 180.1 Rev. 2.0	Turbidity	5.5	A	NTU	P342953	
	EPA 300.0 Rev. 2.1	Chloride	15		mg Cl/L	P343153	
		Sulfate	11		mg SO4/L	P343155	
	SM 2120 B	Color (true)	13		PCU	P342930	
	SM 2320 B-97	Total Alkalinity	75		mg CaCO3/L	P343505	RPD
	SM 2540 C-97	TDS	120		mg/L	P343220	
	SM 2540 D-97	TSS	7	I	mg/L	P343542	
	SM 4500 F-C-97	Fluoride	0.070	I	mg F/L	P343509	
1981967	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P343447	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.76		mg N/L	P343086	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P343473	
	EPA 365.1 Rev. 2.0	Total-P	0.049		mg P/L	P343874	
	SM 5310 B-00	Organic Carbon	4.9		mg C/L	P343323	
1981971	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P342944	

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: Lake Adelaide @ Center (2998E) **Collection Date/Time: 04/05/2018 11:16**

Field ID: G2CE0151 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1981964	EPA 180.1 Rev. 2.0	Turbidity	5.1		NTU	P342953	
	EPA 300.0 Rev. 2.1	Chloride	24		mg Cl/L	P343153	

Field ID: G2CE0151 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1981964	EPA 300.0 Rev. 2.1	Sulfate	11		mg SO4/L	P343155	
	SM 2120 B	Color (true)	46		PCU	P342930	
	SM 2320 B-97	Total Alkalinity	54		mg CaCO3/L	P343505	RPD
	SM 2540 C-97	TDS	130		mg/L	P343221	
	SM 2540 D-97	TSS	4	I	mg/L	P343543	
	SM 4500 F-C-97	Fluoride	0.074	I	mg F/L	P343509	
1981968	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P343447	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P343086	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P343473	
	EPA 365.1 Rev. 2.0	Total-P	0.056		mg P/L	P343198	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P343323	
1981972	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P342944	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Lake Florida @ Center of Lake (2998A) **Collection Date/Time: 04/05/2018 11:42**

Field ID: G2CE0150 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1981965	EPA 180.1 Rev. 2.0	Turbidity	4.6		NTU	P342953	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P343153	
		Sulfate	5.5		mg SO4/L	P343155	
	SM 2120 B	Color (true)	68		PCU	P342930	
	SM 2320 B-97	Total Alkalinity	66		mg CaCO3/L	P343505	RPD
	SM 2540 C-97	TDS	126	A	mg/L	P343221	
	SM 2540 D-97	TSS	5	IA	mg/L	P343543	
	SM 4500 F-C-97	Fluoride	0.081	I	mg F/L	P343509	
1981969	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P343692	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P343086	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P343473	
	EPA 365.1 Rev. 2.0	Total-P	0.040		mg P/L	P343198	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P343323	
1981973	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P342944	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P342952

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P342953

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P343153

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P343155

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343447

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343692

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343085

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343086

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343473

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P343198

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
Batch ID: P343874

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342943

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342944

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

Reference Method: SM 2120 B
Batch ID: P342930

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P343505

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

Reference Method: SM 2540 C-97
Batch ID: P343220

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P343221

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P343542

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P343543

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P343509

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P343323

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: P343153

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P343155

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343447

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343692

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343085

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: P343086

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	108		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343473

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343473

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P343198

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.7		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P343874

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: P342943

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342944

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

Reference Method: SM 2320 B-97
Batch ID: P343505

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P343509

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

Reference Method: SM 5310 B-00
Batch ID: P343323

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.2		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P343153

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P343153

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1981919	Chloride	97.4		P	90 - 110
1981964	Chloride	99.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P343155

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1981919	Sulfate	96.7		P	90 - 110
1981964	Sulfate	99.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343447

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1981878	Ammonia-N	90.3	98.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343692

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1984513	Ammonia-N	99.4	98.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343085

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1981920	Kjeldahl Nitrogen	110	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343086

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1982017	Kjeldahl Nitrogen	100	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343473

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1981881	NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P343874

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1986142	Total-P	101	99.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342943

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1981822	O-Phosphate-P	98.5	97.8	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342944

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1981971	O-Phosphate-P	97.6	98.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P343509

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1981919	Fluoride	102	101	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P343323

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1981878	Organic Carbon	98.2		P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P342952

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981845	Turbidity	16.6	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P342953

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981963	Turbidity	4.19	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P343153

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981919	Chloride	0.327	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P343155

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981919	Sulfate	0.342	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343447

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981878	Ammonia-N	5.25	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343692

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1984513	Ammonia-N	0.980	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343085

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981920	Kjeldahl Nitrogen	5.50	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343086

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1982017	Kjeldahl Nitrogen	0.616	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343473

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981881	NO2NO3-N	0.985	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P343198

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981920	Total-P	2.22	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P343874

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1986142	Total-P	1.93	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342943

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981822	O-Phosphate-P	0.713	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342944

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981971	O-Phosphate-P	0.918	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P342930

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981962	Color (true)	1.59	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P343505

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981919	Total Alkalinity	1.62	Sample	F	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P343220

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981858	TDS	3.95	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P343221

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981965	TDS	3.98	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P343509

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981919	Fluoride	0.480	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P343323

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981878	Organic Carbon	1.65	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: A83083
Included Lab Sample IDs: 1981962, 1981963, 1981964, 1981965

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.5	99.1	P/P	90 - 115

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A83086
Included Lab Sample IDs: 1981970, 1981971, 1981972, 1981973

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	100	P/P	90 - 110
O-Phosphate-P	99.5	101	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A83088
Included Lab Sample IDs: 1981962, 1981963, 1981964, 1981965

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	98.5	P/P	95 - 105
Turbidity	98.5	99.0	P/P	95 - 105

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A83148
Included Lab Sample IDs: 1981962, 1981963, 1981964, 1981965

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	103	P/P	90 - 110
Chloride	101	100	P/P	90 - 110
Sulfate	101	99.9	P/P	90 - 110
Sulfate	99.9	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A83173
Included Lab Sample IDs: 1981966, 1981967, 1981968, 1981969

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	105	P/P	90 - 110
Kjeldahl Nitrogen	105	103	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A83208
Included Lab Sample IDs: 1981966, 1981967, 1981968, 1981969

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.6	97.0	P/P	90 - 110
Organic Carbon	97.0	96.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A83210
Included Lab Sample IDs: 1981968

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A83249
Included Lab Sample IDs: 1981966, 1981967, 1981968

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	96.0	P/P	90 - 110
Ammonia-N	96.0	101	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A83258
Included Lab Sample IDs: 1981966, 1981967, 1981968, 1981969

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

Reference Method: SM 2320 B-97
Run ID: A83264
Included Lab Sample IDs: 1981962, 1981963, 1981964, 1981965

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A83264
Included Lab Sample IDs: 1981962, 1981963, 1981964, 1981965

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A83277
Included Lab Sample IDs: 1981966, 1981969

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	99.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A83326
Included Lab Sample IDs: 1981969

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A83423
Included Lab Sample IDs: 1981967

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	99.5	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					16.6	
	Turbidity					4.19	
EPA 300.0 Rev. 2.1	Chloride	101	97.4	99.4		0.327	
	Sulfate	100	96.7	99.1		0.342	

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 350.1 Rev. 2.0	Ammonia-N	98.4	90.3	98.5			5.25
	Ammonia-N	98.2	99.4	98.0			0.980
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	110	110	103			5.50
	Kjeldahl Nitrogen	108	100	101			0.616
EPA 353.2 Rev. 2.0	NO2NO3-N	102	101	102			0.985
EPA 365.1 Rev. 2.0	Total-P	99.7					2.22
	Total-P	103	101	99.4			1.93
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.4	98.5	97.8			0.713
	O-Phosphate-P	102	97.6	98.5			0.918
SM 2120 B	Color (true)					1.59	
SM 2320 B-97	Total Alkalinity	101				1.62	
SM 2540 C-97	TDS					3.95	
	TDS					3.98	
SM 4500 F-C-97	Fluoride	101	102	101			0.480
SM 5310 B-00	Organic Carbon	98.2	98.2				1.65

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1981962, 1981963, 1981964, 1981965
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1981962, 1981963, 1981964, 1981965
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1981962, 1981963, 1981964, 1981965
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1981966, 1981967, 1981968, 1981969
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1981966, 1981967, 1981968, 1981969
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1981966, 1981967, 1981968, 1981969
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1981966, 1981967, 1981968, 1981969
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1981970, 1981971, 1981972, 1981973
SM 2120 B / E31780	True Color measured at 450 nm	1981962, 1981963, 1981964, 1981965
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1981962, 1981963, 1981964, 1981965
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1981962, 1981963, 1981964, 1981965
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1981962, 1981963, 1981964, 1981965
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1981962, 1981963, 1981964, 1981965
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1981966, 1981967, 1981968, 1981969

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	04/06/2018			04/06/2018 15:08	William L. Brown IV	1981962, 1981963, 1981964, 1981965
EPA 300.0 Rev. 2.1	04/06/2018			04/10/2018 15:38	Lipi Saha	1981964
	04/06/2018			04/10/2018 18:01	Lipi Saha	1981962
	04/06/2018			04/10/2018 18:13	Lipi Saha	1981963
	04/06/2018			04/10/2018 18:25	Lipi Saha	1981965
EPA 350.1 Rev. 2.0	04/06/2018			04/13/2018 16:28	Julia Storbeck	1981966
	04/06/2018			04/13/2018 16:37	Julia Storbeck	1981967
	04/06/2018			04/13/2018 16:38	Julia Storbeck	1981968
	04/06/2018			04/17/2018 13:33	Ping Hua	1981969
EPA 351.2 Rev. 2.0	04/06/2018	04/10/2018 10:00	Adrian Shelby	04/11/2018 14:27	Joseph Suarez	1981966
	04/06/2018	04/10/2018 10:00	Adrian Shelby	04/11/2018 14:35	Joseph Suarez	1981967
	04/06/2018	04/10/2018 10:00	Adrian Shelby	04/11/2018 14:37	Joseph Suarez	1981968
	04/06/2018	04/10/2018 10:00	Adrian Shelby	04/11/2018 14:38	Joseph Suarez	1981969
EPA 353.2 Rev. 2.0	04/06/2018			04/16/2018 12:13	Lauren Bottorf	1981966
	04/06/2018			04/16/2018 12:14	Lauren Bottorf	1981967
	04/06/2018			04/16/2018 12:15	Lauren Bottorf	1981968
	04/06/2018			04/16/2018 12:16	Lauren Bottorf	1981969
EPA 365.1 Rev. 2.0	04/06/2018	04/11/2018 13:08	Sima Feizi	04/13/2018 09:46	Beverly Y. Sanders	1981968
	04/06/2018	04/11/2018 13:08	Sima Feizi	04/16/2018 13:35	Beverly Y. Sanders	1981966
	04/06/2018	04/11/2018 13:08	Sima Feizi	04/16/2018 13:36	Beverly Y. Sanders	1981969
	04/06/2018	04/23/2018 13:56	Sima Feizi	04/24/2018 13:33	Beverly Y. Sanders	1981967
EPA 365.1 Rev. 2.0 dissolved	04/06/2018			04/06/2018 16:00	Megan Treadwell	1981971
	04/06/2018			04/06/2018 16:22	Megan Treadwell	1981970
	04/06/2018			04/06/2018 16:23	Megan Treadwell	1981972, 1981973
SM 2120 B	04/06/2018			04/06/2018 14:49	Tanya Welborn	1981962
	04/06/2018			04/06/2018 14:50	Tanya Welborn	1981963, 1981964
	04/06/2018			04/06/2018 14:51	Tanya Welborn	1981965
SM 2320 B-97	04/06/2018			04/16/2018 11:07	Dale L. Simmons	1981962
	04/06/2018			04/16/2018 11:17	Dale L. Simmons	1981963
	04/06/2018			04/16/2018 11:27	Dale L. Simmons	1981964
	04/06/2018			04/16/2018 11:37	Dale L. Simmons	1981965
SM 2540 C-97	04/06/2018			04/09/2018 14:02	Yijie Li	1981962, 1981963, 1981964, 1981965
SM 2540 D-97	04/06/2018			04/09/2018 14:02	Yijie Li	1981962, 1981963, 1981964, 1981965
SM 4500 F-C-97	04/06/2018			04/16/2018 11:07	Dale L. Simmons	1981962
	04/06/2018			04/16/2018 11:17	Dale L. Simmons	1981963
	04/06/2018			04/16/2018 11:27	Dale L. Simmons	1981964
	04/06/2018			04/16/2018 11:37	Dale L. Simmons	1981965
SM 5310 B-00	04/06/2018			04/13/2018 00:14	Megan Treadwell	1981966
	04/06/2018			04/13/2018 00:51	Megan Treadwell	1981967
	04/06/2018			04/13/2018 01:03	Megan Treadwell	1981968

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-00	04/06/2018			04/13/2018 01:18	Megan Treadwell	1981969