Chemical Analysis Report

CEN-DIST-2017-06-02-01

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

Event Description: **Gleason / Chain / Marie**
Request ID: **RQ-2017-05-29-55**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
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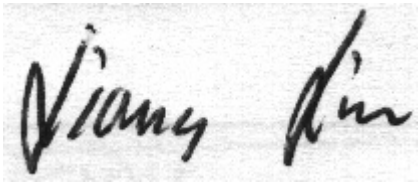
Certified by: Liang Lin, Environmental Administrator

Date Certified: 26-JUN-2017 16:39



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: Three Island Lake @ Center of South Lobe **Collection Date/Time: 06/01/2017 10:40**

Field ID: G2CE0085 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1903208	EPA 180.1 Rev. 2.0	Turbidity	4.9		NTU	P326174	
	EPA 300.0 Rev. 2.1	Chloride	44	A	mg Cl/L	P326859	
		Sulfate	15	A	mg SO4/L	P326861	
	SM 2120 B	Color (true)	30		PCU	P326234	
	SM 2320 B-97	Total Alkalinity	1.9	I	mg CaCO3/L	P326416	
	SM 2540 C-97	TDS	140		mg/L	P326693	
	SM 2540 D-97	TSS	6	I	mg/L	P326664	
	SM 4500 F-C-97	Fluoride	0.052	I	mg F/L	P326417	
1903210	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P326188	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P326256	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P326263	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P326259	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P326192	
1903212	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P326177	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries 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 Gleason @ Center **Collection Date/Time: 06/01/2017 11:30**

Field ID: G2CE0114 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1903209	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P326174	
	EPA 300.0 Rev. 2.1	Chloride	33		mg Cl/L	P326859	
		Sulfate	2.7		mg SO4/L	P326861	
	SM 2120 B	Color (true)	26	A	PCU	P326235	
	SM 2320 B-97	Total Alkalinity	62		mg CaCO3/L	P326416	
	SM 2540 C-97	TDS	163		mg/L	P326693	
	SM 2540 D-97	TSS	3	I	mg/L	P326664	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P326417	
1903211	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P326188	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P326256	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P326263	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P326259	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P326192	
1903213	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P326177	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries 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 Marie @ Center **Collection Date/Time: 06/01/2017 12:10**

Field ID: G2CE0084 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1903214	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P326174	

Field ID: G2CE0084 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1903214	EPA 300.0 Rev. 2.1	Chloride	74		mg Cl/L	P326860	
		Sulfate	6.3		mg SO4/L	P326862	
	SM 2120 B	Color (true)	27		PCU	P326235	
	SM 2320 B-97	Total Alkalinity	46		mg CaCO3/L	P326591	
	SM 2540 C-97	TDS	212		mg/L	P326693	
	SM 2540 D-97	TSS	3	I	mg/L	P326664	
	SM 4500 F-C-97	Fluoride	0.13		mg F/L	P326595	
1903215	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P326188	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P326256	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P326264	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P326259	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P326192	
1903216	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P326177	

Ref. Method and Comment:
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: P326174

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326859

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326860

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326861

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326862

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P326188

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P326256

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326263

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326264

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P326259

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P326177

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

Reference Method: SM 2120 B
Batch ID: P326234

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P326235

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P326416

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

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P326591

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

Reference Method: SM 2540 C-97
Batch ID: P326693

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P326664

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P326417

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P326595

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P326192

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: P326859

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326860

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326861

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326861

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326862

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P326188

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P326256

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326263

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326264

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P326259

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P326177

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.7		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P326416

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P326591

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P326417

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

Reference Method: SM 4500 F-C-97
Batch ID: P326595

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.2		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P326192

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: P326860

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1903324	Chloride	106		P	90 - 110
1903963	Chloride	97.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326861

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1903208	Sulfate	104		P	90 - 110
1903209	Sulfate	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326862

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1903324	Sulfate	104		P	90 - 110
1903963	Sulfate	95.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P326188

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1903210	Ammonia-N	101	103	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P326256

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1903211	Kjeldahl Nitrogen	92.0	94.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326263

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1903084	NO2NO3-N	107	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326264

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1903215	NO2NO3-N	103	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P326259

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1903210	Total-P	101	94.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P326177

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1903194	O-Phosphate-P	95.0	95.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P326417

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1903067	Fluoride	100	99.3	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P326595

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1904081	Fluoride	99.4	99.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P326192

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1902870	Organic Carbon	98.1	98.0	P/P	85 - 115

Quality Assurance Report
Precision

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P326174

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1903199	Turbidity	8.06	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326859

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1903208	Chloride	0.636	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326860

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1903324	Chloride	2.98	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326861

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1903208	Sulfate	0.343	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326862

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1903324	Sulfate	3.34	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P326188

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1903210	Ammonia-N	2.43	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P326256

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1903211	Kjeldahl Nitrogen	1.22	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326263

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1903084	NO2NO3-N	2.36	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326264

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1903215	NO2NO3-N	0.484	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P326259

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1903210	Total-P	6.44	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P326177

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1903194	O-Phosphate-P	0.630	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P326234

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1903082	Color (true)	1.15	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P326235

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1903209	Color (true)	4.02	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P326416

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1903067	Total Alkalinity	0.320	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P326591

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1904081	Total Alkalinity	0.0261	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P326693

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1903082	TDS	4.14	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-97
Batch ID: P326417

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1903067	Fluoride	0.995	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P326595

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1904081	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P326192

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1902870	Organic Carbon	0.0270	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: A76836
Included Lab Sample IDs: 1903208, 1903209, 1903214

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A76839
Included Lab Sample IDs: 1903212, 1903213, 1903216

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A76841
Included Lab Sample IDs: 1903210, 1903211, 1903215

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

Reference Method: SM 5310 B-00
Run ID: A76846
Included Lab Sample IDs: 1903210, 1903211, 1903215

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 2120 B
Run ID: A76866
Included Lab Sample IDs: 1903208, 1903209, 1903214

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	102	P/P	85 - 115
Color (true)	99.1	103	P/P	85 - 115

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A76880
Included Lab Sample IDs: 1903210, 1903211, 1903215

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	100	P/P	90 - 110
NO2NO3-N	100	101	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A76939
Included Lab Sample IDs: 1903208, 1903209

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	100	P/P	90 - 110
Total Alkalinity	100	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A76939
Included Lab Sample IDs: 1903208, 1903209

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	101	100	P/P	90 - 110
Fluoride	99.0	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A76940
Included Lab Sample IDs: 1903210, 1903211, 1903215

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.0	96.4	P/P	90 - 110
Kjeldahl Nitrogen	99.4	99.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A76950
Included Lab Sample IDs: 1903210, 1903211, 1903215

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.0	98.5	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A77001
Included Lab Sample IDs: 1903214

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	104	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-97
Run ID: A77001
Included Lab Sample IDs: 1903214

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.1	99.0	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A77076
Included Lab Sample IDs: 1903208, 1903209, 1903214

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	98.3	P/P	90 - 110
Chloride	97.8	97.5	P/P	90 - 110
Sulfate	103	103	P/P	90 - 110
Sulfate	108	105	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					8.06	
EPA 300.0 Rev. 2.1	Chloride	104				0.636	
	Chloride	99.2	106	97.9		2.98	
	Sulfate	103	104	101		0.343	
	Sulfate	99.9	104	95.3		3.34	
EPA 350.1 Rev. 2.0	Ammonia-N	103	101	103			2.43
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	92.0	94.3			1.22
EPA 353.2 Rev. 2.0	NO2NO3-N	102	107	104			2.36
	NO2NO3-N	99.5	103	104			0.484
EPA 365.1 Rev. 2.0	Total-P	102	101	94.7			6.44
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.7	95.0	95.6			0.630
SM 2120 B	Color (true)					1.15	
	Color (true)					4.02	
SM 2320 B-97	Total Alkalinity	103				0.320	
	Total Alkalinity	102				0.0261	
SM 2540 C-97	TDS					4.14	
SM 4500 F-C-97	Fluoride	97.0	100	99.3			0.995
	Fluoride	98.2	99.4	99.4			0.0
SM 5310 B-00	Organic Carbon	96.2	98.1	98.0			0.0270

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1903208, 1903209, 1903214
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1903208, 1903209, 1903214
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1903208, 1903209, 1903214

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1903210, 1903211, 1903215
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1903210, 1903211, 1903215
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1903210, 1903211, 1903215
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1903210, 1903211, 1903215
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1903212, 1903213, 1903216
SM 2120 B / E31780	True Color measured at 450 nm	1903208, 1903209, 1903214
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1903208, 1903209, 1903214
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1903208, 1903209, 1903214
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1903208, 1903209, 1903214
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1903208, 1903209, 1903214
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1903210, 1903211, 1903215

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	06/02/2017			06/02/2017 14:58	Sima Feizi	1903208, 1903209, 1903214
EPA 300.0 Rev. 2.1	06/02/2017			06/14/2017	Julia Storbeck	1903208, 1903209
	06/02/2017			06/15/2017	Julia Storbeck	1903214
EPA 350.1 Rev. 2.0	06/02/2017			06/02/2017	Julie Michelle Frank	1903210, 1903211, 1903215
EPA 351.2 Rev. 2.0	06/02/2017	06/06/2017	Adrian Shelby	06/08/2017	Joseph Suarez	1903210, 1903211, 1903215
EPA 353.2 Rev. 2.0	06/02/2017			06/06/2017	Beverly Y. Sanders	1903210, 1903211, 1903215
EPA 365.1 Rev. 2.0	06/02/2017	06/06/2017	Adrian Shelby	06/08/2017	Lipi Saha	1903210, 1903211, 1903215
EPA 365.1 Rev. 2.0 dissolved	06/02/2017			06/02/2017 14:35	Anthony C. Onicha	1903212, 1903213
	06/02/2017			06/02/2017 14:36	Anthony C. Onicha	1903216
SM 2120 B	06/02/2017			06/02/2017 15:19	Tanya Welborn	1903208
	06/02/2017			06/02/2017 15:23	Tanya Welborn	1903209
	06/02/2017			06/02/2017 15:24	Tanya Welborn	1903214
SM 2320 B-97	06/02/2017			06/07/2017	Dale L. Simmons	1903208
	06/02/2017			06/08/2017	Dale L. Simmons	1903209
	06/02/2017			06/09/2017	Dale L. Simmons	1903214
SM 2540 C-97	06/02/2017			06/07/2017	Yijie Li	1903208, 1903209, 1903214
SM 2540 D-97	06/02/2017			06/07/2017	Yijie Li	1903208, 1903209, 1903214
SM 4500 F-C-97	06/02/2017			06/07/2017	Dale L. Simmons	1903208
	06/02/2017			06/08/2017	Dale L. Simmons	1903209
	06/02/2017			06/09/2017	Dale L. Simmons	1903214
SM 5310 B-00	06/02/2017			06/03/2017	Julie Michelle Frank	1903210, 1903211, 1903215