Chemical Analysis Report

NW-DIST-2018-07-24-02

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

Event Description: **PACE RUN**
Request ID: **RQ-2018-07-23-20**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 208
Pensacola, FL 32502-5794
Attn: Cheryl Bunch

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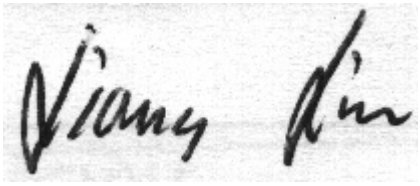
Certified by: Liang Lin, Environmental Administrator

Date Certified: 10-AUG-2018 09:49



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: Direct Runoff-Graveyard Branch @ Tradewinds Dr. **Collection Date/Time: 07/23/2018 11:10**

Field ID: G4NW0176 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2009893	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P349081	
	EPA 300.0 Rev. 2.1	Chloride	8.8		mg Cl/L	P349262	
		Sulfate	5.5		mg SO4/L	P349266	
	SM 2120 B	Color (true)	18		PCU	P349052	
	SM 2320 B-97	Total Alkalinity	38		mg CaCO3/L	P349243	
	SM 2540 C-97	TDS	61		mg/L	P349346	
	SM 2540 D-97	TSS	3	I	mg/L	P349340	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P349245	
2009897	EPA 350.1 Rev. 2.0	Ammonia-N	0.031		mg N/L	P349215	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	I	mg N/L	P349468	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.32		mg N/L	P349329	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P349206	
	SM 5310 B-00	Organic Carbon	1.9		mg C/L	P349222	
2009901	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P349056	

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: Direct Runoff-Graveyard Branch @ Tradewinds Dr. **Collection Date/Time: 07/23/2018 11:20**

Field ID: G4NW0176_DUP Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2009894	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P349081	
	EPA 300.0 Rev. 2.1	Chloride	8.7		mg Cl/L	P349262	
		Sulfate	5.5		mg SO4/L	P349266	
	SM 2120 B	Color (true)	18		PCU	P349052	
	SM 2320 B-97	Total Alkalinity	38		mg CaCO3/L	P349243	
	SM 2540 C-97	TDS	65		mg/L	P349346	
	SM 2540 D-97	TSS	3	I	mg/L	P349340	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P349245	
2009898	EPA 350.1 Rev. 2.0	Ammonia-N	0.031		mg N/L	P349215	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.14	I	mg N/L	P349468	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.32		mg N/L	P349329	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P349206	
	SM 5310 B-00	Organic Carbon	1.9		mg C/L	P349222	
2009902	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P349056	

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: Direct Runoff-Graveyard Branch @ Tradewinds Dr. **Collection Date/Time: 07/23/2018 11:30**

Field ID: BLANK_07232018 Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2009905	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P349082	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P349262	
		Sulfate	0.20	U	mg SO4/L	P349266	
	SM 2120 B	Color (true)	2.5	U	PCU	P349053	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P349243	
	SM 2540 C-97	TDS	15	U	mg/L	P349345	
	SM 2540 D-97	TSS	2	U	mg/L	P349339	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P349245	
2009906	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P349215	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P349185	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P349329	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P349206	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P349222	
2009907	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P349057	

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: Sevenmile Creek upstream of AlderBrook Blvd. Collection Date/Time: 07/23/2018 11:55

Field ID: G4NW0345 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2009895	EPA 180.1 Rev. 2.0	Turbidity	0.75		NTU	P349081	
	EPA 300.0 Rev. 2.1	Chloride	6.9		mg Cl/L	P349262	
		Sulfate	0.99		mg SO4/L	P349266	
	SM 2120 B	Color (true)	6.8		PCU	P349053	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P349243	
	SM 2540 C-97	TDS	44		mg/L	P349346	
	SM 2540 D-97	TSS	3	I	mg/L	P349340	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P349245	
2009899	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P349215	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.15	I	mg N/L	P349185	
	EPA 353.2 Rev. 2.0	NO2NO3-N	2.9		mg N/L	P349329	
	EPA 365.1 Rev. 2.0	Total-P	0.002	I	mg P/L	P349206	
	SM 5310 B-00	Organic Carbon	0.96	I	mg C/L	P349222	
2009903	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P349057	

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: Dridglers Creek above Parkview Street **Collection Date/Time: 07/23/2018 12:20**

Field ID: G4NW0168 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2009896	EPA 180.1 Rev. 2.0	Turbidity	2.6	A	NTU	P349082	
	EPA 300.0 Rev. 2.1	Chloride	7.6		mg Cl/L	P349262	
		Sulfate	2.2		mg SO4/L	P349266	
	SM 2120 B	Color (true)	110		PCU	P349053	
	SM 2320 B-97	Total Alkalinity	14		mg CaCO3/L	P349243	
	SM 2540 C-97	TDS	47		mg/L	P349346	
	SM 2540 D-97	TSS	2	I	mg/L	P349340	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P349245	
2009900	EPA 350.1 Rev. 2.0	Ammonia-N	0.059		mg N/L	P349215	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.51		mg N/L	P349185	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.23		mg N/L	P349329	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P349206	
	SM 5310 B-00	Organic Carbon	6.7		mg C/L	P349222	
2009904	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P349057	

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: P349081

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P349082

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349262

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349266

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349215

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349185

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349468

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349329

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349206

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349056

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349057

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

Reference Method: SM 2120 B
Batch ID: P349052

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P349053

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P349243

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

Reference Method: SM 2540 C-97
Batch ID: P349345

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P349346

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P349339

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P349340

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P349245

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P349222

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: P349262

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349266

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349215

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: P349185

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	107		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349468

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349329

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349206

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349056

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349057

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2120 B
Batch ID: P349052

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.3		P	85 - 115

Reference Method: SM 2120 B
Batch ID: P349053

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.3		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P349243

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P349245

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

Reference Method: SM 5310 B-00
Batch ID: P349222

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.6		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349262

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009889	Chloride	101		P	90 - 110
2010003	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349266

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009889	Sulfate	98.9		P	90 - 110
2010003	Sulfate	104		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349215

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009897	Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349185

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009899	Kjeldahl Nitrogen	101	99.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349468

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011655	Kjeldahl Nitrogen	96.2	98.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349329

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009946	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349206

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009897	Total-P	95.8	98.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349056

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009820	O-Phosphate-P	100	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349057

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009903	O-Phosphate-P	101	102	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P349245

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009796	Fluoride	95.2	95.2	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P349222

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009830	Organic Carbon	92.6	93.9	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P349081

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009818	Turbidity	2.34	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P349082

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009896	Turbidity	1.56	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349262

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009889	Chloride	2.94	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349266

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009889	Sulfate	3.75	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349215

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009897	Ammonia-N	0.660	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349185

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009899	Kjeldahl Nitrogen	0.871	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349468

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011655	Kjeldahl Nitrogen	1.93	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349329

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009946	NO2NO3-N	0.278	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349206

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009897	Total-P	2.88	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349056

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009820	O-Phosphate-P	0.992	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349057

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009903	O-Phosphate-P	0.691	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P349052

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009822	Color (true)	0.924	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P349053

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009929	Color (true)	2.08	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P349243

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009796	Total Alkalinity	0.0271	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P349345

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009796	TDS	7.32	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P349346

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2010002	TDS	3.75	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-97
Batch ID: P349245

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009796	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P349222

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009830	Organic Carbon	1.30	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 300.0 Rev. 2.1
Run ID: A85417
Included Lab Sample IDs: 2009893, 2009894, 2009895, 2009896, 2009905

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	103	P/P	90 - 110
Sulfate	104	105	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A85440
Included Lab Sample IDs: 2009893, 2009894, 2009895, 2009896, 2009905

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	102	P/P	90 - 115
Color (true)	102	103	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A85441
Included Lab Sample IDs: 2009901, 2009902, 2009903, 2009904, 2009907

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.1	97.6	P/P	90 - 110
O-Phosphate-P	98.9	98.3	P/P	90 - 110
O-Phosphate-P	99.6	98.9	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A85446
Included Lab Sample IDs: 2009893, 2009894, 2009895, 2009896, 2009905

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.0	99.0	P/P	95 - 105
Turbidity	98.5	98.0	P/P	95 - 105

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A85497
Included Lab Sample IDs: 2009897, 2009898, 2009899, 2009900, 2009906

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: A85504
Included Lab Sample IDs: 2009897, 2009898, 2009899, 2009900, 2009906

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.0	97.0	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A85509
Included Lab Sample IDs: 2009893, 2009894, 2009895, 2009896, 2009905

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	102	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-97
Run ID: A85509
Included Lab Sample IDs: 2009893, 2009894, 2009895, 2009896, 2009905

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A85538
Included Lab Sample IDs: 2009897, 2009898, 2009899, 2009900, 2009906

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A85543
Included Lab Sample IDs: 2009899, 2009900, 2009906

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	97.3	P/P	90 - 110
Kjeldahl Nitrogen	97.3	96.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A85553
Included Lab Sample IDs: 2009897, 2009898, 2009899, 2009900, 2009906

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A85631
Included Lab Sample IDs: 2009897, 2009898

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.6	100	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					2.34	
	Turbidity					1.56	
EPA 300.0 Rev. 2.1	Chloride	104	101	103		2.94	
	Sulfate	102	98.9	104		3.75	
EPA 350.1 Rev. 2.0	Ammonia-N	103	102	103			0.660
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	101	99.8			0.871
	Kjeldahl Nitrogen	99.8	96.2	98.8			1.93
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	102	102			0.278
EPA 365.1 Rev. 2.0	Total-P	98.8	95.8	98.7			2.88
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	100	101			0.992
	O-Phosphate-P	101	101	102			0.691
SM 2120 B	Color (true)	98.3				0.924	
	Color (true)	98.3				2.08	
SM 2320 B-97	Total Alkalinity	103				0.0271	
SM 2540 C-97	TDS					7.32	
	TDS					3.75	
SM 4500 F-C-97	Fluoride	96.4	95.2	95.2			0.0
SM 5310 B-00	Organic Carbon	93.6	92.6	93.9			1.30

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2009893, 2009894, 2009895, 2009896, 2009905
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2009893, 2009894, 2009895, 2009896, 2009905
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2009893, 2009894, 2009895, 2009896, 2009905
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2009897, 2009898, 2009899, 2009900, 2009906
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2009897, 2009898, 2009899, 2009900, 2009906
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2009897, 2009898, 2009899, 2009900, 2009906
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2009897, 2009898, 2009899, 2009900, 2009906
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2009901, 2009902, 2009903, 2009904, 2009907
SM 2120 B / E31780	True Color measured at 450 nm	2009893, 2009894, 2009895, 2009896, 2009905
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2009893, 2009894, 2009895, 2009896, 2009905
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2009893, 2009894, 2009895, 2009896, 2009905
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2009893, 2009894, 2009895, 2009896, 2009905
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2009893, 2009894, 2009895, 2009896, 2009905
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2009897, 2009898, 2009899, 2009900, 2009906

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	07/24/2018			07/24/2018 15:17	Blanca Fach	2009893, 2009894, 2009895, 2009896, 2009905
EPA 300.0 Rev. 2.1	07/24/2018			07/26/2018 08:43	Lipi Saha	2009893
	07/24/2018			07/26/2018 08:55	Lipi Saha	2009894
	07/24/2018			07/26/2018 09:07	Lipi Saha	2009895
	07/24/2018			07/26/2018 09:19	Lipi Saha	2009896
	07/24/2018			07/26/2018 09:31	Lipi Saha	2009905
EPA 350.1 Rev. 2.0	07/24/2018			07/26/2018 11:47	Ping Hua	2009897
	07/24/2018			07/26/2018 11:52	Ping Hua	2009898
	07/24/2018			07/26/2018 11:55	Ping Hua	2009899
	07/24/2018			07/26/2018 11:56	Ping Hua	2009900
	07/24/2018			07/26/2018 11:58	Ping Hua	2009906
EPA 351.2 Rev. 2.0	07/24/2018	07/26/2018 11:30	Adrian Shelby	07/27/2018 16:01	Joseph Suarez	2009899
	07/24/2018	07/26/2018 11:30	Adrian Shelby	07/27/2018 16:09	Joseph Suarez	2009900
	07/24/2018	07/26/2018 11:30	Adrian Shelby	07/27/2018 16:10	Joseph Suarez	2009906
	07/24/2018	08/01/2018 10:30	Adrian Shelby	08/02/2018 08:55	Joseph Suarez	2009897
	07/24/2018	08/01/2018 10:30	Adrian Shelby	08/02/2018 08:58	Joseph Suarez	2009898
EPA 353.2 Rev. 2.0	07/24/2018			07/27/2018 12:05	Lauren Bottorf	2009906
	07/24/2018			07/27/2018 12:07	Lauren Bottorf	2009897
	07/24/2018			07/27/2018 12:08	Lauren Bottorf	2009898
	07/24/2018			07/27/2018 12:12	Lauren Bottorf	2009900
	07/24/2018			07/27/2018 12:14	Lauren Bottorf	2009899
EPA 365.1 Rev. 2.0	07/24/2018	07/26/2018 12:35	Sima Feizi	07/30/2018 10:32	Beverly Y. Sanders	2009897
	07/24/2018	07/26/2018 12:35	Sima Feizi	07/30/2018 10:33	Beverly Y. Sanders	2009898
	07/24/2018	07/26/2018 12:35	Sima Feizi	07/30/2018 10:40	Beverly Y. Sanders	2009906
	07/24/2018	07/26/2018 12:35	Sima Feizi	07/30/2018 10:42	Beverly Y. Sanders	2009899
	07/24/2018	07/26/2018 12:35	Sima Feizi	07/30/2018 10:43	Beverly Y. Sanders	2009900
EPA 365.1 Rev. 2.0 dissolved	07/24/2018			07/24/2018 16:10	Julia Storbeck	2009903
	07/24/2018			07/24/2018 16:30	Julia Storbeck	2009907
	07/24/2018			07/24/2018 16:32	Julia Storbeck	2009901
	07/24/2018			07/24/2018 16:33	Julia Storbeck	2009902
	07/24/2018			07/24/2018 16:55	Julia Storbeck	2009904
SM 2120 B	07/24/2018			07/24/2018 16:07	Tanya Welborn	2009893
	07/24/2018			07/24/2018 16:08	Tanya Welborn	2009894
	07/24/2018			07/24/2018 16:12	Tanya Welborn	2009895
	07/24/2018			07/24/2018 16:13	Tanya Welborn	2009896, 2009905
SM 2320 B-97	07/24/2018			07/25/2018 23:21	Dale L. Simmons	2009893
	07/24/2018			07/25/2018 23:31	Dale L. Simmons	2009894
	07/24/2018			07/25/2018 23:41	Dale L. Simmons	2009895
	07/24/2018			07/25/2018 23:52	Dale L. Simmons	2009896

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-97	07/24/2018			07/26/2018 00:03	Dale L. Simmons	2009905
SM 2540 C-97	07/24/2018			07/26/2018 15:35	Yijie Li	2009893, 2009894, 2009895, 2009896, 2009905
SM 2540 D-97	07/24/2018			07/26/2018 15:35	Yijie Li	2009893, 2009894, 2009895, 2009896, 2009905
SM 4500 F-C-97	07/24/2018			07/25/2018 23:21	Dale L. Simmons	2009893
	07/24/2018			07/25/2018 23:31	Dale L. Simmons	2009894
	07/24/2018			07/25/2018 23:41	Dale L. Simmons	2009895
	07/24/2018			07/25/2018 23:52	Dale L. Simmons	2009896
	07/24/2018			07/26/2018 00:03	Dale L. Simmons	2009905
SM 5310 B-00	07/24/2018			07/26/2018 01:09	Megan Treadwell	2009897
	07/24/2018			07/26/2018 01:22	Megan Treadwell	2009898
	07/24/2018			07/26/2018 01:35	Megan Treadwell	2009899
	07/24/2018			07/26/2018 01:48	Megan Treadwell	2009900
	07/24/2018			07/26/2018 02:01	Megan Treadwell	2009906