Chemical Analysis Report

SO-DIST-2016-04-01-01

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

Event Description: **SMP: Highlands Lakes**
Request ID: **RQ-2016-03-14-17**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901
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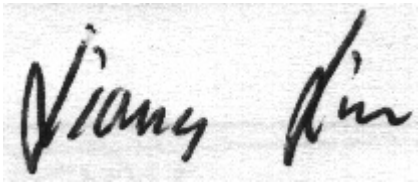
Certified by: Liang Lin, Environmental Administrator

Date Certified: 20-APR-2016 15:33



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 Sirena @ Middle **Collection Date/Time: 03/31/2016 11:12**

Field ID: G4HL032016-21 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1785322	EPA 180.1 Rev. 2.0	Turbidity	0.80		NTU	P301430	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P301645	
		Sulfate	25		mg SO4/L	P301647	
	SM 2120 B	Color (true)	5.8	I	PCU	P301417	
	SM 2320 B-97	Total Alkalinity	9.2		mg CaCO3/L	P301744	
	SM 2540 C-97	TDS	96		mg/L	P302075	
	SM 2540 D-97	TSS	2	U	mg/L	P302082	
	SM 4500 F-C-97	Fluoride	0.070	I	mg F/L	P301746	
1785327	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P301772	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.45		mg N/L	P301986	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P301612	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P301876	
	SM 5310 B-00	Organic Carbon	5.8		mg C/L	P301820	
1785332	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P301411	

Ref. Method and Comment:
SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 146 umhos/cm.
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.
SM 4500 F-C-97: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Lake Sirena @ North Side **Collection Date/Time: 03/31/2016 11:20**

Field ID: G4HL032016-22 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1785323	EPA 180.1 Rev. 2.0	Turbidity	0.85		NTU	P301430	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P301645	
		Sulfate	25		mg SO4/L	P301647	
	SM 2120 B	Color (true)	5.6	I	PCU	P301417	
	SM 2320 B-97	Total Alkalinity	9.2		mg CaCO3/L	P301744	
	SM 2540 C-97	TDS	89		mg/L	P302075	
	SM 2540 D-97	TSS	2	U	mg/L	P302082	
	SM 4500 F-C-97	Fluoride	0.068	I	mg F/L	P301746	
1785328	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P301772	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.43		mg N/L	P302055	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P301612	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P301876	
	SM 5310 B-00	Organic Carbon	5.6		mg C/L	P301820	
1785333	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P301411	

Ref. Method and Comment:
SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 146 umhos/cm.
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.
SM 4500 F-C-97: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Lake Sirena @ West Side **Collection Date/Time: 03/31/2016 11:30**

Field ID: G4HL032016-23 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes

Field ID: G4HL032016-23 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1785324	EPA 180.1 Rev. 2.0	Turbidity	0.90		NTU	P301430	
	EPA 300.0 Rev. 2.1	Chloride	18	A	mg Cl/L	P301645	
		Sulfate	25	A	mg SO4/L	P301647	
	SM 2120 B	Color (true)	6.0		PCU	P301417	
	SM 2320 B-97	Total Alkalinity	9.2		mg CaCO3/L	P301744	
	SM 2540 C-97	TDS	88		mg/L	P302075	
	SM 2540 D-97	TSS	2	U	mg/L	P302082	
	SM 4500 F-C-97	Fluoride	0.067	I	mg F/L	P301746	
1785329	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P301772	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.45		mg N/L	P302055	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P301612	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P301876	
	SM 5310 B-00	Organic Carbon	5.6		mg C/L	P301820	
1785334	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P301411	

Ref. Method and Comment:
SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 146 umhos/cm.
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.
SM 4500 F-C-97: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Lake Sirena @ East Side **Collection Date/Time: 03/31/2016 10:55**

Field ID: G4HL032016-25 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1785325	EPA 180.1 Rev. 2.0	Turbidity	0.80		NTU	P301430	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P301645	
		Sulfate	25		mg SO4/L	P301647	
	SM 2120 B	Color (true)	6.0		PCU	P301417	
	SM 2320 B-97	Total Alkalinity	9.3		mg CaCO3/L	P301744	
	SM 2540 C-97	TDS	85		mg/L	P302075	
	SM 2540 D-97	TSS	3	I	mg/L	P302082	
	SM 4500 F-C-97	Fluoride	0.066	I	mg F/L	P301746	
1785330	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P301772	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.46		mg N/L	P302055	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P301612	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P301876	
	SM 5310 B-00	Organic Carbon	5.7		mg C/L	P301820	
1785335	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P301411	

Ref. Method and Comment:
SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 146 umhos/cm.
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.
SM 4500 F-C-97: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Lake Sirena @ South Side **Collection Date/Time: 03/31/2016 11:03**

Field ID: G4HL032016-24 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1785326	EPA 180.1 Rev. 2.0	Turbidity	0.85		NTU	P301431	

Field ID: G4HL032016-24 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1785326	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P301645	
		Sulfate	25		mg SO4/L	P301647	
	SM 2120 B	Color (true)	5.8	I	PCU	P301417	
	SM 2320 B-97	Total Alkalinity	9.1		mg CaCO3/L	P301744	
	SM 2540 C-97	TDS	93		mg/L	P302075	
	SM 2540 D-97	TSS	2	I	mg/L	P302082	
	SM 4500 F-C-97	Fluoride	0.066	I	mg F/L	P301746	
1785331	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P301772	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.42		mg N/L	P302055	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P301612	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P301877	
	SM 5310 B-00	Organic Carbon	5.7		mg C/L	P301820	
1785336	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P301411	

Ref. Method and Comment:
SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 146 umhos/cm.
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.
SM 4500 F-C-97: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P301430

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P301431

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P301645

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P301647

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P301772

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301986

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P302055

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P301612

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301876

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301877

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301411

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

Reference Method: SM 2120 B
Batch ID: P301417

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P301744

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

Reference Method: SM 2540 C-97
Batch ID: P302075

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P302082

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P301746

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P301820

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: P301645

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P301647

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P301772

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: P301986

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P302055

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P301612

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: P301612

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301876

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301877

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301411

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

Reference Method: SM 2320 B-97
Batch ID: P301744

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P301746

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.4		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P301820

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.6		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P301645

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1785324	Chloride	99.6		P	90 - 110
1785325	Chloride	100		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P301647

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1785324	Sulfate	97.9		P	90 - 110
1785325	Sulfate	98.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P301772

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1785347	Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301986

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1785099	Kjeldahl Nitrogen	94.9	94.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P302055

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1785328	Kjeldahl Nitrogen	96.4	96.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P301612

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1785305	NO2NO3-N	96.0	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301876

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1785288	Total-P	103	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301877

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1785331	Total-P	100	99.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301411

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1785308	O-Phosphate-P	99.7	101	P/P	90 - 110

Reference Method: SM 5310 B-00
Batch ID: P301820

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1784989	Organic Carbon	94.2	93.8	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P301430

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1785286	Turbidity	12.7	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P301431

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1785337	Turbidity	5.10	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P301645

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1785324	Chloride	0.00105	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P301647

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1785324	Sulfate	0.122	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P301772

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1785347	Ammonia-N	0.586	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301986

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1785099	Kjeldahl Nitrogen	0.679	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P302055

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1785328	Kjeldahl Nitrogen	0.333	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P301612

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1785305	NO2NO3-N	2.06	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301876

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1785288	Total-P	2.83	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301877

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1785331	Total-P	0.791	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301411

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1785308	O-Phosphate-P	0.998	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P301417

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1785322	Color (true)	18.5	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P301744

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1785896	Total Alkalinity	0.391	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P302075

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1785301	TDS	1.40	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P301746

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1785896	Fluoride	0.477	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P301820

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1784989	Organic Carbon	0.279	Spike	P	0 - 20

Quality Assurance Report
Precision

* 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: A68583
Included Lab Sample IDs: 1785332, 1785333, 1785334, 1785335, 1785336

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.4	99.4	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A68584
Included Lab Sample IDs: 1785322, 1785323, 1785324, 1785325, 1785326

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A68593
Included Lab Sample IDs: 1785322, 1785323, 1785324, 1785325, 1785326

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.5	P/P	95 - 105
Turbidity	99.5	100	P/P	95 - 105

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A68637
Included Lab Sample IDs: 1785322, 1785323, 1785324, 1785325, 1785326

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	102	P/P	90 - 110
Chloride	102	102	P/P	90 - 110
Sulfate	101	99.9	P/P	90 - 110
Sulfate	99.5	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A68658
Included Lab Sample IDs: 1785327, 1785328, 1785329, 1785330, 1785331

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	99.5	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A68698
Included Lab Sample IDs: 1785322, 1785323, 1785324, 1785325, 1785326

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	103	P/P	90 - 110
Total Alkalinity	103	101	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-97
Run ID: A68698
Included Lab Sample IDs: 1785322, 1785323, 1785324, 1785325, 1785326

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	98.5	P/P	90 - 110
Fluoride	98.5	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A68711
Included Lab Sample IDs: 1785327, 1785328, 1785329, 1785330, 1785331

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

Reference Method: SM 5310 B-00
Run ID: A68728
Included Lab Sample IDs: 1785327, 1785328, 1785329, 1785330, 1785331

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	92.0	92.6	P/P	90 - 110
Organic Carbon	93.4	92.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A68796
Included Lab Sample IDs: 1785327, 1785328, 1785329, 1785330, 1785331

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.5	98.2	P/P	90 - 110
Total-P	98.8	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A68820
Included Lab Sample IDs: 1785327

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	97.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A68850
Included Lab Sample IDs: 1785328, 1785329, 1785330, 1785331

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	102	P/P	90 - 110
Kjeldahl Nitrogen	102	101	P/P	90 - 110
Kjeldahl Nitrogen	105	102	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					12.7	
	Turbidity					5.10	
EPA 300.0 Rev. 2.1	Chloride	102	99.6	100		0.0010	
	Sulfate	100	97.9	98.4		0.122	
EPA 350.1 Rev. 2.0	Ammonia-N	104	102	103			0.586
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.9	94.9	94.0			0.679
	Kjeldahl Nitrogen	98.5	96.4	96.8			0.333
EPA 353.2 Rev. 2.0	NO2NO3-N	100	96.0	98.0			2.06
EPA 365.1 Rev. 2.0	Total-P	102	103	99.8			2.83
	Total-P	99.0	100	99.4			0.791
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	99.7	101			0.998
SM 2120 B	Color (true)					18.5	
SM 2320 B-97	Total Alkalinity	103				0.391	
SM 2540 C-97	TDS					1.40	
SM 4500 F-C-97	Fluoride	97.4					0.477
SM 5310 B-00	Organic Carbon	94.6	94.2	93.8			0.279

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1785322, 1785323, 1785324, 1785325, 1785326
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1785322, 1785323, 1785324, 1785325, 1785326
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1785322, 1785323, 1785324, 1785325, 1785326
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1785327, 1785328, 1785329, 1785330, 1785331
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1785327, 1785328, 1785329, 1785330, 1785331
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1785327, 1785328, 1785329, 1785330, 1785331
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1785327, 1785328, 1785329, 1785330, 1785331
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1785332, 1785333, 1785334, 1785335, 1785336
SM 2120 B / E31780	True Color measured at 450 nm	1785322, 1785323, 1785324, 1785325, 1785326
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1785322, 1785323, 1785324, 1785325, 1785326
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1785322, 1785323, 1785324, 1785325, 1785326
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1785322, 1785323, 1785324, 1785325, 1785326
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1785322, 1785323, 1785324, 1785325, 1785326
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1785327, 1785328, 1785329, 1785330, 1785331

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	04/01/2016			04/01/2016 16:54	Sima Feizi	1785322, 1785323, 1785324, 1785325, 1785326
EPA 300.0 Rev. 2.1	04/01/2016			04/05/2016	Julia Storbeck	1785322, 1785323, 1785324, 1785325, 1785326
EPA 350.1 Rev. 2.0	04/01/2016			04/06/2016	Diana M. Turner	1785327, 1785328, 1785329, 1785330, 1785331
EPA 351.2 Rev. 2.0	04/01/2016	04/11/2016	Sofia Elnemr	04/12/2016	Christopher Armour	1785327
	04/01/2016	04/12/2016	Sofia Elnemr	04/13/2016	Christopher Armour	1785328, 1785329, 1785330, 1785331
EPA 353.2 Rev. 2.0	04/01/2016			04/05/2016	Peter D. Kaus	1785327, 1785328, 1785329, 1785330, 1785331
EPA 365.1 Rev. 2.0	04/01/2016	04/08/2016	Christopher Armour	04/11/2016	Lipi Saha	1785327, 1785328, 1785329, 1785330, 1785331
EPA 365.1 Rev. 2.0 dissolved	04/01/2016			04/01/2016 12:45	Julia Storbeck	1785332
	04/01/2016			04/01/2016 12:46	Julia Storbeck	1785333, 1785334
	04/01/2016			04/01/2016 12:47	Julia Storbeck	1785335
	04/01/2016			04/01/2016 12:48	Julia Storbeck	1785336
SM 2120 B	04/01/2016			04/01/2016 14:59	Rochelle Y Jackson	1785322
	04/01/2016			04/01/2016 15:00	Rochelle Y Jackson	1785323, 1785324
	04/01/2016			04/01/2016 15:01	Rochelle Y Jackson	1785325
	04/01/2016			04/01/2016 15:02	Rochelle Y Jackson	1785326
SM 2320 B-97	04/01/2016			04/07/2016	Dale L. Simmons	1785322, 1785323, 1785324, 1785325, 1785326
SM 2540 C-97	04/01/2016			04/05/2016	Yijie Li	1785322, 1785323, 1785324, 1785325, 1785326
SM 2540 D-97	04/01/2016			04/05/2016	Yijie Li	1785322, 1785323, 1785324, 1785325, 1785326
SM 4500 F-C-97	04/01/2016			04/07/2016	Dale L. Simmons	1785322, 1785323, 1785324, 1785325, 1785326
SM 5310 B-00	04/01/2016			04/06/2016	Sofia Elnemr	1785327, 1785328, 1785329, 1785330, 1785331