

Chemical Analysis Report

SO-DIST-2016-02-25-02

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-2016-01-25-69**

Customer: **SO-DIST**

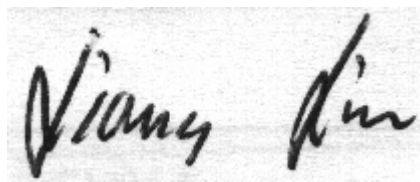
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901
Attn: Ben Paswater

For additional information please contact
Timothy W. Fitzpatrick
Liang-Tsair Lin, Ph.D.
Colin Wright, Ph.D.
Thekkekalathil Chandrasekhar, PhD, QA Officer
Phone (850) 245-8085

Certified by: Liang Lin, Environmental Administrator

Date Certified: 15-MAR-2016 17:34

A handwritten signature in black ink, appearing to read "Liang Lin", is written on a light-colored, textured background.

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: HILL LAKE WBID 1860 E

Collection Date/Time: 02/24/2016 08:30

Field ID: HILL LAKE @ NORTH

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1774529	EPA 180.1 Rev. 2.0	Turbidity	1.3	A	NTU	P299296	
	EPA 300.0 Rev. 2.1	Chloride	8.7		mg Cl/L	P299558	
		Sulfate	4.6		mg SO4/L	P299560	
	SM 2120 B	Color (true)	52	A	PCU	P299250	
	SM 2320 B-97	Total Alkalinity	4.1		mg CaCO3/L	P300007	
	SM 2540 C-97	TDS	50		mg/L	P299909	
	SM 2540 D-97	TSS	2	U	mg/L	P299731	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P299767	
1774534	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P299982	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.44		mg N/L	P299644	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P299705	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P299672	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P299514	
1774539	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P299293	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Chloride: Matrix spike recovery data for one of two spiked samples is unavailable due to high analyte concentration in the QC sample.

SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 55 umhos/cm.

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 350.1 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: HILL LAKE WBID 1860 E

Collection Date/Time: 02/24/2016 08:20

Field ID: HILL LAKE @ CENTER

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1774530	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P299296	
	EPA 300.0 Rev. 2.1	Chloride	8.8		mg Cl/L	P299558	
		Sulfate	4.5		mg SO4/L	P299560	
	SM 2120 B	Color (true)	53		PCU	P299250	
	SM 2320 B-97	Total Alkalinity	4.0		mg CaCO3/L	P300007	
	SM 2540 C-97	TDS	51		mg/L	P299909	
	SM 2540 D-97	TSS	2	U	mg/L	P299731	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P299767	
1774535	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P299983	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.43		mg N/L	P299644	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P299705	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P299672	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P299514	
1774540	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P299293	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Chloride: Matrix spike recovery data for one of two spiked samples is unavailable due to high analyte concentration in the QC sample.

SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 55 umhos/cm.

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: HILL LAKE WBID 1860 E

Collection Date/Time: 02/24/2016 08:40

Field ID: HILL LAKE @ WEST SIDE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1774531	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P299296	
	EPA 300.0 Rev. 2.1	Chloride	8.7		mg Cl/L	P299558	
		Sulfate	4.5		mg SO4/L	P299560	
	SM 2120 B	Color (true)	52		PCU	P299250	
	SM 2320 B-97	Total Alkalinity	3.8		mg CaCO3/L	P300007	
	SM 2540 C-97	TDS	47		mg/L	P299909	
	SM 2540 D-97	TSS	2	U	mg/L	P299731	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P299767	
1774536	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P299983	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.44		mg N/L	P299644	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P299705	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P299672	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P299514	
1774541	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P299293	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Chloride: Matrix spike recovery data for one of two spiked samples is unavailable due to high analyte concentration in the QC sample.

SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 56 umhos/cm.

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: HILL LAKE WBID 1860 E

Collection Date/Time: 02/24/2016 08:50

Field ID: HILL LAKE @ SOUTH SIDE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1774532	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P299296	
	EPA 300.0 Rev. 2.1	Chloride	8.7		mg Cl/L	P299558	
		Sulfate	4.5		mg SO4/L	P299560	
	SM 2120 B	Color (true)	53		PCU	P299250	
	SM 2320 B-97	Total Alkalinity	4.2		mg CaCO3/L	P300007	
	SM 2540 C-97	TDS	41		mg/L	P299909	
	SM 2540 D-97	TSS	2	U	mg/L	P299731	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P299767	
1774537	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P299983	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.45		mg N/L	P299644	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P299705	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P299672	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P299514	
1774542	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P299293	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Chloride: Matrix spike recovery data for one of two spiked samples is unavailable due to high analyte concentration in the QC sample.

SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 56 umhos/cm.

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: HILL LAKE WBID 1860 E

Collection Date/Time: 02/24/2016 09:05

Field ID: HILL LAKE @ EAST SIDE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1774533	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P299296	
	EPA 300.0 Rev. 2.1	Chloride	8.7		mg Cl/L	P299558	
		Sulfate	4.5		mg SO4/L	P299560	
	SM 2120 B	Color (true)	52		PCU	P299250	
	SM 2320 B-97	Total Alkalinity	4.1		mg CaCO3/L	P300007	
	SM 2540 C-97	TDS	41		mg/L	P299909	
	SM 2540 D-97	TSS	2	U	mg/L	P299731	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P299768	
1774538	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P299983	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.43		mg N/L	P299675	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P299705	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P299672	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P299514	
1774543	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P299293	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Chloride: Matrix spike recovery data for one of two spiked samples is unavailable due to high analyte concentration in the QC sample.

SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 56 umhos/cm.

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: 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: P299296

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P299558

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P299560

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P299982

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

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P299983

Component	Result	Code	Units
-----------	--------	------	-------

Quality Assurance Report

Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299983

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299644

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299675

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299705

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299672

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299293

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

Reference Method: SM 2120 B
Batch ID: P299250

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P300007

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-97
Batch ID: P299909

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P299731

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P299767

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P299768

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P299514

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: P299558

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299560

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299982

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299983

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299644

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299644

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	95.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299675

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299705

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299672

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299293

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

Reference Method: SM 2320 B-97
Batch ID: P300007

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P299767

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.3		P	94 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P299768

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.9		P	94 - 108

Reference Method: SM 5310 B-00
Batch ID: P299514

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299558

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1774654	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299560

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1774417	Sulfate	101		P	90 - 110
1774654	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299983

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1774535	Ammonia-N	97.2	96.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299675

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1774538	Kjeldahl Nitrogen	104	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299705

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1774534	NO2NO3-N	100	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299293

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1774539	O-Phosphate-P	101	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P299767

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1774755	Fluoride	95.8	97.2	P/P	94 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P299768

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1774946	Fluoride	96.3	96.8	P/P	94 - 107

Reference Method: SM 5310 B-00
Batch ID: P299514

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1774425	Organic Carbon	96.6	95.3	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P299296

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774529	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299558

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774654	Chloride	0.0532	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299560

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774654	Sulfate	0.280	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299982

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774519	Ammonia-N	0.837	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299983

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774535	Ammonia-N	0.437	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299644

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774518	Kjeldahl Nitrogen	8.83	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299675

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774538	Kjeldahl Nitrogen	1.66	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299705

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774534	NO2NO3-N	0.482	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299672

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774427	Total-P	2.08	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299293

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774539	O-Phosphate-P	0.787	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P299250

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774529	Color (true)	2.95	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P300007

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774788	Total Alkalinity	1.03	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P299909

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774770	TDS	0.496	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P299767

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774755	Fluoride	0.999	Spike	P	0 - 3.7

Reference Method: SM 4500 F-C-97
Batch ID: P299768

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774946	Fluoride	0.492	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
Batch ID: P299514

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774425	Organic Carbon	0.840	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: SM 2120 B

Run ID: A67832

Included Lab Sample IDs: 1774529, 1774530, 1774531, 1774532, 1774533

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.0	97.9	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A67843

Included Lab Sample IDs: 1774539, 1774540, 1774541, 1774542, 1774543

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.0	99.4	P/P	90 - 110
O-Phosphate-P	99.4	98.0	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A67847

Included Lab Sample IDs: 1774529, 1774530, 1774531, 1774532, 1774533

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

Reference Method: SM 5310 B-00

Run ID: A67917

Included Lab Sample IDs: 1774534, 1774535, 1774536, 1774537, 1774538

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.8	95.9	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A67933

Included Lab Sample IDs: 1774529, 1774530, 1774531, 1774532, 1774533

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.2	101	P/P	90 - 110
Sulfate	96.3	98.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A67984

Included Lab Sample IDs: 1774534, 1774535, 1774536, 1774537, 1774538

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

Reference Method: SM 4500 F-C-97

Run ID: A68004

Included Lab Sample IDs: 1774529, 1774530, 1774531, 1774532, 1774533

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

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A68004

Included Lab Sample IDs: 1774529, 1774530, 1774531, 1774532, 1774533

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	98.5	P/P	90 - 110
Fluoride	98.5	99.5	P/P	90 - 110
Fluoride	99.5	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A68006

Included Lab Sample IDs: 1774534, 1774535, 1774536, 1774537, 1774538

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.8	97.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A68075

Included Lab Sample IDs: 1774534, 1774535, 1774536, 1774537, 1774538

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	102	P/P	90 - 110
Kjeldahl Nitrogen	107	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A68091

Included Lab Sample IDs: 1774534, 1774535, 1774536, 1774537, 1774538

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.2	99.5	P/P	90 - 110
Ammonia-N	99.5	101	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A68093

Included Lab Sample IDs: 1774529, 1774530, 1774531, 1774532, 1774533

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.7	98.1	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	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				0.0	
EPA 300.0 Rev. 2.1	Chloride	102	103		0.0532	
	Sulfate	99.2	100	101	0.280	
EPA 350.1 Rev. 2.0	Ammonia-N	97.2				0.837
	Ammonia-N	98.8	97.2	96.7		0.437
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	95.8				8.83
	Kjeldahl Nitrogen	99.0	104	102		1.66

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 353.2 Rev. 2.0	NO2NO3-N	104	100	101		0.482
EPA 365.1 Rev. 2.0	Total-P	99.8				2.08
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	101	102		0.787
SM 2120 B	Color (true)				2.95	
SM 2320 B-97	Total Alkalinity	102			1.03	
SM 2540 C-97	TDS				0.496	
SM 4500 F-C-97	Fluoride	96.3	95.8	97.2		0.999
	Fluoride	95.9	96.3	96.8		0.492
SM 5310 B-00	Organic Carbon	94.8	96.6	95.3		0.840

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1774529, 1774530, 1774531, 1774532, 1774533
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1774529, 1774530, 1774531, 1774532, 1774533
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1774529, 1774530, 1774531, 1774532, 1774533
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1774534, 1774535, 1774536, 1774537, 1774538
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1774534, 1774535, 1774536, 1774537, 1774538
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1774534, 1774535, 1774536, 1774537, 1774538
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1774534, 1774535, 1774536, 1774537, 1774538
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1774539, 1774540, 1774541, 1774542, 1774543
SM 2120 B / E31780	True Color measured at 450 nm	1774529, 1774530, 1774531, 1774532, 1774533
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1774529, 1774530, 1774531, 1774532, 1774533
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1774529, 1774530, 1774531, 1774532, 1774533
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1774529, 1774530, 1774531, 1774532, 1774533
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1774529, 1774530, 1774531, 1774532, 1774533
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1774534, 1774535, 1774536, 1774537, 1774538

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	02/25/2016			02/25/2016 16:51	Sima Feizi	1774529, 1774530, 1774531, 1774532, 1774533
EPA 300.0 Rev. 2.1	02/25/2016			03/02/2016	Ping Hua	1774529, 1774530, 1774531, 1774532, 1774533
EPA 350.1 Rev. 2.0	02/25/2016			03/08/2016	Diana M. Turner	1774534, 1774535, 1774536, 1774537, 1774538
EPA 351.2 Rev. 2.0	02/25/2016	03/03/2016	Sofia Elnemr	03/08/2016	Rochelle Y Jackson	1774534, 1774535, 1774536, 1774537, 1774538
EPA 353.2 Rev. 2.0	02/25/2016			03/03/2016	Peter D. Kaus	1774534, 1774535, 1774536, 1774537, 1774538
EPA 365.1 Rev. 2.0	02/25/2016	03/03/2016	Christopher Armour	03/04/2016	Lipi Saha	1774534, 1774535, 1774536, 1774537, 1774538
EPA 365.1 Rev. 2.0 dissolved	02/25/2016			02/25/2016 14:23	Bryan A. Werth	1774539
	02/25/2016			02/25/2016 14:28	Bryan A. Werth	1774540, 1774541
	02/25/2016			02/25/2016 14:29	Bryan A. Werth	1774542
	02/25/2016			02/25/2016 14:34	Bryan A. Werth	1774543
SM 2120 B	02/25/2016			02/25/2016 12:30	Rochelle Y Jackson	1774529, 1774530
	02/25/2016			02/25/2016 12:31	Rochelle Y Jackson	1774531
	02/25/2016			02/25/2016 12:32	Rochelle Y Jackson	1774532
	02/25/2016			02/25/2016 12:33	Rochelle Y Jackson	1774533
SM 2320 B-97	02/25/2016			03/07/2016	Dale L. Simmons	1774529, 1774530, 1774531, 1774532, 1774533
SM 2540 C-97	02/25/2016			02/29/2016	Sima Feizi	1774529, 1774530, 1774531, 1774532, 1774533
SM 2540 D-97	02/25/2016			02/29/2016	Sima Feizi	1774529, 1774530, 1774531, 1774532, 1774533
SM 4500 F-C-97	02/25/2016			03/03/2016	Dale L. Simmons	1774529, 1774530, 1774531, 1774532
	02/25/2016			03/04/2016	Dale L. Simmons	1774533
SM 5310 B-00	02/25/2016			02/29/2016	Sofia Elnemr	1774534, 1774535, 1774536, 1774537, 1774538