

Chemical Analysis Report

NE-DIST-2016-02-17-01

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

Event Description: **ALACHUA LAKES**
Request ID: **RQ-2016-02-15-40**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way
Jacksonville, FL 32256
Attn: J. Gruentzel

For additional information please contact
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 08-MAR-2016 13:44



NON-CONFORMANCE REPORT INCLUDED

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: G3NE0002 HAMMOCK LAKE

Collection Date/Time: 02/16/2016 14:10

Field ID: G3NE0002 HAMMOCK LAKE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1771783	EPA 180.1 Rev. 2.0	Turbidity	4.4		NTU	P298791	
	EPA 300.0 Rev. 2.1	Chloride	38		mg Cl/L	P298903	
		Sulfate	8.5		mg SO4/L	P298905	
	SM 2120 B	Color (true)	38		PCU	P298752	
	SM 2320 B-97	Total Alkalinity	77		mg CaCO3/L	P299387	RPD
	SM 2540 C-97	TDS	172		mg/L	P299453	
	SM 2540 D-97	TSS	4	I	mg/L	P299284	
1771786	SM 4500 F-C-97	Fluoride	0.22		mg F/L	P299044	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.075		mg N/L	P299253	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P299002	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.059		mg N/L	P299059	
	EPA 365.1 Rev. 2.0	Total-P	0.22		mg P/L	P298996	
1771789	SM 5310 B-00	Organic Carbon	11		mg C/L	P299192	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.10		mg P/L	P298746	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: The precision data is unavailable due to low analyte concentration in the QC sample.

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.

Sample Location: 20020140 LAKE WAUBERG CENTER

Collection Date/Time: 02/16/2016 11:10

Field ID: 20020140 LAKE WAUBERG CENTER

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1771784	EPA 180.1 Rev. 2.0	Turbidity	11	A	NTU	P298792	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P298903	
		Sulfate	0.28	I	mg SO4/L	P298905	
	SM 2120 B	Color (true)	29		PCU	P298752	
	SM 2320 B-97	Total Alkalinity	22		mg CaCO3/L	P299387	RPD
	SM 2540 C-97	TDS	60		mg/L	P299453	
	SM 2540 D-97	TSS	17		mg/L	P299284	
1771787	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P299044	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P299253	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.1		mg N/L	P299002	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P299063	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P298998	
1771790	SM 5310 B-00	Organic Carbon	15		mg C/L	P299192	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P298746	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: The precision data is unavailable due to low analyte concentration in the QC sample.

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.

Sample Location: G3NE0001 MOON LAKE

Collection Date/Time: 02/16/2016 12:48

Field ID: G3NE0001 MOON LAKE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Field ID: G3NE0001 MOON LAKE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1771785	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P298792	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P298903	
		Sulfate	13		mg SO4/L	P298905	
	SM 2120 B	Color (true)	56		PCU	P298752	
	SM 2320 B-97	Total Alkalinity	29		mg CaCO3/L	P299543	
	SM 2540 C-97	TDS	93		mg/L	P299453	
	SM 2540 D-97	TSS	2	I	mg/L	P299284	
	SM 4500 F-C-97	Fluoride	0.21		mg F/L	P299322	
1771788	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P299253	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.73		mg N/L	P299032	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P299063	
	EPA 365.1 Rev. 2.0	Total-P	0.38		mg P/L	P298998	
	SM 5310 B-00	Organic Carbon	8.8		mg C/L	P299192	
1771791	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.31		mg P/L	P298746	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: The precision data is unavailable due to low analyte concentration in the QC sample.

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.

Non-Conformance Report

NCR ID: 5702

Event(s)

NE-DIST-2016-02-17-01

Job(s)

Sample(s)

Test(s)

NCR Type: SHIPPING/RECEIVING

NCR Category: Receiving

Observation: No collection time was recorded on the submittal form for Hammock Lake.

Resolution: Collection time on container was used to log in the sample.

Authorised by/Date: Kathryn Holland 2/18/2016

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry Tim Fitzpatrick (850) 245-8085
Biology Lori Wolfe (850) 245-8177

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P298791

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P298792

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298903

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298905

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299253

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299002

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299032

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299059

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299063

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298996

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298998

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: P298746

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

Reference Method: SM 2120 B
Batch ID: P298752

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P299387

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

Reference Method: SM 2320 B-97
Batch ID: P299543

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

Reference Method: SM 2540 C-97
Batch ID: P299453

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P299284

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P299044

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P299322

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P299192

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: P298903

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298905

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299253

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299002

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299032

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	90.9		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299059

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299063

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298996

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298998

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298746

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

Reference Method: SM 2320 B-97
Batch ID: P299387

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

Reference Method: SM 2320 B-97
Batch ID: P299543

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

Reference Method: SM 4500 F-C-97
Batch ID: P299044

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.0		P	94 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P299322

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.6		P	94 - 108

Reference Method: SM 5310 B-00
Batch ID: P299192

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298903

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771706	Chloride	103		P	90 - 110
1771785	Chloride	104		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298905

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771706	Sulfate	101		P	90 - 110
1771785	Sulfate	99.3		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299002

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771707	Kjeldahl Nitrogen	102	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299032

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771788	Kjeldahl Nitrogen	96.6	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299059

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771315	NO2NO3-N	99.0	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299063

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771645	NO2NO3-N	98.5	97.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298996

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771708	Total-P	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298998

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771788	Total-P	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298746

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1772120	O-Phosphate-P	99.3	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P299044

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771613	Fluoride	98.8	98.3	P/P	94 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P299322

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1772627	Fluoride	96.6	98.3	P/P	94 - 107

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P299192

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771693	Organic Carbon	94.6	93.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P298791

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771705	Turbidity	1.77	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P298792

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771784	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298903

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771706	Chloride	0.212	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299253

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771786	Ammonia-N	0.873	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299002

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771707	Kjeldahl Nitrogen	0.997	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299032

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771788	Kjeldahl Nitrogen	2.26	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299059

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771315	NO2NO3-N	0.506	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299063

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771645	NO2NO3-N	1.02	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298996

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771708	Total-P	1.29	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298998

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771788	Total-P	0.101	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298746

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772120	O-Phosphate-P	0.804	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P298752

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771733	Color (true)	0.704	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P299387

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771612	Total Alkalinity	5.00	Sample	F	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P299543

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772629	Total Alkalinity	0.334	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P299453

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771616	TDS	3.45	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P299044

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771613	Fluoride	0.487	Spike	P	0 - 3.7

Reference Method: SM 4500 F-C-97
Batch ID: P299322

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772627	Fluoride	0.940	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
Batch ID: P299192

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771693	Organic Carbon	1.60	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: A67638
Included Lab Sample IDs: 1771783, 1771784, 1771785

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	100	P/P	90 - 110
Sulfate	98.5	94.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A67652
Included Lab Sample IDs: 1771789, 1771790, 1771791

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.3	98.7	P/P	90 - 110
O-Phosphate-P	98.6	99.2	P/P	90 - 110
O-Phosphate-P	99.4	98.6	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B

Run ID: A67654

Included Lab Sample IDs: 1771783, 1771784, 1771785

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.2	100	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A67661

Included Lab Sample IDs: 1771783, 1771784, 1771785

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A67737

Included Lab Sample IDs: 1771786, 1771787, 1771788

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

Reference Method: SM 4500 F-C-97

Run ID: A67743

Included Lab Sample IDs: 1771783, 1771784

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A67752

Included Lab Sample IDs: 1771786, 1771787, 1771788

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A67771

Included Lab Sample IDs: 1771786, 1771787

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A67795

Included Lab Sample IDs: 1771788

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.9	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A67804

Included Lab Sample IDs: 1771786, 1771787, 1771788

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.4	94.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A67833

Included Lab Sample IDs: 1771786, 1771787, 1771788

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.5	99.9	P/P	90 - 110
Ammonia-N	98.7	98.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A67854

Included Lab Sample IDs: 1771785

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

Reference Method: SM 2320 B-97

Run ID: A67871

Included Lab Sample IDs: 1771783, 1771784

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

Reference Method: SM 2320 B-97

Run ID: A67927

Included Lab Sample IDs: 1771785

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	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		LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					1.77	
	Turbidity					0.0	
EPA 300.0 Rev. 2.1	Chloride	102	103	104		0.212	
	Sulfate	101	101	99.3			
EPA 350.1 Rev. 2.0	Ammonia-N	96.7					0.873
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	110	102	104			0.997
	Kjeldahl Nitrogen	90.9	96.6	100			2.26
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	99.0	98.5			0.506
	NO ₂ NO ₃ -N	102	98.5	97.5			1.02
EPA 365.1 Rev. 2.0	Total-P	100	102	104			1.29

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 365.1 Rev. 2.0	Total-P	105	104	104		0.101
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	104	99.3	100		0.804
SM 2120 B	Color (true)				0.704	
SM 2320 B-97	Total Alkalinity	105			5.00	
	Total Alkalinity	102			0.334	
SM 2540 C-97	TDS				3.45	
SM 4500 F-C-97	Fluoride	98.0	98.8	98.3		0.487
	Fluoride	97.6	96.6	98.3		0.940
SM 5310 B-00	Organic Carbon	94.4	94.6	93.0		1.60

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1771783, 1771784, 1771785
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1771783, 1771784, 1771785
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1771783, 1771784, 1771785
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1771786, 1771787, 1771788
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1771786, 1771787, 1771788
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1771786, 1771787, 1771788
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1771786, 1771787, 1771788
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1771789, 1771790, 1771791
SM 2120 B / E31780	True Color measured at 450 nm	1771783, 1771784, 1771785
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1771783, 1771784, 1771785
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1771783, 1771784, 1771785
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1771783, 1771784, 1771785
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1771783, 1771784, 1771785
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1771786, 1771787, 1771788

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	02/17/2016			02/17/2016 16:45	Sima Feizi	1771783, 1771784, 1771785
EPA 300.0 Rev. 2.1	02/17/2016			02/18/2016	Ping Hua	1771783, 1771784, 1771785
EPA 350.1 Rev. 2.0	02/17/2016			02/24/2016	Diana M. Turner	1771786, 1771787, 1771788
EPA 351.2 Rev. 2.0	02/17/2016	02/22/2016	Christopher Armour	02/23/2016	Bryan A. Werth	1771786, 1771787
	02/17/2016	02/23/2016	Christopher Armour	02/24/2016	Bryan A. Werth	1771788
EPA 353.2 Rev. 2.0	02/17/2016			02/22/2016	Diana M. Turner	1771786, 1771787, 1771788
EPA 365.1 Rev. 2.0	02/17/2016	02/22/2016	Christopher Armour	02/22/2016	Lipi Saha	1771786, 1771787, 1771788
EPA 365.1 Rev. 2.0 dissolved	02/17/2016			02/17/2016 14:59	Bryan A. Werth	1771790
	02/17/2016			02/17/2016 15:15	Bryan A. Werth	1771789
	02/17/2016			02/17/2016 15:43	Bryan A. Werth	1771791
SM 2120 B	02/17/2016			02/17/2016 15:18	Rochelle Y Jackson	1771783, 1771784
	02/17/2016			02/17/2016 15:19	Rochelle Y Jackson	1771785
SM 2320 B-97	02/17/2016			02/27/2016	Dale L. Simmons	1771783, 1771784
	02/17/2016			03/01/2016	Dale L. Simmons	1771785
SM 2540 C-97	02/17/2016			02/19/2016	Yijie Li	1771783, 1771784, 1771785
SM 2540 D-97	02/17/2016			02/19/2016	Yijie Li	1771783, 1771784, 1771785
SM 4500 F-C-97	02/17/2016			02/23/2016	Dale L. Simmons	1771783, 1771784, 1771785
SM 5310 B-00	02/17/2016			02/23/2016	Sofia Elnemr	1771786, 1771787, 1771788