Chemical Analysis Report

SO-DIST-2016-02-18-01

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

Event Description: **SMP: Everglades Lakes**
Request ID: **RQ-2016-02-15-64**
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.
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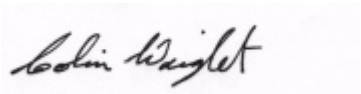
Certified by: Colin Wright, Environmental Administrator

Date Certified: 11-MAR-2016 10:31



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: 3289X WEST LAKE AT CENTER **Collection Date/Time: 02/17/2016 12:10**

Field ID: G5SD021715-1 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1772521	EPA 180.1 Rev. 2.0	Turbidity	13		NTU	P298860	
	SM 2320 B-97	Total Alkalinity	154		mg CaCO3/L	P298966	
	SM 2540 D-97	TSS	12		mg/L	P299450	
	SM 4500 F-C-97	Fluoride	0.44		mg F/L	P298957	
1772525	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P299258	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	3.6		mg N/L	P299144	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P299100	
	EPA 365.1 Rev. 2.0	Total-P	0.054		mg P/L	P299160	
	SM 5310 B-00	Organic Carbon	42		mg C/L	P299306	
1772529	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	UJ	mg P/L	P298853	MS

Ref. Method and Comment:
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.
SM 5310 B-00: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0 dissolved: Refer to the narrative for an explanation of QC Codes.

Sample Location: 3289X LONG LAKE SOUTH **Collection Date/Time: 02/17/2016 10:45**

Field ID: G5SD021715-2 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1772522	EPA 180.1 Rev. 2.0	Turbidity	13		NTU	P298860	
	SM 2320 B-97	Total Alkalinity	143		mg CaCO3/L	P298966	
	SM 2540 D-97	TSS	11		mg/L	P299450	
	SM 4500 F-C-97	Fluoride	0.43		mg F/L	P298957	
1772526	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P299986	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	3.6		mg N/L	P299144	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P299100	
	EPA 365.1 Rev. 2.0	Total-P	0.079		mg P/L	P299160	
	SM 5310 B-00	Organic Carbon	44		mg C/L	P299306	
1772530	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P298853	MS

Ref. Method and Comment:
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.
SM 5310 B-00: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: DUPLICATE 3289X LONG LAKE SOUTH **Collection Date/Time: 02/17/2016 10:50**

Field ID: G5SD021715-3 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1772523	EPA 180.1 Rev. 2.0	Turbidity	13		NTU	P298860	
	SM 2320 B-97	Total Alkalinity	143		mg CaCO3/L	P298966	
	SM 2540 D-97	TSS	12		mg/L	P299450	
	SM 4500 F-C-97	Fluoride	0.43		mg F/L	P298957	
1772527	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P299986	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	3.8		mg N/L	P299144	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P299100	
	EPA 365.1 Rev. 2.0	Total-P	0.082		mg P/L	P299160	
	SM 5310 B-00	Organic Carbon	43		mg C/L	P299306	

Field ID: G5SD021715-3 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1772531	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P298853	MS

Ref. Method and Comment:
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.
SM 5310 B-00: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: FIELD BLANK **Collection Date/Time: 02/17/2016 08:40**

Field ID: G5SD021715-4 Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1772524	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P298860	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P299410	RPD
	SM 2540 D-97	TSS	2	U	mg/L	P299447	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P299322	
1772528	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P299315	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P299142	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P299441	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P299053	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P299304	
1772532	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P298851	

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

Non-Conformance Report

NCR ID: 5707

Event(s)	Job(s)	Sample(s)	Test(s)
SO-DIST-2016-02-18-01			

NCR Type: SHIPPING/RECEIVING **NCR Category: Receiving**

Observation: No collection time was recorded on the submittal form for site G5SD021715-2.

Resolution: Collection time from sample container was used for log-in.

Authorised by/Date: Kathryn Holland 2/22/2016

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: P298860

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report
Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299258

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299315

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299986

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299142

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299144

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299100

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299441

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299053

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299160

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: P298851

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298853

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

Reference Method: SM 2320 B-97
Batch ID: P298966

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

Reference Method: SM 2320 B-97
Batch ID: P299410

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

Reference Method: SM 2540 D-97
Batch ID: P299447

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P299450

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P298957

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: P299304

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P299306

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299258

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299315

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299986

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.7		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299142

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	95.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299144

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	95.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299100

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	92.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299441

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: P299053

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299053

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299160

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298851

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298853

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

Reference Method: SM 2320 B-97
Batch ID: P298966

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

Reference Method: SM 2320 B-97
Batch ID: P299410

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P298957

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.9		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: P299304

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.2		P	85 - 115

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P299306

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	102		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299258

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1772077	Ammonia-N	98.1	98.3	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299315

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1772548	Ammonia-N	98.6	99.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299986

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1774297	Ammonia-N	106	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299142

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1772367	Kjeldahl Nitrogen	94.8	96.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299144

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1772504	Kjeldahl Nitrogen	93.5	96.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299100

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1772525	NO2NO3-N	96.1	97.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299441

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1772370	NO2NO3-N	95.5	94.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299053

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299053

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1772501	Total-P	103	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299160

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1772525	Total-P	98.5	97.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298851

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1772691	O-Phosphate-P	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298853

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1772529	O-Phosphate-P	66.6	66.3	F/F	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P298957

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1771810	Fluoride	97.7	100	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

Reference Method: SM 5310 B-00
Batch ID: P299304

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1772215	Organic Carbon	98.5	99.8	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P298860

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772211	Turbidity	5.91	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299258

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772077	Ammonia-N	0.195	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299315

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772548	Ammonia-N	0.387	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299986

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774297	Ammonia-N	0.774	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299142

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772367	Kjeldahl Nitrogen	1.55	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299144

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772504	Kjeldahl Nitrogen	2.20	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299100

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772525	NO2NO3-N	1.04	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299441

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772370	NO2NO3-N	0.574	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299053

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772501	Total-P	1.35	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299160

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772525	Total-P	1.44	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298851

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772691	O-Phosphate-P	1.65	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298853

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772529	O-Phosphate-P	0.451	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P298966

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771810	Total Alkalinity	1.29	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P299410

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772627	Total Alkalinity	8.88	Sample	F	0 - 4.8

Reference Method: SM 4500 F-C-97
Batch ID: P298957

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771810	Fluoride	0.987	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: P299304

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772215	Organic Carbon	1.14	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 5310 B-00
Batch ID: P299306

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1772525	Organic Carbon	0.714	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 365.1 Rev. 2.0 dissolved
Run ID: A67674
Included Lab Sample IDs: 1772529, 1772530, 1772531, 1772532

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.3	99.9	P/P	90 - 110
O-Phosphate-P	99.4	99.3	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A67676
Included Lab Sample IDs: 1772521, 1772522, 1772523, 1772524

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

Reference Method: SM 4500 F-C-97
Run ID: A67712
Included Lab Sample IDs: 1772521, 1772522, 1772523

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

Reference Method: SM 2320 B-97
Run ID: A67716
Included Lab Sample IDs: 1772521, 1772522, 1772523

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A67764
Included Lab Sample IDs: 1772525, 1772526, 1772527

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A67786
Included Lab Sample IDs: 1772528

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.8	98.5	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A67829
Included Lab Sample IDs: 1772525, 1772526, 1772527

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	99.0	P/P	90 - 110
Total-P	99.0	98.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A67833
Included Lab Sample IDs: 1772525

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.8	98.7	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A67848
Included Lab Sample IDs: 1772525, 1772526, 1772527, 1772528

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.5	98.2	P/P	90 - 110
Organic Carbon	99.4	94.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A67850
Included Lab Sample IDs: 1772528

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A67851
Included Lab Sample IDs: 1772525, 1772526, 1772527, 1772528

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.4	99.6	P/P	90 - 110
Kjeldahl Nitrogen	99.6	96.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A67854
Included Lab Sample IDs: 1772524

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A67889
Included Lab Sample IDs: 1772528

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A67974
Included Lab Sample IDs: 1772524

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A68091
Included Lab Sample IDs: 1772526, 1772527

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.6	98.6	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					5.91	
EPA 350.1 Rev. 2.0	Ammonia-N	98.6	98.1	98.3			0.195
	Ammonia-N	99.0	98.6	99.1			0.387
	Ammonia-N	99.7	106	105			0.774
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	95.6	94.8	96.8			1.55
	Kjeldahl Nitrogen	95.5	93.5	96.2			2.20
EPA 353.2 Rev. 2.0	NO2NO3-N	92.0	96.1	97.1			1.04
	NO2NO3-N	100	95.5	94.5			0.574
EPA 365.1 Rev. 2.0	Total-P	97.5	103	101			1.35
	Total-P	103	98.5	97.0			1.44
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	102	104			1.65
	O-Phosphate-P	103	66.6	66.3			0.451
SM 2320 B-97	Total Alkalinity	101				1.29	
	Total Alkalinity	104				8.88	
SM 4500 F-C-97	Fluoride	97.9	97.7	100			0.987
	Fluoride	97.6	96.6	98.3			0.940
SM 5310 B-00	Organic Carbon	99.2	98.5	99.8			1.14
	Organic Carbon	102					0.714

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1772521, 1772522, 1772523, 1772524
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1772525, 1772526, 1772527, 1772528
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1772525, 1772526, 1772527, 1772528
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1772525, 1772526, 1772527, 1772528
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1772525, 1772526, 1772527, 1772528

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1772529, 1772530, 1772531, 1772532
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1772521, 1772522, 1772523, 1772524
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1772521, 1772522, 1772523, 1772524
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1772521, 1772522, 1772523, 1772524
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1772525, 1772526, 1772527, 1772528

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	02/18/2016			02/18/2016 15:08	Sima Feizi	1772521, 1772522, 1772523, 1772524
EPA 350.1 Rev. 2.0	02/18/2016			02/24/2016	Diana M. Turner	1772525
	02/18/2016			02/25/2016	Diana M. Turner	1772528
	02/18/2016			03/08/2016	Diana M. Turner	1772526, 1772527
EPA 351.2 Rev. 2.0	02/18/2016	02/24/2016	Christopher Armour	02/25/2016	Bryan A. Werth	1772525, 1772526, 1772527, 1772528
EPA 353.2 Rev. 2.0	02/18/2016			02/23/2016	Peter D. Kaus	1772525, 1772526, 1772527
	02/18/2016			02/26/2016	Diana M. Turner	1772528
EPA 365.1 Rev. 2.0	02/18/2016	02/23/2016	Christopher Armour	02/24/2016	Lipi Saha	1772528
	02/18/2016	02/24/2016	Christopher Armour	02/25/2016	Lipi Saha	1772525, 1772526, 1772527
EPA 365.1 Rev. 2.0 dissolved	02/18/2016			02/18/2016 13:24	Bryan A. Werth	1772529
	02/18/2016			02/18/2016 13:27	Bryan A. Werth	1772532
	02/18/2016			02/18/2016 13:54	Bryan A. Werth	1772530
	02/18/2016			02/18/2016 13:55	Bryan A. Werth	1772531
SM 2320 B-97	02/18/2016			02/21/2016	Dale L. Simmons	1772521, 1772522, 1772523
	02/18/2016			02/28/2016	Dale L. Simmons	1772524
SM 2540 D-97	02/18/2016			02/22/2016	Sima Feizi	1772521, 1772522, 1772523, 1772524
SM 4500 F-C-97	02/18/2016			02/19/2016	Dale L. Simmons	1772521, 1772522, 1772523
	02/18/2016			02/23/2016	Dale L. Simmons	1772524
SM 5310 B-00	02/18/2016			02/24/2016	Sofia Elnemr	1772528
	02/18/2016			02/25/2016	Sofia Elnemr	1772525, 1772526, 1772527