

Chemical Analysis Report

WQ-ASSESS-2017-03-14-01

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

Event Description: **NE Tallahassee Lakes**

Request ID: **RQ-2017-01-23-58**

Customer: **WQ-ASSESS**

Project ID: **SMP**

Send Reports to:

FL Dept. of Environmental Protection
Division Of Water Facilities, FL DEP
2600 Blair Stone Rd.
Tallahassee, FL 32399-2400
Attn: Curtis Musson

For additional information please contact

Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Thekkekalathil Chandrasekhar, PhD, QA Officer
Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 07-APR-2017 10:58



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: Upper Dianne Lake Middle

Collection Date/Time: 03/14/2017 08:45

Field ID: G1WA0041-03142017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1880007	EPA 180.1 Rev. 2.0	Turbidity	4.8		NTU	P321565	
	EPA 300.0 Rev. 2.1	Chloride	7.2	A	mg Cl/L	P321808	
		Sulfate	1.3	A	mg SO4/L	P321812	
	SM 2120 B	Color (true)	11		PCU	P321545	
	SM 2320 B-97	Total Alkalinity	25		mg CaCO3/L	P322070	
	SM 2540 C-97	TDS	58		mg/L	P322312	
	SM 2540 D-97	TSS	8	I	mg/L	P322175	
	SM 4500 F-C-97	Fluoride	0.061	I	mg F/L	P322075	
1880012	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P321643	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.74		mg N/L	P321713	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P321960	
	EPA 365.1 Rev. 2.0	Total-P	0.041		mg P/L	P321654	
	SM 5310 B-00	Organic Carbon	4.9		mg C/L	P321639	
1880017	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P321539	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Lower Dianne Lake Middle

Collection Date/Time: 03/14/2017 09:35

Field ID: G1WA0040-03142017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1880008	EPA 180.1 Rev. 2.0	Turbidity	3.0		NTU	P321565	
	EPA 300.0 Rev. 2.1	Chloride	7.5		mg Cl/L	P322217	
		Sulfate	1.1	A	mg SO4/L	P322408	
	SM 2120 B	Color (true)	8.0		PCU	P321545	
	SM 2320 B-97	Total Alkalinity	23		mg CaCO3/L	P322071	
	SM 2540 C-97	TDS	52		mg/L	P322312	
	SM 2540 D-97	TSS	4	I	mg/L	P322175	
	SM 4500 F-C-97	Fluoride	0.055	I	mg F/L	P322077	
1880013	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P321643	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.69		mg N/L	P321713	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P321836	
	EPA 365.1 Rev. 2.0	Total-P	0.031		mg P/L	P321654	
	SM 5310 B-00	Organic Carbon	4.6		mg C/L	P321639	
1880018	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P321539	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Petty Gulf Lake Middle

Collection Date/Time: 03/14/2017 10:10

Field ID: G1WA0022-03142017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1880009	EPA 180.1 Rev. 2.0	Turbidity	4.2		NTU	P321565	

Field ID: G1WA0022-03142017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1880009	EPA 300.0 Rev. 2.1	Chloride	4.9		mg Cl/L	P322122	
		Sulfate	0.70		mg SO4/L	P322124	
	SM 2120 B	Color (true)	13	A	PCU	P321545	
	SM 2320 B-97	Total Alkalinity	20		mg CaCO3/L	P322071	
	SM 2540 C-97	TDS	38		mg/L	P322313	
	SM 2540 D-97	TSS	8	I	mg/L	P322176	
	SM 4500 F-C-97	Fluoride	0.045	I	mg F/L	P322077	
1880014	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P321643	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.57		mg N/L	P321713	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P321836	
	EPA 365.1 Rev. 2.0	Total-P	0.033		mg P/L	P321655	
	SM 5310 B-00	Organic Carbon	5.2		mg C/L	P321639	
1880019	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P321539	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Pine Hill Lake Middle**Collection Date/Time: 03/14/2017 10:35****Field ID: G1WA0054-03142017**

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1880010	EPA 180.1 Rev. 2.0	Turbidity	2.6	A	NTU	P321566	
	EPA 300.0 Rev. 2.1	Chloride	6.0		mg Cl/L	P322217	
		Sulfate	0.97		mg SO4/L	P322408	
	SM 2120 B	Color (true)	11		PCU	P321545	
	SM 2320 B-97	Total Alkalinity	13		mg CaCO3/L	P322071	
	SM 2540 C-97	TDS	39		mg/L	P322313	
	SM 2540 D-97	TSS	5	I	mg/L	P322176	
1880015	SM 4500 F-C-97	Fluoride	0.042	I	mg F/L	P322077	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P321643	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.42		mg N/L	P321713	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P321836	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P321655	
1880020	SM 5310 B-00	Organic Carbon	5.0		mg C/L	P321639	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P321539	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Lake Tom John Middle**Collection Date/Time: 03/14/2017 11:20****Field ID: G1WA0043-03142017**

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1880011	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P321566	
	EPA 300.0 Rev. 2.1	Chloride	8.1		mg Cl/L	P322217	
		Sulfate	0.27	I	mg SO4/L	P322408	
	SM 2120 B	Color (true)	19		PCU	P321545	
	SM 2320 B-97	Total Alkalinity	16		mg CaCO3/L	P322071	

Field ID: G1WA0043-03142017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1880011	SM 2540 C-97	TDS	47		mg/L	P322313	
	SM 2540 D-97	TSS	2	I	mg/L	P322176	
	SM 4500 F-C-97	Fluoride	0.047	I	mg F/L	P322077	
1880016	EPA 350.1 Rev. 2.0	Ammonia-N	0.027		mg N/L	P321646	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.54		mg N/L	P321713	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P321836	
	EPA 365.1 Rev. 2.0	Total-P	0.030		mg P/L	P321655	
	SM 5310 B-00	Organic Carbon	5.5		mg C/L	P321639	
1880021	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P321539	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

**Sample Location: Killlearn Chain of Outlet at Velda Dairy Rd.
 across from Mint Hill Ct**

Collection Date/Time: 03/14/2017 11:50

Field ID: G1WA0015-03142017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1880022	EPA 180.1 Rev. 2.0	Turbidity	6.7		NTU	P321566	
	EPA 300.0 Rev. 2.1	Chloride	4.0	A	mg Cl/L	P322122	
		Sulfate	0.77	A	mg SO4/L	P322124	
	SM 2120 B	Color (true)	48		PCU	P321545	
	SM 2320 B-97	Total Alkalinity	41		mg CaCO3/L	P322071	
	SM 2540 C-97	TDS	59		mg/L	P322313	
	SM 2540 D-97	TSS	6	I	mg/L	P322176	
	SM 4500 F-C-97	Fluoride	0.073	I	mg F/L	P322077	
1880023	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P321646	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.25		mg N/L	P321713	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.036		mg N/L	P321836	
	EPA 365.1 Rev. 2.0	Total-P	0.082		mg P/L	P321655	
	SM 5310 B-00	Organic Carbon	4.2		mg C/L	P321639	
1880024	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.026		mg P/L	P321539	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P321565

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P321566

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: P321808

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P321812

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322122

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322124

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322217

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322408

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321643

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321646

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P321713

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321836

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321960

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P321654

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P321655

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P321539

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

Reference Method: SM 2120 B
Batch ID: P321545

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P322070

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

Reference Method: SM 2320 B-97
Batch ID: P322071

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

Reference Method: SM 2540 C-97
Batch ID: P322312

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 C-97
 Batch ID: P322313

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
 Batch ID: P322175

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
 Batch ID: P322176

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
 Batch ID: P322075

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
 Batch ID: P322077

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
 Batch ID: P321639

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: P321808

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	106		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P321812

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

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P322122

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322122

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322124

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322217

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322408

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321643

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321646

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P321713

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321836

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: P321960

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P321654

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P321655

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P321539

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.2		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P322070

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P322071

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P322075

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.4		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P322077

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P321639

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.5		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P321808

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P321808

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1880007	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P321812

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1880007	Sulfate	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P322122

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1880009	Chloride	99.2		P	90 - 110
1880022	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P322124

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1880009	Sulfate	97.6		P	90 - 110
1880022	Sulfate	99.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P322217

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1880121	Chloride	96.0		P	90 - 110
1880195	Chloride	95.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P322408

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1880008	Sulfate	103		P	90 - 110
1880197	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P321643

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879944	Ammonia-N	98.2	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P321646

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1880016	Ammonia-N	98.1	98.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P321713

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P321713

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1880013	Kjeldahl Nitrogen	90.9	92.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321836

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879970	NO2NO3-N	96.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321960

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1880012	NO2NO3-N	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P321655

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1880023	Total-P	100	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P321539

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1880018	O-Phosphate-P	96.2	96.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P322075

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881143	Fluoride	98.7	99.3	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P322077

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1880957	Fluoride	96.3	97.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P321639

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879968	Organic Carbon	91.4	93.9	P/P	85 - 115

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P321565

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879939	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P321566

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1880010	Turbidity	2.65	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P321808

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1880007	Chloride	0.00194	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P321812

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1880007	Sulfate	0.961	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322122

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1880022	Chloride	0.125	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322124

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1880022	Sulfate	0.862	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322217

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1880195	Chloride	0.0821	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322408

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1880008	Sulfate	0.133	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321643

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879944	Ammonia-N	1.27	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321646

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1880016	Ammonia-N	0.154	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P321713

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1880013	Kjeldahl Nitrogen	1.03	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321836

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879970	NO2NO3-N	0.392	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321960

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1880012	NO2NO3-N	0.985	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P321654

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879946	Total-P	1.75	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P321655

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1880023	Total-P	2.28	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P321539

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1880018	O-Phosphate-P	0.725	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P321545

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1880009	Color (true)	3.04	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P322070

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881143	Total Alkalinity	0.0281	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P322071

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1880957	Total Alkalinity	0.282	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P322312

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879911	TDS	4.51	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P322313

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1880064	TDS	5.01	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P322075

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881143	Fluoride	0.477	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P322077

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1880957	Fluoride	1.04	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P321639

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879968	Organic Carbon	1.82	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: A75093

Included Lab Sample IDs: 1880017, 1880018, 1880019, 1880020, 1880021, 1880024

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

Reference Method: SM 2120 B

Run ID: A75095

Included Lab Sample IDs: 1880007, 1880008, 1880009, 1880010, 1880011, 1880022

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	102	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A75104

Included Lab Sample IDs: 1880007, 1880008, 1880009, 1880010, 1880011, 1880022

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

Reference Method: SM 5310 B-00

Run ID: A75134

Included Lab Sample IDs: 1880012, 1880013, 1880014, 1880015, 1880016, 1880023

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.5	96.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A75137

Included Lab Sample IDs: 1880012, 1880013, 1880014, 1880015, 1880016, 1880023

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.3	99.9	P/P	90 - 110
Ammonia-N	99.9	101	P/P	90 - 110
Ammonia-N	99.9	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A75193

Included Lab Sample IDs: 1880007

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A75195

Included Lab Sample IDs: 1880012, 1880013, 1880014, 1880015, 1880016

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	100	P/P	90 - 110
Total-P	99.8	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A75199

Included Lab Sample IDs: 1880013, 1880014, 1880015, 1880016, 1880023

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A75227

Included Lab Sample IDs: 1880012, 1880013, 1880014, 1880015, 1880016, 1880023

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.6	95.1	P/P	90 - 110
Kjeldahl Nitrogen	99.0	99.5	P/P	90 - 110
Kjeldahl Nitrogen	99.5	94.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A75230

Included Lab Sample IDs: 1880023

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A75257

Included Lab Sample IDs: 1880012

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

Reference Method: SM 2320 B-97

Run ID: A75310

Included Lab Sample IDs: 1880007, 1880008, 1880009, 1880010, 1880011, 1880022

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

Reference Method: SM 4500 F-C-97

Run ID: A75310

Included Lab Sample IDs: 1880007, 1880008, 1880009, 1880010, 1880011, 1880022

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	99.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A75326

Included Lab Sample IDs: 1880008, 1880009, 1880010, 1880011, 1880022

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	95.2	P/P	90 - 110
Chloride	103	98.9	P/P	90 - 110
Chloride	98.9	100	P/P	90 - 110
Sulfate	96.1	93.7	P/P	90 - 110
Sulfate	97.1	96.1	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A75396

Included Lab Sample IDs: 1880008, 1880010, 1880011

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sulfate	102	97.5	P/P	90 - 110
Sulfate	98.6	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				0.0	
	Turbidity				2.65	
EPA 300.0 Rev. 2.1	Chloride	106	102		0.0019	
	Chloride	101	99.2	101	0.125	
	Chloride	97.9	95.7	96.0	0.0821	
	Sulfate	102	101		0.961	
	Sulfate	97.3	97.6	99.3	0.862	
	Sulfate	101	103	102	0.133	
EPA 350.1 Rev. 2.0	Ammonia-N	100	100	98.2		1.27
	Ammonia-N	100	98.1	98.4		0.154
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	90.9	92.4		1.03
EPA 353.2 Rev. 2.0	NO2NO3-N	100	96.8			0.392
	NO2NO3-N	100	102	101		0.985
EPA 365.1 Rev. 2.0	Total-P	103				1.75
	Total-P	102	100	103		2.28
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.2	96.2	96.9		0.725
SM 2120 B	Color (true)				3.04	
SM 2320 B-97	Total Alkalinity	104			0.0281	
	Total Alkalinity	103			0.282	
SM 2540 C-97	TDS				4.51	
	TDS				5.01	
SM 4500 F-C-97	Fluoride	95.4	98.7	99.3		0.477
	Fluoride	95.9	96.3	97.4		1.04
SM 5310 B-00	Organic Carbon	93.5	91.4	93.9		1.82

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1880007, 1880008, 1880009, 1880010, 1880011, 1880022
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1880007, 1880008, 1880009, 1880010, 1880011, 1880022
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1880007, 1880008, 1880009, 1880010, 1880011, 1880022
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1880012, 1880013, 1880014, 1880015, 1880016, 1880023
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1880012, 1880013, 1880014, 1880015, 1880016, 1880023
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1880012, 1880013, 1880014, 1880015, 1880016, 1880023
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1880012, 1880013, 1880014, 1880015, 1880016, 1880023
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1880017, 1880018, 1880019, 1880020, 1880021, 1880024
SM 2120 B / E31780	True Color measured at 450 nm	1880007, 1880008, 1880009, 1880010, 1880011, 1880022
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1880007, 1880008, 1880009, 1880010, 1880011, 1880022
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1880007, 1880008, 1880009, 1880010, 1880011, 1880022
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1880007, 1880008, 1880009, 1880010, 1880011, 1880022
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1880007, 1880008, 1880009, 1880010, 1880011, 1880022
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1880012, 1880013, 1880014, 1880015, 1880016, 1880023

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	03/14/2017			03/14/2017 16:51	Blanca Fach	1880007, 1880008, 1880009, 1880010, 1880011, 1880022
EPA 300.0 Rev. 2.1	03/14/2017			03/17/2017	Elisa J Lutz	1880007
	03/14/2017			03/24/2017	Ping Hua	1880008, 1880009, 1880010, 1880011, 1880022
	03/14/2017			03/28/2017	Ping Hua	1880008, 1880010, 1880011
EPA 350.1 Rev. 2.0	03/14/2017			03/15/2017	Sofia Elnemr	1880012, 1880013, 1880014, 1880015, 1880016, 1880023
EPA 351.2 Rev. 2.0	03/14/2017	03/17/2017	Adrian Shelby	03/21/2017	Joseph Suarez	1880012, 1880013, 1880014, 1880015, 1880016, 1880023
EPA 353.2 Rev. 2.0	03/14/2017			03/20/2017	Beverly Y. Sanders	1880013, 1880014, 1880015, 1880016, 1880023
	03/14/2017			03/21/2017	Beverly Y. Sanders	1880012
EPA 365.1 Rev. 2.0	03/14/2017	03/16/2017	Adrian Shelby	03/20/2017	Lipi Saha	1880012, 1880013, 1880014, 1880015, 1880016, 1880023
EPA 365.1 Rev. 2.0 dissolved	03/14/2017			03/14/2017 15:14	Ping Hua	1880018
	03/14/2017			03/14/2017 15:43	Ping Hua	1880017
	03/14/2017			03/14/2017 15:44	Ping Hua	1880019
	03/14/2017			03/14/2017 15:45	Ping Hua	1880020
	03/14/2017			03/14/2017 15:50	Ping Hua	1880021
	03/14/2017			03/14/2017 15:51	Ping Hua	1880024
SM 2120 B	03/14/2017			03/14/2017 18:45	Julie Michelle Frank	1880007
	03/14/2017			03/14/2017 18:46	Julie Michelle Frank	1880008
	03/14/2017			03/14/2017 18:48	Julie Michelle Frank	1880009, 1880010
	03/14/2017			03/14/2017 18:49	Julie Michelle Frank	1880011
	03/14/2017			03/14/2017 18:50	Julie Michelle Frank	1880022
SM 2320 B-97	03/14/2017			03/22/2017	Dale L. Simmons	1880007
	03/14/2017			03/23/2017	Dale L. Simmons	1880008, 1880009, 1880010, 1880011, 1880022
SM 2540 C-97	03/14/2017			03/17/2017	Yijie Li	1880007, 1880008, 1880009, 1880010, 1880011, 1880022
SM 2540 D-97	03/14/2017			03/17/2017	Yijie Li	1880007, 1880008, 1880009, 1880010, 1880011, 1880022
SM 4500 F-C-97	03/14/2017			03/22/2017	Dale L. Simmons	1880007
	03/14/2017			03/23/2017	Dale L. Simmons	1880008, 1880009, 1880010, 1880011, 1880022
SM 5310 B-00	03/14/2017			03/15/2017	Julia Storbeck	1880012, 1880013, 1880014, 1880015, 1880016, 1880023