

Chemical Analysis Report

NE-DIST-2016-09-15-01

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

Event Description: **Suwannee 1**
Request ID: **RQ-2016-09-12-28**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way
Suite 100
Jacksonville, FL 32256
Attn: Nicole Frederick

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

Certified by: Colin Wright, Environmental Administrator

Date Certified: 14-OCT-2016 12:35

A handwritten signature in black ink, appearing to read "Colin Wright", is written on a light-colored rectangular background.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical group are included in this report: Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: SUWANNEE AT 340

Collection Date/Time: 09/14/2016 10:00

Field ID: G1NE0356 09142016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1831625	EPA 180.1 Rev. 2.0	Turbidity	2.6	A	NTU	P311233	
	EPA 300.0 Rev. 2.1	Chloride	7.4		mg Cl/L	P311704	
		Sulfate	18		mg SO4/L	P311706	
	SM 2120 B	Color (true)	220		PCU	P311245	
	SM 2320 B-97	Total Alkalinity	101		mg CaCO3/L	P311385	
	SM 2540 C-97	TDS	188		mg/L	P312205	
	SM 2540 D-97	TSS	5	I	mg/L	P311876	
	SM 4500 F-C-97	Fluoride	0.15		mg F/L	P311389	
1831630	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P311420	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.58		mg N/L	P311613	
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.1		mg N/L	P311673	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P311854	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P311528	
1831635	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.088		mg P/L	P311239	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: ROSE CR AT BROOKWOOD

Collection Date/Time: 09/14/2016 11:25

Field ID: G1NE0019 09142016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1831626	EPA 180.1 Rev. 2.0	Turbidity	3.5		NTU	P311233	
	EPA 300.0 Rev. 2.1	Chloride	4.2		mg Cl/L	P311704	
		Sulfate	0.22	I	mg SO4/L	P311706	
	SM 2120 B	Color (true)	480		PCU	P311245	
	SM 2320 B-97	Total Alkalinity	12		mg CaCO3/L	P311385	
	SM 2540 C-97	TDS	139		mg/L	P312205	
	SM 2540 D-97	TSS	2	I	mg/L	P311876	
	SM 4500 F-C-97	Fluoride	0.056	I	mg F/L	P311389	
1831631	EPA 350.1 Rev. 2.0	Ammonia-N	0.022		mg N/L	P311420	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P311613	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.037		mg N/L	P311673	
	EPA 365.1 Rev. 2.0	Total-P	0.27		mg P/L	P311854	
	SM 5310 B-00	Organic Carbon	47		mg C/L	P311528	
1831636	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.20		mg P/L	P311239	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: LAKE JEFFREY OUTLET AT AUBURN

Collection Date/Time: 09/14/2016 12:20

Field ID: G1NE0334 09142016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1831627	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P311233	

Field ID: G1NE0334 09142016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1831627	EPA 300.0 Rev. 2.1	Chloride	15		mg Cl/L	P311704	
		Sulfate	0.63		mg SO4/L	P311706	
	SM 2120 B	Color (true)	1.0E+03		PCU	P311245	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P311385	
	SM 2540 C-97	TDS	112		mg/L	P312205	
	SM 2540 D-97	TSS	2	I	mg/L	P311876	
	SM 4500 F-C-97	Fluoride	0.053	I	mg F/L	P311389	
1831632	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P311420	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P311613	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P312623	
	EPA 365.1 Rev. 2.0	Total-P	0.027		mg P/L	P311854	
	SM 5310 B-00	Organic Carbon	87		mg C/L	P311528	
1831637	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.014		mg P/L	P311239	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: LAKE JEFFREY OUTLET SCENIC LAKE DR.

Collection Date/Time: 09/14/2016 12:45

Field ID: G1NE0450 09142016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1831628	EPA 180.1 Rev. 2.0	Turbidity	0.75		NTU	P311233	
	EPA 300.0 Rev. 2.1	Chloride	10	A	mg Cl/L	P311707	
		Sulfate	0.53	A	mg SO4/L	P311705	
	SM 2120 B	Color (true)	690		PCU	P311245	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P311385	
	SM 2540 C-97	TDS	115		mg/L	P312205	
	SM 2540 D-97	TSS	2	U	mg/L	P311876	
1831633	SM 4500 F-C-97	Fluoride	0.057	I	mg F/L	P311389	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P311420	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P311613	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P312623	
	EPA 365.1 Rev. 2.0	Total-P	0.039		mg P/L	P311854	
1831638	SM 5310 B-00	Organic Carbon	75		mg C/L	P311528	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.021		mg P/L	P311239	

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: FALLING CR. ABV. FALLS

Collection Date/Time: 09/14/2016 15:10

Field ID: G1NE0236 09142016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1831629	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P311233	
	EPA 300.0 Rev. 2.1	Chloride	5.6		mg Cl/L	P311707	
		Sulfate	0.30	I	mg SO4/L	P311705	
	SM 2120 B	Color (true)	920		PCU	P311245	

Field ID: G1NE0236 09142016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1831629	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P311385	
	SM 2540 C-97	TDS	87		mg/L	P312205	
	SM 2540 D-97	TSS	3	I	mg/L	P311876	
	SM 4500 F-C-97	Fluoride	0.073	I	mg F/L	P311389	
1831634	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P311420	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P311613	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P312623	
	EPA 365.1 Rev. 2.0	Total-P	0.21		mg P/L	P311854	
	SM 5310 B-00	Organic Carbon	70		mg C/L	P311528	
1831639	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.15		mg P/L	P311239	

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: P311233

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P311704

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P311705

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P311706

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P311707

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P311420

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311613

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311673

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312623

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311854

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311239

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

Reference Method: SM 2120 B
Batch ID: P311245

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P311385

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

Reference Method: SM 2540 C-97
Batch ID: P312205

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P311876

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P311389

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P311528

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: P311704

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311705

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	94.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311706

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	94.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311707

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P311420

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311613

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311673

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311673

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	106		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312623

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311854

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	95.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311239

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

Reference Method: SM 2320 B-97
Batch ID: P311385

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

Reference Method: SM 4500 F-C-97
Batch ID: P311389

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P311528

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	100		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311704

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831091	Chloride	99.3		P	90 - 110
1831374	Chloride	99.8		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311705

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831628	Sulfate	98.2		P	90 - 110
1831814	Sulfate	95.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311706

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831091	Sulfate	95.4		P	90 - 110
1831374	Sulfate	94.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311707

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831628	Chloride	102		P	90 - 110
1831814	Chloride	99.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P311420

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831613	Ammonia-N	103	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311613

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831614	Kjeldahl Nitrogen	95.2	99.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311673

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831715	NO2NO3-N	91.0	91.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312623

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1836921	NO2NO3-N	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311854

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831613	Total-P	101	97.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311239

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831730	O-Phosphate-P	98.6	98.8	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P311389

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831378	Fluoride	102	102	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P311528

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831525	Organic Carbon	98.9	95.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P311233

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831625	Turbidity	6.13	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311704

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831091	Chloride	0.000447	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311705

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831628	Sulfate	0.209	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311707

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831628	Chloride	0.288	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P311420

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831613	Ammonia-N	2.15	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311613

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
--------------------------	-----------	-----------	-------------------	-----------	----------------

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311613

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831614	Kjeldahl Nitrogen	3.10	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311673

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831715	NO2NO3-N	0.480	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312623

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836921	NO2NO3-N	1.10	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311854

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831613	Total-P	3.50	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311239

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831730	O-Phosphate-P	0.194	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P311245

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831690	Color (true)	6.37	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P311385

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831378	Total Alkalinity	0.410	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P312205

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831611	TDS	0.844	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P311389

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831378	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P311528

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831525	Organic Carbon	2.40	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 180.1 Rev. 2.0
Run ID: A71650
Included Lab Sample IDs: 1831625, 1831626, 1831627, 1831628, 1831629

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A71652
Included Lab Sample IDs: 1831635, 1831636, 1831637, 1831638, 1831639

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.4	98.5	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A71654
Included Lab Sample IDs: 1831625, 1831626, 1831627, 1831628, 1831629

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.1	98.9	P/P	85 - 115

Reference Method: SM 2320 B-97
Run ID: A71696
Included Lab Sample IDs: 1831625, 1831626, 1831627, 1831628, 1831629

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

Reference Method: SM 4500 F-C-97
Run ID: A71696
Included Lab Sample IDs: 1831625, 1831626, 1831627, 1831628, 1831629

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

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A71696

Included Lab Sample IDs: 1831625, 1831626, 1831627, 1831628, 1831629

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A71708

Included Lab Sample IDs: 1831630, 1831631, 1831632, 1831633, 1831634

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

Reference Method: SM 5310 B-00

Run ID: A71737

Included Lab Sample IDs: 1831630, 1831631, 1831632, 1831633, 1831634

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A71777

Included Lab Sample IDs: 1831630, 1831631

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	103	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A71784

Included Lab Sample IDs: 1831630, 1831631, 1831632, 1831633, 1831634

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.8	97.9	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A71789

Included Lab Sample IDs: 1831625, 1831626, 1831627, 1831628, 1831629

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.2	98.1	P/P	90 - 110
Chloride	98.1	97.2	P/P	90 - 110
Sulfate	98.4	97.1	P/P	90 - 110
Sulfate	99.0	98.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A71847

Included Lab Sample IDs: 1831630, 1831631, 1831634

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A71852
Included Lab Sample IDs: 1831632, 1831633

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A72060
Included Lab Sample IDs: 1831632, 1831633, 1831634

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	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				6.13	
EPA 300.0 Rev. 2.1	Chloride	98.0	99.3 99.8		0.0004	
	Chloride	98.7	102 99.2		0.288	
	Sulfate	94.9	98.2 95.6		0.209	
	Sulfate	94.0	95.4 94.3			
EPA 350.1 Rev. 2.0	Ammonia-N	98.2	103 105			2.15
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.6	95.2 99.7			3.10
EPA 353.2 Rev. 2.0	NO2NO3-N	106	91.0 91.6			0.480
	NO2NO3-N	106	106			1.10
EPA 365.1 Rev. 2.0	Total-P	95.0	101 97.9			3.50
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	98.6 98.8			0.194
SM 2120 B	Color (true)				6.37	
SM 2320 B-97	Total Alkalinity	104			0.410	
SM 2540 C-97	TDS				0.844	
SM 4500 F-C-97	Fluoride	100	102 102			0.0
SM 5310 B-00	Organic Carbon	100	98.9 95.0			2.40

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1831625, 1831626, 1831627, 1831628, 1831629
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1831625, 1831626, 1831627, 1831628, 1831629
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1831625, 1831626, 1831627, 1831628, 1831629
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1831630, 1831631, 1831632, 1831633, 1831634
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1831630, 1831631, 1831632, 1831633, 1831634
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1831630, 1831631, 1831632, 1831633, 1831634

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1831630, 1831631, 1831632, 1831633, 1831634
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1831635, 1831636, 1831637, 1831638, 1831639
SM 2120 B / E31780	True Color measured at 450 nm	1831625, 1831626, 1831627, 1831628, 1831629
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1831625, 1831626, 1831627, 1831628, 1831629
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1831625, 1831626, 1831627, 1831628, 1831629
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1831625, 1831626, 1831627, 1831628, 1831629
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1831625, 1831626, 1831627, 1831628, 1831629
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1831630, 1831631, 1831632, 1831633, 1831634

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	09/15/2016			09/15/2016 15:35	Sima Feizi	1831625, 1831626, 1831627, 1831628, 1831629
EPA 300.0 Rev. 2.1	09/15/2016			09/22/2016	Ping Hua	1831625, 1831626, 1831627
	09/15/2016			09/23/2016	Ping Hua	1831628, 1831629
EPA 350.1 Rev. 2.0	09/15/2016			09/16/2016	Sofia Elnemr	1831630, 1831631, 1831632, 1831633, 1831634
EPA 351.2 Rev. 2.0	09/15/2016	09/21/2016	Adrian Shelby	09/22/2016	Christopher Armour	1831630, 1831631, 1831632, 1831633, 1831634
EPA 353.2 Rev. 2.0	09/15/2016			09/22/2016	Peter D. Kaus	1831630, 1831631
	09/15/2016			10/06/2016	Peter D. Kaus	1831632, 1831633, 1831634
EPA 365.1 Rev. 2.0	09/15/2016	09/26/2016	Vijayalakshmi Reddy	09/27/2016	Lipi Saha	1831630, 1831631, 1831632, 1831633, 1831634
EPA 365.1 Rev. 2.0 dissolved	09/15/2016			09/15/2016 15:38	Julia Storbeck	1831635
	09/15/2016			09/15/2016 15:39	Julia Storbeck	1831636
	09/15/2016			09/15/2016 15:40	Julia Storbeck	1831637
	09/15/2016			09/15/2016 15:41	Julia Storbeck	1831638, 1831639
SM 2120 B	09/15/2016			09/15/2016 19:14	Julie Michelle Frank	1831625, 1831626
	09/15/2016			09/15/2016 19:15	Julie Michelle Frank	1831627
	09/15/2016			09/15/2016 19:16	Julie Michelle Frank	1831628
	09/15/2016			09/15/2016 19:17	Julie Michelle Frank	1831629
SM 2320 B-97	09/15/2016			09/17/2016	Dale L. Simmons	1831625, 1831626, 1831627, 1831628, 1831629
SM 2540 C-97	09/15/2016			09/20/2016	Sima Feizi	1831625, 1831626, 1831627, 1831628, 1831629
SM 2540 D-97	09/15/2016			09/20/2016	Sima Feizi	1831625, 1831626, 1831627, 1831628, 1831629
SM 4500 F-C-97	09/15/2016			09/17/2016	Dale L. Simmons	1831625, 1831626, 1831627, 1831628, 1831629
SM 5310 B-00	09/15/2016			09/19/2016	Sofia Elnemr	1831630, 1831631, 1831632, 1831633, 1831634