

Chemical Analysis Report

NE-DIST-2017-06-28-01

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

Event Description: **Ichetucknee**
Request ID: **RQ-2017-06-26-04**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Jacksonville, FL 32256-7577
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 14-JUL-2017 14:41



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: Rose Creek @ Brookwood

Collection Date/Time: 06/27/2017 09:25

Field ID: G1NE019 06272017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1909448	EPA 180.1 Rev. 2.0	Turbidity	4.4	A	NTU	P327669	
	EPA 300.0 Rev. 2.1	Chloride	5.0	A	mg Cl/L	P327936	
		Sulfate	0.45	IA	mg SO4/L	P327939	
	SM 2120 B	Color (true)	400		PCU	P327649	
	SM 2320 B-97	Total Alkalinity	13		mg CaCO3/L	P327908	
	SM 2540 C-97	TDS	122		mg/L	P328011	
	SM 2540 D-97	TSS	3	I	mg/L	P328281	
	SM 4500 F-C-97	Fluoride	0.057	I	mg F/L	P327913	
1909454	EPA 350.1 Rev. 2.0	Ammonia-N	0.027		mg N/L	P327684	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P327771	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.039		mg N/L	P327701	
	EPA 365.1 Rev. 2.0	Total-P	0.25		mg P/L	P327793	
	SM 5310 B-00	Organic Carbon	39		mg C/L	P327801	
1909460	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.18		mg P/L	P327641	

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: Ichetucknee R @ US Hwy 27

Collection Date/Time: 06/27/2017 09:50

Field ID: G1NE0531 06272017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1909449	EPA 180.1 Rev. 2.0	Turbidity	0.60		NTU	P327669	
	EPA 300.0 Rev. 2.1	Chloride	5.8		mg Cl/L	P327936	
		Sulfate	11		mg SO4/L	P327939	
	SM 2120 B	Color (true)	2.5	U	PCU	P327650	
	SM 2320 B-97	Total Alkalinity	155		mg CaCO3/L	P327908	
	SM 2540 C-97	TDS	161		mg/L	P328011	
	SM 2540 D-97	TSS	3	I	mg/L	P328281	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P327913	
1909455	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P327684	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.13	I	mg N/L	P327771	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.52		mg N/L	P327701	
	EPA 365.1 Rev. 2.0	Total-P	0.053		mg P/L	P327793	
	SM 5310 B-00	Organic Carbon	0.57	I	mg C/L	P327801	
1909461	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.040		mg P/L	P327643	

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: Ichetucknee R @ Coffee Springs

Collection Date/Time: 06/27/2017 10:50

Field ID: G1NE0583 06272017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1909450	EPA 180.1 Rev. 2.0	Turbidity	0.25		NTU	P327669	

Field ID: G1NE0583 06272017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1909450	EPA 300.0 Rev. 2.1	Chloride	2.8		mg Cl/L	P327936	
		Sulfate	7.6		mg SO4/L	P327939	
	SM 2120 B	Color (true)	2.5	U	PCU	P327650	
	SM 2320 B-97	Total Alkalinity	137		mg CaCO3/L	P327908	
	SM 2540 C-97	TDS	160		mg/L	P328011	
	SM 2540 D-97	TSS	3	I	mg/L	P328281	
	SM 4500 F-C-97	Fluoride	0.067	I	mg F/L	P327913	
1909456	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P327684	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.11	I	mg N/L	P327771	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.49		mg N/L	P327701	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P327793	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P327801	
1909462	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.027		mg P/L	P327643	

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: Devil's Eye Spring

Collection Date/Time: 06/27/2017 11:10

Field ID: G1NE0561 06272017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1909451	EPA 180.1 Rev. 2.0	Turbidity	0.20		NTU	P327669	
	EPA 300.0 Rev. 2.1	Chloride	6.4		mg Cl/L	P327936	
		Sulfate	11		mg SO4/L	P327939	
	SM 2120 B	Color (true)	2.5	U	PCU	P327650	
	SM 2320 B-97	Total Alkalinity	154		mg CaCO3/L	P327908	
	SM 2540 C-97	TDS	184		mg/L	P328011	
	SM 2540 D-97	TSS	2	I	mg/L	P328281	
1909457	SM 4500 F-C-97	Fluoride	0.16		mg F/L	P327913	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P327684	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.083	I	mg N/L	P327771	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.60		mg N/L	P327701	
	EPA 365.1 Rev. 2.0	Total-P	0.050		mg P/L	P327793	
1909463	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P327801	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.054		mg P/L	P327643	

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: Grassy Hole Spring

Collection Date/Time: 06/27/2017 10:15

Field ID: G1NE0532 06272017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1909452	EPA 180.1 Rev. 2.0	Turbidity	0.30		NTU	P327669	
	EPA 300.0 Rev. 2.1	Chloride	6.6		mg Cl/L	P327936	
		Sulfate	18		mg SO4/L	P327939	

Field ID: G1NE0532 06272017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1909452	SM 2120 B	Color (true)	2.5	U	PCU	P327650	
	SM 2320 B-97	Total Alkalinity	158		mg CaCO3/L	P327908	
	SM 2540 C-97	TDS	202		mg/L	P328011	
	SM 2540 D-97	TSS	2	U	mg/L	P328281	
	SM 4500 F-C-97	Fluoride	0.19		mg F/L	P327982	
1909458	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P327684	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.12	I	mg N/L	P327771	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.56		mg N/L	P327701	
	EPA 365.1 Rev. 2.0	Total-P	0.056		mg P/L	P327793	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P327801	
1909464	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.054		mg P/L	P327643	

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. @ 131

Collection Date/Time: 06/27/2017 09:00

Field ID: G1NE0584 06272017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1909453	EPA 180.1 Rev. 2.0	Turbidity	4.6		NTU	P327669	
	EPA 300.0 Rev. 2.1	Chloride	4.4		mg Cl/L	P327936	
		Sulfate	0.47	I	mg SO4/L	P327939	
	SM 2120 B	Color (true)	390		PCU	P327650	
	SM 2320 B-97	Total Alkalinity	13		mg CaCO3/L	P327908	
	SM 2540 C-97	TDS	105		mg/L	P328011	
	SM 2540 D-97	TSS	2	I	mg/L	P328281	
	SM 4500 F-C-97	Fluoride	0.057	I	mg F/L	P327982	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.061		mg N/L	P327684	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P327771	
1909459	EPA 353.2 Rev. 2.0	NO2NO3-N	0.031		mg N/L	P327701	
	EPA 365.1 Rev. 2.0	Total-P	0.24		mg P/L	P327793	
	SM 5310 B-00	Organic Carbon	38		mg C/L	P327801	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.18		mg P/L	P327643	

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.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P327669

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: P327936

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P327939

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P327684

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P327771

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P327701

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P327793

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P327641

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P327643

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

Reference Method: SM 2120 B
Batch ID: P327649

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report Method Blank Results

Reference Method: SM 2120 B
Batch ID: P327650

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P327908

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

Reference Method: SM 2540 C-97
Batch ID: P328011

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P328281

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P327913

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P327982

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P327801

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: P327936

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P327939

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: P327939

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P327684

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P327771

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.3		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P327701

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P327793

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.4		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P327641

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P327643

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

Reference Method: SM 2320 B-97
Batch ID: P327908

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

Reference Method: SM 4500 F-C-97
Batch ID: P327913

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.3		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P327982

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	102		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P327801

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.7		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P327936

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909448	Chloride	102		P	90 - 110
1909517	Chloride	104		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P327939

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909448	Sulfate	99.3		P	90 - 110
1909517	Sulfate	98.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P327684

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909398	Ammonia-N	97.1	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P327771

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909483	Kjeldahl Nitrogen	95.2	97.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P327701

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909454	NO2NO3-N	93.4	93.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P327793

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909455	Total-P	96.1	100	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P327641

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909373	O-Phosphate-P	93.4	95.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P327643

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909461	O-Phosphate-P	96.2	95.2	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P327913

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909394	Fluoride	100	100	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P327982

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909452	Fluoride	102	103	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P327801

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909372	Organic Carbon	98.4	98.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P327669

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909448	Turbidity	3.17	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P327936

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909448	Chloride	1.57	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P327684

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909398	Ammonia-N	1.34	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P327771

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909483	Kjeldahl Nitrogen	1.16	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P327701

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909454	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P327793

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909455	Total-P	3.85	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P327641

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909373	O-Phosphate-P	1.25	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P327643

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909461	O-Phosphate-P	0.739	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P327649

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909352	Color (true)	1.30	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P327650

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909490	Color (true)	2.62	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P327908

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909394	Total Alkalinity	0.0689	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P328011

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909394	TDS	3.10	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P327913

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909394	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P327982

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909452	Fluoride	0.953	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P327801

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909372	Organic Carbon	0.356	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: A77396
Included Lab Sample IDs: 1909460, 1909461, 1909462, 1909463, 1909464, 1909465

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.3	99.4	P/P	90 - 110
O-Phosphate-P	99.4	99.6	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A77400
Included Lab Sample IDs: 1909448, 1909449, 1909450, 1909451, 1909452, 1909453

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	99.9	P/P	85 - 115
Color (true)	103	99.6	P/P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A77410
Included Lab Sample IDs: 1909454, 1909455, 1909456, 1909457, 1909458, 1909459

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A77410

Included Lab Sample IDs: 1909454, 1909455, 1909456, 1909457, 1909458, 1909459

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	95.4	96.3	P/P	90 - 110
Ammonia-N	98.1	95.4	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A77411

Included Lab Sample IDs: 1909448, 1909449, 1909450, 1909451, 1909452, 1909453

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.5	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A77418

Included Lab Sample IDs: 1909454, 1909455, 1909456, 1909457, 1909458, 1909459

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	99.5	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A77463

Included Lab Sample IDs: 1909454, 1909455, 1909456, 1909457, 1909458, 1909459

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.8	97.6	P/P	90 - 110
Organic Carbon	96.2	94.8	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A77508

Included Lab Sample IDs: 1909448, 1909449, 1909450, 1909451, 1909452, 1909453

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	103	P/P	90 - 110
Total Alkalinity	104	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A77508

Included Lab Sample IDs: 1909448, 1909449, 1909450, 1909451

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	97.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A77511

Included Lab Sample IDs: 1909454, 1909455, 1909456, 1909457, 1909458, 1909459

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	102	P/P	90 - 110
Kjeldahl Nitrogen	96.7	104	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A77520

Included Lab Sample IDs: 1909454, 1909455, 1909457, 1909459

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A77522

Included Lab Sample IDs: 1909448, 1909449, 1909450, 1909451, 1909452, 1909453

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	94.7	97.2	P/P	90 - 110
Chloride	97.2	91.7	P/P	90 - 110
Sulfate	101	96.1	P/P	90 - 110
Sulfate	98.3	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A77523

Included Lab Sample IDs: 1909456, 1909458

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	99.2	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A77532

Included Lab Sample IDs: 1909452, 1909453

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	99.5	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				3.17	
EPA 300.0 Rev. 2.1	Chloride	99.0	102 104		1.57	
	Sulfate	101	99.3 98.5			
EPA 350.1 Rev. 2.0	Ammonia-N	97.1	97.1 98.6			1.34
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.3	95.2 97.2			1.16
EPA 353.2 Rev. 2.0	NO2NO3-N	106	93.4 93.4			0.0
EPA 365.1 Rev. 2.0	Total-P	97.4	96.1 100			3.85
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.9	93.4 95.1			1.25
	O-Phosphate-P	98.7	96.2 95.2			0.739
SM 2120 B	Color (true)				1.30	
	Color (true)				2.62	
SM 2320 B-97	Total Alkalinity	103			0.0689	
SM 2540 C-97	TDS				3.10	
SM 4500 F-C-97	Fluoride	96.3	100 100			0.0
	Fluoride	102	102 103			0.953

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	Precision		
				LCS	SMP	MS
SM 5310 B-00	Organic Carbon	94.7	98.4 98.0			0.356

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1909448, 1909449, 1909450, 1909451, 1909452, 1909453
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1909448, 1909449, 1909450, 1909451, 1909452, 1909453
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1909448, 1909449, 1909450, 1909451, 1909452, 1909453
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1909454, 1909455, 1909456, 1909457, 1909458, 1909459
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1909454, 1909455, 1909456, 1909457, 1909458, 1909459
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1909454, 1909455, 1909456, 1909457, 1909458, 1909459
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1909454, 1909455, 1909456, 1909457, 1909458, 1909459
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1909460, 1909461, 1909462, 1909463, 1909464, 1909465
SM 2120 B / E31780	True Color measured at 450 nm	1909448, 1909449, 1909450, 1909451, 1909452, 1909453
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1909448, 1909449, 1909450, 1909451, 1909452, 1909453
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1909448, 1909449, 1909450, 1909451, 1909452, 1909453
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1909448, 1909449, 1909450, 1909451, 1909452, 1909453
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1909448, 1909449, 1909450, 1909451, 1909452, 1909453
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1909454, 1909455, 1909456, 1909457, 1909458, 1909459

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	06/28/2017			06/28/2017 17:52	DeAsia Armster	1909448, 1909449, 1909450, 1909451, 1909452, 1909453
EPA 300.0 Rev. 2.1	06/28/2017			06/30/2017	Julia Storbeck	1909448, 1909449, 1909450, 1909451, 1909452, 1909453
EPA 350.1 Rev. 2.0	06/28/2017			06/28/2017	Sofia Elnemr	1909454, 1909455, 1909456, 1909457, 1909458, 1909459
EPA 351.2 Rev. 2.0	06/28/2017	06/30/2017	Adrian Shelby	07/05/2017	Joseph Suarez	1909454, 1909455, 1909456, 1909457, 1909458, 1909459
EPA 353.2 Rev. 2.0	06/28/2017			06/29/2017	Beverly Y. Sanders	1909454, 1909455, 1909456, 1909457, 1909458, 1909459
EPA 365.1 Rev. 2.0	06/28/2017	06/30/2017	Vijayalakshmi Reddy	07/05/2017	Lipi Saha	1909454, 1909455, 1909456, 1909457, 1909458, 1909459
EPA 365.1 Rev. 2.0 dissolved	06/28/2017			06/28/2017 12:25	Lipi Saha	1909460
	06/28/2017			06/28/2017 12:32	Lipi Saha	1909461
	06/28/2017			06/28/2017 12:34	Lipi Saha	1909462
	06/28/2017			06/28/2017 12:35	Lipi Saha	1909463
	06/28/2017			06/28/2017 12:36	Lipi Saha	1909464
	06/28/2017			06/28/2017 12:37	Lipi Saha	1909465
SM 2120 B	06/28/2017			06/28/2017 15:45	Tanya Welborn	1909449
	06/28/2017			06/28/2017 15:46	Tanya Welborn	1909450, 1909451
	06/28/2017			06/28/2017 15:47	Tanya Welborn	1909452
	06/28/2017			06/28/2017 16:32	Tanya Welborn	1909448
	06/28/2017			06/28/2017 16:33	Tanya Welborn	1909453
SM 2320 B-97	06/28/2017			07/01/2017	Dale L. Simmons	1909448, 1909449, 1909450, 1909451, 1909452, 1909453
SM 2540 C-97	06/28/2017			06/30/2017	Yijie Li	1909448, 1909449, 1909450, 1909451, 1909452, 1909453
SM 2540 D-97	06/28/2017			06/30/2017	Yijie Li	1909448, 1909449, 1909450, 1909451, 1909452, 1909453
SM 4500 F-C-97	06/28/2017			07/01/2017	Dale L. Simmons	1909448, 1909449, 1909450, 1909451
	06/28/2017			07/05/2017	Dale L. Simmons	1909452, 1909453
SM 5310 B-00	06/28/2017			06/29/2017	Sofia Elnemr	1909454, 1909455, 1909456, 1909457, 1909458, 1909459