

Chemical Analysis Report

NE-DIST-2016-07-27-02

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

Event Description: **Suwannee springs**
Request ID: **RQ-2016-07-25-05**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Jacksonville, FL 32256-7577
Attn: Jeremy Parrish

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 22-AUG-2016 13:17

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored 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: 22051007 Trail Spring Vent

Collection Date/Time: 07/27/2016 10:35

Field ID: 22051007

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1819631	EPA 180.1 Rev. 2.0	Turbidity	0.15		NTU	P308766	
	EPA 300.0 Rev. 2.1	Chloride	9.6		mg Cl/L	P309376	
		Sulfate	32		mg SO4/L	P309381	
	SM 2120 B	Color (true)	3.3	I	PCU	P308737	
	SM 2320 B-97	Total Alkalinity	162	A	mg CaCO3/L	P308919	
	SM 2540 C-97	TDS	285		mg/L	P309414	
	SM 2540 D-97	TSS	2	I	mg/L	P309011	
	SM 4500 F-C-97	Fluoride	0.073	I	mg F/L	P308922	
1819635	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P308939	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.15	I	mg N/L	P309244	
	EPA 353.2 Rev. 2.0	NO2NO3-N	8.6		mg N/L	P309032	
	EPA 365.1 Rev. 2.0	Total-P	0.052		mg P/L	P309280	
	SM 5310 B-00	Organic Carbon	0.89	I	mg C/L	P309197	
1819639	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.051		mg P/L	P308733	

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: Trail Springs Vent Duplicate

Collection Date/Time: 07/27/2016 10:40

Field ID: 22051007

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1819632	EPA 180.1 Rev. 2.0	Turbidity	0.30		NTU	P308766	
	EPA 300.0 Rev. 2.1	Chloride	9.6		mg Cl/L	P309376	
		Sulfate	32		mg SO4/L	P309381	
	SM 2120 B	Color (true)	3.5	I	PCU	P308737	
	SM 2320 B-97	Total Alkalinity	162		mg CaCO3/L	P308919	
	SM 2540 C-97	TDS	302		mg/L	P309414	
	SM 2540 D-97	TSS	3	I	mg/L	P309011	
	SM 4500 F-C-97	Fluoride	0.072	I	mg F/L	P308922	
1819636	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P308939	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P309244	
	EPA 353.2 Rev. 2.0	NO2NO3-N	8.6		mg N/L	P309032	
	EPA 365.1 Rev. 2.0	Total-P	0.050		mg P/L	P309280	
	SM 5310 B-00	Organic Carbon	0.86	I	mg C/L	P309197	
1819640	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.051		mg P/L	P308733	

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: 22051012 Guaranto Spr. Vent

Collection Date/Time: 07/27/2016 11:15

Field ID: 22051012

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1819633	EPA 180.1 Rev. 2.0	Turbidity	0.90		NTU	P308766	
	EPA 300.0 Rev. 2.1	Chloride	8.3		mg Cl/L	P309376	
		Sulfate	13		mg SO4/L	P309381	

Field ID: 22051012

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1819633	SM 2120 B	Color (true)	2.5	U	PCU	P308737	
	SM 2320 B-97	Total Alkalinity	191		mg CaCO3/L	P308919	
	SM 2540 C-97	TDS	243		mg/L	P309414	
	SM 2540 D-97	TSS	3	I	mg/L	P309011	
	SM 4500 F-C-97	Fluoride	0.096	I	mg F/L	P308922	
1819637	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P308939	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.23		mg N/L	P309244	
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.7		mg N/L	P309032	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P309280	
	SM 5310 B-00	Organic Carbon	0.94	I	mg C/L	P309198	
1819641	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.009	I	mg P/L	P308733	

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: G1NE0013 Hart Springs

Collection Date/Time: 07/27/2016 12:10

Field ID: G1NE0013

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1819634	EPA 180.1 Rev. 2.0	Turbidity	0.30		NTU	P308766	
	EPA 300.0 Rev. 2.1	Chloride	11		mg Cl/L	P309376	
		Sulfate	34		mg SO4/L	P309381	
	SM 2120 B	Color (true)	2.5	U	PCU	P308737	
	SM 2320 B-97	Total Alkalinity	217		mg CaCO3/L	P308919	
	SM 2540 C-97	TDS	286	A	mg/L	P309414	
	SM 2540 D-97	TSS	3	I	mg/L	P309011	
	SM 4500 F-C-97	Fluoride	0.093	I	mg F/L	P308922	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P308939	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.12	I	mg N/L	P309244	
1819638	EPA 353.2 Rev. 2.0	NO2NO3-N	2.5		mg N/L	P309032	
	EPA 365.1 Rev. 2.0	Total-P	0.068		mg P/L	P309281	
	SM 5310 B-00	Organic Carbon	0.64	I	mg C/L	P309198	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.066		mg P/L	P308735	

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: P308766

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P309376

Component	Result	Code	Units
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Quality Assurance Report

Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309376

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309381

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308939

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309244

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309032

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309280

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309281

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308733

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308735

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2120 B
Batch ID: P308737

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P308919

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

Reference Method: SM 2540 C-97
Batch ID: P309414

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P309011

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P308922

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P309197

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

Reference Method: SM 5310 B-00
Batch ID: P309198

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: P309376

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: P309381

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: P309381

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	92.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308939

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309244

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309032

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: P309280

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309281

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308733

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308735

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

Reference Method: SM 2320 B-97
Batch ID: P308919

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P308922

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P309197

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

Reference Method: SM 5310 B-00
Batch ID: P309198

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309376

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1819651	Chloride	98.1		P	90 - 110
1822305	Chloride	95.4	95.4	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309381

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1819651	Sulfate	94.4		P	90 - 110
1822305	Sulfate	96.1	96.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308939

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1819389	Ammonia-N	104	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309244

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1819636	Kjeldahl Nitrogen	92.6	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309032

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1819473	NO2NO3-N	99.8		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309280

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1819464	Total-P	100	99.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309281

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1819638	Total-P	105	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308733

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1819371	O-Phosphate-P	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308735

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1819642	O-Phosphate-P	101	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P308922

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1819631	Fluoride	98.0	98.5	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P309197

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1819390	Organic Carbon	105		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P309198

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1819637	Organic Carbon	106	106	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P308766

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819472	Turbidity	0.703	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309376

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822305	Chloride	0.0134	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309381

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822305	Sulfate	0.00800	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308939

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819389	Ammonia-N	0.994	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309244

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819636	Kjeldahl Nitrogen	15.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309032

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819473	NO2NO3-N	0.397	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309280

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819464	Total-P	0.532	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309281

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819638	Total-P	1.98	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308733

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819371	O-Phosphate-P	0.781	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308735

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819642	O-Phosphate-P	1.01	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P308737

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819341	Color (true)	0.348	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P308919

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819631	Total Alkalinity	0.260	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P309414

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819634	TDS	2.80	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P308922

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819631	Fluoride	0.482	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P309197

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819390	Organic Carbon	0.460	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P309198

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819637	Organic Carbon	0.497	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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A70793

Included Lab Sample IDs: 1819639, 1819640, 1819641, 1819642

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.7	99.0	P/P	90 - 110
O-Phosphate-P	99.9	99.7	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A70794

Included Lab Sample IDs: 1819631, 1819632, 1819633, 1819634

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A70799

Included Lab Sample IDs: 1819631, 1819632, 1819633, 1819634

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	100	P/P	95 - 105

Reference Method: SM 2320 B-97

Run ID: A70856

Included Lab Sample IDs: 1819631, 1819632, 1819633, 1819634

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	104	P/P	90 - 110
Total Alkalinity	104	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A70856

Included Lab Sample IDs: 1819631, 1819632, 1819633, 1819634

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A70861

Included Lab Sample IDs: 1819635, 1819636, 1819637, 1819638

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.7	99.7	P/P	90 - 110
Ammonia-N	99.8	99.7	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A70885

Included Lab Sample IDs: 1819631, 1819632, 1819633, 1819634

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.6	101	P/P	90 - 110
Sulfate	96.4	98.3	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A70894

Included Lab Sample IDs: 1819635, 1819636, 1819637, 1819638

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

Reference Method: SM 5310 B-00

Run ID: A70945

Included Lab Sample IDs: 1819635, 1819636, 1819637, 1819638

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A70992

Included Lab Sample IDs: 1819636, 1819638

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	101	P/P	90 - 110
Total-P	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A71009

Included Lab Sample IDs: 1819635, 1819637

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A71014

Included Lab Sample IDs: 1819635, 1819636, 1819637, 1819638

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	93.0	97.2	P/P	90 - 110
Kjeldahl Nitrogen	94.6	93.0	P/P	90 - 110
Kjeldahl Nitrogen	97.2	93.0	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						0.703	
EPA 300.0 Rev. 2.1	Chloride	97.9	95.4	95.4	98.1			0.0134
	Sulfate	92.1	96.1	96.1	94.4			0.0080
EPA 350.1 Rev. 2.0	Ammonia-N	104	104	103				0.994
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	92.6	108				15.0
EPA 353.2 Rev. 2.0	NO2NO3-N	106	99.8					0.397
EPA 365.1 Rev. 2.0	Total-P	102	100	99.9				0.532

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 365.1 Rev. 2.0	Total-P	98.9	105	103		1.98
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	102	103		0.781
	O-Phosphate-P	102	101	102		1.01
SM 2120 B	Color (true)				0.348	
SM 2320 B-97	Total Alkalinity	103			0.260	
SM 2540 C-97	TDS				2.80	
SM 4500 F-C-97	Fluoride	101	98.0	98.5		0.482
SM 5310 B-00	Organic Carbon	100	105			0.460
	Organic Carbon	102	106	106		0.497

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1819631, 1819632, 1819633, 1819634
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1819631, 1819632, 1819633, 1819634
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1819631, 1819632, 1819633, 1819634
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1819635, 1819636, 1819637, 1819638
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1819635, 1819636, 1819637, 1819638
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1819635, 1819636, 1819637, 1819638
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1819635, 1819636, 1819637, 1819638
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1819639, 1819640, 1819641, 1819642
SM 2120 B / E31780	True Color measured at 450 nm	1819631, 1819632, 1819633, 1819634
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1819631, 1819632, 1819633, 1819634
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1819631, 1819632, 1819633, 1819634
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1819631, 1819632, 1819633, 1819634
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1819631, 1819632, 1819633, 1819634
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1819635, 1819636, 1819637, 1819638

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	07/27/2016			07/27/2016 16:42	Sima Feizi	1819631, 1819632, 1819633, 1819634
EPA 300.0 Rev. 2.1	07/27/2016			08/05/2016	Ping Hua	1819631, 1819632, 1819633, 1819634
EPA 350.1 Rev. 2.0	07/27/2016			07/29/2016	Julie Michelle Frank	1819635, 1819636, 1819637, 1819638
EPA 351.2 Rev. 2.0	07/27/2016	08/05/2016	Sofia Elnemr	08/09/2016	Virginia P. Brown	1819635, 1819636, 1819637, 1819638
EPA 353.2 Rev. 2.0	07/27/2016			08/02/2016	Peter D. Kaus	1819635, 1819636, 1819637, 1819638
EPA 365.1 Rev. 2.0	07/27/2016	08/05/2016	Vijayalakshmi Reddy	08/08/2016	Lipi Saha	1819636, 1819638
	07/27/2016	08/05/2016	Vijayalakshmi Reddy	08/09/2016	Lipi Saha	1819635, 1819637
EPA 365.1 Rev. 2.0 dissolved	07/27/2016			07/27/2016 16:16	Julia Storbeck	1819642
	07/27/2016			07/27/2016 16:21	Julia Storbeck	1819639
	07/27/2016			07/27/2016 16:22	Julia Storbeck	1819640
	07/27/2016			07/27/2016 16:27	Julia Storbeck	1819641
SM 2120 B	07/27/2016			07/27/2016 18:00	Rochelle Y Jackson	1819631, 1819632
	07/27/2016			07/27/2016 18:01	Rochelle Y Jackson	1819633
	07/27/2016			07/27/2016 18:02	Rochelle Y Jackson	1819634
SM 2320 B-97	07/27/2016			07/30/2016	Dale L. Simmons	1819631, 1819632, 1819633, 1819634
SM 2540 C-97	07/27/2016			07/29/2016	Yijie Li	1819631, 1819632, 1819633, 1819634
SM 2540 D-97	07/27/2016			07/29/2016	Yijie Li	1819631, 1819632, 1819633, 1819634
SM 4500 F-C-97	07/27/2016			07/30/2016	Dale L. Simmons	1819631, 1819632, 1819633, 1819634
SM 5310 B-00	07/27/2016			08/03/2016	Sofia Elnemr	1819635, 1819636
	07/27/2016			08/04/2016	Sofia Elnemr	1819637, 1819638