Chemical Analysis Report

NE-DIST-2016-04-14-02

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

Event Description: **High Springs**
Request ID: **RQ-2016-04-11-11**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
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8800 Baymeadows Way West
Jacksonville, FL 32256-7577
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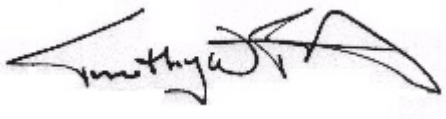
Certified by: Timothy Fitzpatrick, Program Administrator

Date Certified: 05-MAY-2016 09:05



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: G1NE0016 Tree House Spring **Collection Date/Time: 04/13/2016 13:00**

Field ID: G1NE0016 Tree House Spring Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1789427	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P302321	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P302718	
		Sulfate	31		mg SO4/L	P302721	
	SM 2120 B	Color (true)	250		PCU	P302292	
	SM 2320 B-97	Total Alkalinity	76		mg CaCO3/L	P302635	
	SM 2540 C-97	TDS	214		mg/L	P303138	
	SM 2540 D-97	TSS	2	U	mg/L	P302915	
	SM 4500 F-C-97	Fluoride	0.16		mg F/L	P302638	
1789432	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P303039	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.76		mg N/L	P303094	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.20		mg N/L	P302709	
	EPA 365.1 Rev. 2.0	Total-P	0.17		mg P/L	P302793	
	SM 5310 B-00	Organic Carbon	24		mg C/L	P302856	
1789437	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.13		mg P/L	P302278	

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

Sample Location: G1NE0015 Santa Fe Rise **Collection Date/Time: 04/13/2016 10:25**

Field ID: G1NE0015 Santa Fe Rise Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1789428	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P302321	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P302718	
		Sulfate	28		mg SO4/L	P302721	
	SM 2120 B	Color (true)	340		PCU	P302292	
	SM 2320 B-97	Total Alkalinity	48		mg CaCO3/L	P302635	
	SM 2540 C-97	TDS	177		mg/L	P303138	
	SM 2540 D-97	TSS	2	I	mg/L	P302915	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P302638	
1789433	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P303039	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.94		mg N/L	P303094	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P302709	
	EPA 365.1 Rev. 2.0	Total-P	0.20		mg P/L	P302793	
	SM 5310 B-00	Organic Carbon	30		mg C/L	P302856	
1789438	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.14		mg P/L	P302278	

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

Sample Location: G1NE0017 Hornsby Spring **Collection Date/Time: 04/13/2016 11:05**

Field ID: G1NE0017 Hornsby Spring Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1789429	EPA 180.1 Rev. 2.0	Turbidity	0.15		NTU	P302321	
	EPA 300.0 Rev. 2.1	Chloride	13		mg Cl/L	P302718	
		Sulfate	43		mg SO4/L	P302721	

Field ID: G1NE0017 Hornsby Spring Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1789429	SM 2120 B	Color (true)	12		PCU	P302292	
	SM 2320 B-97	Total Alkalinity	166		mg CaCO3/L	P302635	
	SM 2540 C-97	TDS	270	A	mg/L	P303138	
	SM 2540 D-97	TSS	2	U	mg/L	P302915	
	SM 4500 F-C-97	Fluoride	0.20		mg F/L	P302638	
1789434	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P303039	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.18	I	mg N/L	P303094	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.48		mg N/L	P302709	
	EPA 365.1 Rev. 2.0	Total-P	0.085		mg P/L	P302793	
	SM 5310 B-00	Organic Carbon	2.3		mg C/L	P302856	
1789439	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.079		mg P/L	P302278	

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

Sample Location: G1NE0014 Gilchrist Blue Spring **Collection Date/Time: 04/13/2016 11:45**

Field ID: G1NE0014 Gilchrist Blue Spring Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1789430	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P302321	
	EPA 300.0 Rev. 2.1	Chloride	6.4	A	mg Cl/L	P302718	
		Sulfate	12	A	mg SO4/L	P302721	
	SM 2120 B	Color (true)	2.5	U	PCU	P302292	
	SM 2320 B-97	Total Alkalinity	174		mg CaCO3/L	P302635	
	SM 2540 C-97	TDS	207		mg/L	P303138	
	SM 2540 D-97	TSS	2	U	mg/L	P302915	
	SM 4500 F-C-97	Fluoride	0.10		mg F/L	P302638	
1789435	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P303039	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.12	I	mg N/L	P303094	
	EPA 353.2 Rev. 2.0	NO2NO3-N	2.2		mg N/L	P302709	
	EPA 365.1 Rev. 2.0	Total-P	0.034		mg P/L	P302793	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P302856	
1789440	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.031		mg P/L	P302278	

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

Sample Location: FIELD BLANK **Collection Date/Time: 04/13/2016 14:50**

Field ID: FIELD BLANK Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1789431	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P302321	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P302718	
		Sulfate	0.20	U	mg SO4/L	P302721	
	SM 2120 B	Color (true)	2.5	U	PCU	P302459	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P302635	
	SM 2540 C-97	TDS	15	U	mg/L	P303138	
	SM 2540 D-97	TSS	2	U	mg/L	P302915	

Field ID: FIELD BLANK Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1789431	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P302638	
1789436	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P303040	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P303094	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P302709	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P302927	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P302856	
1789441	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P302278	

Ref. Method and Comment:
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.
EPA 350.1 Rev. 2.0: The result was confirmed on 04/26/2016.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P302321

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302718

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302721

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303039

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303040

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P303094

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302709

Component	Result	Code	Units

Quality Assurance Report
Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302709

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302793

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302927

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P302278

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

Reference Method: SM 2120 B
Batch ID: P302292

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P302459

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P302635

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

Reference Method: SM 2540 C-97
Batch ID: P303138

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P302915

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P302638

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P302856

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: P302718

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302721

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303039

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303040

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P303094

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302709

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302793

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302793

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.7		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302927

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P302278

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

Reference Method: SM 2320 B-97
Batch ID: P302635

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P302638

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.5		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P302856

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.6		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302718

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1789428	Chloride	99.3		P	90 - 110
1789430	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302721

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1789428	Sulfate	96.8		P	90 - 110
1789430	Sulfate	95.8		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303039

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1789395	Ammonia-N	99.8	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303040

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1789501	Ammonia-N	96.9	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P303094

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1789432	Kjeldahl Nitrogen	99.1	107	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302709

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1789395	NO2NO3-N	99.0	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302793

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1789394	Total-P	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302927

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1789693	Total-P	98.7	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P302278

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1789440	O-Phosphate-P	100	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P302638

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1789284	Fluoride	96.2	96.9	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P302856

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1789296	Organic Carbon	92.7	94.0	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P302321

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789389	Turbidity	3.57	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302718

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789430	Chloride	1.36	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302721

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789430	Sulfate	2.19	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303039

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789395	Ammonia-N	0.690	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303040

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789501	Ammonia-N	0.856	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P303094

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789432	Kjeldahl Nitrogen	4.77	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302709

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789395	NO2NO3-N	0.830	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302793

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789394	Total-P	0.525	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302927

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789693	Total-P	1.37	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P302278

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789440	O-Phosphate-P	0.609	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P302292

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789390	Color (true)	0.0334	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P302459

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789497	Color (true)	3.24	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P302635

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789284	Total Alkalinity	0.477	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P303138

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789429	TDS	0.371	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P302638

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789284	Fluoride	0.539	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P302856

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789296	Organic Carbon	0.744	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: A68887
Included Lab Sample IDs: 1789437, 1789438, 1789439, 1789440, 1789441

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

Reference Method: SM 2120 B
Run ID: A68890
Included Lab Sample IDs: 1789427, 1789428, 1789429, 1789430

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	90 - 115
Color (true)	100	100	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A68896
Included Lab Sample IDs: 1789427, 1789428, 1789429, 1789430, 1789431

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	98.5	P/P	95 - 105

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A68939
Included Lab Sample IDs: 1789427, 1789428, 1789429, 1789430, 1789431

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.9	99.1	P/P	90 - 110
Chloride	99.1	99.6	P/P	90 - 110
Sulfate	98.4	98.4	P/P	90 - 110
Sulfate	98.4	97.1	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A68940
Included Lab Sample IDs: 1789431

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	100	P/P	90 - 115

Reference Method: SM 2320 B-97
Run ID: A68993
Included Lab Sample IDs: 1789427, 1789428, 1789429, 1789430, 1789431

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A68993
Included Lab Sample IDs: 1789427, 1789428, 1789429, 1789430, 1789431

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.7	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A68993
Included Lab Sample IDs: 1789427, 1789428, 1789429, 1789430, 1789431

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	98.1	P/P	90 - 110
Fluoride	99.5	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A69015
Included Lab Sample IDs: 1789432, 1789433, 1789434, 1789435, 1789436

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	97.0	98.0	P/P	90 - 110
NO2NO3-N	99.0	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A69053
Included Lab Sample IDs: 1789432, 1789433, 1789434

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	103	103	P/P	90 - 110
Total-P	106	103	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A69060
Included Lab Sample IDs: 1789432, 1789433, 1789434, 1789435, 1789436

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.0	95.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A69085
Included Lab Sample IDs: 1789435

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A69122
Included Lab Sample IDs: 1789432, 1789433, 1789434, 1789435, 1789436

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A69131
Included Lab Sample IDs: 1789436

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A69223
Included Lab Sample IDs: 1789432, 1789433, 1789434, 1789435, 1789436

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.3	99.5	P/P	90 - 110
Kjeldahl Nitrogen	95.8	96.2	P/P	90 - 110
Kjeldahl Nitrogen	96.2	95.3	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					3.57	
EPA 300.0 Rev. 2.1	Chloride	100	100	99.3		1.36	
	Sulfate	98.3	95.8	96.8		2.19	
EPA 350.1 Rev. 2.0	Ammonia-N	102	99.8	101			0.690
	Ammonia-N	102	96.9	97.8			0.856
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	99.1	107			4.77
EPA 353.2 Rev. 2.0	NO2NO3-N	102	99.0	100			0.830
EPA 365.1 Rev. 2.0	Total-P	97.7	102	103			0.525
	Total-P	96.0	98.7	100			1.37
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	105	100	101			0.609
SM 2120 B	Color (true)					0.0334	
	Color (true)					3.24	
SM 2320 B-97	Total Alkalinity	102				0.477	
SM 2540 C-97	TDS					0.371	
SM 4500 F-C-97	Fluoride	96.5	96.2	96.9			0.539
SM 5310 B-00	Organic Carbon	96.6	92.7	94.0			0.744

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1789427, 1789428, 1789429, 1789430, 1789431
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1789427, 1789428, 1789429, 1789430, 1789431
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1789427, 1789428, 1789429, 1789430, 1789431
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1789432, 1789433, 1789434, 1789435, 1789436
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1789432, 1789433, 1789434, 1789435, 1789436

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1789432, 1789433, 1789434, 1789435, 1789436
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1789432, 1789433, 1789434, 1789435, 1789436
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1789437, 1789438, 1789439, 1789440, 1789441
SM 2120 B / E31780	True Color measured at 450 nm	1789427, 1789428, 1789429, 1789430, 1789431
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1789427, 1789428, 1789429, 1789430, 1789431
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1789427, 1789428, 1789429, 1789430, 1789431
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1789427, 1789428, 1789429, 1789430, 1789431
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1789427, 1789428, 1789429, 1789430, 1789431
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1789432, 1789433, 1789434, 1789435, 1789436

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	04/14/2016			04/14/2016 16:39	Blanca Fach	1789427, 1789428, 1789429, 1789430, 1789431
EPA 300.0 Rev. 2.1	04/14/2016			04/20/2016	Julia Storbeck	1789427, 1789428, 1789429, 1789430, 1789431
EPA 350.1 Rev. 2.0	04/14/2016			04/26/2016	Diana M. Turner	1789432, 1789433, 1789434, 1789435, 1789436
EPA 351.2 Rev. 2.0	04/14/2016	04/27/2016	Sofia Elnemr	05/02/2016	Christopher Armour	1789432, 1789433, 1789434, 1789435, 1789436
EPA 353.2 Rev. 2.0	04/14/2016			04/21/2016	Peter D. Kaus	1789432, 1789433, 1789434, 1789435, 1789436
EPA 365.1 Rev. 2.0	04/14/2016	04/22/2016	Lipi Saha	04/22/2016	Lipi Saha	1789432, 1789433, 1789434
	04/14/2016	04/22/2016	Lipi Saha	04/25/2016	Lipi Saha	1789435
	04/14/2016	04/26/2016	Christopher Armour	04/27/2016	Lipi Saha	1789436
EPA 365.1 Rev. 2.0 dissolved	04/14/2016			04/14/2016 14:24	Julia Storbeck	1789440
	04/14/2016			04/14/2016 14:39	Julia Storbeck	1789441
	04/14/2016			04/14/2016 14:46	Julia Storbeck	1789439
	04/14/2016			04/14/2016 15:17	Julia Storbeck	1789437
	04/14/2016			04/14/2016 15:29	Julia Storbeck	1789438
SM 2120 B	04/14/2016			04/14/2016 16:29	Chrisoulla Rakowski	1789429
	04/14/2016			04/14/2016 16:30	Chrisoulla Rakowski	1789430
	04/14/2016			04/14/2016 16:48	Chrisoulla Rakowski	1789427, 1789428
	04/14/2016			04/14/2016 18:06	Chrisoulla Rakowski	1789431
SM 2320 B-97	04/14/2016			04/20/2016	Dale L. Simmons	1789427, 1789428, 1789429, 1789430, 1789431
SM 2540 C-97	04/14/2016			04/18/2016	Sima Feizi	1789427, 1789428, 1789429, 1789430, 1789431
SM 2540 D-97	04/14/2016			04/18/2016	Sima Feizi	1789427, 1789428, 1789429, 1789430, 1789431
SM 4500 F-C-97	04/14/2016			04/20/2016	Dale L. Simmons	1789427, 1789428, 1789429, 1789430, 1789431
SM 5310 B-00	04/14/2016			04/22/2016	Sofia Elnemr	1789432, 1789433, 1789434, 1789435, 1789436