

Chemical Analysis Report

NE-DIST-2016-08-03-01

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

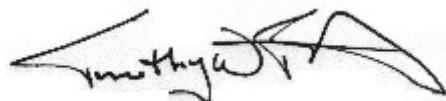
Event Description: **Reference Lakes**
Request ID: **RQ-2016-07-25-11**
Customer: **NE-DIST**
Project ID: **LAKESREF**

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: Timothy Fitzpatrick, Program Administrator

Date Certified: 26-AUG-2016 14:44

A handwritten signature in black ink, appearing to read "Timothy W. Fitzpatrick", is written over a light blue 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 groups are included in this report: Metals and 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: Swift Creek Pond Center

Collection Date/Time: 08/02/2016 11:40

Field ID: 21030066

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1821404	EPA 180.1 Rev. 2.0	Turbidity	10		NTU	P309138	
	EPA 300.0	Bromide**	0.042		mg Br/L	P310191	
	EPA 300.0 Rev. 2.1	Chloride	8.4		mg Cl/L	P309376	
		Sulfate	22		mg SO4/L	P309381	
	SM 2120 B	Color (true)	220		PCU	P309400	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P309335	
	SM 2540 C-97	TDS	83		mg/L	P309788	
	SM 2540 D-97	TSS	5	I	mg/L	P309711	
	SM 4500 F-C-97	Fluoride	0.068	I	mg F/L	P309342	
1821405	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P309211	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.82		mg N/L	P309593	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.091		mg N/L	P309532	
	EPA 365.1 Rev. 2.0	Total-P	0.074		mg P/L	P309572	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P310029	
1821406	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.030		mg P/L	P309141	
1821409	EPA 200.7 Rev. 4.4	Calcium	5.50		mg/L	P309232	
		Iron	640		ug/L	P309232	
		Magnesium	1.99		mg/L	P309232	
		Potassium	0.44	I	mg/L	P309232	
		Sodium	4.8		mg/L	P309232	
		Zinc	5.0	U	ug/L	P309232	
	EPA 200.8 Rev. 5.4	Arsenic	0.50		ug/L	P309232	
		Cadmium	0.020	U	ug/L	P309232	
		Chromium	0.45		ug/L	P309232	
		Copper	2.02		ug/L	P309232	
		Lead	0.82		ug/L	P309232	
		Nickel	2.40		ug/L	P309745	
		Silver	0.0060	I	ug/L	P309232	

Ref. Method and Comment:

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

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

EPA 200.8 Rev. 5.4: The lead result was confirmed on 08/17/2016.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P309138

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P309232

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P309232

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P309232

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.050	U	ug/L
Copper	0.10	U	ug/L
Lead	0.050	U	ug/L
Silver	0.0050	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P309745

Component	Result	Code	Units
Nickel	0.050	U	ug/L

Reference Method: EPA 300.0
Batch ID: P310191

Component	Result	Code	Units
Bromide	0.016	U	mg Br/L

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: P309211

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309593

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309593

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309532

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309572

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309141

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

Reference Method: SM 2120 B
Batch ID: P309400

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P309335

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

Reference Method: SM 2540 C-97
Batch ID: P309788

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P309711

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P309342

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P310029

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P309232

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	103		P	85 - 115
Iron	105		P	85 - 115
Magnesium	103		P	85 - 115
Potassium	100		P	85 - 115
Sodium	102		P	85 - 115
Zinc	96.9		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P309232

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	97.0		P	85 - 115
Cadmium	98.8		P	85 - 115
Chromium	100		P	85 - 115
Copper	97.0		P	85 - 115
Lead	103		P	85 - 115
Silver	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P309745

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

Reference Method: EPA 300.0
Batch ID: P310191

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

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
Sulfate	92.1		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P309211

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309593

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309532

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: P309572

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309141

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

Reference Method: SM 2320 B-97
Batch ID: P309335

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

Reference Method: SM 4500 F-C-97
Batch ID: P309342

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.0		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P310029

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	103		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P309232

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P309232

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1820947	Iron	102		P	80 - 120
1820947	Magnesium	105		P	80 - 120
1820947	Potassium	103		P	80 - 120
1820947	Sodium	105		P	80 - 120
1820947	Zinc	100		P	80 - 120
1821388	Calcium	103		P	80 - 120
1821388	Iron	105	103	P/P	80 - 120
1821388	Magnesium	105		P	80 - 120
1821388	Potassium	103		P	80 - 120
1821388	Sodium	101		P	80 - 120
1821388	Zinc	99.2	97.9	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P309232

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1820947	Arsenic	101		P	80 - 120
1820947	Cadmium	101		P	80 - 120
1820947	Chromium	102		P	80 - 120
1820947	Copper	92.9		P	80 - 120
1820947	Lead	106		P	80 - 120
1820947	Silver	103		P	80 - 120
1821388	Arsenic	99.0	99.8	P/P	80 - 120
1821388	Cadmium	104	103	P/P	80 - 120
1821388	Chromium	105	106	P/P	80 - 120
1821388	Copper	88.7	90.3	P/P	80 - 120
1821388	Lead	104	104	P/P	80 - 120
1821388	Silver	103	104	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P309745

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1821387	Nickel	97.6		P	80 - 120
1823155	Nickel	96.8	96.8	P/P	80 - 120

Reference Method: EPA 300.0
Batch ID: P310191

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1825042	Bromide	103	104	P/P	90 - 110

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

Quality Assurance Report Matrix Spike Accuracy

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: P309211

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1821264	Ammonia-N	99.4	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309593

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1821370	Kjeldahl Nitrogen	113	102	F/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309532

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1821356	NO2NO3-N	95.4	95.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309572

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1821356	Total-P	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309141

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1821232	O-Phosphate-P	98.4	99.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P309342

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1821367	Fluoride	98.8	99.5	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P310029

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1821634	Organic Carbon	106	108	P/P	85 - 115

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P309138

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1821355	Turbidity	0.656	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P309232

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1821388	Calcium	2.12	Spike	P	0 - 20
1821388	Iron	2.00	Spike	P	0 - 20
1821388	Magnesium	2.16	Spike	P	0 - 20
1821388	Potassium	0.452	Spike	P	0 - 20
1821388	Sodium	1.59	Spike	P	0 - 20
1821388	Zinc	1.32	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P309232

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1821388	Arsenic	0.773	Spike	P	0 - 20
1821388	Cadmium	1.01	Spike	P	0 - 20
1821388	Chromium	1.37	Spike	P	0 - 20
1821388	Copper	1.85	Spike	P	0 - 20
1821388	Lead	0.362	Spike	P	0 - 20
1821388	Silver	0.502	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P309745

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1823155	Nickel	0.0923	Spike	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P310191

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825042	Bromide	1.37	Spike	P	0 - 20

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

Quality Assurance Report Precision

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: P309211

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1821264	Ammonia-N	1.73	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309593

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1821370	Kjeldahl Nitrogen	7.49	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309532

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1821356	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309572

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1821356	Total-P	0.528	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309141

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1821232	O-Phosphate-P	0.965	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P309400

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1821367	Color (true)	0.355	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P309335

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1821367	Total Alkalinity	0.161	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P309788

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1821314	TDS	3.59	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P309342

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1821367	Fluoride	0.467	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P310029

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1821634	Organic Carbon	1.24	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 300.0 Rev. 2.1
Run ID: A70885
Included Lab Sample IDs: 1821404

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	99.6	P/P	90 - 110
Sulfate	101	96.4	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A70928
Included Lab Sample IDs: 1821404

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.5	98.8	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A70929
Included Lab Sample IDs: 1821404

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A70930
Included Lab Sample IDs: 1821406

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A70951

Included Lab Sample IDs: 1821405

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

Reference Method: SM 2320 B-97

Run ID: A70986

Included Lab Sample IDs: 1821404

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

Reference Method: SM 4500 F-C-97

Run ID: A70986

Included Lab Sample IDs: 1821404

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A71001

Included Lab Sample IDs: 1821409

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	98.7	103	P/P	90 - 110
Iron	98.7	98.7	P/P	90 - 110
Magnesium	100	100	P/P	90 - 110
Potassium	100	101	P/P	90 - 110
Sodium	99.5	103	P/P	90 - 110
Zinc	97.1	99.0	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A71038

Included Lab Sample IDs: 1821409

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	96.1	95.7	P/P	90 - 110
Cadmium	100	99.6	P/P	90 - 110
Copper	91.8	90.2	P/P	90 - 110
Lead	99.4	97.9	P/P	90 - 110
Silver	102	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A71059

Included Lab Sample IDs: 1821405

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A71073

Included Lab Sample IDs: 1821409

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A71073

Included Lab Sample IDs: 1821409

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	98.5	97.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A71098

Included Lab Sample IDs: 1821405

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.6	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A71113

Included Lab Sample IDs: 1821405

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A71207

Included Lab Sample IDs: 1821409

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Nickel	98.6	97.0	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A71232

Included Lab Sample IDs: 1821405

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	103	105	P/P	90 - 110

Reference Method: EPA 300.0

Run ID: A71280

Included Lab Sample IDs: 1821404

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	97.1	97.9	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				0.656	
EPA 200.7 Rev. 4.4	Calcium	103	103			2.12
	Iron	105	102	105		2.00
	Magnesium	103	105	105		2.16

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision	MS
			LCS	SMP	MS		
EPA 200.7 Rev. 4.4	Potassium	100	103	103			0.452
	Sodium	102	105	101			1.59
	Zinc	96.9	100	99.2	97.9		1.32
EPA 200.8 Rev. 5.4	Arsenic	97.0	101	99.0	99.8		0.773
	Cadmium	98.8	101	104	103		1.01
	Chromium	100	102	105	106		1.37
	Copper	97.0	92.9	88.7	90.3		1.85
	Lead	103	106	104	104		0.362
	Nickel	100	97.6	96.8	96.8		0.0923
	Silver	103	103	103	104		0.502
EPA 300.0	Bromide	103	103	104			1.37
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	99.2	99.4	102			1.73
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	113	102			7.49
EPA 353.2 Rev. 2.0	NO2NO3-N	102	95.4	95.4			0.0
EPA 365.1 Rev. 2.0	Total-P	101	104	104			0.528
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	98.4	99.4			0.965
SM 2120 B	Color (true)					0.355	
SM 2320 B-97	Total Alkalinity	103				0.161	
SM 2540 C-97	TDS					3.59	
SM 4500 F-C-97	Fluoride	99.0	98.8	99.5			0.467
SM 5310 B-00	Organic Carbon	103	106	108			1.24

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1821404
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1821409
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1821409
EPA 300.0 / E31780	Bromide in aqueous matrices	1821404
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1821404
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1821404
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1821405
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1821405
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1821405
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1821405
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1821406
SM 2120 B / E31780	True Color measured at 450 nm	1821404
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1821404
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1821404
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1821404
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1821404
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1821405

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	08/03/2016			08/03/2016 15:05	Sima Feizi	1821404
EPA 200.7 Rev. 4.4	08/03/2016	08/04/2016	Elliott D. Healy	08/08/2016	Joshua Ayres	1821409
EPA 200.8 Rev. 5.4	08/03/2016	08/04/2016	Elliott D. Healy	08/09/2016	Charles J. Peterson	1821409
	08/03/2016	08/04/2016	Elliott D. Healy	08/10/2016	Charles J. Peterson	1821409
	08/03/2016	08/15/2016	Elliott D. Healy	08/17/2016	Charles J. Peterson	1821409
EPA 300.0	08/03/2016			08/23/2016	Ping Hua	1821404
EPA 300.0 Rev. 2.1	08/03/2016			08/05/2016	Ping Hua	1821404
EPA 350.1 Rev. 2.0	08/03/2016			08/04/2016	Julie Michelle Frank	1821405
EPA 351.2 Rev. 2.0	08/03/2016	08/11/2016	Martin Acosta	08/12/2016	Christopher Armour	1821405
EPA 353.2 Rev. 2.0	08/03/2016			08/10/2016	Beverly Y. Sanders	1821405
EPA 365.1 Rev. 2.0	08/03/2016	08/11/2016	Vijayalakshmi Reddy	08/12/2016	Lipt Saha	1821405
EPA 365.1 Rev. 2.0 dissolved	08/03/2016			08/03/2016 15:58	Julia Storbeck	1821406
SM 2120 B	08/03/2016			08/03/2016 15:34	Rochelle Y Jackson	1821404
SM 2320 B-97	08/03/2016			08/06/2016	Dale L. Simmons	1821404
SM 2540 C-97	08/03/2016			08/05/2016	Yijie Li	1821404
SM 2540 D-97	08/03/2016			08/05/2016	Yijie Li	1821404
SM 4500 F-C-97	08/03/2016			08/06/2016	Dale L. Simmons	1821404
SM 5310 B-00	08/03/2016			08/18/2016	Sofia Elhemr	1821405