Chemical Analysis Report

NE-DIST-2016-07-14-01

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-2016-07-04-25**
Customer: **NE-DIST**
Project ID: **LAKESREF**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Jacksonville, FL 32256-7577
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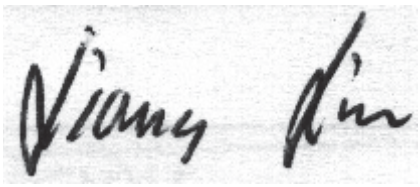
Certified by: Liang Lin, Environmental Administrator

Date Certified: 08-AUG-2016 11:48



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: Three Mile Pond Center **Collection Date/Time: 07/13/2016 10:40**

Field ID: Three Mile Pond Center Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1815940	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P307974	
	EPA 300.0	Bromide**	0.032	I	mg Br/L	P308115	
	EPA 300.0 Rev. 2.1	Chloride	6.0		mg Cl/L	P308122	
		Sulfate	0.20	U	mg SO4/L	P308119	
	SM 2120 B	Color (true)	780		PCU	P307964	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P308420	
	SM 2540 C-97	TDS	82		mg/L	P308836	
	SM 2540 D-97	TSS	3	I	mg/L	P308473	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P308424	
1815941	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P308346	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P308167	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P308708	
	EPA 365.1 Rev. 2.0	Total-P	0.027		mg P/L	P308128	
	SM 5310 B-00	Organic Carbon	59		mg C/L	P308414	
1815942	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.036		mg P/L	P307958	
1815945	EPA 200.7 Rev. 4.4	Calcium	0.92		mg/L	P308145	
		Iron	520		ug/L	P308145	
		Magnesium	0.91		mg/L	P308145	
		Potassium	0.30	U	mg/L	P308145	
		Sodium	3.9		mg/L	P308145	
		Zinc	5.0	U	ug/L	P308145	
	EPA 200.8 Rev. 5.4	Arsenic	0.31		ug/L	P308145	
		Cadmium	0.020	U	ug/L	P308145	
		Chromium	0.40		ug/L	P308145	
		Copper	0.14	I	ug/L	P308145	
		Lead	0.88		ug/L	P308145	
		Nickel	0.39		ug/L	P308145	
		Silver	0.0050	U	ug/L	P308145	

Ref. Method and Comment:
EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0: Total-P: The result was confirmed on 08/05/2016.
SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The result was confirmed on 07/26/2016.
EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 07/25/2016.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P307974

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P308145

Component	Result	Code	Units

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P308145

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: P308145

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
Nickel	0.050	U	ug/L
Silver	0.0050	U	ug/L

Reference Method: EPA 300.0
Batch ID: P308115

Component	Result	Code	Units
Bromide	0.016	U	mg Br/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308119

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308122

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308346

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308167

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308708

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308128

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307958

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

Reference Method: SM 2120 B
Batch ID: P307964

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P308420

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

Reference Method: SM 2540 C-97
Batch ID: P308836

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P308473

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P308424

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P308414

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: P308145

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	103		P	85 - 115
Iron	107		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	105		P	85 - 115
Sodium	104		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P308145

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	96.4		P	85 - 115
Cadmium	94.7		P	85 - 115
Chromium	97.8		P	85 - 115
Copper	94.2		P	85 - 115
Lead	95.4		P	85 - 115
Nickel	94.4		P	85 - 115
Silver	96.5		P	85 - 115

Reference Method: EPA 300.0
Batch ID: P308115

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Bromide	97.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308119

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308122

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308346

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308167

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308708

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308128

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307958

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

Reference Method: SM 2320 B-97
Batch ID: P308420

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

Reference Method: SM 4500 F-C-97
Batch ID: P308424

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.8		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P308414

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.2		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P308145

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815900	Calcium	107		P	80 - 120
1815900	Iron	107	105	P/P	80 - 120
1815900	Magnesium	104		P	80 - 120
1815900	Potassium	104	103	P/P	80 - 120
1815900	Sodium	107		P	80 - 120
1815900	Zinc	99.4	101	P/P	80 - 120
1816541	Calcium	107		P	80 - 120
1816541	Iron	109		P	80 - 120
1816541	Magnesium	109		P	80 - 120
1816541	Potassium	112		P	80 - 120
1816541	Sodium	107		P	80 - 120
1816541	Zinc	103		P	80 - 120

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P308145

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815900	Arsenic	99.8	97.9	P/P	80 - 120
1815900	Cadmium	98.6	96.6	P/P	80 - 120
1815900	Chromium	96.9	96.9	P/P	80 - 120
1815900	Copper	92.7	91.7	P/P	80 - 120
1815900	Lead	96.4	94.9	P/P	80 - 120
1815900	Nickel	93.5	91.7	P/P	80 - 120
1815900	Silver	96.8	96.8	P/P	80 - 120
1816541	Arsenic	101		P	80 - 120
1816541	Cadmium	101		P	80 - 120
1816541	Chromium	101		P	80 - 120
1816541	Copper	97.4		P	80 - 120
1816541	Lead	99.6		P	80 - 120
1816541	Nickel	95.5		P	80 - 120
1816541	Silver	99.1		P	80 - 120

Reference Method: EPA 300.0
Batch ID: P308115

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1814095	Bromide	99.4	99.0	P/P	90 - 110
1814122	Bromide	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308119

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1814095	Sulfate	99.3	97.8	P/P	90 - 110
1814122	Sulfate	97.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308122

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1814095	Chloride	97.5	96.3	P/P	90 - 110
1814122	Chloride	97.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308346

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815875	Ammonia-N	97.2	98.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308708

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815941	NO2NO3-N	94.1	93.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308128

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308128

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815864	Total-P	96.6	96.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307958

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815969	O-Phosphate-P	97.3	98.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P308424

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815860	Fluoride	97.7	98.9	P/P	91 - 105

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P307974

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815874	Turbidity	0.960	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P308145

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815900	Calcium	0.860	Spike	P	0 - 20
1815900	Iron	1.97	Spike	P	0 - 20
1815900	Magnesium	2.13	Spike	P	0 - 20
1815900	Potassium	0.897	Spike	P	0 - 20
1815900	Sodium	1.53	Spike	P	0 - 20
1815900	Zinc	2.03	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P308145

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815900	Arsenic	1.91	Spike	P	0 - 20
1815900	Cadmium	2.08	Spike	P	0 - 20
1815900	Chromium	0.00914	Spike	P	0 - 20
1815900	Copper	0.984	Spike	P	0 - 20
1815900	Lead	1.56	Spike	P	0 - 20
1815900	Nickel	1.90	Spike	P	0 - 20
1815900	Silver	0.00458	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 300.0
Batch ID: P308115

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814095	Bromide	0.398	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308119

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814095	Sulfate	1.33	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308122

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814095	Chloride	0.682	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308346

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815875	Ammonia-N	1.27	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308167

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815963	Kjeldahl Nitrogen	2.97	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308708

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815941	NO2NO3-N	1.04	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308128

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815864	Total-P	0.381	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307958

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815969	O-Phosphate-P	1.02	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P307964

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815961	Color (true)	0.550	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P308420

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815860	Total Alkalinity	0.0713	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P308836

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815874	TDS	0.322	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P308473

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815874	TSS	0.0	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P308424

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815860	Fluoride	0.979	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P308414

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815941	Organic Carbon	0.246	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
Run ID: A70540
Included Lab Sample IDs: 1815940

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	99.3	99.7	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A70540
Included Lab Sample IDs: 1815940

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.7	98.5	P/P	90 - 110
Sulfate	96.6	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A70559
Included Lab Sample IDs: 1815942

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.4	101	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A70560
Included Lab Sample IDs: 1815940

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	95.2	96.5	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A70563
Included Lab Sample IDs: 1815940

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A70648
Included Lab Sample IDs: 1815941

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	99.0	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A70661
Included Lab Sample IDs: 1815945

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	101	P/P	90 - 110
Iron	101	101	P/P	90 - 110
Magnesium	102	101	P/P	90 - 110
Potassium	102	102	P/P	90 - 110
Sodium	103	101	P/P	90 - 110
Zinc	100	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A70675
Included Lab Sample IDs: 1815941

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A70693
Included Lab Sample IDs: 1815941

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.3	98.4	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A70694
Included Lab Sample IDs: 1815940

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A70694
Included Lab Sample IDs: 1815940

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A70723
Included Lab Sample IDs: 1815941

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.9	102	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A70730
Included Lab Sample IDs: 1815945

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	97.9	97.1	P/P	90 - 110
Cadmium	95.3	95.1	P/P	90 - 110
Chromium	99.0	99.3	P/P	90 - 110
Copper	97.5	95.4	P/P	90 - 110
Lead	94.5	94.1	P/P	90 - 110
Nickel	96.5	94.9	P/P	90 - 110
Silver	96.0	95.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A70779
Included Lab Sample IDs: 1815941

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	95.5	100	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						0.960	
EPA 200.7 Rev. 4.4	Calcium	103	107	107				0.860
	Iron	107	107	105	109			1.97
	Magnesium	104	104	109				2.13
	Potassium	105	104	103	112			0.897
	Sodium	104	107	107				1.53
	Zinc	101	99.4	101	103			2.03
EPA 200.8 Rev. 5.4	Arsenic	96.4	99.8	97.9	101			1.91
	Cadmium	94.7	98.6	96.6	101			2.08
	Chromium	97.8	96.9	96.9	101			0.0091
	Copper	94.2	92.7	91.7	97.4			0.984
	Lead	95.4	96.4	94.9	99.6			1.56
	Nickel	94.4	93.5	91.7	95.5			1.90
	Silver	96.5	96.8	96.8	99.1			0.0045
EPA 300.0	Bromide	97.8	99.4	99.0	101			0.398
EPA 300.0 Rev. 2.1	Chloride	97.1	96.3	97.7	97.5			0.682
	Sulfate	96.9	99.3	97.8	97.3			1.33
EPA 350.1 Rev. 2.0	Ammonia-N	99.0	97.2	98.7				1.27
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101						2.97
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	94.1	93.1				1.04
EPA 365.1 Rev. 2.0	Total-P	97.8	96.6	96.2				0.381
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	97.3	98.3				1.02
SM 2120 B	Color (true)						0.550	
SM 2320 B-97	Total Alkalinity	104					0.0713	
SM 2540 C-97	TDS						0.322	
SM 2540 D-97	TSS						0.0	
SM 4500 F-C-97	Fluoride	97.8	97.7	98.9				0.979
SM 5310 B-00	Organic Carbon	96.2						0.246

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1815940
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1815945
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1815945
EPA 300.0 / E31780	Bromide in aqueous matrices	1815940
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1815940
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1815940
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1815941
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1815941
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1815941
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1815941
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1815942
SM 2120 B / E31780	True Color measured at 450 nm	1815940
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1815940

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1815940
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1815940
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1815940
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1815941

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	07/14/2016			07/14/2016 14:48	Blanca Fach	1815940
EPA 200.7 Rev. 4.4	07/14/2016	07/18/2016	Elliott D. Healy	07/20/2016	Joshua Ayres	1815945
EPA 200.8 Rev. 5.4	07/14/2016	07/18/2016	Elliott D. Healy	07/22/2016	Charles J. Peterson	1815945
EPA 300.0	07/14/2016			07/15/2016	Ping Hua	1815940
EPA 300.0 Rev. 2.1	07/14/2016			07/15/2016	Ping Hua	1815940
EPA 350.1 Rev. 2.0	07/14/2016			07/20/2016	Diana M. Turner	1815941
EPA 351.2 Rev. 2.0	07/14/2016	07/19/2016	Sofia Elnemr	07/21/2016	Christopher Armour	1815941
EPA 353.2 Rev. 2.0	07/14/2016			07/27/2016	Beverly Y. Sanders	1815941
EPA 365.1 Rev. 2.0	07/14/2016	07/18/2016	Vijayalakshmi Reddy	07/20/2016	Lipi Saha	1815941
EPA 365.1 Rev. 2.0 dissolved	07/14/2016			07/14/2016 14:34	Julia Storbeck	1815942
SM 2120 B	07/14/2016			07/14/2016 14:41	Rochelle Y Jackson	1815940
SM 2320 B-97	07/14/2016			07/20/2016	Dale L. Simmons	1815940
SM 2540 C-97	07/14/2016			07/18/2016	Sima Feizi	1815940
SM 2540 D-97	07/14/2016			07/18/2016	Sima Feizi	1815940
SM 4500 F-C-97	07/14/2016			07/20/2016	Dale L. Simmons	1815940
SM 5310 B-00	07/14/2016			07/21/2016	Sofia Elnemr	1815941