Chemical Analysis Report

WAS-SECT-2018-06-28-02

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

Event Description: **Lake Miccosukee LVI**
Request ID: **RQ-2018-06-25-21**
Customer: **WAS-SECT**
Project ID: **SMP**

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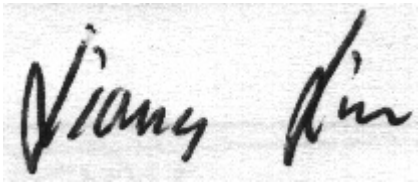
Date Certified: 26-JUL-2018 11:30



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: Lake Miccosukee **Collection Date/Time: 06/28/2018 12:45**

Field ID: G1WA0077 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2003999	EPA 180.1 Rev. 2.0	Turbidity	1.4	A	NTU	P347781	
	EPA 300.0 Rev. 2.1	Chloride	4.1		mg Cl/L	P347954	
		Sulfate	0.20	U	mg SO4/L	P347960	
	SM 2120 B	Color (true)	35	A	PCU	P347776	
	SM 2320 B-97	Total Alkalinity	3.2		mg CaCO3/L	P348196	RPD
	SM 2540 C-97	TDS	29		mg/L	P347933	
	SM 2540 D-97	TSS	2	I	mg/L	P347877	
	SM 4500 F-C-97	Fluoride	0.044	I	mg F/L	P348103	
2004000	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P348351	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.70	J	mg N/L	P348137	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P347831	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P347887	
	SM 5310 B-00	Organic Carbon	9.4		mg C/L	P348374	
2004001	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P347922	
2004004	EPA 200.7 Rev. 4.4	Calcium	1.65		mg/L	P347853	
		Iron	220		ug/L	P347853	
		Magnesium	1.03		mg/L	P347853	
		Potassium	0.30	U	mg/L	P347853	
		Sodium	1.9	I	mg/L	P347853	
		Zinc	5.0	U	ug/L	P347853	
	EPA 200.8 Rev. 5.4	Arsenic	0.28		ug/L	P347853	
		Cadmium	0.020	U	ug/L	P347853	
		Chromium	0.40	U	ug/L	P347853	
		Copper	0.20	U	ug/L	P347853	
		Lead	0.091	I	ug/L	P347853	
		Nickel	0.20	U	ug/L	P347853	
		Silver	0.010	U	ug/L	P347853	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Refer to the narrative for an explanation of QC Codes.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P347781

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P347853

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: P347853

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347954

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347960

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P348351

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348137

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: P347831

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347887

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347922

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

Reference Method: SM 2120 B
Batch ID: P347776

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P348196

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

Reference Method: SM 2540 C-97
Batch ID: P347933

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P347877

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P348103

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P348374

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: P347853

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	108		P	85 - 115
Iron	104		P	85 - 115
Magnesium	108		P	85 - 115
Potassium	102		P	85 - 115
Sodium	104		P	85 - 115
Zinc	99.9		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P347853

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	96.3		P	85 - 115
Cadmium	95.8		P	85 - 115
Chromium	93.6		P	85 - 115
Copper	94.4		P	85 - 115
Lead	92.3		P	85 - 115
Nickel	96.1		P	85 - 115
Silver	92.6		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347954

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347960

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	94.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P348351

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348137

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.6		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347831

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347887

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347922

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

Reference Method: SM 2120 B
Batch ID: P347776

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.4		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P348196

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P348103

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P348374

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.0		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P347853

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003929	Calcium	99.5		P	80 - 120
2003929	Iron	103		P	80 - 120
2003929	Magnesium	101		P	80 - 120
2003929	Potassium	101		P	80 - 120
2003929	Sodium	100		P	80 - 120
2003929	Zinc	99.2		P	80 - 120
2004004	Calcium	106	104	P/P	80 - 120
2004004	Iron	103	101	P/P	80 - 120
2004004	Magnesium	106	104	P/P	80 - 120
2004004	Potassium	105	103	P/P	80 - 120
2004004	Sodium	104	100	P/P	80 - 120
2004004	Zinc	101	99.8	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P347853

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003929	Arsenic	97.0		P	80 - 120
2003929	Cadmium	100		P	80 - 120
2003929	Chromium	93.6		P	80 - 120
2003929	Copper	91.0		P	80 - 120
2003929	Lead	92.0		P	80 - 120
2003929	Nickel	94.5		P	80 - 120
2003929	Silver	94.4		P	80 - 120
2004004	Arsenic	94.4	95.5	P/P	80 - 120
2004004	Cadmium	95.8	96.2	P/P	80 - 120
2004004	Chromium	94.1	95.7	P/P	80 - 120
2004004	Copper	93.0	93.9	P/P	80 - 120
2004004	Lead	93.2	93.4	P/P	80 - 120
2004004	Nickel	94.9	96.4	P/P	80 - 120
2004004	Silver	92.6	92.4	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347954

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003943	Chloride	96.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347960

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003943	Sulfate	95.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P348351

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003948	Ammonia-N	101	101	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348137

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2004000	Kjeldahl Nitrogen	83.8	84.1	F/F	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347831

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003950	NO2NO3-N	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347887

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003951	Total-P	96.8	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347922

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003957	O-Phosphate-P	90.6	91.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P348103

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2004379	Fluoride	98.4	97.8	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P348374

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2004267	Organic Carbon	97.3	98.8	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P347781

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003999	Turbidity	4.35	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P347853

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2004004	Calcium	1.38	Spike	P	0 - 20
2004004	Iron	1.72	Spike	P	0 - 20
2004004	Magnesium	1.65	Spike	P	0 - 20
2004004	Potassium	1.53	Spike	P	0 - 20
2004004	Sodium	2.43	Spike	P	0 - 20
2004004	Zinc	1.39	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P347853

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2004004	Arsenic	1.06	Spike	P	0 - 20
2004004	Cadmium	0.367	Spike	P	0 - 20
2004004	Chromium	1.61	Spike	P	0 - 20
2004004	Copper	0.951	Spike	P	0 - 20
2004004	Lead	0.216	Spike	P	0 - 20
2004004	Nickel	1.49	Spike	P	0 - 20
2004004	Silver	0.148	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347954

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003943	Chloride	2.81	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P348351

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003948	Ammonia-N	0.0893	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348137

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2004000	Kjeldahl Nitrogen	0.222	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347831

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003950	NO2NO3-N	0.971	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347887

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003951	Total-P	1.85	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347922

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003957	O-Phosphate-P	1.32	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P347776

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003999	Color (true)	1.82	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P348196

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2004379	Total Alkalinity	3.62	Sample	F	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P347933

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003944	TDS	7.52	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P348103

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2004379	Fluoride	0.509	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P348374

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2004267	Organic Carbon	0.804	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: SM 2120 B
Run ID: A84943
Included Lab Sample IDs: 2003999

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	104	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A84944
Included Lab Sample IDs: 2003999

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	99.5	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A84966
Included Lab Sample IDs: 2004000

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A85001
Included Lab Sample IDs: 2003999

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	104	103	P/P	90 - 110
Sulfate	103	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A85002
Included Lab Sample IDs: 2004001

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.2	99.4	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A85021
Included Lab Sample IDs: 2004004

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	102	P/P	90 - 110
Iron	100	101	P/P	90 - 110
Magnesium	101	102	P/P	90 - 110
Potassium	98.4	99.0	P/P	90 - 110
Sodium	101	101	P/P	90 - 110
Zinc	102	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A85051
Included Lab Sample IDs: 2004000

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A85067
Included Lab Sample IDs: 2004004

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	97.6	97.3	P/P	90 - 110
Cadmium	97.6	95.8	P/P	90 - 110
Chromium	97.5	95.0	P/P	90 - 110
Copper	97.0	97.3	P/P	90 - 110
Lead	95.8	96.2	P/P	90 - 110
Nickel	96.5	96.5	P/P	90 - 110
Silver	98.0	97.2	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A85091
Included Lab Sample IDs: 2003999

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

Reference Method: SM 2320 B-97
Run ID: A85129
Included Lab Sample IDs: 2003999

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	107	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A85139
Included Lab Sample IDs: 2004000

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.5	97.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A85188
Included Lab Sample IDs: 2004000

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

Reference Method: SM 5310 B-00
Run ID: A85195
Included Lab Sample IDs: 2004000

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.8	99.4	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						4.35	
EPA 200.7 Rev. 4.4	Calcium	108	99.5	106	104			1.38
	Iron	104	103	103	101			1.72
	Magnesium	108	101	106	104			1.65
	Potassium	102	101	105	103			1.53
	Sodium	104	100	104	100			2.43
	Zinc	99.9	99.2	101	99.8			1.39
EPA 200.8 Rev. 5.4	Arsenic	96.3	97.0	94.4	95.5			1.06
	Cadmium	95.8	100	95.8	96.2			0.367
	Chromium	93.6	93.6	94.1	95.7			1.61
	Copper	94.4	91.0	93.0	93.9			0.951
	Lead	92.3	92.0	93.2	93.4			0.216
	Nickel	96.1	94.5	94.9	96.4			1.49
	Silver	92.6	94.4	92.6	92.4			0.148
EPA 300.0 Rev. 2.1	Chloride	97.8	96.8				2.81	
	Sulfate	94.8	95.3					
EPA 350.1 Rev. 2.0	Ammonia-N	99.6	101	101				0.0893
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.6	83.8	84.1				0.222
EPA 353.2 Rev. 2.0	NO2NO3-N	100	102	104				0.971
EPA 365.1 Rev. 2.0	Total-P	96.8	96.8	99.2				1.85
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	90.6	91.8				1.32
SM 2120 B	Color (true)	99.4					1.82	
SM 2320 B-97	Total Alkalinity	104					3.62	
SM 2540 C-97	TDS						7.52	
SM 4500 F-C-97	Fluoride	101	98.4	97.8				0.509
SM 5310 B-00	Organic Carbon	97.0	97.3	98.8				0.804

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2003999
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2004004
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2004004
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2003999
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2003999
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2004000
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2004000
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2004000
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2004000
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2004001
SM 2120 B / E31780	True Color measured at 450 nm	2003999
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2003999
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2003999
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2003999
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2003999

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2004000

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	06/28/2018			06/29/2018 16:25	William L. Brown IV	2003999
EPA 200.7 Rev. 4.4	06/28/2018	07/02/2018 17:35	Elliott D. Healy	07/03/2018 18:11	Betina Topolski	2004004
EPA 200.8 Rev. 5.4	06/28/2018	07/02/2018 17:35	Elliott D. Healy	07/06/2018 16:36	Robert K Palmer	2004004
EPA 300.0 Rev. 2.1	06/28/2018			07/04/2018 08:45	Lipi Saha	2003999
EPA 350.1 Rev. 2.0	06/28/2018			07/12/2018 10:32	Ping Hua	2004000
EPA 351.2 Rev. 2.0	06/28/2018	07/10/2018 10:45	Adrian Shelby	07/11/2018 12:10	Joseph Suarez	2004000
EPA 353.2 Rev. 2.0	06/28/2018			07/02/2018 12:11	Lauren Bottorf	2004000
EPA 365.1 Rev. 2.0	06/28/2018	07/03/2018 10:50	Sima Feizi	07/06/2018 11:03	Beverly Y. Sanders	2004000
EPA 365.1 Rev. 2.0 dissolved	06/28/2018			06/29/2018 14:57	Megan Treadwell	2004001
SM 2120 B	06/28/2018			06/29/2018 15:22	Tanya Welborn	2003999
SM 2320 B-97	06/28/2018			07/10/2018 20:29	Dale L. Simmons	2003999
SM 2540 C-97	06/28/2018			06/29/2018 16:30	William L. Brown IV	2003999
SM 2540 D-97	06/28/2018			06/29/2018 16:30	William L. Brown IV	2003999
SM 4500 F-C-97	06/28/2018			07/07/2018 13:57	Dale L. Simmons	2003999
SM 5310 B-00	06/28/2018			07/12/2018 04:50	Megan Treadwell	2004000