Chemical Analysis Report

CEN-DIST-2018-10-18-02

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

Event Description: **SJR - Dexter (2893B)**
Request ID: **RQ-2018-10-15-29**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Mike Linger

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Colin Wright, Program Administrator

Date Certified: 15-NOV-2018 13:57

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: SJR @ 700M SOUTH OF LAKE DEXTER (2893B)

Collection Date/Time: 10/17/2018 12:00

Field ID: G2CE0164

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2033957	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P353460	
	EPA 300.0 Rev. 2.1	Chloride	150		mg Cl/L	P353721	
		Sulfate	29		mg SO4/L	P353723	
	SM 2120 B	Color (true)	170		PCU	P353298	
	SM 2320 B-97	Total Alkalinity	69		mg CaCO3/L	P353711	
	SM 2540 C-97	TDS	404		mg/L	P353887	
	SM 2540 D-97	TSS	3	I	mg/L	P353841	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P353714	
2033958	EPA 350.1 Rev. 2.0	Ammonia-N	0.046		mg N/L	P353863	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.98		mg N/L	P353606	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.25		mg N/L	P353354	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P353405	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P353623	
2033959	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.080		mg P/L	P353315	
2033965	EPA 200.7 Rev. 4.4	Calcium	35.8		mg/L	P353462	
		Iron	300		ug/L	P353462	
		Magnesium	11.0		mg/L	P353462	
		Potassium	3.2		mg/L	P353462	
		Sodium	73.1		mg/L	P353462	
		Zinc	5.0	U	ug/L	P353462	
	EPA 200.8 Rev. 5.4	Arsenic	0.72		ug/L	P353462	
		Cadmium	0.020	U	ug/L	P353462	
		Chromium	0.40	U	ug/L	P353462	
		Copper	0.42	I	ug/L	P353462	
		Lead	0.22		ug/L	P353462	
		Nickel	0.25	I	ug/L	P353462	
		Silver	0.010	U	ug/L	P353462	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P353460

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353462

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: P353462

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: P353721

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353723

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353863

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353606

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: P353354

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353405

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353315

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

Reference Method: SM 2120 B
Batch ID: P353298

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P353711

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

Reference Method: SM 2540 C-97
Batch ID: P353887

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P353841

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P353714

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P353623

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: P353462

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	103		P	85 - 115
Iron	103		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	98.6		P	85 - 115
Sodium	106		P	85 - 115
Zinc	92.4		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353462

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	102		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	101		P	85 - 115
Copper	102		P	85 - 115
Lead	94.9		P	85 - 115
Nickel	102		P	85 - 115
Silver	98.7		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353721

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353723

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353863

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: P353606

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353354

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: P353405

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353315

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

Reference Method: SM 2120 B
Batch ID: P353298

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P353711

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P353714

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

Reference Method: SM 5310 B-00
Batch ID: P353623

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.1		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353462

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2033892	Calcium	99.8		P	80 - 120
2033892	Iron	104		P	80 - 120
2033892	Magnesium	104		P	80 - 120
2033892	Potassium	101		P	80 - 120
2033892	Sodium	95.1		P	80 - 120
2033892	Zinc	91.2		P	80 - 120
2033902	Calcium	99.7	102	P/P	80 - 120
2033902	Iron	102	101	P/P	80 - 120
2033902	Magnesium	101	99.8	P/P	80 - 120
2033902	Potassium	97.3	95.1	P/P	80 - 120
2033902	Sodium	97.6	94.4	P/P	80 - 120
2033902	Zinc	91.9	92.7	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353462

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2033892	Arsenic	102		P	80 - 120
2033892	Cadmium	103		P	80 - 120
2033892	Chromium	103		P	80 - 120
2033892	Copper	101		P	80 - 120
2033892	Lead	95.8		P	80 - 120
2033892	Nickel	101		P	80 - 120
2033892	Silver	99.6		P	80 - 120
2033902	Arsenic	102	101	P/P	80 - 120
2033902	Cadmium	101	98.9	P/P	80 - 120
2033902	Chromium	101	100	P/P	80 - 120
2033902	Copper	103	103	P/P	80 - 120
2033902	Lead	94.2	94.2	P/P	80 - 120
2033902	Nickel	101	101	P/P	80 - 120
2033902	Silver	99.0	98.3	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353721

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2033859	Chloride	102		P	90 - 110
2033971	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353723

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2033859	Sulfate	101		P	90 - 110
2033971	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353863

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2033974	Ammonia-N	99.9	102	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353606

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2033879	Kjeldahl Nitrogen	104	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353354

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2033921	NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353405

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2033974	Total-P	97.8	95.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353315

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2033918	O-Phosphate-P	93.8	95.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P353714

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2033920	Fluoride	97.6	97.6	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P353623

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2033917	Organic Carbon	93.4	95.8	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P353460

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2033972	Turbidity	10.7	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353462

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2033902	Calcium	1.64	Spike	P	0 - 20
2033902	Iron	0.566	Spike	P	0 - 20
2033902	Magnesium	0.856	Spike	P	0 - 20
2033902	Potassium	2.14	Spike	P	0 - 20
2033902	Sodium	1.85	Spike	P	0 - 20
2033902	Zinc	0.876	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353462

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2033902	Arsenic	0.588	Spike	P	0 - 20
2033902	Cadmium	1.75	Spike	P	0 - 20
2033902	Chromium	0.815	Spike	P	0 - 20
2033902	Copper	0.0989	Spike	P	0 - 20
2033902	Lead	0.0603	Spike	P	0 - 20
2033902	Nickel	0.133	Spike	P	0 - 20
2033902	Silver	0.647	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353721

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2033859	Chloride	0.142	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353723

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2033859	Sulfate	0.486	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353863

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2033974	Ammonia-N	2.21	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353606

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2033879	Kjeldahl Nitrogen	1.98	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353354

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2033921	NO2NO3-N	0.621	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353405

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2033974	Total-P	2.84	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353315

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2033918	O-Phosphate-P	1.90	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P353298

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2033859	Color (true)	2.17	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P353711

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2033920	Total Alkalinity	0.631	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P353887

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2033910	TDS	6.71	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P353841

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2033910	TSS	6.90	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-97
Batch ID: P353714

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2033920	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P353623

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2033917	Organic Carbon	1.53	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: SM 2120 B
Run ID: A87127
Included Lab Sample IDs: 2033957

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	102	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A87131
Included Lab Sample IDs: 2033959

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.8	98.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A87160
Included Lab Sample IDs: 2033958

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A87200
Included Lab Sample IDs: 2033957

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	101	P/P	95 - 105

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A87212
Included Lab Sample IDs: 2033957

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A87213
Included Lab Sample IDs: 2033958

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

Reference Method: SM 5310 B-00
Run ID: A87260
Included Lab Sample IDs: 2033958

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.3	97.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A87281
Included Lab Sample IDs: 2033958

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.5	96.4	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A87299
Included Lab Sample IDs: 2033957

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

Reference Method: SM 4500 F-C-97
Run ID: A87299
Included Lab Sample IDs: 2033957

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: A87337
Included Lab Sample IDs: 2033965

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Potassium	92.2	92.5	P/P	90 - 110
Sodium	94.9	93.1	P/P	90 - 110
Zinc	92.8	92.6	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A87365
Included Lab Sample IDs: 2033965

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	98.1	98.5	P/P	90 - 110
Iron	99.6	99.5	P/P	90 - 110
Magnesium	97.0	97.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A87366
Included Lab Sample IDs: 2033958

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A87611
Included Lab Sample IDs: 2033965

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	97.6	101	P/P	90 - 110
Cadmium	98.3	100	P/P	90 - 110
Chromium	100	99.8	P/P	90 - 110
Copper	99.1	103	P/P	90 - 110
Lead	93.6	96.5	P/P	90 - 110
Nickel	99.9	101	P/P	90 - 110
Silver	93.8	96.5	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						10.7	
EPA 200.7 Rev. 4.4	Calcium	103	99.8	99.7	102			1.64
	Iron	103	104	102	101			0.566
	Magnesium	104	104	101	99.8			0.856
	Potassium	98.6	101	97.3	95.1			2.14
	Sodium	106	95.1	97.6	94.4			1.85
	Zinc	92.4	91.2	91.9	92.7			0.876
EPA 200.8 Rev. 5.4	Arsenic	102	102	102	101			0.588
	Cadmium	101	103	101	98.9			1.75
	Chromium	101	103	101	100			0.815
	Copper	102	101	103	103			0.0989
	Lead	94.9	95.8	94.2	94.2			0.0603
	Nickel	102	101	101	101			0.133
	Silver	98.7	99.6	99.0	98.3			0.647
EPA 300.0 Rev. 2.1	Chloride	100	102	102			0.142	
	Sulfate	99.7	101	102			0.486	
EPA 350.1 Rev. 2.0	Ammonia-N	102	99.9	102				2.21
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	104	106				1.98
EPA 353.2 Rev. 2.0	NO2NO3-N	100	100	102				0.621
EPA 365.1 Rev. 2.0	Total-P	103	97.8	95.0				2.84
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.8	93.8	95.6				1.90
SM 2120 B	Color (true)	101					2.17	
SM 2320 B-97	Total Alkalinity	103					0.631	
SM 2540 C-97	TDS						6.71	
SM 2540 D-97	TSS						6.90	
SM 4500 F-C-97	Fluoride	98.9	97.6	97.6				0.0
SM 5310 B-00	Organic Carbon	95.1	93.4	95.8				1.53

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2033957
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2033965
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2033965
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2033957
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2033957
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2033958
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2033958
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2033958
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2033958
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2033959
SM 2120 B / E31780	True Color measured at 450 nm	2033957
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2033957
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2033957
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2033957

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2033957
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2033958

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	10/18/2018			10/18/2018 15:59	Megan Treadwell	2033957
EPA 200.7 Rev. 4.4	10/18/2018	10/22/2018 14:45	Elliott D. Healy	10/27/2018 00:19	Betina Topolski	2033965
	10/18/2018	10/22/2018 14:45	Elliott D. Healy	10/29/2018 23:00	Betina Topolski	2033965
EPA 200.8 Rev. 5.4	10/18/2018	10/22/2018 14:45	Elliott D. Healy	11/07/2018 23:15	Robert K Palmer	2033965
EPA 300.0 Rev. 2.1	10/18/2018			10/25/2018 02:20	Lipi Saha	2033957
EPA 350.1 Rev. 2.0	10/18/2018			10/29/2018 14:54	Ping Hua	2033958
EPA 351.2 Rev. 2.0	10/18/2018	10/24/2018 11:00	Adrian Shelby	10/25/2018 11:33	Joseph Suarez	2033958
EPA 353.2 Rev. 2.0	10/18/2018			10/19/2018 13:48	Lauren Bottorf	2033958
EPA 365.1 Rev. 2.0	10/18/2018	10/22/2018 13:00	Sima Feizi	10/23/2018 08:34	Beverly Y. Sanders	2033958
EPA 365.1 Rev. 2.0 dissolved	10/18/2018			10/18/2018 18:01	Anthony C. Onicha	2033959
SM 2120 B	10/18/2018			10/18/2018 16:08	Chelsea Hernandez	2033957
SM 2320 B-97	10/18/2018			10/24/2018 14:47	Dale L. Simmons	2033957
SM 2540 C-97	10/18/2018			10/23/2018 15:01	Yijie Li	2033957
SM 2540 D-97	10/18/2018			10/23/2018 15:01	Yijie Li	2033957
SM 4500 F-C-97	10/18/2018			10/24/2018 14:47	Dale L. Simmons	2033957
SM 5310 B-00	10/18/2018			10/24/2018 13:18	Megan Treadwell	2033958