Chemical Analysis Report

NE-DIST-2018-10-04-01

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

Event Description: **Cross creek**
Request ID: **RQ-2018-10-01-14**
Customer: **NE-DIST**
Project ID: **SMP**

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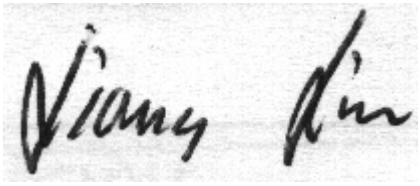
Certified by: Liang Lin, Environmental Administrator

Date Certified: 29-OCT-2018 14:40



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: Cross Creek at end of Twin Lakes Rd. **Collection Date/Time: 10/03/2018 13:05**

Field ID: G1NE0922 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2031350	EPA 180.1 Rev. 2.0	Turbidity	11		NTU	P352909	
	EPA 300.0 Rev. 2.1	Chloride	6.9		mg Cl/L	P353420	
		Sulfate	1.2		mg SO4/L	P353423	
	SM 2120 B	Color (true)	120		PCU	P352788	
	SM 2320 B-97	Total Alkalinity	20		mg CaCO3/L	P353271	
	SM 2540 C-97	TDS	89		mg/L	P353374	
	SM 2540 D-97	TSS	14		mg/L	P353360	
	SM 4500 F-C-97	Fluoride	0.084	I	mg F/L	P353275	
2031351	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P353413	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P353121	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P353142	
	EPA 365.1 Rev. 2.0	Total-P	0.096		mg P/L	P352930	
	SM 5310 B-00	Organic Carbon	21		mg C/L	P353301	
2031352	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P352793	
2031360	EPA 200.7 Rev. 4.4	Calcium	8.69		mg/L	P353045	
		Iron	320		ug/L	P353045	
		Magnesium	2.36		mg/L	P353045	
		Potassium	0.93	I	mg/L	P353045	
		Sodium	4.6		mg/L	P353045	
		Zinc	5.0	U	ug/L	P353045	
	EPA 200.8 Rev. 5.4	Arsenic	0.48		ug/L	P353045	
		Cadmium	0.020	U	ug/L	P353045	
		Chromium	0.40	U	ug/L	P353045	
		Copper	0.20	U	ug/L	P353045	
		Lead	0.24		ug/L	P353045	
		Nickel	0.20	U	ug/L	P353045	
		Silver	0.025	I	ug/L	P353045	

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.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P352909

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353045

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: P353045

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: P353420

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353423

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353413

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353121

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: P353142

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352930

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352793

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

Reference Method: SM 2120 B
Batch ID: P352788

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P353271

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

Reference Method: SM 2540 C-97
Batch ID: P353374

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P353360

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P353275

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P353301

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: P353045

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	102		P	85 - 115
Iron	106		P	85 - 115
Magnesium	109		P	85 - 115
Potassium	98.3		P	85 - 115
Sodium	101		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353045

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	100		P	85 - 115
Cadmium	102		P	85 - 115
Chromium	95.4		P	85 - 115
Copper	97.9		P	85 - 115
Lead	107		P	85 - 115
Nickel	111		P	85 - 115
Silver	110		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353420

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353423

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353413

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353121

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353142

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352930

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352793

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.9		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P352788

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	104		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P353271

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

Reference Method: SM 4500 F-C-97
Batch ID: P353275

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.5		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P353301

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.1		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353045

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031170	Calcium	105		P	80 - 120
2031170	Iron	111		P	80 - 120
2031170	Magnesium	110		P	80 - 120
2031170	Potassium	101		P	80 - 120
2031170	Sodium	105		P	80 - 120
2031170	Zinc	105		P	80 - 120
2031385	Calcium	105		P	80 - 120
2031385	Iron	108	107	P/P	80 - 120
2031385	Magnesium	107	108	P/P	80 - 120
2031385	Potassium	101	102	P/P	80 - 120
2031385	Sodium	101	101	P/P	80 - 120
2031385	Zinc	107	108	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353045

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031170	Arsenic	100		P	80 - 120
2031170	Cadmium	101		P	80 - 120
2031170	Chromium	96.4		P	80 - 120
2031170	Copper	97.0		P	80 - 120
2031170	Lead	107		P	80 - 120
2031170	Nickel	108		P	80 - 120
2031170	Silver	110		P	80 - 120
2031385	Arsenic	98.7	98.8	P/P	80 - 120
2031385	Cadmium	101	97.6	P/P	80 - 120
2031385	Chromium	93.0	92.8	P/P	80 - 120
2031385	Copper	94.0	93.2	P/P	80 - 120
2031385	Lead	104	103	P/P	80 - 120
2031385	Nickel	104	101	P/P	80 - 120
2031385	Silver	107	106	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353420

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031117	Chloride	100		P	90 - 110
2031350	Chloride	98.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353423

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031117	Sulfate	98.6		P	90 - 110
2031350	Sulfate	97.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353413

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031237	Ammonia-N	99.3	97.4	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353121

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031397	Kjeldahl Nitrogen	107	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353142

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031312	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352930

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031237	Total-P	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352793

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031315	O-Phosphate-P	99.4	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P353275

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031693	Fluoride	95.4	95.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P353301

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031209	Organic Carbon	95.4	94.8	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P352909

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031391	Turbidity	7.65	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353045

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031385	Calcium	0.340	Spike	P	0 - 20
2031385	Iron	0.436	Spike	P	0 - 20
2031385	Magnesium	0.597	Spike	P	0 - 20
2031385	Potassium	0.492	Spike	P	0 - 20
2031385	Sodium	0.0971	Spike	P	0 - 20
2031385	Zinc	0.885	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353045

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031385	Arsenic	0.137	Spike	P	0 - 20
2031385	Cadmium	3.14	Spike	P	0 - 20
2031385	Chromium	0.124	Spike	P	0 - 20
2031385	Copper	0.757	Spike	P	0 - 20
2031385	Lead	1.08	Spike	P	0 - 20
2031385	Nickel	2.19	Spike	P	0 - 20
2031385	Silver	0.679	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353420

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031117	Chloride	2.82	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353413

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031237	Ammonia-N	1.83	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353121

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031397	Kjeldahl Nitrogen	0.679	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353142

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031312	NO2NO3-N	0.491	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352930

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031237	Total-P	0.410	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352793

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031315	O-Phosphate-P	1.10	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P352788

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031391	Color (true)	1.98	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P353271

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031693	Total Alkalinity	0.695	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P353374

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031206	TDS	1.20	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P353275

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031693	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P353301

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031209	Organic Carbon	0.271	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: A86918
Included Lab Sample IDs: 2031350

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A86919
Included Lab Sample IDs: 2031352

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.9	99.8	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A86964
Included Lab Sample IDs: 2031350

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A87067
Included Lab Sample IDs: 2031351

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A87075
Included Lab Sample IDs: 2031351

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A87105
Included Lab Sample IDs: 2031350

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.6	99.8	P/P	90 - 110
Sulfate	97.3	99.3	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A87109
Included Lab Sample IDs: 2031350

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A87109
Included Lab Sample IDs: 2031350

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A87112
Included Lab Sample IDs: 2031351

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	98.4	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A87126
Included Lab Sample IDs: 2031351

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.2	97.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A87188
Included Lab Sample IDs: 2031351

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.7	103	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A87207
Included Lab Sample IDs: 2031360

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	96.7	95.5	P/P	90 - 110
Cadmium	96.6	97.6	P/P	90 - 110
Chromium	93.2	93.4	P/P	90 - 110
Copper	93.8	93.3	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A87263
Included Lab Sample IDs: 2031360

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	103	104	P/P	90 - 110
Iron	104	103	P/P	90 - 110
Magnesium	102	102	P/P	90 - 110
Potassium	99.3	99.1	P/P	90 - 110
Sodium	101	101	P/P	90 - 110
Zinc	104	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A87266
Included Lab Sample IDs: 2031360

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	99.2	98.4	P/P	90 - 110
Nickel	100	96.8	P/P	90 - 110
Silver	97.9	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			Precision		
						LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						7.65	
EPA 200.7 Rev. 4.4	Calcium	102	105	105				0.340
	Iron	106	111	108	107			0.436
	Magnesium	109	110	107	108			0.597
	Potassium	98.3	101	101	102			0.492
	Sodium	101	105	101	101			0.0971
	Zinc	103	105	107	108			0.885
EPA 200.8 Rev. 5.4	Arsenic	100	100	98.7	98.8			0.137
	Cadmium	102	101	101	97.6			3.14
	Chromium	95.4	96.4	93.0	92.8			0.124
	Copper	97.9	97.0	94.0	93.2			0.757
	Lead	107	107	104	103			1.08
	Nickel	111	108	104	101			2.19
	Silver	110	110	107	106			0.679
EPA 300.0 Rev. 2.1	Chloride	99.3	100	98.2			2.82	
	Sulfate	99.4	98.6	97.5				
EPA 350.1 Rev. 2.0	Ammonia-N	101	99.3	97.4				1.83
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	107	108				0.679
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	102	102				0.491
EPA 365.1 Rev. 2.0	Total-P	98.0	101	101				0.410
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.9	99.4	100				1.10
SM 2120 B	Color (true)	104					1.98	
SM 2320 B-97	Total Alkalinity	103					0.695	
SM 2540 C-97	TDS						1.20	
SM 4500 F-C-97	Fluoride	96.5	95.4	95.4				0.0
SM 5310 B-00	Organic Carbon	93.1	95.4	94.8				0.271

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2031350
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2031360
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2031360
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2031350
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2031350
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2031351
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2031351
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2031351
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2031351
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2031352
SM 2120 B / E31780	True Color measured at 450 nm	2031350
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2031350
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2031350
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2031350
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2031350

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2031351

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	10/04/2018			10/04/2018 16:07	Megan Treadwell	2031350
EPA 200.7 Rev. 4.4	10/04/2018	10/15/2018 16:20	Elliott D. Healy	10/24/2018 14:15	Betina Topolski	2031360
EPA 200.8 Rev. 5.4	10/04/2018	10/15/2018 16:20	Elliott D. Healy	10/19/2018 16:44	Robert K Palmer	2031360
	10/04/2018	10/15/2018 16:20	Elliott D. Healy	10/24/2018 19:06	Robert K Palmer	2031360
EPA 300.0 Rev. 2.1	10/04/2018			10/18/2018 22:10	Lipi Saha	2031350
EPA 350.1 Rev. 2.0	10/04/2018			10/19/2018 11:17	Ping Hua	2031351
EPA 351.2 Rev. 2.0	10/04/2018	10/16/2018 16:30	Adrian Shelby	10/18/2018 10:01	Joseph Suarez	2031351
EPA 353.2 Rev. 2.0	10/04/2018			10/16/2018 11:13	Lauren Bottorf	2031351
EPA 365.1 Rev. 2.0	10/04/2018	10/08/2018 13:30	Sima Feizi	10/15/2018 15:48	Beverly Y. Sanders	2031351
EPA 365.1 Rev. 2.0 dissolved	10/04/2018			10/04/2018 16:46	Julia Storbeck	2031352
SM 2120 B	10/04/2018			10/04/2018 16:53	Chelsea Hernandez	2031350
SM 2320 B-97	10/04/2018			10/17/2018 02:21	Dale L. Simmons	2031350
SM 2540 C-97	10/04/2018			10/08/2018 15:30	DeAsia Armster	2031350
SM 2540 D-97	10/04/2018			10/08/2018 15:30	DeAsia Armster	2031350
SM 4500 F-C-97	10/04/2018			10/17/2018 02:21	Dale L. Simmons	2031350
SM 5310 B-00	10/04/2018			10/18/2018 01:34	Megan Treadwell	2031351