Chemical Analysis Report

NE-DIST-2018-11-27-01

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

Event Description: **LSJR2-McGirts**
Request ID: **RQ-2018-11-26-19**
Customer: **NE-DIST**
Project ID: **SMP**

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Certified by: Colin Wright, Program Administrator

Date Certified: 12-DEC-2018 14:22

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: McGirts Creek at Helsema Rd. **Collection Date/Time: 11/26/2018 09:50**

Field ID: 20030877 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2043706	EPA 180.1 Rev. 2.0	Turbidity	2.7		NTU	P355151	
	EPA 300.0 Rev. 2.1	Chloride	10		mg Cl/L	P355506	
		Sulfate	16		mg SO4/L	P355508	
	SM 2120 B	Color (true)	36		PCU	P355211	
	SM 2320 B-97	Total Alkalinity	30		mg CaCO3/L	P355470	
	SM 2540 C-97	TDS	91		mg/L	P355529	
	SM 2540 D-97	TSS	3	I	mg/L	P355511	
	SM 4500 F-C-97	Fluoride	0.047	I	mg F/L	P355475	
2043708	EPA 350.1 Rev. 2.0	Ammonia-N	0.024		mg N/L	P355447	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.20	I	mg N/L	P355218	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.031		mg N/L	P355332	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P355229	
	SM 5310 B-00	Organic Carbon	5.4		mg C/L	P355423	
2043710	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.012		mg P/L	P355155	
2043717	EPA 200.7 Rev. 4.4	Calcium	18.0		mg/L	P355153	
		Iron	320		ug/L	P355153	
		Magnesium	1.49		mg/L	P355153	
		Potassium	0.81	I	mg/L	P355153	
		Sodium	6.6		mg/L	P355153	
		Zinc	5.4	I	ug/L	P355153	
	EPA 200.8 Rev. 5.4	Arsenic	0.21		ug/L	P355153	
		Cadmium	0.020	U	ug/L	P355153	
		Chromium	0.40	U	ug/L	P355153	
		Copper	0.20	U	ug/L	P355153	
		Lead	0.98		ug/L	P355153	
		Nickel	0.40	I	ug/L	P355153	
		Silver	0.010	U	ug/L	P355153	

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

Sample Location: McGrits Creek at Old Plank Road **Collection Date/Time: 11/26/2018 10:05**

Field ID: 20030346 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2043707	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P355151	
	EPA 300.0 Rev. 2.1	Chloride	15		mg Cl/L	P355506	
		Sulfate	13		mg SO4/L	P355508	
	SM 2120 B	Color (true)	77	A	PCU	P355211	
	SM 2320 B-97	Total Alkalinity	31		mg CaCO3/L	P355470	
	SM 2540 C-97	TDS	101		mg/L	P355529	
	SM 2540 D-97	TSS	2	I	mg/L	P355511	
	SM 4500 F-C-97	Fluoride	0.044	I	mg F/L	P355475	
2043709	EPA 350.1 Rev. 2.0	Ammonia-N	0.022		mg N/L	P355447	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.33		mg N/L	P355218	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.041		mg N/L	P355332	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P355229	
	SM 5310 B-00	Organic Carbon	9.3		mg C/L	P355423	
2043711	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.012		mg P/L	P355155	
2043718	EPA 200.7 Rev. 4.4	Calcium	17.9		mg/L	P355153	
		Iron	410		ug/L	P355153	
		Magnesium	1.61		mg/L	P355153	
		Potassium	1.1	I	mg/L	P355153	
		Sodium	9.1		mg/L	P355153	
		Zinc	5.0	U	ug/L	P355153	
	EPA 200.8 Rev. 5.4	Arsenic	0.30		ug/L	P355153	
		Cadmium	0.020	U	ug/L	P355153	
		Chromium	0.40	U	ug/L	P355153	
		Copper	0.21	I	ug/L	P355153	
		Lead	0.75		ug/L	P355153	
		Nickel	0.46	I	ug/L	P355153	
		Silver	0.010	U	ug/L	P355153	

Ref. Method and Comment:
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: P355151

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P355153

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: P355153

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: P355506

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355508

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355447

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355218

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: P355332

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355229

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355155

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

Reference Method: SM 2120 B
Batch ID: P355211

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P355470

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

Reference Method: SM 2540 C-97
Batch ID: P355529

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P355511

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P355475

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P355423

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: P355153

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	104		P	85 - 115
Iron	106		P	85 - 115
Magnesium	102		P	85 - 115
Potassium	102		P	85 - 115
Sodium	102		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P355153

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	106		P	85 - 115
Cadmium	102		P	85 - 115
Chromium	101		P	85 - 115
Copper	102		P	85 - 115
Lead	98.7		P	85 - 115
Nickel	102		P	85 - 115
Silver	103		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355506

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355508

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355447

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: P355218

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: P355332

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: P355229

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355155

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

Reference Method: SM 2120 B
Batch ID: P355211

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P355470

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P355475

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.9		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P355423

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.0		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P355153

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043589	Calcium	103		P	80 - 120
2043589	Iron	106	107	P/P	80 - 120
2043589	Magnesium	102		P	80 - 120
2043589	Potassium	101		P	80 - 120
2043589	Sodium	102		P	80 - 120
2043589	Zinc	100	101	P/P	80 - 120
2043717	Calcium	105		P	80 - 120
2043717	Iron	105		P	80 - 120
2043717	Magnesium	106		P	80 - 120
2043717	Potassium	101		P	80 - 120
2043717	Sodium	105		P	80 - 120
2043717	Zinc	99.1		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P355153

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043589	Arsenic	106	106	P/P	80 - 120
2043589	Cadmium	102	103	P/P	80 - 120
2043589	Chromium	100	101	P/P	80 - 120
2043589	Copper	99.9	100	P/P	80 - 120
2043589	Lead	98.3	98.7	P/P	80 - 120
2043589	Nickel	100	101	P/P	80 - 120
2043589	Silver	104	103	P/P	80 - 120
2043717	Arsenic	104		P	80 - 120
2043717	Cadmium	104		P	80 - 120
2043717	Chromium	102		P	80 - 120
2043717	Copper	99.2		P	80 - 120
2043717	Lead	98.8		P	80 - 120
2043717	Nickel	99.0		P	80 - 120
2043717	Silver	102		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355506

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043583	Chloride	97.4		P	90 - 110
2043811	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355508

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043583	Sulfate	99.0		P	90 - 110
2043811	Sulfate	98.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355447

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2044033	Ammonia-N	104	104	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355218

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043601	Kjeldahl Nitrogen	108	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355332

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043638	NO2NO3-N	100		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355229

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043708	Total-P	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355155

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043710	O-Phosphate-P	96.0	98.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P355475

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043583	Fluoride	98.9	98.9	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P355423

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043516	Organic Carbon	98.2	98.3	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P355151

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043740	Turbidity	8.72	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P355153

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043589	Calcium	0.00903	Spike	P	0 - 20
2043589	Iron	0.540	Spike	P	0 - 20
2043589	Magnesium	0.862	Spike	P	0 - 20
2043589	Potassium	0.237	Spike	P	0 - 20
2043589	Sodium	0.0153	Spike	P	0 - 20
2043589	Zinc	0.531	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P355153

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043589	Arsenic	0.194	Spike	P	0 - 20
2043589	Cadmium	0.390	Spike	P	0 - 20
2043589	Chromium	0.263	Spike	P	0 - 20
2043589	Copper	0.451	Spike	P	0 - 20
2043589	Lead	0.380	Spike	P	0 - 20
2043589	Nickel	0.719	Spike	P	0 - 20
2043589	Silver	1.08	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355506

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043583	Chloride	0.375	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355508

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043583	Sulfate	0.196	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355447

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2044033	Ammonia-N	0.767	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355218

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043601	Kjeldahl Nitrogen	2.28	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355332

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043638	NO2NO3-N	0.748	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355229

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043708	Total-P	0.187	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355155

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043710	O-Phosphate-P	2.47	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P355211

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043707	Color (true)	1.49	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P355470

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043583	Total Alkalinity	1.51	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P355529

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043583	TDS	6.79	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P355475

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043583	Fluoride	0.0	Spike	P	0 - 3.5

Quality Assurance Report
Precision

Reference Method: SM 5310 B-00
Batch ID: P355423

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043516	Organic Carbon	0.0321	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 180.1 Rev. 2.0
Run ID: A87978
Included Lab Sample IDs: 2043706, 2043707

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	101	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A87979
Included Lab Sample IDs: 2043710, 2043711

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	99.6	P/P	90 - 110
O-Phosphate-P	99.6	100	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A88001
Included Lab Sample IDs: 2043706, 2043707

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	102	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A88038
Included Lab Sample IDs: 2043708, 2043709

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A88040
Included Lab Sample IDs: 2043708, 2043709

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A88043
Included Lab Sample IDs: 2043708, 2043709

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A88065
Included Lab Sample IDs: 2043717, 2043718

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	108	104	P/P	90 - 110
Iron	109	102	P/P	90 - 110
Magnesium	109	103	P/P	90 - 110
Potassium	107	102	P/P	90 - 110
Sodium	108	103	P/P	90 - 110
Zinc	103	103	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A88068
Included Lab Sample IDs: 2043708, 2043709

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.0	94.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A88077
Included Lab Sample IDs: 2043708, 2043709

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	100	P/P	90 - 110
Ammonia-N	102	100	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A88097
Included Lab Sample IDs: 2043706, 2043707

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.3	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A88097
Included Lab Sample IDs: 2043706, 2043707

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A88113
Included Lab Sample IDs: 2043706, 2043707

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A88146
Included Lab Sample IDs: 2043717, 2043718

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	101	104	P/P	90 - 110
Cadmium	101	102	P/P	90 - 110
Chromium	100	101	P/P	90 - 110
Copper	101	102	P/P	90 - 110
Lead	99.3	100	P/P	90 - 110
Nickel	101	101	P/P	90 - 110
Silver	101	102	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						8.72	
EPA 200.7 Rev. 4.4	Calcium	104	103	105				0.0090
	Iron	106	106	107	105			0.540
	Magnesium	102	102	106				0.862
	Potassium	102	101	101				0.237
	Sodium	102	102	105				0.0153
	Zinc	101	100	101	99.1			0.531
EPA 200.8 Rev. 5.4	Arsenic	106	106	106	104			0.194
	Cadmium	102	102	103	104			0.390
	Chromium	101	100	101	102			0.263
	Copper	102	99.9	100	99.2			0.451
	Lead	98.7	98.3	98.7	98.8			0.380
	Nickel	102	100	101	99.0			0.719
	Silver	103	104	103	102			1.08
EPA 300.0 Rev. 2.1	Chloride	99.9	97.4	101			0.375	
	Sulfate	99.9	99.0	98.6			0.196	
EPA 350.1 Rev. 2.0	Ammonia-N	101	104	104				0.767
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	108	105				2.28
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	100					0.748
EPA 365.1 Rev. 2.0	Total-P	101	102	102				0.187
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	96.0	98.7				2.47
SM 2120 B	Color (true)	102					1.49	
SM 2320 B-97	Total Alkalinity	101					1.51	
SM 2540 C-97	TDS						6.79	
SM 4500 F-C-97	Fluoride	99.9	98.9	98.9				0.0
SM 5310 B-00	Organic Carbon	95.0	98.2	98.3				0.0321

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2043706, 2043707
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2043717, 2043718
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2043717, 2043718
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2043706, 2043707
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2043706, 2043707
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2043708, 2043709
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2043708, 2043709
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2043708, 2043709
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2043708, 2043709
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2043710, 2043711
SM 2120 B / E31780	True Color measured at 450 nm	2043706, 2043707
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2043706, 2043707
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2043706, 2043707
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2043706, 2043707
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2043706, 2043707

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2043708, 2043709

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	11/27/2018			11/27/2018 16:56	Julia Storbeck	2043706, 2043707
EPA 200.7 Rev. 4.4	11/27/2018	11/27/2018 17:30	Elliott D. Healy	11/30/2018 14:57	Betina Topolski	2043717
	11/27/2018	11/27/2018 17:30	Elliott D. Healy	11/30/2018 15:17	Betina Topolski	2043718
EPA 200.8 Rev. 5.4	11/27/2018	11/27/2018 17:30	Elliott D. Healy	12/05/2018 08:21	Robert K Palmer	2043717
	11/27/2018	11/27/2018 17:30	Elliott D. Healy	12/05/2018 08:40	Robert K Palmer	2043718
EPA 300.0 Rev. 2.1	11/27/2018			12/04/2018 02:26	Lipi Saha	2043706
	11/27/2018			12/04/2018 02:38	Lipi Saha	2043707
EPA 350.1 Rev. 2.0	11/27/2018			11/30/2018 14:20	Ping Hua	2043709
	11/27/2018			11/30/2018 14:32	Ping Hua	2043708
EPA 351.2 Rev. 2.0	11/27/2018	11/28/2018 11:50	Adrian Shelby	11/29/2018 14:01	Joseph Suarez	2043708
	11/27/2018	11/28/2018 11:50	Adrian Shelby	11/29/2018 14:03	Joseph Suarez	2043709
EPA 353.2 Rev. 2.0	11/27/2018			11/29/2018 13:08	Lauren Bottorf	2043708
	11/27/2018			11/29/2018 13:09	Lauren Bottorf	2043709
EPA 365.1 Rev. 2.0	11/27/2018	11/28/2018 12:35	Sima Feizi	11/29/2018 12:46	Beverly Y. Sanders	2043708
	11/27/2018	11/28/2018 12:35	Sima Feizi	11/29/2018 12:47	Beverly Y. Sanders	2043709
EPA 365.1 Rev. 2.0 dissolved	11/27/2018			11/27/2018 15:26	Jhamieka S. Greenwood	2043710
	11/27/2018			11/27/2018 15:39	Jhamieka S. Greenwood	2043711
SM 2120 B	11/27/2018			11/27/2018 15:11	Chelsea Hernandez	2043706
	11/27/2018			11/27/2018 15:13	Chelsea Hernandez	2043707
SM 2320 B-97	11/27/2018			11/30/2018 15:19	Dale L. Simmons	2043706
	11/27/2018			11/30/2018 15:30	Dale L. Simmons	2043707
SM 2540 C-97	11/27/2018			11/29/2018 13:42	Yijie Li	2043706, 2043707
SM 2540 D-97	11/27/2018			11/29/2018 13:42	Yijie Li	2043706, 2043707
SM 4500 F-C-97	11/27/2018			11/30/2018 15:19	Dale L. Simmons	2043706
	11/27/2018			11/30/2018 15:30	Dale L. Simmons	2043707
SM 5310 B-00	11/27/2018			11/30/2018 01:18	Megan Treadwell	2043708
	11/27/2018			11/30/2018 01:31	Megan Treadwell	2043709