Chemical Analysis Report

CEN-DIST-2018-11-01-01

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

Event Description: **SJR - Harney (Vol)**
Request ID: **RQ-2018-10-22-13**
Customer: **CEN-DIST**
Project ID: **SMP**

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Date Certified: 29-NOV-2018 08:57

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: Lake Harney Outfall in center of SJR **Collection Date/Time: 10/31/2018 11:40**

Field ID: G2CE0173 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2038235	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P354073	
	EPA 300.0 Rev. 2.1	Chloride	190		mg Cl/L	P355115	
		Sulfate	36		mg SO4/L	P355058	
	SM 2120 B	Color (true)	200		PCU	P354451	
	SM 2320 B-97	Total Alkalinity	58		mg CaCO3/L	P354358	
	SM 2540 C-97	TDS	470	A	mg/L	P354608	
	SM 2540 D-97	TSS	3	IA	mg/L	P354529	
	SM 4500 F-C-97	Fluoride	0.13		mg F/L	P354364	
2038236	EPA 350.1 Rev. 2.0	Ammonia-N	0.026		mg N/L	P354510	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P354345	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.23		mg N/L	P354297	
	EPA 365.1 Rev. 2.0	Total-P	0.069		mg P/L	P354226	
	SM 5310 B-00	Organic Carbon	23		mg C/L	P354327	
2038237	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.053		mg P/L	P354083	
2038240	EPA 200.7 Rev. 4.4	Calcium	36.4		mg/L	P354281	
		Iron	580		ug/L	P354281	
		Magnesium	13.7		mg/L	P354281	
		Potassium	4.5		mg/L	P354281	
		Sodium	102		mg/L	P354281	
		Zinc	5.0	U	ug/L	P354281	
	EPA 200.8 Rev. 5.4	Arsenic	0.67		ug/L	P354281	
		Cadmium	0.020	U	ug/L	P354281	
		Chromium	0.40	U	ug/L	P354281	
		Copper	0.42	I	ug/L	P354281	
		Lead	0.40		ug/L	P354281	
		Nickel	0.25	I	ug/L	P354281	
		Silver	0.010	U	ug/L	P354281	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P354073

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P354281

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: P354281

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: P355058

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355115

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354510

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354345

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: P354297

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354226

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P354083

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

Reference Method: SM 2120 B
Batch ID: P354451

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P354358

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

Reference Method: SM 2540 C-97
Batch ID: P354608

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P354529

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P354364

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P354327

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: P354281

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	100		P	85 - 115
Iron	103		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	102		P	85 - 115
Sodium	97.5		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P354281

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	102		P	85 - 115
Cadmium	102		P	85 - 115
Chromium	100		P	85 - 115
Copper	97.9		P	85 - 115
Lead	93.0		P	85 - 115
Nickel	97.5		P	85 - 115
Silver	97.6		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355058

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355115

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354510

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: P354345

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P354297

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	103		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354226

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: P354083

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

Reference Method: SM 2120 B
Batch ID: P354451

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.0		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P354358

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

Reference Method: SM 4500 F-C-97
Batch ID: P354364

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	102		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P354327

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.2		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P354281

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2038195	Iron	99.4		P	80 - 120
2038195	Magnesium	104		P	80 - 120
2038195	Potassium	97.3		P	80 - 120
2038195	Sodium	100		P	80 - 120
2038195	Zinc	102		P	80 - 120
2038694	Calcium	97.3		P	80 - 120
2038694	Iron	107	107	P/P	80 - 120
2038694	Magnesium	101		P	80 - 120
2038694	Potassium	101		P	80 - 120
2038694	Sodium	96.2		P	80 - 120
2038694	Zinc	98.1	102	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P354281

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2038195	Arsenic	105		P	80 - 120
2038195	Cadmium	103		P	80 - 120
2038195	Chromium	98.6		P	80 - 120
2038195	Copper	96.8		P	80 - 120
2038195	Lead	94.5		P	80 - 120
2038195	Nickel	95.5		P	80 - 120
2038195	Silver	95.3		P	80 - 120
2038694	Arsenic	105	105	P/P	80 - 120
2038694	Cadmium	102	103	P/P	80 - 120
2038694	Chromium	99.7	99.5	P/P	80 - 120
2038694	Copper	101	101	P/P	80 - 120
2038694	Lead	97.0	94.8	P/P	80 - 120
2038694	Nickel	99.0	98.5	P/P	80 - 120
2038694	Silver	98.6	98.7	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355058

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2037915	Sulfate	98.1		P	90 - 110
2038130	Sulfate	95.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355115

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2039199	Chloride	100	99.3	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354510

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2038236	Ammonia-N	99.0	99.1	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354345

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2038300	Kjeldahl Nitrogen	99.3	98.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P354297

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2038203	NO2NO3-N	101		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354226

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2038299	Total-P	98.6	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P354083

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2038301	O-Phosphate-P	96.6	98.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P354364

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2038075	Fluoride	101	101	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P354327

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2038205	Organic Carbon	101	100	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P354073

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2038223	Turbidity	1.77	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P354281

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2038694	Calcium	0.715	Spike	P	0 - 20
2038694	Iron	0.175	Spike	P	0 - 20
2038694	Magnesium	0.881	Spike	P	0 - 20
2038694	Potassium	0.748	Spike	P	0 - 20
2038694	Sodium	0.280	Spike	P	0 - 20
2038694	Zinc	2.82	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P354281

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2038694	Arsenic	0.133	Spike	P	0 - 20
2038694	Cadmium	1.26	Spike	P	0 - 20
2038694	Chromium	0.121	Spike	P	0 - 20
2038694	Copper	0.0198	Spike	P	0 - 20
2038694	Lead	2.13	Spike	P	0 - 20
2038694	Nickel	0.420	Spike	P	0 - 20
2038694	Silver	0.0380	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355058

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2037915	Sulfate	0.664	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355115

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2039199	Chloride	0.699	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354510

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2038236	Ammonia-N	0.114	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354345

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2038300	Kjeldahl Nitrogen	0.763	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P354297

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2038203	NO2NO3-N	0.197	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354226

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2038299	Total-P	2.68	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P354083

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2038301	O-Phosphate-P	2.35	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P354451

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2038223	Color (true)	2.60	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P354358

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2038075	Total Alkalinity	0.592	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P354608

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2038235	TDS	1.70	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P354364

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2038075	Fluoride	0.0	Spike	P	0 - 3.5

Quality Assurance Report
Precision

Reference Method: SM 5310 B-00
Batch ID: P354327

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2038205	Organic Carbon	0.742	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: A87461
Included Lab Sample IDs: 2038235

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: A87463
Included Lab Sample IDs: 2038237

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.0	99.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A87559
Included Lab Sample IDs: 2038236

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.9	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A87560
Included Lab Sample IDs: 2038236

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

Reference Method: SM 5310 B-00
Run ID: A87585
Included Lab Sample IDs: 2038236

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.4	97.6	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A87599
Included Lab Sample IDs: 2038235

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

Reference Method: SM 4500 F-C-97
Run ID: A87599
Included Lab Sample IDs: 2038235

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

Reference Method: SM 2120 B
Run ID: A87642
Included Lab Sample IDs: 2038235

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A87648
Included Lab Sample IDs: 2038240

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	101	101	P/P	90 - 110
Cadmium	101	98.9	P/P	90 - 110
Copper	100	101	P/P	90 - 110
Lead	95.8	96.1	P/P	90 - 110
Nickel	100	99.8	P/P	90 - 110
Silver	95.0	93.9	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A87652
Included Lab Sample IDs: 2038240

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	96.9	100	P/P	90 - 110
Iron	102	102	P/P	90 - 110
Magnesium	103	104	P/P	90 - 110
Potassium	98.2	97.8	P/P	90 - 110
Sodium	97.7	99.6	P/P	90 - 110
Zinc	103	107	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A87660
Included Lab Sample IDs: 2038236

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	99.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A87674
Included Lab Sample IDs: 2038236

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A87873
Included Lab Sample IDs: 2038240

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	98.9	98.8	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A87936
Included Lab Sample IDs: 2038235

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.7	101	P/P	90 - 110
Sulfate	97.0	99.9	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						1.77	
EPA 200.7 Rev. 4.4	Calcium	100	97.3					0.715
	Iron	103	99.4	107	107			0.175
	Magnesium	104	104	101				0.881
	Potassium	102	97.3	101				0.748
	Sodium	97.5	100	96.2				0.280
	Zinc	103	102	98.1	102			2.82
EPA 200.8 Rev. 5.4	Arsenic	102	105	105	105			0.133
	Cadmium	102	103	102	103			1.26
	Chromium	100	98.6	99.7	99.5			0.121
	Copper	97.9	96.8	101	101			0.0198
	Lead	93.0	94.5	97.0	94.8			2.13
	Nickel	97.5	95.5	99.0	98.5			0.420
	Silver	97.6	95.3	98.6	98.7			0.0380
EPA 300.0 Rev. 2.1	Chloride	99.3	100	99.3				0.699
	Sulfate	101	98.1	95.4			0.664	
EPA 350.1 Rev. 2.0	Ammonia-N	101	99.0	99.1				0.114
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	99.3	98.4				0.763
EPA 353.2 Rev. 2.0	NO2NO3-N	103	101					0.197
EPA 365.1 Rev. 2.0	Total-P	103	98.6	101				2.68
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	96.6	98.9				2.35
SM 2120 B	Color (true)	98.0					2.60	
SM 2320 B-97	Total Alkalinity	103					0.592	
SM 2540 C-97	TDS						1.70	
SM 4500 F-C-97	Fluoride	102	101	101				0.0
SM 5310 B-00	Organic Carbon	95.2	101	100				0.742

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2038235
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2038240
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2038240
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2038235
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2038235
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2038236
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2038236
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2038236
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2038236
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2038237
SM 2120 B / E31780	True Color measured at 450 nm	2038235
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2038235
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2038235
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2038235
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2038235

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2038236

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	11/01/2018			11/01/2018 16:10	Megan Treadwell	2038235
EPA 200.7 Rev. 4.4	11/01/2018	11/06/2018 14:45	Elliott D. Healy	11/08/2018 16:39	Betina Topolski	2038240
EPA 200.8 Rev. 5.4	11/01/2018	11/06/2018 14:45	Elliott D. Healy	11/08/2018 18:30	Robert K Palmer	2038240
	11/01/2018	11/06/2018 14:45	Elliott D. Healy	11/19/2018 19:01	Robert K Palmer	2038240
EPA 300.0 Rev. 2.1	11/01/2018			11/26/2018 15:06	Lipi Saha	2038235
EPA 350.1 Rev. 2.0	11/01/2018			11/08/2018 14:47	Ping Hua	2038236
EPA 351.2 Rev. 2.0	11/01/2018	11/07/2018 11:50	Adrian Shelby	11/09/2018 09:59	Joseph Suarez	2038236
EPA 353.2 Rev. 2.0	11/01/2018			11/06/2018 13:18	Lauren Bottorf	2038236
EPA 365.1 Rev. 2.0	11/01/2018	11/05/2018 11:55	Sima Feizi	11/06/2018 12:07	Beverly Y. Sanders	2038236
EPA 365.1 Rev. 2.0 dissolved	11/01/2018			11/01/2018 15:27	Julia Storbeck	2038237
SM 2120 B	11/01/2018			11/01/2018 15:59	Chelsea Hernandez	2038235
SM 2320 B-97	11/01/2018			11/07/2018 09:43	Dale L. Simmons	2038235
SM 2540 C-97	11/01/2018			11/06/2018 15:10	Yijie Li	2038235
SM 2540 D-97	11/01/2018			11/06/2018 15:10	Yijie Li	2038235
SM 4500 F-C-97	11/01/2018			11/07/2018 09:43	Dale L. Simmons	2038235
SM 5310 B-00	11/01/2018			11/06/2018 09:22	Megan Treadwell	2038236