Chemical Analysis Report

NE-DIST-2019-05-17-02

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

Event Description: **Continuous Monitoring Event**
Request ID: **RQ-2019-04-08-59**
Customer: **NE-DIST**
Project ID: **SMP**

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8800 Baymeadows Way West
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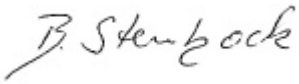
Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 05-JUN-2019 17:23



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 by the Florida Department of Health Environmental Laboratory Certification Program 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: Big Fishweir Creek at end of Merrimac Ave **Collection Date/Time: 05/16/2019 10:05**

Field ID: G2NE1175 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2087185	EPA 180.1 Rev. 2.0	Turbidity	4.9		NTU	P364160	
	EPA 300.0	Bromide	7.5		mg Br/L	P364503	
	SM 2320 B-97	Total Alkalinity	134		mg CaCO3/L	P364425	
	SM 2540 D-97	TSS	7	I	mg/L	P364711	
	SM 4500 F-C-97	Fluoride	0.29		mg F/L	P364428	
2087186	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P364329	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.69		mg N/L	P364676	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P364369	
	EPA 365.1 Rev. 2.0	Total-P	0.36		mg P/L	P364579	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P364290	
2087187	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.21		mg P/L	P364178	
2087189	EPA 200.7 Rev. 4.4	Barium	86.9		ug/L	P364306	
		Calcium	89.5		mg/L	P364306	
		Iron	410		ug/L	P364306	
		Magnesium	143		mg/L	P364306	
		Manganese	53.8		ug/L	P364306	
		Potassium	42		mg/L	P364306	
		Sodium	1.09E+03		mg/L	P364306	
		Zinc	5.0	U	ug/L	P364306	
	EPA 200.8 Rev. 5.4	Aluminum	63		ug/L	P364306	
		Antimony	0.21		ug/L	P364306	
		Arsenic	1.70		ug/L	P364306	
		Cadmium	0.020	U	ug/L	P364306	
		Chromium	0.40	U	ug/L	P364306	
		Copper	1.03		ug/L	P364306	
		Lead	1.29		ug/L	P364306	
		Nickel	0.63	I	ug/L	P364306	
		Selenium	0.20	U	ug/L	P364306	
		Silver	0.010	U	ug/L	P364306	
		Thallium	0.10	U	ug/L	P364306	

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: P364160

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P364306

Component	Result	Code	Units
Barium	1.0	U	ug/L
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Manganese	1.0	U	ug/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: P364306

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0
Batch ID: P364503

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364329

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364676

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: P364369

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364579

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364178

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

Reference Method: SM 2320 B-97
Batch ID: P364425

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

Reference Method: SM 2540 D-97
Batch ID: P364711

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P364428

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P364290

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: P364306

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	101		P	85 - 115
Calcium	103		P	85 - 115
Iron	100		P	85 - 115
Magnesium	105		P	85 - 115
Manganese	100		P	85 - 115
Potassium	96.4		P	85 - 115
Sodium	99.7		P	85 - 115
Zinc	99.7		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P364306

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	107		P	85 - 115
Antimony	99.8		P	85 - 115
Arsenic	103		P	85 - 115
Cadmium	102		P	85 - 115
Chromium	95.7		P	85 - 115
Copper	102		P	85 - 115
Lead	94.2		P	85 - 115
Nickel	99.5		P	85 - 115
Selenium	108		P	85 - 115
Silver	101		P	85 - 115
Thallium	102		P	85 - 115

Reference Method: EPA 300.0
Batch ID: P364503

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364329

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364676

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: P364369

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: P364579

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	94.1		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364178

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

Reference Method: SM 2320 B-97
Batch ID: P364425

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P364428

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P364290

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: P364306

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2087113	Barium	101	101	P/P	80 - 120
2087113	Calcium	102	102	P/P	80 - 120
2087113	Iron	99.0	98.8	P/P	80 - 120
2087113	Magnesium	104	104	P/P	80 - 120
2087113	Manganese	99.1	99.4	P/P	80 - 120
2087113	Potassium	99.4	99.6	P/P	80 - 120
2087113	Sodium	95.7	95.0	P/P	80 - 120
2087113	Zinc	99.8	100	P/P	80 - 120
2087427	Barium	97.7		P	80 - 120
2087427	Calcium	88.9		P	80 - 120
2087427	Iron	98.2		P	80 - 120
2087427	Magnesium	88.8		P	80 - 120
2087427	Manganese	98.1		P	80 - 120
2087427	Potassium	96.5		P	80 - 120
2087427	Sodium	93.8		P	80 - 120
2087427	Zinc	95.9		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P364306

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2087113	Aluminum	101	102	P/P	80 - 120
2087113	Antimony	98.0	101	P/P	80 - 120
2087113	Arsenic	101	103	P/P	80 - 120
2087113	Cadmium	96.4	105	P/P	80 - 120
2087113	Chromium	96.5	98.7	P/P	80 - 120
2087113	Copper	102	104	P/P	80 - 120
2087113	Lead	93.8	96.7	P/P	80 - 120
2087113	Nickel	98.7	101	P/P	80 - 120
2087113	Selenium	103	106	P/P	80 - 120
2087113	Silver	101	103	P/P	80 - 120
2087113	Thallium	102	106	P/P	80 - 120
2087427	Aluminum	102		P	80 - 120
2087427	Antimony	101		P	80 - 120
2087427	Arsenic	104		P	80 - 120
2087427	Cadmium	104		P	80 - 120
2087427	Chromium	96.5		P	80 - 120
2087427	Copper	96.3		P	80 - 120
2087427	Lead	95.1		P	80 - 120
2087427	Nickel	96.2		P	80 - 120
2087427	Selenium	103		P	80 - 120
2087427	Silver	103		P	80 - 120
2087427	Thallium	104		P	80 - 120

Reference Method: EPA 300.0
Batch ID: P364503

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088065	Bromide	99.6	99.0	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364329

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2087192	Ammonia-N	105	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364676

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2086895	Kjeldahl Nitrogen	108	107	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364369

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2086894	NO2NO3-N	103	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364579

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2086894	Total-P	95.7	93.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364178

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2087465	O-Phosphate-P	94.3	96.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P364428

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2086920	Fluoride	97.9	99.0	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P364290

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2087247	Organic Carbon	95.2	96.5	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P364160

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2087244	Turbidity	4.08	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P364306

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2087113	Barium	0.0536	Spike	P	0 - 20
2087113	Calcium	0.303	Spike	P	0 - 20
2087113	Iron	0.251	Spike	P	0 - 20
2087113	Magnesium	0.0852	Spike	P	0 - 20
2087113	Manganese	0.236	Spike	P	0 - 20
2087113	Potassium	0.187	Spike	P	0 - 20
2087113	Sodium	0.550	Spike	P	0 - 20
2087113	Zinc	0.206	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P364306

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2087113	Aluminum	0.675	Spike	P	0 - 20
2087113	Antimony	2.63	Spike	P	0 - 20
2087113	Arsenic	2.26	Spike	P	0 - 20
2087113	Cadmium	8.57	Spike	P	0 - 20
2087113	Chromium	2.30	Spike	P	0 - 20
2087113	Copper	2.25	Spike	P	0 - 20
2087113	Lead	2.97	Spike	P	0 - 20
2087113	Nickel	1.97	Spike	P	0 - 20
2087113	Selenium	2.39	Spike	P	0 - 20
2087113	Silver	1.71	Spike	P	0 - 20
2087113	Thallium	3.87	Spike	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P364503

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088065	Bromide	0.394	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364329

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2087192	Ammonia-N	0.988	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364676

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2086895	Kjeldahl Nitrogen	0.641	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364369

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2086894	NO2NO3-N	0.487	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364579

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2086894	Total-P	1.93	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364178

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2087465	O-Phosphate-P	1.64	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P364425

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2086920	Total Alkalinity	0.272	Sample	P	0 - 2.8

Reference Method: SM 4500 F-C-97
Batch ID: P364428

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2086920	Fluoride	0.998	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P364290

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2087247	Organic Carbon	0.799	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: A91511
Included Lab Sample IDs: 2087185

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.5	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A91514
Included Lab Sample IDs: 2087187

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.6	96.8	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A91559
Included Lab Sample IDs: 2087186

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.0	95.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A91568
Included Lab Sample IDs: 2087186

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	107	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A91592
Included Lab Sample IDs: 2087186

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	97.0	97.0	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A91612
Included Lab Sample IDs: 2087189

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	99.7	P/P	90 - 110
Calcium	97.0	97.3	P/P	90 - 110
Iron	96.7	96.3	P/P	90 - 110
Magnesium	96.4	95.9	P/P	90 - 110
Manganese	101	99.8	P/P	90 - 110
Potassium	94.8	94.7	P/P	90 - 110
Sodium	94.9	92.2	P/P	90 - 110
Zinc	101	100	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A91614
Included Lab Sample IDs: 2087185

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-97
Run ID: A91614
Included Lab Sample IDs: 2087185

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

Reference Method: EPA 300.0
Run ID: A91648
Included Lab Sample IDs: 2087185

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A91674
Included Lab Sample IDs: 2087189

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	105	103	P/P	90 - 110
Antimony	96.3	96.2	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Cadmium	99.0	99.9	P/P	90 - 110
Chromium	96.3	97.1	P/P	90 - 110
Copper	101	101	P/P	90 - 110
Lead	95.3	94.4	P/P	90 - 110
Nickel	99.0	98.4	P/P	90 - 110
Selenium	102	101	P/P	90 - 110
Silver	99.4	99.4	P/P	90 - 110
Thallium	96.0	95.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A91713
Included Lab Sample IDs: 2087186

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A91745
Included Lab Sample IDs: 2087186

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.6	95.5	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						4.08	
EPA 200.7 Rev. 4.4	Barium	101	101	101	97.7			0.0536
	Calcium	103	102	102	88.9			0.303
	Iron	100	99.0	98.8	98.2			0.251
	Magnesium	105	104	104	88.8			0.0852
	Manganese	100	99.1	99.4	98.1			0.236
	Potassium	96.4	99.4	99.6	96.5			0.187
	Sodium	99.7	95.7	95.0	93.8			0.550
	Zinc	99.7	99.8	100	95.9			0.206
EPA 200.8 Rev. 5.4	Aluminum	107	101	102	102			0.675
	Antimony	99.8	98.0	101	101			2.63
	Arsenic	103	101	103	104			2.26
	Cadmium	102	96.4	105	104			8.57
	Chromium	95.7	96.5	98.7	96.5			2.30
	Copper	102	102	104	96.3			2.25
	Lead	94.2	93.8	96.7	95.1			2.97
	Nickel	99.5	98.7	101	96.2			1.97
	Selenium	108	103	106	103			2.39
	Silver	101	101	103	103			1.71
	Thallium	102	102	106	104			3.87
EPA 300.0	Bromide	103	99.6	99.0				0.394
EPA 350.1 Rev. 2.0	Ammonia-N	104	105	106				0.988
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	108	107				0.641
EPA 353.2 Rev. 2.0	NO2NO3-N	100	103	102				0.487
EPA 365.1 Rev. 2.0	Total-P	94.1	95.7	93.7				1.93
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.2	94.3	96.0				1.64
SM 2320 B-97	Total Alkalinity	103					0.272	
SM 4500 F-C-97	Fluoride	100	97.9	99.0				0.998
SM 5310 B-00	Organic Carbon	95.2	95.2	96.5				0.799

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2087185
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2087189
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2087189
EPA 300.0 / E31780	Bromide in aqueous matrices	2087185
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2087186
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2087186
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2087186
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2087186
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2087187
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2087185
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2087185
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2087185
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2087186

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	05/17/2019			05/17/2019 14:03	Adrian Shelby	2087185
EPA 200.7 Rev. 4.4	05/17/2019	05/21/2019 13:45	Elliott D. Healy	05/22/2019 13:00	Vijayalakshmi Reddy	2087189
	05/17/2019	05/21/2019 13:45	Elliott D. Healy	05/22/2019 13:10	Vijayalakshmi Reddy	2087189
EPA 200.8 Rev. 5.4	05/17/2019	05/21/2019 13:45	Elliott D. Healy	05/24/2019 23:44	Robert K Palmer	2087189
EPA 300.0	05/17/2019			05/23/2019 17:33	Lipi Saha	2087185
EPA 350.1 Rev. 2.0	05/17/2019			05/20/2019 13:48	Ping Hua	2087186
EPA 351.2 Rev. 2.0	05/17/2019	05/29/2019 14:15	Adrian Shelby	05/30/2019 09:55	Joseph Suarez	2087186
EPA 353.2 Rev. 2.0	05/17/2019			05/22/2019 10:28	Beverly Y. Sanders	2087186
EPA 365.1 Rev. 2.0	05/17/2019	05/28/2019 16:20	Adrian Shelby	05/29/2019 10:07	Rosalyn Ballman	2087186
EPA 365.1 Rev. 2.0 dissolved	05/17/2019			05/17/2019 16:21	Jhamieka S. Greenwood	2087187
SM 2320 B-97	05/17/2019			05/23/2019 07:34	Dale L. Simmons	2087185
SM 2540 D-97	05/17/2019			05/21/2019 15:26	Yijie Li	2087185
SM 4500 F-C-97	05/17/2019			05/23/2019 07:34	Dale L. Simmons	2087185
SM 5310 B-00	05/17/2019			05/21/2019 02:11	Julia Storbeck	2087186