

Chemical Analysis Report

NE-DIST-2019-10-11-03

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-2019-10-07-20**

Customer: **NE-DIST**

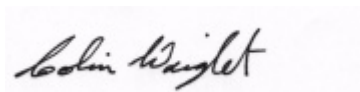
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Suite 100
Jacksonville, FL 32256
Attn: Brian G Davis

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

Certified by: Colin Wright, Program Administrator

Date Certified: 07-NOV-2019 15:16

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light gray rectangular background.

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: Hopkins Cr at Kings Rd

Collection Date/Time: 10/10/2019 11:15

Field ID: 20030758

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2127396	EPA 180.1 Rev. 2.0	Turbidity	5.0		NTU	P372376	
	EPA 300.0	Bromide	47		mg Br/L	P372703	
	SM 2320 B-97	Total Alkalinity	103		mg CaCO3/L	P372648	
	SM 2540 D-97	TSS	9	I	mg/L	P372873	
	SM 4500 F-C-97	Fluoride	0.85		mg F/L	P372650	
2127397	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.046		mg P/L	P372367	
	SM 4500 F-C-97 dissolved	Fluoride	0.84		mg F/L	P372895	
2127398	EPA 350.1 Rev. 2.0	Ammonia-N	0.073		mg N/L	P372695	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.58		mg N/L	P372397	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.044		mg N/L	P372726	
	EPA 365.1 Rev. 2.0	Total-P	0.074		mg P/L	P372575	
	SM 5310 B-00	Organic Carbon	6.4		mg C/L	P372784	
2127404	EPA 200.7 Rev. 4.4	Barium	14		ug/L	P372426	
		Calcium	261		mg/L	P372426	
		Iron	93	I	ug/L	P372426	
		Manganese	13		ug/L	P372426	
		Potassium	280		mg/L	P372426	
		Sodium	7.09E+03		mg/L	P372426	
		Zinc	15	U	ug/L	P372426	
	EPA 200.8 Rev. 5.4	Aluminum	346		ug/L	P372426	
		Antimony	0.20	U	ug/L	P372426	
		Arsenic	2.17		ug/L	P372426	
		Cadmium	0.080	U	ug/L	P372426	
		Chromium	4.0	U	ug/L	P372426	
		Copper	1.6	U	ug/L	P372426	
		Lead	2.0	U	ug/L	P372426	
		Nickel	5.0	U	ug/L	P372426	
		Selenium	0.80	U	ug/L	P372426	
		Silver	0.040	U	ug/L	P372426	
		Thallium	1.0	U	ug/L	P372426	

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, potassium, and sodium are unavailable because of high analyte concentration in the QC sample.

Sample Location: Sherman Cr @ Conf San Pablo R

Collection Date/Time: 10/10/2019 13:50

Field ID: 20030802

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2127393	EPA 180.1 Rev. 2.0	Turbidity	6.5		NTU	P372376	
	EPA 300.0	Bromide	41		mg Br/L	P372703	
	SM 2320 B-97	Total Alkalinity	110		mg CaCO3/L	P372648	
	SM 2540 D-97	TSS	11		mg/L	P372873	
	SM 4500 F-C-97	Fluoride	0.80		mg F/L	P372650	
2127394	EPA 350.1 Rev. 2.0	Ammonia-N	0.040		mg N/L	P372695	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.60		mg N/L	P372397	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.018		mg N/L	P372726	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P372575	
	SM 5310 B-00	Organic Carbon	8.0		mg C/L	P372784	
2127395	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.089		mg P/L	P372367	

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: P372376

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P372426

Component	Result	Code	Units
Barium	1.0	U	ug/L
Calcium	0.075	U	mg/L
Iron	30	U	ug/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: P372426

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: P372703

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P372695

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P372397

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P372726

Component	Result	Code	Units
-----------	--------	------	-------

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P372726

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P372575

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P372367

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

Reference Method: SM 2320 B-97
Batch ID: P372648

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

Reference Method: SM 2540 D-97
Batch ID: P372873

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P372650

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97 dissolved
Batch ID: P372895

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P372784

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: P372426

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	100		P	80 - 120
Calcium	101		P	80 - 120
Iron	100		P	80 - 120
Manganese	99.0		P	80 - 120
Potassium	100		P	80 - 120
Sodium	98.1		P	80 - 120
Zinc	97.8		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P372426

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	91.5		P	85 - 115
Antimony	93.1		P	85 - 115
Arsenic	91.5		P	85 - 115
Cadmium	91.4		P	85 - 115
Chromium	104		P	85 - 115
Copper	105		P	85 - 115
Lead	92.0		P	85 - 115
Nickel	93.9		P	85 - 115
Selenium	88.0		P	85 - 115
Silver	92.6		P	85 - 115
Thallium	99.6		P	85 - 115

Reference Method: EPA 300.0
Batch ID: P372703

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Bromide	98.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P372695

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P372397

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: P372726

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P372575

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
-----------	---------	---------	-----------	----------------

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P372575

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P372367

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

Reference Method: SM 2320 B-97
Batch ID: P372648

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

Reference Method: SM 4500 F-C-97
Batch ID: P372650

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.6		P	92 - 103

Reference Method: SM 4500 F-C-97 dissolved
Batch ID: P372895

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.8		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P372784

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P372426

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2127371	Barium	95.0	94.9	P/P	70 - 130
2127371	Iron	96.4	97.6	P/P	70 - 130
2127371	Manganese	93.4	93.7	P/P	70 - 130
2127371	Zinc	101	100	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P372426

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2127371	Aluminum	110	115	P/P	70 - 130
2127371	Antimony	97.2	101	P/P	70 - 130
2127371	Arsenic	103	107	P/P	70 - 130
2127371	Cadmium	86.8	89.5	P/P	70 - 130
2127371	Chromium	91.5	95.3	P/P	70 - 130
2127371	Copper	97.3	98.6	P/P	70 - 130
2127371	Lead	100	104	P/P	70 - 130
2127371	Nickel	106	109	P/P	70 - 130
2127371	Selenium	93.8	96.0	P/P	70 - 130
2127371	Silver	86.0	88.3	P/P	70 - 130
2127371	Thallium	102	105	P/P	70 - 130

Reference Method: EPA 300.0
Batch ID: P372703

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2127309	Bromide	95.7	95.8	P/P	90 - 110
2127737	Bromide	96.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P372695

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2127928	Ammonia-N	99.9	96.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P372397

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2127310	Kjeldahl Nitrogen	103	99.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P372726

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2127394	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P372575

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2127394	Total-P	91.8	94.9	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P372367

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2127301	O-Phosphate-P	96.9	97.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P372650

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2125353	Fluoride	95.2	95.9	P/P	89 - 106

Reference Method: SM 4500 F-C-97 dissolved
Batch ID: P372895

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2126334	Fluoride	95.9	95.9	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P372784

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2127310	Organic Carbon	99.7	99.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P372376

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2127389	Turbidity	6.33	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P372426

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2127371	Barium	0.115	Spike	P	0 - 20
2127371	Calcium	0.822	Spike	P	0 - 20
2127371	Iron	1.19	Spike	P	0 - 20
2127371	Manganese	0.273	Spike	P	0 - 20
2127371	Potassium	0.339	Spike	P	0 - 20
2127371	Sodium	0.217	Spike	P	0 - 20
2127371	Zinc	0.563	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P372426

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2127371	Aluminum	4.47	Spike	P	0 - 20
2127371	Antimony	3.65	Spike	P	0 - 20
2127371	Arsenic	3.85	Spike	P	0 - 20
2127371	Cadmium	2.99	Spike	P	0 - 20
2127371	Chromium	4.09	Spike	P	0 - 20
2127371	Copper	1.25	Spike	P	0 - 20
2127371	Lead	3.44	Spike	P	0 - 20
2127371	Nickel	2.40	Spike	P	0 - 20
2127371	Selenium	2.27	Spike	P	0 - 20
2127371	Silver	2.63	Spike	P	0 - 20
2127371	Thallium	2.93	Spike	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P372703

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2127309	Bromide	0.0401	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P372695

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2127928	Ammonia-N	2.21	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P372397

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
--------------------------	-----------	-----------	-------------------	-----------	----------------

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P372397

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2127310	Kjeldahl Nitrogen	2.18	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P372726

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2127394	NO2NO3-N	0.443	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P372575

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2127394	Total-P	2.82	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P372367

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2127301	O-Phosphate-P	0.285	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P372648

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2127265	Total Alkalinity	0.262	Sample	P	0 - 2.8

Reference Method: SM 4500 F-C-97
Batch ID: P372650

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2125353	Fluoride	0.480	Spike	P	0 - 2.5

Reference Method: SM 4500 F-C-97 dissolved
Batch ID: P372895

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2126334	Fluoride	0.0	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P372784

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2127310	Organic Carbon	0.390	Spike	P	0 - 20

Quality Assurance Report Precision

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A94905

Included Lab Sample IDs: 2127395, 2127397

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.1	99.8	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A94921

Included Lab Sample IDs: 2127393, 2127396

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	99.5	P/P	95 - 105

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A94968

Included Lab Sample IDs: 2127404

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	99.8	P/P	90 - 110
Calcium	99.4	99.9	P/P	90 - 110
Iron	101	100	P/P	90 - 110
Manganese	103	102	P/P	90 - 110
Potassium	100	100	P/P	90 - 110
Sodium	103	102	P/P	90 - 110
Zinc	99.3	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A94982

Included Lab Sample IDs: 2127394, 2127398

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A94995

Included Lab Sample IDs: 2127394, 2127398

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

Reference Method: SM 2320 B-97

Run ID: A95027

Included Lab Sample IDs: 2127393, 2127396

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	105	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A95027

Included Lab Sample IDs: 2127393, 2127396

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A95041

Included Lab Sample IDs: 2127394

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.3	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A95045

Included Lab Sample IDs: 2127394, 2127398

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

Reference Method: EPA 300.0

Run ID: A95051

Included Lab Sample IDs: 2127393, 2127396

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A95072

Included Lab Sample IDs: 2127398

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

Reference Method: SM 5310 B-00

Run ID: A95085

Included Lab Sample IDs: 2127394, 2127398

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	102	101	P/P	90 - 110
Organic Carbon	106	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97 dissolved

Run ID: A95133

Included Lab Sample IDs: 2127397

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A95196

Included Lab Sample IDs: 2127404

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	102	98.9	P/P	90 - 110
Antimony	91.9	92.0	P/P	90 - 110
Arsenic	95.9	94.9	P/P	90 - 110
Cadmium	92.6	93.0	P/P	90 - 110
Lead	92.7	93.3	P/P	90 - 110
Selenium	93.6	92.7	P/P	90 - 110
Silver	93.3	94.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A95431

Included Lab Sample IDs: 2127404

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Thallium	92.3	92.0	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A95532

Included Lab Sample IDs: 2127404

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	94.0	90.9	P/P	90 - 110
Copper	102	103	P/P	90 - 110
Nickel	101	101	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		LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					6.33	
EPA 200.7 Rev. 4.4	Barium	100	95.0	94.9			0.115
	Calcium	101					0.822
	Iron	100	96.4	97.6			1.19
	Manganese	99.0	93.4	93.7			0.273
	Potassium	100					0.339
	Sodium	98.1					0.217
	Zinc	97.8	101	100			0.563
EPA 200.8 Rev. 5.4	Aluminum	91.5	110	115			4.47
	Antimony	93.1	97.2	101			3.65
	Arsenic	91.5	103	107			3.85
	Cadmium	91.4	86.8	89.5			2.99
	Chromium	104	91.5	95.3			4.09
	Copper	105	97.3	98.6			1.25
	Lead	92.0	100	104			3.44
	Nickel	93.9	106	109			2.40
	Selenium	88.0	93.8	96.0			2.27
	Silver	92.6	86.0	88.3			2.63
	Thallium	99.6	102	105			2.93
EPA 300.0	Bromide	98.4	95.7	95.8	96.1		0.0401
EPA 350.1 Rev. 2.0	Ammonia-N	99.6	99.9	96.2			2.21
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	103	99.7			2.18
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	104	104	104			0.443
EPA 365.1 Rev. 2.0	Total-P	98.8	91.8	94.9			2.82
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.8	96.9	97.3			0.285
SM 2320 B-97	Total Alkalinity	103				0.262	
SM 4500 F-C-97	Fluoride	97.6	95.2	95.9			0.480
SM 4500 F-C-97 dissolved	Fluoride	96.8	95.9	95.9			0.0
SM 5310 B-00	Organic Carbon	101	99.7	99.2			0.390

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2127393, 2127396
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2127404
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2127404
EPA 300.0 / E31780	Bromide in aqueous matrices	2127393, 2127396
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2127394, 2127398
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2127394, 2127398
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2127394, 2127398
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2127394, 2127398
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2127395, 2127397
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2127393, 2127396
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2127393, 2127396
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2127393, 2127396
SM 4500 F-C-97 dissolved / E31780	Fluoride, dissolved, in filtered aqueous matrices, without distillation (not valid for NPDES monitoring)	2127397

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2127394, 2127398

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	10/11/2019			10/11/2019 15:36	Blanca Fach	2127393, 2127396
EPA 200.7 Rev. 4.4	10/11/2019	10/14/2019 16:55	Elliott D. Healy	10/15/2019 18:19	Betina Topolski	2127404
	10/11/2019	10/14/2019 16:55	Elliott D. Healy	10/15/2019 18:30	Betina Topolski	2127404
EPA 200.8 Rev. 5.4	10/11/2019	10/14/2019 16:55	Elliott D. Healy	10/23/2019 23:02	Justin Cutchin	2127404
	10/11/2019	10/14/2019 16:55	Elliott D. Healy	10/24/2019 01:29	Justin Cutchin	2127404
	10/11/2019	10/14/2019 16:55	Elliott D. Healy	11/02/2019 07:05	Justin Cutchin	2127404
	10/11/2019	10/14/2019 16:55	Elliott D. Healy	11/06/2019 13:43	Robert K Palmer	2127404
	10/11/2019	10/14/2019 16:55	Elliott D. Healy	11/06/2019 15:56	Robert K Palmer	2127404
EPA 300.0	10/11/2019			10/17/2019 23:22	Lipi Saha	2127393
	10/11/2019			10/17/2019 23:39	Lipi Saha	2127396
EPA 350.1 Rev. 2.0	10/11/2019			10/17/2019 13:51	Ping Hua	2127394
	10/11/2019			10/17/2019 13:53	Ping Hua	2127398
EPA 351.2 Rev. 2.0	10/11/2019	10/14/2019 13:01	Sima Feizi	10/15/2019 18:35	Jhamieka S. Greenwood	2127394
	10/11/2019	10/14/2019 13:01	Sima Feizi	10/15/2019 18:36	Jhamieka S. Greenwood	2127398
EPA 353.2 Rev. 2.0	10/11/2019			10/16/2019 11:18	Beverly Y. Sanders	2127394
	10/11/2019			10/16/2019 11:24	Beverly Y. Sanders	2127398
EPA 365.1 Rev. 2.0	10/11/2019	10/16/2019 10:45	Lipi Saha	10/17/2019 13:58	Rosalyn Ballman	2127394
	10/11/2019	10/16/2019 10:45	Lipi Saha	10/17/2019 16:34	Rosalyn Ballman	2127398
EPA 365.1 Rev. 2.0 dissolved	10/11/2019			10/11/2019 16:04	Jhamieka S. Greenwood	2127395
	10/11/2019			10/11/2019 16:05	Jhamieka S. Greenwood	2127397
SM 2320 B-97	10/11/2019			10/16/2019 08:48	Dale L. Simmons	2127393
	10/11/2019			10/16/2019 09:00	Dale L. Simmons	2127396
SM 2540 D-97	10/11/2019			10/16/2019 13:25	Yijie Li	2127393, 2127396
SM 4500 F-C-97	10/11/2019			10/16/2019 03:08	Dale L. Simmons	2127393
	10/11/2019			10/16/2019 03:13	Dale L. Simmons	2127396
SM 4500 F-C-97 dissolved	10/11/2019			10/22/2019 02:10	Dale L. Simmons	2127397
SM 5310 B-00	10/11/2019			10/19/2019 11:11	Madeline Funaro	2127394
	10/11/2019			10/19/2019 11:55	Madeline Funaro	2127398