Chemical Analysis Report

SE-DIST-2019-08-14-01

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

Event Description: **SMP-SLE Boat**
Request ID: **RQ-2019-08-05-48**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
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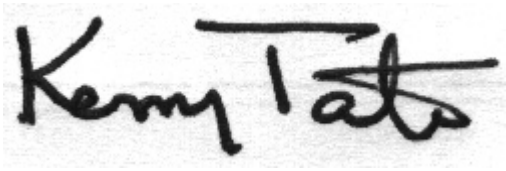
Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 11-SEP-2019 10:08



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: MANATEE POCKET CENTER **Collection Date/Time: 08/13/2019 12:10**

Field ID: G2SE0052 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2111598	EPA 180.1 Rev. 2.0	Turbidity	3.2		NTU	P369078	
	EPA 300.0	Bromide	12		mg Br/L	P369434	
	SM 2320 B-97	Total Alkalinity	100		mg CaCO3/L	P369681	
	SM 2540 D-97	TSS	4	I	mg/L	P369481	
	SM 4500 F-C-97	Fluoride	0.24		mg F/L	P369682	
2111599	EPA 350.1 Rev. 2.0	Ammonia-N	0.053		mg N/L	P369396	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.81		mg N/L	P369302	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.078		mg N/L	P369202	
	EPA 365.1 Rev. 2.0	Total-P	0.098		mg P/L	P369157	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P369284	
2111600	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.059		mg P/L	P369095	
2111604	EPA 200.7 Rev. 4.4	Iron	110	I	ug/L	P369030	
		Manganese	7.5	I	ug/L	P369030	
		Zinc	15	U	ug/L	P369030	
	EPA 200.8 Rev. 5.4	Aluminum	120	I	ug/L	P369030	
		Antimony	0.50	U	ug/L	P369030	
		Arsenic	3.3		ug/L	P369030	
		Cadmium	0.20	U	ug/L	P369030	
		Chromium	1.6	U	ug/L	P369030	
		Copper	8.7		ug/L	P369030	
		Lead	2.0	U	ug/L	P369030	
		Nickel	5.0	U	ug/L	P369030	
		Selenium	2.0	U	ug/L	P369030	
		Silver	0.10	U	ug/L	P369030	
		Thallium	1.0	U	ug/L	P369030	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 200.8 Rev. 5.4: The copper result was confirmed in the undigested sample on 09/05/2019.

Sample Location: GREAT POCKET @ MARKER 8 **Collection Date/Time: 08/13/2019 12:35**

Field ID: G2SE0033 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2111595	EPA 180.1 Rev. 2.0	Turbidity	5.9	A	NTU	P369078	
	EPA 300.0	Bromide	53		mg Br/L	P369434	
	SM 2320 B-97	Total Alkalinity	117		mg CaCO3/L	P369681	
	SM 2540 D-97	TSS	8	I	mg/L	P369484	
	SM 4500 F-C-97	Fluoride	0.93		mg F/L	P369682	
2111596	EPA 350.1 Rev. 2.0	Ammonia-N	0.036		mg N/L	P369396	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.63		mg N/L	P369302	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.009	I	mg N/L	P369202	
	EPA 365.1 Rev. 2.0	Total-P	0.053		mg P/L	P369157	
	SM 5310 B-00	Organic Carbon	4.8		mg C/L	P369287	
2111597	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.024		mg P/L	P369095	

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: SLE NEAR HOGGS COVE **Collection Date/Time: 08/13/2019 13:00**

Field ID: G2SE0046 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2111592	EPA 180.1 Rev. 2.0	Turbidity	4.1		NTU	P369078	
	EPA 300.0	Bromide	26		mg Br/L	P369434	
	SM 2320 B-97	Total Alkalinity	129		mg CaCO3/L	P369681	
	SM 2540 D-97	TSS	5	IA	mg/L	P369484	
	SM 4500 F-C-97	Fluoride	0.57		mg F/L	P369682	
2111593	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P369396	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.73		mg N/L	P369302	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.016		mg N/L	P369202	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P369157	
	SM 5310 B-00	Organic Carbon	9.2		mg C/L	P369234	
2111594	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.095		mg P/L	P369095	

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: P369078

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P369030

Component	Result	Code	Units
Iron	30	U	ug/L
Manganese	1.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P369030

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: P369434

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369396

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369302

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369202

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369157

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369095

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

Reference Method: SM 2320 B-97
Batch ID: P369681

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

Reference Method: SM 2540 D-97
Batch ID: P369481

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P369484

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P369682

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P369234

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Reference Method: SM 5310 B-00
Batch ID: P369284

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Reference Method: SM 5310 B-00
Batch ID: P369287

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: P369030

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	107		P	85 - 115
Manganese	104		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P369030

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	102		P	85 - 115
Antimony	101		P	85 - 115
Arsenic	104		P	85 - 115
Cadmium	102		P	85 - 115
Chromium	95.7		P	85 - 115
Copper	95.8		P	85 - 115
Lead	99.6		P	85 - 115
Nickel	97.3		P	85 - 115
Selenium	105		P	85 - 115
Silver	99.0		P	85 - 115
Thallium	102		P	85 - 115

Reference Method: EPA 300.0
Batch ID: P369434

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369396

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369302

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369202

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369157

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369095

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

Reference Method: SM 2320 B-97
Batch ID: P369681

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	105		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P369682

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.7		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P369234

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.6		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P369284

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.5		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P369287

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.0		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P369030

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109813	Iron	101	102	P/P	70 - 130
2109813	Manganese	97.0	97.8	P/P	70 - 130
2109813	Zinc	104	106	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P369030

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109813	Aluminum	103	103	P/P	70 - 130
2109813	Antimony	102	101	P/P	70 - 130
2109813	Arsenic	111	112	P/P	70 - 130
2109813	Cadmium	101	96.4	P/P	70 - 130
2109813	Chromium	94.0	92.8	P/P	70 - 130
2109813	Copper	98.7	98.4	P/P	70 - 130
2109813	Lead	102	102	P/P	70 - 130
2109813	Nickel	99.1	98.6	P/P	70 - 130
2109813	Selenium	108	108	P/P	70 - 130
2109813	Silver	96.6	111	P/P	70 - 130
2109813	Thallium	92.2	91.8	P/P	70 - 130

Reference Method: EPA 300.0
Batch ID: P369434

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111690	Bromide	98.0	96.8	P/P	90 - 110
2111695	Bromide	95.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369396

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111593	Ammonia-N	101	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369302

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111501	Kjeldahl Nitrogen	95.5	97.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369202

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111501	NO2NO3-N	101	92.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369157

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111501	Total-P	104	102	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369095

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111165	O-Phosphate-P	94.4	97.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P369682

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2113383	Fluoride	98.0	99.3	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P369234

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111593	Organic Carbon	99.0	97.8	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P369284

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111766	Organic Carbon	104	103	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P369287

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2112043	Organic Carbon	93.5	94.5	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P369078

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111595	Turbidity	6.43	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P369030

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109813	Iron	0.549	Spike	P	0 - 20
2109813	Manganese	0.744	Spike	P	0 - 20
2109813	Zinc	2.60	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P369030

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109813	Aluminum	0.245	Spike	P	0 - 20
2109813	Antimony	0.632	Spike	P	0 - 20
2109813	Arsenic	0.809	Spike	P	0 - 20
2109813	Cadmium	5.13	Spike	P	0 - 20
2109813	Chromium	1.29	Spike	P	0 - 20
2109813	Copper	0.280	Spike	P	0 - 20
2109813	Lead	0.0146	Spike	P	0 - 20
2109813	Nickel	0.539	Spike	P	0 - 20
2109813	Selenium	0.0800	Spike	P	0 - 20
2109813	Silver	14.0	Spike	P	0 - 20
2109813	Thallium	0.394	Spike	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P369434

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111690	Bromide	1.08	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369396

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111593	Ammonia-N	2.19	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369302

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111501	Kjeldahl Nitrogen	1.67	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369202

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111501	NO2NO3-N	8.79	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369157

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111501	Total-P	1.84	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369095

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111165	O-Phosphate-P	2.90	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P369681

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2113383	Total Alkalinity	0.472	Sample	P	0 - 2.8

Reference Method: SM 4500 F-C-97
Batch ID: P369682

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2113383	Fluoride	0.967	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P369234

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111593	Organic Carbon	0.989	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P369284

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111766	Organic Carbon	0.494	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P369287

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2112043	Organic Carbon	0.868	Spike	P	0 - 20

Quality Assurance Report
Precision

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report
Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A93525
Included Lab Sample IDs: 2111592, 2111595, 2111598

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A93535
Included Lab Sample IDs: 2111594, 2111597, 2111600

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A93542
Included Lab Sample IDs: 2111604

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	100	100	P/P	90 - 110
Manganese	103	103	P/P	90 - 110
Zinc	101	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A93573
Included Lab Sample IDs: 2111593, 2111596, 2111599

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

Reference Method: SM 5310 B-00
Run ID: A93586
Included Lab Sample IDs: 2111593

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.4	97.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A93591
Included Lab Sample IDs: 2111593

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	104	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A93599
Included Lab Sample IDs: 2111596, 2111599

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	98.2	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A93620
Included Lab Sample IDs: 2111596, 2111599

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

Quality Assurance Report
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Reference Method: SM 5310 B-00
Run ID: A93620
Included Lab Sample IDs: 2111596, 2111599

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.4	95.3	P/P	90 - 110
Organic Carbon	99.6	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A93669
Included Lab Sample IDs: 2111593, 2111596, 2111599

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	106	108	P/P	90 - 110
Ammonia-N	108	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A93671
Included Lab Sample IDs: 2111593, 2111596, 2111599

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.9	105	P/P	90 - 110

Reference Method: EPA 300.0
Run ID: A93690
Included Lab Sample IDs: 2111592, 2111595, 2111598

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

Reference Method: SM 2320 B-97
Run ID: A93793
Included Lab Sample IDs: 2111592, 2111595, 2111598

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: A93793
Included Lab Sample IDs: 2111592, 2111595, 2111598

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	102	P/P	90 - 110
Fluoride	103	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A93990
Included Lab Sample IDs: 2111604

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	104	99.8	P/P	90 - 110
Antimony	94.7	95.7	P/P	90 - 110
Arsenic	102	99.9	P/P	90 - 110
Cadmium	95.7	97.5	P/P	90 - 110
Copper	98.4	101	P/P	90 - 110
Lead	97.9	98.2	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A93990
Included Lab Sample IDs: 2111604

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Selenium	99.4	98.1	P/P	90 - 110
Thallium	93.4	93.9	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A94046
Included Lab Sample IDs: 2111604

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	99.9	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A94068
Included Lab Sample IDs: 2111604

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	95.0	93.7	P/P	90 - 110
Nickel	95.9	95.8	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					6.43	
EPA 200.7 Rev. 4.4	Iron	107	101	102			0.549
	Manganese	104	97.0	97.8			0.744
	Zinc	102	104	106			2.60
EPA 200.8 Rev. 5.4	Aluminum	102	103	103			0.245
	Antimony	101	101	102			0.632
	Arsenic	104	112	111			0.809
	Cadmium	102	96.4	101			5.13
	Chromium	95.7	94.0	92.8			1.29
	Copper	95.8	98.7	98.4			0.280
	Lead	99.6	102	102			0.0146
	Nickel	97.3	99.1	98.6			0.539
	Selenium	105	108	108			0.0800
	Silver	99.0	96.6	111			14.0
	Thallium	102	91.8	92.2			0.394
EPA 300.0	Bromide	98.6	98.0	96.8	95.9		1.08
EPA 350.1 Rev. 2.0	Ammonia-N	103	101	104			2.19
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.8	95.5	97.4			1.67
EPA 353.2 Rev. 2.0	NO2NO3-N	100	101	92.5			8.79
EPA 365.1 Rev. 2.0	Total-P	105	104	102			1.84
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	105	94.4	97.3			2.90
SM 2320 B-97	Total Alkalinity	105				0.472	
SM 4500 F-C-97	Fluoride	98.7	98.0	99.3			0.967
SM 5310 B-00	Organic Carbon	98.6	99.0	97.8			0.989
	Organic Carbon	99.5	104	103			0.494
	Organic Carbon	98.0	93.5	94.5			0.868

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2111592, 2111595, 2111598
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2111604
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2111604
EPA 300.0 / E31780	Bromide in aqueous matrices	2111592, 2111595, 2111598
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2111593, 2111596, 2111599
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2111593, 2111596, 2111599
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2111593, 2111596, 2111599
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2111593, 2111596, 2111599
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2111594, 2111597, 2111600
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2111592, 2111595, 2111598
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2111592, 2111595, 2111598
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2111592, 2111595, 2111598
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2111593, 2111596, 2111599

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	08/14/2019			08/14/2019 19:08	Rosalyn Ballman	2111592, 2111595, 2111598
EPA 200.7 Rev. 4.4	08/14/2019	08/14/2019 16:15	Elliott D. Healy	08/15/2019 17:19	Alexander Thompson	2111604
EPA 200.8 Rev. 5.4	08/14/2019	08/14/2019 16:15	Elliott D. Healy	09/05/2019 04:34	Robert K Palmer	2111604
	08/14/2019	08/14/2019 16:15	Elliott D. Healy	09/05/2019 07:54	Robert K Palmer	2111604
	08/14/2019	08/14/2019 16:15	Elliott D. Healy	09/06/2019 18:47	Robert K Palmer	2111604
	08/14/2019	08/14/2019 16:15	Elliott D. Healy	09/09/2019 07:45	Robert K Palmer	2111604
	08/14/2019	08/14/2019 16:15	Elliott D. Healy	09/09/2019 08:58	Robert K Palmer	2111604
EPA 300.0	08/14/2019			08/20/2019 12:32	Jhamieka S. Greenwood	2111592
	08/14/2019			08/20/2019 12:49	Jhamieka S. Greenwood	2111595
	08/14/2019			08/20/2019 13:06	Jhamieka S. Greenwood	2111598
EPA 350.1 Rev. 2.0	08/14/2019			08/20/2019 10:44	Ping Hua	2111593
	08/14/2019			08/20/2019 10:48	Ping Hua	2111596
	08/14/2019			08/20/2019 10:59	Ping Hua	2111599
EPA 351.2 Rev. 2.0	08/14/2019	08/20/2019 11:35	Sima Feizi	08/21/2019 10:23	Joseph Suarez	2111593
	08/14/2019	08/20/2019 11:35	Sima Feizi	08/21/2019 10:24	Joseph Suarez	2111596
	08/14/2019	08/20/2019 11:35	Sima Feizi	08/21/2019 10:26	Joseph Suarez	2111599
EPA 353.2 Rev. 2.0	08/14/2019			08/16/2019 11:28	Beverly Y. Sanders	2111593
	08/14/2019			08/16/2019 11:29	Beverly Y. Sanders	2111596
	08/14/2019			08/16/2019 11:30	Beverly Y. Sanders	2111599
EPA 365.1 Rev. 2.0	08/14/2019	08/16/2019 13:30	Vijayalakshmi Reddy	08/19/2019 09:49	Lipi Saha	2111593
	08/14/2019	08/16/2019 13:30	Vijayalakshmi Reddy	08/19/2019 12:47	Lipi Saha	2111596
	08/14/2019	08/16/2019 13:30	Vijayalakshmi Reddy	08/19/2019 12:48	Lipi Saha	2111599
EPA 365.1 Rev. 2.0 dissolved	08/14/2019			08/14/2019 18:05	Jhamieka S. Greenwood	2111594
	08/14/2019			08/14/2019 18:06	Jhamieka S. Greenwood	2111597
	08/14/2019			08/14/2019 18:07	Jhamieka S. Greenwood	2111600
SM 2320 B-97	08/14/2019			08/26/2019 22:38	Dale L. Simmons	2111598
	08/14/2019			08/26/2019 23:28	Dale L. Simmons	2111592
	08/14/2019			08/26/2019 23:40	Dale L. Simmons	2111595
SM 2540 D-97	08/14/2019			08/19/2019 15:20	Yijie Li	2111592, 2111595, 2111598
SM 4500 F-C-97	08/14/2019			08/26/2019 20:38	Dale L. Simmons	2111598
	08/14/2019			08/26/2019 20:54	Dale L. Simmons	2111592
	08/14/2019			08/26/2019 22:02	Dale L. Simmons	2111595
SM 5310 B-00	08/14/2019			08/17/2019 07:29	Madeline Funaro	2111593
	08/14/2019			08/19/2019 15:02	Madeline Funaro	2111599
	08/14/2019			08/20/2019 04:30	Madeline Funaro	2111596