

Chemical Analysis Report

SE-DIST-2018-08-24-01

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

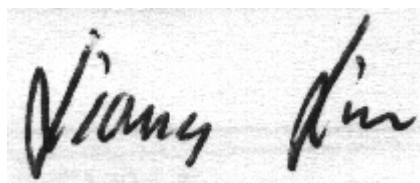
Event Description: **SMP- Martin Boat**
Request ID: **RQ-2018-08-13-83**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
Attn: Matthew Sewell

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: Liang Lin, Environmental Administrator

Date Certified: 14-SEP-2018 14:06

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored background.

NON-CONFORMANCE REPORT INCLUDED

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: GREAT POCKET @ MARKER 8

Collection Date/Time: 08/23/2018 13:05

Field ID: G2SE0033

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2020093	EPA 180.1 Rev. 2.0	Turbidity	8.9		NTU	P350731	
	SM 2320 B-97	Total Alkalinity	126		mg CaCO3/L	P350903	
	SM 2540 D-97	TSS	10		mg/L	P351032	
	SM 4500 F-C-97	Fluoride	0.96		mg F/L	P350905	
2020094	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P351009	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.59		mg N/L	P350826	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P351124	
	EPA 365.1 Rev. 2.0	Total-P	0.075		mg P/L	P350911	
	SM 5310 B-00	Organic Carbon	6.1		mg C/L	P350878	
2020095	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.034		mg P/L	P350727	

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: MANATEE POCKET @ PORT SALERNO

Collection Date/Time: 08/23/2018 13:45

Field ID: G2SE0012

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2020096	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P350731	
	SM 2320 B-97	Total Alkalinity	125		mg CaCO3/L	P350903	
	SM 2540 D-97	TSS	7	I	mg/L	P351032	
	SM 4500 F-C-97	Fluoride	0.69		mg F/L	P350905	
2020097	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	IY	mg N/L	P351009	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.66	Y	mg N/L	P350829	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	UY	mg N/L	P351124	
	EPA 365.1 Rev. 2.0	Total-P	0.080	Y	mg P/L	P350911	
	SM 5310 B-00	Organic Carbon	9.5		mg C/L	P350837	
2020098	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.038		mg P/L	P350727	
2020104	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P350868	
	EPA 200.8 Rev. 5.4	Arsenic	2.49		ug/L	P350868	
		Cadmium	0.060	U	ug/L	P350868	
		Chromium	1.2	U	ug/L	P350868	
		Copper	6.9		ug/L	P350868	
		Lead	0.20	U	ug/L	P350868	
		Nickel	3.5		ug/L	P350868	
		Silver	0.030	U	ug/L	P350868	
		Zinc	8.6	IJ	ug/L	P350868	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Sample was left out at room temperature overnight, should be stored below 6 degC.

EPA 351.2 Rev. 2.0: Sample was left out at room temperature overnight, should be stored below 6 degC.

EPA 353.2 Rev. 2.0: Sample was left out at room temperature overnight, should be stored below 6 degC.

EPA 365.1 Rev. 2.0: Total-P: Sample was left out at room temperature overnight, should be stored below 6 degC.

EPA 200.8 Rev. 5.4: The copper result was confirmed in the undigested sample on 09/10/2018. The zinc recovery in the batch PQL was outside of the acceptable limit. The zinc result may be biased high.

Non-Conformance Report

NCR ID: 7193

Event(s)

SE-DIST-2018-08-24-01

Job(s)

TLH-2018-08-24-28

Sample(s)

2020097

Test(s)

NCR Type: CUSTODY

NCR Category: General

Observation: Sample was not stored in refrigerator the night of 08/27/2018.

Resolution: Sample was returned to refrigerator on the morning of 08/28/2018. Analyses requiring refrigeration that were prepared or, if preparation is not required, analyzed on or after 08/28/2018 will be Y qualified for incorrect preservation.

Authorized by/Date: Peter D. Kaus 9/12/2018

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P350731

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P350868

Component	Result	Code	Units
Iron	30	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P350868

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
Zinc	2.0	U	ug/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351009

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350826

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350829

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351124

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350911

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350727

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

Reference Method: SM 2320 B-97
Batch ID: P350903

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 D-97
Batch ID: P351032

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P350905

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P350837

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

Reference Method: SM 5310 B-00
Batch ID: P350878

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: P350868

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

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P350868

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	101		P	85 - 115
Cadmium	102		P	85 - 115
Chromium	109		P	85 - 115
Copper	97.7		P	85 - 115
Lead	99.2		P	85 - 115
Nickel	99.4		P	85 - 115
Silver	105		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351009

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.7		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350826

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350829

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: P351124

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: P350911

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: P350727

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P350903

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P350905

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.6		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P350837

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.4		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P350878

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.7		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P350868

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019530	Iron	101	103	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P350868

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019530	Arsenic	108	109	P/P	70 - 130
2019530	Cadmium	98.7	95.2	P/P	70 - 130
2019530	Chromium	91.5	91.2	P/P	70 - 130
2019530	Copper	93.1	94.5	P/P	70 - 130
2019530	Lead	109	110	P/P	70 - 130
2019530	Nickel	93.9	94.0	P/P	70 - 130
2019530	Silver	96.8	97.5	P/P	70 - 130
2019530	Zinc	91.8	92.0	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351009

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019403	Ammonia-N	100	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350826

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020043	Kjeldahl Nitrogen	104	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350829

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020097	Kjeldahl Nitrogen	102	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351124

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020048	NO2NO3-N	98.1	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350911

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020434	Total-P	92.9	93.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350727

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020095	O-Phosphate-P	98.1	98.9	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P350905

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019401	Fluoride	96.5	97.9	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P350837

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018533	Organic Carbon	97.3	97.9	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P350878

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020094	Organic Carbon	96.6	96.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P350731

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020076	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P350868

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019530	Iron	1.64	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P350868

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019530	Arsenic	0.735	Spike	P	0 - 20
2019530	Cadmium	3.65	Spike	P	0 - 20
2019530	Chromium	0.349	Spike	P	0 - 20
2019530	Copper	1.14	Spike	P	0 - 20
2019530	Lead	1.13	Spike	P	0 - 20
2019530	Nickel	0.170	Spike	P	0 - 20
2019530	Silver	0.732	Spike	P	0 - 20
2019530	Zinc	0.222	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351009

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019403	Ammonia-N	0.973	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350826

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020043	Kjeldahl Nitrogen	3.17	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350829

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020097	Kjeldahl Nitrogen	1.15	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351124

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020048	NO2NO3-N	0.508	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P350911

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020434	Total-P	0.935	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P350727

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020095	O-Phosphate-P	0.606	Spike	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P350903

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019401	Total Alkalinity	0.264	Sample	P	0 - 1.6

Reference Method: SM 4500 F-C-97
 Batch ID: P350905

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019401	Fluoride	0.986	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
 Batch ID: P350837

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018533	Organic Carbon	0.459	Spike	P	0 - 20

Reference Method: SM 5310 B-00
 Batch ID: P350878

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020094	Organic Carbon	0.0447	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 365.1 Rev. 2.0 dissolved

Run ID: A86105

Included Lab Sample IDs: 2020095, 2020098

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	102	99.4	P/P	90 - 110
O-Phosphate-P	98.7	102	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A86108

Included Lab Sample IDs: 2020093, 2020096

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	102	P/P	95 - 105

Reference Method: SM 5310 B-00

Run ID: A86150

Included Lab Sample IDs: 2020097

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.6	96.6	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A86162

Included Lab Sample IDs: 2020094

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.5	97.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A86169

Included Lab Sample IDs: 2020094

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.2	95.7	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A86172

Included Lab Sample IDs: 2020093, 2020096

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A86172

Included Lab Sample IDs: 2020093, 2020096

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	99.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A86177

Included Lab Sample IDs: 2020097

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.0	98.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A86193

Included Lab Sample IDs: 2020104

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	95.1	95.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A86208

Included Lab Sample IDs: 2020094, 2020097

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	98.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A86236

Included Lab Sample IDs: 2020094, 2020097

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A86297

Included Lab Sample IDs: 2020094, 2020097

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A86304

Included Lab Sample IDs: 2020104

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	97.2	97.1	P/P	90 - 110
Cadmium	96.0	94.7	P/P	90 - 110
Copper	96.5	95.6	P/P	90 - 110
Nickel	97.0	93.7	P/P	90 - 110
Silver	104	102	P/P	90 - 110
Zinc	98.4	96.8	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A86331

Included Lab Sample IDs: 2020104

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	103	96.9	P/P	90 - 110
Lead	98.4	103	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					0.0	
EPA 200.7 Rev. 4.4	Iron	102	101	103			1.64
EPA 200.8 Rev. 5.4	Arsenic	101	108	109			0.735
	Cadmium	102	98.7	95.2			3.65
	Chromium	109	91.5	91.2			0.349
	Copper	97.7	93.1	94.5			1.14
	Lead	99.2	109	110			1.13
	Nickel	99.4	93.9	94.0			0.170
	Silver	105	96.8	97.5			0.732
	Zinc	101	91.8	92.0			0.222
EPA 350.1 Rev. 2.0	Ammonia-N	96.7	100	99.0			0.973
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	104	100			3.17
	Kjeldahl Nitrogen	102	102	100			1.15
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	98.1	98.6			0.508
EPA 365.1 Rev. 2.0	Total-P	103	92.9	93.8			0.935
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	98.1	98.9			0.606
SM 2320 B-97	Total Alkalinity	102				0.264	
SM 4500 F-C-97	Fluoride	97.6	96.5	97.9			0.986
SM 5310 B-00	Organic Carbon	98.4	97.3	97.9			0.459
	Organic Carbon	96.7	96.6	96.6			0.0447

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2020093, 2020096
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2020104
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2020104
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2020094, 2020097
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2020094, 2020097
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2020094, 2020097
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2020094, 2020097
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2020095, 2020098
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2020093, 2020096
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2020093, 2020096
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2020093, 2020096
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2020094, 2020097

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	08/24/2018			08/24/2018 16:07	Julia Storbeck	2020093, 2020096
EPA 200.7 Rev. 4.4	08/24/2018	08/28/2018 17:10	Elliott D. Healy	08/29/2018 16:45	Martin Acosta	2020104
EPA 200.8 Rev. 5.4	08/24/2018	08/28/2018 17:10	Elliott D. Healy	09/05/2018 17:48	Robert K Palmer	2020104
	08/24/2018	08/28/2018 17:10	Elliott D. Healy	09/06/2018 16:44	Robert K Palmer	2020104
	08/24/2018	08/28/2018 17:10	Elliott D. Healy	09/06/2018 17:25	Robert K Palmer	2020104
EPA 350.1 Rev. 2.0	08/24/2018			08/28/2018 13:01	Ping Hua	2020094
	08/24/2018			08/28/2018 13:03	Ping Hua	2020097
EPA 351.2 Rev. 2.0	08/24/2018	08/28/2018 11:00	Adrian Shelby	08/29/2018 11:31	Joseph Suarez	2020094
	08/24/2018	08/28/2018 11:00	Adrian Shelby	08/29/2018 13:53	Joseph Suarez	2020097
EPA 353.2 Rev. 2.0	08/24/2018			09/05/2018 15:24	Lauren Bottorf	2020094
	08/24/2018			09/05/2018 15:25	Lauren Bottorf	2020097
EPA 365.1 Rev. 2.0	08/24/2018	08/29/2018 13:20	Sima Feizi	08/30/2018 12:41	Beverly Y. Sanders	2020094
	08/24/2018	08/29/2018 13:20	Sima Feizi	08/30/2018 12:42	Beverly Y. Sanders	2020097
EPA 365.1 Rev. 2.0 dissolved	08/24/2018			08/24/2018 14:08	Lipi Saha	2020095
	08/24/2018			08/24/2018 14:18	Lipi Saha	2020098
SM 2320 B-97	08/24/2018			08/29/2018 02:37	Dale L. Simmons	2020093
	08/24/2018			08/29/2018 02:46	Dale L. Simmons	2020096
SM 2540 D-97	08/24/2018			08/28/2018 15:02	Yijie Li	2020093, 2020096
SM 4500 F-C-97	08/24/2018			08/29/2018 00:53	Dale L. Simmons	2020093
	08/24/2018			08/29/2018 00:56	Dale L. Simmons	2020096
SM 5310 B-00	08/24/2018			08/28/2018 10:03	Megan Treadwell	2020097
	08/24/2018			08/29/2018 05:29	Megan Treadwell	2020094