

Chemical Analysis Report

WAS-SECT-2018-04-05-01

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

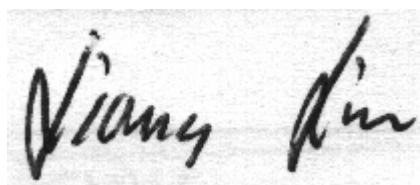
Event Description: **Dickson, St.Marks, East River**
Request ID: **RQ-2018-04-02-23**
Customer: **WAS-SECT**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
Attn: Curtis Musson

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Liang Lin, Environmental Administrator

Date Certified: 01-MAY-2018 09:44

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored 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 group are included in this report: 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: DICKSON BAY NORTH

Collection Date/Time: 04/05/2018 08:55

Field ID: G1WA0062

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1981765	EPA 180.1 Rev. 2.0	Turbidity	7.4	A	NTU	P342870	
	SM 2320 B-97	Total Alkalinity	103		mg CaCO3/L	P343500	
	SM 2540 D-97	TSS	19		mg/L	P343166	
	SM 4500 F-C-97	Fluoride	0.96		mg F/L	P343506	
1981770	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P343448	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.44		mg N/L	P343006	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P343135	
	EPA 365.1 Rev. 2.0	Total-P	0.032		mg P/L	P343817	
	SM 5310 B-00	Organic Carbon	5.3		mg C/L	P343333	
1981775	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P342891	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: DICKSON BAY SOUTH

Collection Date/Time: 04/05/2018 09:25

Field ID: G1WA0063

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1981766	EPA 180.1 Rev. 2.0	Turbidity	6.4		NTU	P342870	
	SM 2320 B-97	Total Alkalinity	104		mg CaCO3/L	P343500	
	SM 2540 D-97	TSS	16		mg/L	P343166	
	SM 4500 F-C-97	Fluoride	0.94		mg F/L	P343506	
1981771	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P343448	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.61		mg N/L	P343634	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P343135	
	EPA 365.1 Rev. 2.0	Total-P	0.032		mg P/L	P343817	
	SM 5310 B-00	Organic Carbon	5.9		mg C/L	P343333	
1981776	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P342891	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: EAST RIVER DOWNSTREAM OF BOGGY BAYOU

Collection Date/Time: 04/05/2018 11:50

Field ID: G1WA0056

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1981767	EPA 180.1 Rev. 2.0	Turbidity	3.5		NTU	P342870	
	SM 2320 B-97	Total Alkalinity	129		mg CaCO3/L	P343500	
	SM 2540 D-97	TSS	7	IA	mg/L	P343166	
	SM 4500 F-C-97	Fluoride	0.60		mg F/L	P343506	
1981772	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P343448	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.36	I	mg N/L	P343006	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.022		mg N/L	P343136	

Field ID: G1WA0056

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1981772	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P343817	
	SM 5310 B-00	Organic Carbon	5.6		mg C/L	P343333	
1981777	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P342891	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: ST. MARKS RIVER AT CHANNEL MARKER 60 **Collection Date/Time: 04/05/2018 12:15**

Field ID: G1WA0055

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1981780	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P342870	
	SM 2320 B-97	Total Alkalinity	141		mg CaCO3/L	P343504	
	SM 2540 D-97	TSS	2	U	mg/L	P343165	
	SM 4500 F-C-97	Fluoride	0.13		mg F/L	P343508	
1981781	EPA 350.1 Rev. 2.0	Ammonia-N	0.017		mg N/L	P343443	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.23		mg N/L	P343081	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.28		mg N/L	P343471	
	EPA 365.1 Rev. 2.0	Total-P	0.036		mg P/L	P343196	
	SM 5310 B-00	Organic Carbon	3.0		mg C/L	P343322	
1981782	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.026		mg P/L	P342890	

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: DICKSON BAY SOUTH **Collection Date/Time: 04/05/2018 09:30**

Field ID: G1WA0063_DUP

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1981768	EPA 180.1 Rev. 2.0	Turbidity	7.8		NTU	P342870	
	SM 2320 B-97	Total Alkalinity	101		mg CaCO3/L	P343500	
	SM 2540 D-97	TSS	16		mg/L	P343166	
	SM 4500 F-C-97	Fluoride	0.94		mg F/L	P343506	
1981773	EPA 350.1 Rev. 2.0	Ammonia-N	0.017		mg N/L	P343448	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.63		mg N/L	P343634	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P343135	
	EPA 365.1 Rev. 2.0	Total-P	0.034		mg P/L	P343817	
	SM 5310 B-00	Organic Carbon	5.8		mg C/L	P343333	
1981778	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P342891	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: FIELD BLANK **Collection Date/Time: 04/05/2018 09:15**

Field ID: Blank_04052018

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
-----------	-------------	-----------	--------	------	-------	----------	----------

Field ID: Blank_04052018

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1981769	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P342870	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P343504	
	SM 2540 D-97	TSS	2	U	mg/L	P343165	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P343508	
1981774	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P343443	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P343010	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P343471	
	EPA 365.1 Rev. 2.0	Total-P	0.002	I	mg P/L	P343196	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P343322	
1981779	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P342890	

Ref. Method and Comment:
 SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
 EPA 365.1 Rev. 2.0: Total-P: The result was confirmed on 04/23/2018.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P342870

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P343443

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

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P343448

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P343006

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P343010

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P343081

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343634

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343135

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343136

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343471

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P343196

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P343817

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342890

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342891

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

Reference Method: SM 2320 B-97
Batch ID: P343500

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P343504

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

Reference Method: SM 2540 D-97
Batch ID: P343165

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P343166

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P343506

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P343508

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P343322

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

Reference Method: SM 5310 B-00
Batch ID: P343333

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343443

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343448

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343448

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343006

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343010

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.7		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343081

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.7		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343634

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: P343135

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343136

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343471

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P343196

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	108		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P343817

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342890

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342891

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

Reference Method: SM 2320 B-97
Batch ID: P343500

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	98 - 107

Reference Method: SM 2320 B-97
Batch ID: P343504

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P343506

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.1		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P343508

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.9		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P343322

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.4		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P343333

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343443

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1981673	Ammonia-N	94.5	99.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343448

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1981770	Ammonia-N	99.0	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343006

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1981294	Kjeldahl Nitrogen	96.3	109	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343010

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1981675	Kjeldahl Nitrogen	109	109	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343081

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1981827	Kjeldahl Nitrogen	105	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343634

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1983940	Kjeldahl Nitrogen	98.5	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343135

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1981294	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343136

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1981772	NO2NO3-N	104	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343471

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1981655	NO2NO3-N	100	102	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P343196

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1981781	Total-P	104	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P343817

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1981770	Total-P	96.8	94.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P342890

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1981552	O-Phosphate-P	95.8	97.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
 Batch ID: P343506

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979698	Fluoride	93.2	94.0	P/P	91 - 105

Reference Method: SM 4500 F-C-97
 Batch ID: P343508

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1982014	Fluoride	99.1	99.8	P/P	91 - 105

Reference Method: SM 5310 B-00
 Batch ID: P343322

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1981341	Organic Carbon	93.6	93.2	P/P	85 - 115

Reference Method: SM 5310 B-00
 Batch ID: P343333

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1981293	Organic Carbon	91.3	94.5	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P342870

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981765	Turbidity	1.35	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343443

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981673	Ammonia-N	4.69	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343448

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981770	Ammonia-N	2.97	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343006

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981294	Kjeldahl Nitrogen	8.03	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343010

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981675	Kjeldahl Nitrogen	0.304	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343081

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981827	Kjeldahl Nitrogen	0.753	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343634

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1983940	Kjeldahl Nitrogen	3.87	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343135

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981294	NO2NO3-N	0.480	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343136

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981772	NO2NO3-N	0.868	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343471

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981655	NO2NO3-N	1.49	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P343196

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981781	Total-P	3.03	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P343817

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981770	Total-P	2.40	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342890

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981552	O-Phosphate-P	1.09	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342891

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981564	O-Phosphate-P	0.402	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P343500

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979698	Total Alkalinity	0.0803	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
Batch ID: P343504

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1982014	Total Alkalinity	0.553	Sample	P	0 - 1.6

Reference Method: SM 4500 F-C-97
Batch ID: P343506

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979698	Fluoride	0.480	Spike	P	0 - 3.5

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P343508

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1982014	Fluoride	0.520	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P343322

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981341	Organic Carbon	0.247	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P343333

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1981293	Organic Carbon	2.53	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: A83067
Included Lab Sample IDs: 1981765, 1981766, 1981767, 1981768, 1981769, 1981780

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.0	98.5	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A83075
Included Lab Sample IDs: 1981775, 1981776, 1981777, 1981778, 1981779, 1981782

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	93.4	91.2	P/P	90 - 110
O-Phosphate-P	94.2	93.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A83149
Included Lab Sample IDs: 1981770, 1981771, 1981772, 1981773

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A83160
Included Lab Sample IDs: 1981770, 1981772

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A83160

Included Lab Sample IDs: 1981770, 1981772

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	102	P/P	90 - 110
Kjeldahl Nitrogen	107	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A83173

Included Lab Sample IDs: 1981774

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	108	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A83201

Included Lab Sample IDs: 1981781

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	106	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A83208

Included Lab Sample IDs: 1981774, 1981781

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.5	97.2	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A83211

Included Lab Sample IDs: 1981770, 1981771, 1981772, 1981773

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.7	97.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A83249

Included Lab Sample IDs: 1981770, 1981771, 1981772, 1981773, 1981774, 1981781

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	98.3	P/P	90 - 110
Ammonia-N	101	98.8	P/P	90 - 110
Ammonia-N	96.0	101	P/P	90 - 110
Ammonia-N	99.7	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A83258

Included Lab Sample IDs: 1981774, 1981781

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A83264

Included Lab Sample IDs: 1981765, 1981766, 1981767, 1981768, 1981769, 1981780

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	98.6	P/P	90 - 110
Total Alkalinity	99.4	102	P/P	90 - 110
Total Alkalinity	99.6	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A83264

Included Lab Sample IDs: 1981765, 1981766, 1981767, 1981768, 1981769, 1981780

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	103	103	P/P	90 - 110
Fluoride	97.1	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A83277

Included Lab Sample IDs: 1981774, 1981781

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A83334

Included Lab Sample IDs: 1981771, 1981773

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A83416

Included Lab Sample IDs: 1981770, 1981771, 1981772, 1981773

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	99.2	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				1.35	
EPA 350.1 Rev. 2.0	Ammonia-N	97.0	94.5 99.6			4.69
	Ammonia-N	105	99.0 103			2.97
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	96.3 109			8.03
	Kjeldahl Nitrogen	98.7	109 109			0.304
	Kjeldahl Nitrogen	98.7	105 103			0.753
	Kjeldahl Nitrogen	103	98.5 104			3.87
EPA 353.2 Rev. 2.0	NO2NO3-N	104	104 104			0.480

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 353.2 Rev. 2.0	NO2NO3-N	104	104	105		0.868
	NO2NO3-N	99.0	100	102		1.49
EPA 365.1 Rev. 2.0	Total-P	108	104	101		3.03
	Total-P	104	96.8	94.4		2.40
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	95.8	97.1		1.09
	O-Phosphate-P	101				0.402
SM 2320 B-97	Total Alkalinity	100			0.0803	
	Total Alkalinity	100			0.553	
SM 4500 F-C-97	Fluoride	94.1	93.2	94.0		0.480
	Fluoride	96.9	99.1	99.8		0.520
SM 5310 B-00	Organic Carbon	97.4	93.6	93.2		0.247
	Organic Carbon	97.6	91.3	94.5		2.53

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1981765, 1981766, 1981767, 1981768, 1981769, 1981780
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1981770, 1981771, 1981772, 1981773, 1981774, 1981781
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1981770, 1981771, 1981772, 1981773, 1981774, 1981781
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1981770, 1981771, 1981772, 1981773, 1981774, 1981781
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1981770, 1981771, 1981772, 1981773, 1981774, 1981781
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1981775, 1981776, 1981777, 1981778, 1981779, 1981782
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1981765, 1981766, 1981767, 1981768, 1981769, 1981780
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1981765, 1981766, 1981767, 1981768, 1981769, 1981780
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1981765, 1981766, 1981767, 1981768, 1981769, 1981780
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1981770, 1981771, 1981772, 1981773, 1981774, 1981781

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	04/05/2018			04/05/2018 16:26	William L. Brown IV	1981765, 1981766, 1981767, 1981768, 1981769, 1981780
EPA 350.1 Rev. 2.0	04/05/2018			04/13/2018 13:08	Julia Storbeck	1981781
	04/05/2018			04/13/2018 13:23	Julia Storbeck	1981774
	04/05/2018			04/13/2018 16:47	Julia Storbeck	1981770
	04/05/2018			04/13/2018 16:59	Julia Storbeck	1981771
	04/05/2018			04/13/2018 17:01	Julia Storbeck	1981772
	04/05/2018			04/13/2018 17:02	Julia Storbeck	1981773
EPA 351.2 Rev. 2.0	04/05/2018	04/09/2018 09:00	Adrian Shelby	04/11/2018 10:37	Joseph Suarez	1981770
	04/05/2018	04/09/2018 09:00	Adrian Shelby	04/11/2018 10:44	Joseph Suarez	1981772
	04/05/2018	04/09/2018 10:15	Adrian Shelby	04/11/2018 13:29	Joseph Suarez	1981774
	04/05/2018	04/10/2018 10:00	Adrian Shelby	04/12/2018 08:44	Joseph Suarez	1981781
	04/05/2018	04/18/2018 10:10	Adrian Shelby	04/19/2018 08:43	Joseph Suarez	1981771
	04/05/2018	04/18/2018 10:10	Adrian Shelby	04/19/2018 08:46	Joseph Suarez	1981773
EPA 353.2 Rev. 2.0	04/05/2018			04/10/2018 16:30	Lauren Bottorf	1981770
	04/05/2018			04/10/2018 16:31	Lauren Bottorf	1981771
	04/05/2018			04/10/2018 16:32	Lauren Bottorf	1981773
	04/05/2018			04/10/2018 16:39	Lauren Bottorf	1981772
	04/05/2018			04/16/2018 11:23	Lauren Bottorf	1981774
	04/05/2018			04/16/2018 11:28	Lauren Bottorf	1981781
EPA 365.1 Rev. 2.0	04/05/2018	04/11/2018 13:08	Sima Feizi	04/16/2018 13:17	Beverly Y. Sanders	1981774
	04/05/2018	04/11/2018 13:08	Sima Feizi	04/16/2018 13:18	Beverly Y. Sanders	1981781
	04/05/2018	04/20/2018 12:57	Sima Feizi	04/24/2018 11:01	Beverly Y. Sanders	1981770
	04/05/2018	04/20/2018 12:57	Sima Feizi	04/24/2018 11:02	Beverly Y. Sanders	1981771
	04/05/2018	04/20/2018 12:57	Sima Feizi	04/24/2018 11:03	Beverly Y. Sanders	1981772
	04/05/2018	04/20/2018 12:57	Sima Feizi	04/24/2018 11:04	Beverly Y. Sanders	1981773
EPA 365.1 Rev. 2.0 dissolved	04/05/2018			04/05/2018 16:16	Megan Treadwell	1981775
	04/05/2018			04/05/2018 16:21	Megan Treadwell	1981776, 1981777
	04/05/2018			04/05/2018 16:22	Megan Treadwell	1981778
	04/05/2018			04/05/2018 16:23	Megan Treadwell	1981779
	04/05/2018			04/05/2018 16:24	Megan Treadwell	1981782
SM 2320 B-97	04/05/2018			04/15/2018 21:39	Dale L. Simmons	1981765
	04/05/2018			04/15/2018 21:49	Dale L. Simmons	1981766
	04/05/2018			04/15/2018 21:59	Dale L. Simmons	1981767
	04/05/2018			04/15/2018 22:53	Dale L. Simmons	1981768
	04/05/2018			04/16/2018 07:39	Dale L. Simmons	1981769
	04/05/2018			04/16/2018 07:49	Dale L. Simmons	1981780
SM 2540 D-97	04/05/2018			04/06/2018 16:00	DeAsia Armster	1981765, 1981766, 1981767, 1981768, 1981769, 1981780
SM 4500 F-C-97	04/05/2018			04/15/2018 18:13	Dale L. Simmons	1981765

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 4500 F-C-97	04/05/2018			04/15/2018 18:16	Dale L. Simmons	1981766
	04/05/2018			04/15/2018 18:20	Dale L. Simmons	1981767
	04/05/2018			04/15/2018 18:24	Dale L. Simmons	1981768
	04/05/2018			04/16/2018 07:39	Dale L. Simmons	1981769
	04/05/2018			04/16/2018 07:49	Dale L. Simmons	1981780
SM 5310 B-00	04/05/2018			04/12/2018 12:54	Julia Storbeck	1981770
	04/05/2018			04/12/2018 13:15	Julia Storbeck	1981771
	04/05/2018			04/12/2018 13:42	Julia Storbeck	1981772
	04/05/2018			04/12/2018 13:56	Julia Storbeck	1981773
	04/05/2018			04/12/2018 17:48	Megan Treadwell	1981774
	04/05/2018			04/12/2018 18:00	Megan Treadwell	1981781