

Chemical Analysis Report

NW-DIST-2017-11-01-01

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

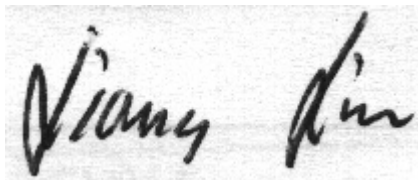
Event Description: **Shoal/Gum WBID 246 167A**
Request ID: **RQ-2017-10-30-11**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government St
Suite 208A
Pensacola, FL 32502-5794
Attn: Michael King

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: 28-NOV-2017 10:54

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 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: Huckleberry Creek upstream Hwy 1883

Collection Date/Time: 10/31/2017 11:15

Field ID: G3NW0135

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1941712	EPA 180.1 Rev. 2.0	Turbidity	2.8	A	NTU	P334493	
	EPA 300.0 Rev. 2.1	Chloride	4.9		mg Cl/L	P334689	
		Sulfate	0.56		mg SO4/L	P334692	
	SM 2120 B	Color (true)	51		PCU	P334498	
	SM 2320 B-97	Total Alkalinity	4.4		mg CaCO3/L	P334754	
	SM 2540 C-97	TDS	31		mg/L	P334919	
	SM 2540 D-97	TSS	2	U	mg/L	P334783	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P334756	
1941718	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P335181	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29		mg N/L	P334933	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.091		mg N/L	P334733	
	EPA 365.1 Rev. 2.0	Total-P	0.01		mg P/L	P334560	
	SM 5310 B-00	Organic Carbon	4.5		mg C/L	P335075	
1941724	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P334490	

Sample Location: West Sandy Cr at CR 183

Collection Date/Time: 10/31/2017 10:50

Field ID: G3NW0053

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1941713	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P334493	
	EPA 300.0 Rev. 2.1	Chloride	3.7		mg Cl/L	P334689	
		Sulfate	1.5		mg SO4/L	P334692	
	SM 2120 B	Color (true)	47		PCU	P334498	
	SM 2320 B-97	Total Alkalinity	5.7		mg CaCO3/L	P334754	
	SM 2540 C-97	TDS	30		mg/L	P334919	
	SM 2540 D-97	TSS	2	U	mg/L	P334783	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P334756	
1941719	EPA 350.1 Rev. 2.0	Ammonia-N	0.049		mg N/L	P335181	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.28		mg N/L	P334933	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.36		mg N/L	P334733	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P334560	
	SM 5310 B-00	Organic Carbon	3.4		mg C/L	P335075	
1941725	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P334491	

Sample Location: Gum Creek

Collection Date/Time: 10/31/2017 12:00

Field ID: G4NW0381

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1941714	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P334493	
	EPA 300.0 Rev. 2.1	Chloride	3.9		mg Cl/L	P334689	
		Sulfate	0.78		mg SO4/L	P334692	
	SM 2120 B	Color (true)	46		PCU	P334498	
	SM 2320 B-97	Total Alkalinity	1.1	I	mg CaCO3/L	P335152	

Field ID: G4NW0381

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1941714	SM 2540 C-97	TDS	28		mg/L	P334919	
	SM 2540 D-97	TSS	2	U	mg/L	P334783	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P335405	
1941720	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	IY	mg N/L	P335181	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.25	Y	mg N/L	P334933	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.42	Y	mg N/L	P334733	
	EPA 365.1 Rev. 2.0	Total-P	0.006	Y	mg P/L	P334560	
	SM 5310 B-00	Organic Carbon	4.6	Y	mg C/L	P335075	
1941726	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P334490	

Ref. Method and Comment:

EPA 350.1 Rev. 2.0: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

EPA 351.2 Rev. 2.0: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

EPA 353.2 Rev. 2.0: NO2NO3-N: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

EPA 365.1 Rev. 2.0: Total-P: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

SM 5310 B-00: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

Sample Location: Shoal River Hinote Rd.

Collection Date/Time: 10/31/2017 12:50

Field ID: G4NW0376

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1941715	EPA 180.1 Rev. 2.0	Turbidity	5.8		NTU	P334493	
	EPA 300.0 Rev. 2.1	Chloride	4.0		mg Cl/L	P334689	
		Sulfate	1.2		mg SO4/L	P334692	
	SM 2120 B	Color (true)	63		PCU	P334498	
	SM 2320 B-97	Total Alkalinity	2.8		mg CaCO3/L	P335152	
	SM 2540 C-97	TDS	33		mg/L	P334919	
	SM 2540 D-97	TSS	7	IA	mg/L	P334783	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P335405	
1941721	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P335181	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29		mg N/L	P335322	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.44		mg N/L	P334733	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P334560	
	SM 5310 B-00	Organic Carbon	4.9		mg C/L	P335075	
1941727	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P334490	

Sample Location: Shoal River off Old Dorcas Rd. Walton Co.

Collection Date/Time: 10/31/2017 12:55

Field ID: G4NW0416DUPLICATE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1941716	EPA 180.1 Rev. 2.0	Turbidity	5.4		NTU	P334493	
	EPA 300.0 Rev. 2.1	Chloride	4.0		mg Cl/L	P334689	
		Sulfate	1.2		mg SO4/L	P334692	
	SM 2120 B	Color (true)	62		PCU	P334499	
	SM 2320 B-97	Total Alkalinity	2.8		mg CaCO3/L	P335152	
	SM 2540 C-97	TDS	34		mg/L	P334919	
	SM 2540 D-97	TSS	6	I	mg/L	P334783	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P335405	

Field ID: G4NW0416DUPLICATE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1941722	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P335181	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.33		mg N/L	P334933	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.44		mg N/L	P334733	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P334560	
	SM 5310 B-00	Organic Carbon	5.0		mg C/L	P335075	
1941728	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P334490	

Sample Location: Shoal River off Old Dorcas Rd Walton Co.

Collection Date/Time: 10/31/2017 13:00

Field ID: FIELD BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1941717	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P334493	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P334715	
		Sulfate	0.20	U	mg SO4/L	P334717	
		Color (true)	2.5	U	PCU	P334499	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P335152	
	SM 2540 C-97	TDS	15	U	mg/L	P334919	
	SM 2540 D-97	TSS	2	U	mg/L	P334783	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P335405	
1941723	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P335182	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P334933	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P334733	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P334560	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P335426	
1941729	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P334491	

Ref. Method and Comment:

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Non-Conformance Report

NCR ID: 6735

Event(s)

NW-DIST-2017-11-01-01

Job(s)

TLH-2017-11-01-23

Sample(s)

1941720

Test(s)

NCR Type: SHIPPING/RECEIVING

NCR Category: Preservation Not Intact

Observation: Sample not preserved to pH < 2.

Resolution: Sample preserved in the laboratory with sulfuric acid.

Authorized by/Date: Joshua Ayres 11/2/2017

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P334493

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P334689

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P334692

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P334715

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P334717

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P335181

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P335182

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P334933

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P335322

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P334733

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P334560

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P334490

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P334491

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

Reference Method: SM 2120 B
Batch ID: P334498

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P334499

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P334754

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

Reference Method: SM 2320 B-97
Batch ID: P335152

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

Reference Method: SM 2540 C-97
Batch ID: P334919

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 D-97
 Batch ID: P334783

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
 Batch ID: P334756

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
 Batch ID: P335405

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
 Batch ID: P335075

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

Reference Method: SM 5310 B-00
 Batch ID: P335426

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P334689

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

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P334692

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

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P334715

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	94.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P334717

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P334717

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	93.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P335181

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P335182

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: P334933

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P335322

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P334733

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P334560

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: P334490

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P334491

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P334754

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P335152

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P334756

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.4		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P335405

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.0		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P335075

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

Reference Method: SM 5310 B-00
Batch ID: P335426

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P334689

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1941598	Chloride	101		P	90 - 110
1941694	Chloride	99.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P334692

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1941598	Sulfate	98.0		P	90 - 110
1941694	Sulfate	99.6		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P334715

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1941739	Chloride	96.0		P	90 - 110
1941940	Chloride	95.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P334717

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1941739	Sulfate	95.2		P	90 - 110
1941940	Sulfate	95.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P335181

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1941718	Ammonia-N	102	97.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P334933

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1941721	Kjeldahl Nitrogen	99.2	96.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P335322

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1943485	Kjeldahl Nitrogen	93.2	95.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P334733

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1941718	NO2NO3-N	103	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P334560

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1941696	Total-P	103	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P334490

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1941604	O-Phosphate-P	101	98.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P334491

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1941725	O-Phosphate-P	95.4	93.7	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P334756

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1941692	Fluoride	98.3	99.5	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P335405

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1941919	Fluoride	96.9	97.7	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P335075

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1941242	Organic Carbon	93.4	94.9	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P335426

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1941679	Organic Carbon	99.3	98.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P334493

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1941712	Turbidity	0.357	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P334689

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1941598	Chloride	1.43	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P334692

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1941598	Sulfate	1.14	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P334715

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1941739	Chloride	0.388	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P334717

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1941739	Sulfate	1.02	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P335181

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1941718	Ammonia-N	3.60	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P335182

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1941733	Ammonia-N	0.0567	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P334933

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1941721	Kjeldahl Nitrogen	1.93	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P335322

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943485	Kjeldahl Nitrogen	2.25	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P334733

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1941718	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P334560

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1941696	Total-P	1.73	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P334490

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1941604	O-Phosphate-P	2.90	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P334491

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1941725	O-Phosphate-P	1.72	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P334498

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1941678	Color (true)	0.181	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P334499

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1941731	Color (true)	0.710	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P334754

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1941692	Total Alkalinity	0.00718	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P335152

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1941919	Total Alkalinity	0.261	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P334919

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1941732	TDS	0.573	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P334783

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1941715	TSS	5.41	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P334756

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1941692	Fluoride	0.964	Spike	P	0 - 3.0

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P335405

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1941919	Fluoride	0.513	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P335075

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1941242	Organic Carbon	1.19	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P335426

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1941679	Organic Carbon	0.314	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: SM 2120 B
Run ID: A79966
Included Lab Sample IDs: 1941712, 1941713, 1941714, 1941715, 1941716, 1941717

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	100	P/P	85 - 115
Color (true)	99.9	101	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A79967
Included Lab Sample IDs: 1941724, 1941725, 1941726, 1941727, 1941728, 1941729

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	102	101	P/P	90 - 110
O-Phosphate-P	98.7	102	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A79968
Included Lab Sample IDs: 1941712, 1941713, 1941714, 1941715, 1941716, 1941717

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A80033
Included Lab Sample IDs: 1941718, 1941719, 1941720, 1941721, 1941722, 1941723

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A80033

Included Lab Sample IDs: 1941718, 1941719, 1941720, 1941721, 1941722, 1941723

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	98.0	P/P	90 - 110
Total-P	98.0	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A80039

Included Lab Sample IDs: 1941712, 1941713, 1941714, 1941715, 1941716, 1941717

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	100	P/P	90 - 110
Chloride	101	101	P/P	90 - 110
Chloride	99.0	99.6	P/P	90 - 110
Sulfate	103	99.2	P/P	90 - 110
Sulfate	99.2	99.3	P/P	90 - 110
Sulfate	99.4	99.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A80058

Included Lab Sample IDs: 1941718, 1941719, 1941720, 1941721, 1941722, 1941723

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

Reference Method: SM 2320 B-97

Run ID: A80074

Included Lab Sample IDs: 1941712, 1941713

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A80074

Included Lab Sample IDs: 1941712, 1941713

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	98.6	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A80188

Included Lab Sample IDs: 1941718, 1941719, 1941720, 1941721, 1941722

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.8	96.4	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A80221

Included Lab Sample IDs: 1941714, 1941715, 1941716, 1941717

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A80229

Included Lab Sample IDs: 1941718, 1941719, 1941720, 1941721, 1941722, 1941723

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A80261

Included Lab Sample IDs: 1941718, 1941719, 1941720, 1941722, 1941723

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	93.8	98.2	P/P	90 - 110
Kjeldahl Nitrogen	98.2	99.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A80300

Included Lab Sample IDs: 1941714, 1941715, 1941716, 1941717

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	104	99.5	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A80314

Included Lab Sample IDs: 1941723

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A80377

Included Lab Sample IDs: 1941721

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.1	95.6	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				0.357	
EPA 300.0 Rev. 2.1	Chloride	101	101 99.9		1.43	
	Chloride	94.3	96.0 95.1		0.388	
	Sulfate	98.6	98.0 99.6		1.14	
	Sulfate	93.8	95.2 95.0		1.02	
EPA 350.1 Rev. 2.0	Ammonia-N	105	102 97.9			3.60
	Ammonia-N	103				0.0567
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	99.2 96.9			1.93
	Kjeldahl Nitrogen	105	93.2 95.9			2.25

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 353.2 Rev. 2.0	NO2NO3-N	104	103	103		0.0
EPA 365.1 Rev. 2.0	Total-P	103	103	101		1.73
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.0	101	98.4		2.90
	O-Phosphate-P	102	95.4	93.7		1.72
SM 2120 B	Color (true)				0.181	
	Color (true)				0.710	
SM 2320 B-97	Total Alkalinity	104			0.0071	
	Total Alkalinity	102			0.261	
SM 2540 C-97	TDS				0.573	
SM 2540 D-97	TSS				5.41	
SM 4500 F-C-97	Fluoride	96.4	98.3	99.5		0.964
	Fluoride	97.0	96.9	97.7		0.513
SM 5310 B-00	Organic Carbon	96.6	93.4	94.9		1.19
	Organic Carbon	99.7	99.3	98.9		0.314

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1941712, 1941713, 1941714, 1941715, 1941716, 1941717
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1941712, 1941713, 1941714, 1941715, 1941716, 1941717
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1941712, 1941713, 1941714, 1941715, 1941716, 1941717
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1941718, 1941719, 1941720, 1941721, 1941722, 1941723
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1941718, 1941719, 1941720, 1941721, 1941722, 1941723
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1941718, 1941719, 1941720, 1941721, 1941722, 1941723
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1941718, 1941719, 1941720, 1941721, 1941722, 1941723
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1941724, 1941725, 1941726, 1941727, 1941728, 1941729
SM 2120 B / E31780	True Color measured at 450 nm	1941712, 1941713, 1941714, 1941715, 1941716, 1941717
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1941712, 1941713, 1941714, 1941715, 1941716, 1941717
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1941712, 1941713, 1941714, 1941715, 1941716, 1941717
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1941712, 1941713, 1941714, 1941715, 1941716, 1941717
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1941712, 1941713, 1941714, 1941715, 1941716, 1941717
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1941718, 1941719, 1941720, 1941721, 1941722, 1941723

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	11/01/2017			11/01/2017 16:13	DeAsia Armster	1941712, 1941713, 1941714, 1941715, 1941716, 1941717
EPA 300.0 Rev. 2.1	11/01/2017			11/03/2017	Irina Carbone	1941717
	11/01/2017			11/03/2017	Julia Storbeck	1941712, 1941713, 1941714, 1941715, 1941716
EPA 350.1 Rev. 2.0	11/01/2017			11/13/2017	Sofia Elnemr	1941718, 1941719, 1941720, 1941721, 1941722, 1941723
EPA 351.2 Rev. 2.0	11/01/2017	11/08/2017	Adrian Shelby	11/14/2017	Tanya Welborn	1941718, 1941719, 1941720, 1941722, 1941723
	11/01/2017	11/15/2017	Adrian Shelby	11/17/2017	Virginia P. Brown	1941721
EPA 353.2 Rev. 2.0	11/01/2017			11/06/2017	Beverly Y. Sanders	1941718, 1941719, 1941720, 1941721, 1941722, 1941723
EPA 365.1 Rev. 2.0	11/01/2017	11/02/2017	Sima Feizi	11/03/2017	Lipi Saha	1941718, 1941719, 1941720, 1941721, 1941722, 1941723
EPA 365.1 Rev. 2.0 dissolved	11/01/2017			11/01/2017 15:23	Megan Treadwell	1941724
	11/01/2017			11/01/2017 15:24	Megan Treadwell	1941726
	11/01/2017			11/01/2017 15:25	Megan Treadwell	1941727
	11/01/2017			11/01/2017 15:26	Megan Treadwell	1941728
	11/01/2017			11/01/2017 15:28	Megan Treadwell	1941725
	11/01/2017			11/01/2017 15:37	Megan Treadwell	1941729
SM 2120 B	11/01/2017			11/01/2017 15:21	Tanya Welborn	1941712
	11/01/2017			11/01/2017 15:22	Tanya Welborn	1941713
	11/01/2017			11/01/2017 15:23	Tanya Welborn	1941714, 1941715
	11/01/2017			11/01/2017 15:26	Tanya Welborn	1941716
	11/01/2017			11/01/2017 15:27	Tanya Welborn	1941717
SM 2320 B-97	11/01/2017			11/03/2017	Dale L. Simmons	1941712, 1941713
	11/01/2017			11/08/2017	Dale L. Simmons	1941714, 1941715, 1941716, 1941717
SM 2540 C-97	11/01/2017			11/03/2017	DeAsia Armster	1941712, 1941713, 1941714, 1941715, 1941716, 1941717
SM 2540 D-97	11/01/2017			11/03/2017	DeAsia Armster	1941712, 1941713, 1941714, 1941715, 1941716, 1941717
SM 4500 F-C-97	11/01/2017			11/03/2017	Dale L. Simmons	1941712, 1941713
	11/01/2017			11/16/2017	Dale L. Simmons	1941714, 1941715, 1941716, 1941717
SM 5310 B-00	11/01/2017			11/09/2017	Ping Hua	1941718, 1941719, 1941720, 1941721, 1941722
	11/01/2017			11/15/2017	Ping Hua	1941723