

Chemical Analysis Report

NW-DIST-2018-02-22-01

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

Event Description: **South SR County Run**

Request ID: **RQ-2018-02-19-19**

Customer: **NW-DIST**

Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 208
Pensacola, FL 32502-5794
Attn: Cheryl Bunch

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: 16-MAR-2018 11:38

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: SANDY POINT CREEK ABV CR191

Collection Date/Time: 02/21/2018 09:50

Field ID: G4NW0078

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1969664	EPA 180.1 Rev. 2.0	Turbidity	4.6		NTU	P340457	
	EPA 300.0 Rev. 2.1	Chloride	9.7		mg Cl/L	P340796	
		Sulfate	2.4		mg SO4/L	P340800	
	SM 2120 B	Color (true)	490		PCU	P340450	
	SM 2320 B-97	Total Alkalinity	8.9		mg CaCO3/L	P340876	
	SM 2540 C-97	TDS	99		mg/L	P340806	
	SM 2540 D-97	TSS	2	I	mg/L	P340882	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P340880	
1969668	EPA 350.1 Rev. 2.0	Ammonia-N	0.16		mg N/L	P340914	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P340558	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.093		mg N/L	P340588	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P340582	
	SM 5310 B-00	Organic Carbon	26		mg C/L	P340632	
1969672	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P340479	

Ref. Method and Comment:

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

SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: JAKES BAYOU UPSTREAM OF RO

Collection Date/Time: 02/21/2018 10:15

Field ID: G4NW0394

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1969676	EPA 180.1 Rev. 2.0	Turbidity	4.0		NTU	P340457	
	SM 2320 B-97	Total Alkalinity	2.4	I	mg CaCO3/L	P340919	
	SM 2540 D-97	TSS	4	I	mg/L	P340882	
	SM 4500 F-C-97	Fluoride	0.040	I	mg F/L	P341123	MS, RPD
1969677	EPA 350.1 Rev. 2.0	Ammonia-N	0.029		mg N/L	P340968	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P340559	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P340588	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P340582	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P340632	
1969678	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P340479	

Ref. Method and Comment:

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

SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: TOM KING BAYOU CREEK

Collection Date/Time: 02/21/2018 11:15

Field ID: G4NW0193

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1969665	EPA 180.1 Rev. 2.0	Turbidity	5.0		NTU	P340457	
	EPA 300.0 Rev. 2.1	Chloride	18	A	mg Cl/L	P340796	
		Sulfate	6.5	A	mg SO4/L	P340800	
	SM 2120 B	Color (true)	120		PCU	P340450	
	SM 2320 B-97	Total Alkalinity	3.7		mg CaCO3/L	P340876	

Field ID: G4NW0193

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1969665	SM 2540 C-97	TDS	88		mg/L	P340806	
	SM 2540 D-97	TSS	2	I	mg/L	P340882	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P340880	
1969669	EPA 350.1 Rev. 2.0	Ammonia-N	0.026		mg N/L	P340914	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40		mg N/L	P340558	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.33		mg N/L	P340588	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P340582	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P340632	
1969673	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.012		mg P/L	P340479	

Ref. Method and Comment:

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

SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: DEAN CREEK UPSTREAM OF SR

Collection Date/Time: 02/21/2018 11:50

Field ID: G4NW0362

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1969666	EPA 180.1 Rev. 2.0	Turbidity	0.95		NTU	P340457	
	EPA 300.0 Rev. 2.1	Chloride	4.2		mg Cl/L	P340796	
		Sulfate	1.3		mg SO4/L	P340800	
	SM 2120 B	Color (true)	38	A	PCU	P340450	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P340919	
	SM 2540 C-97	TDS	22	I	mg/L	P340806	
	SM 2540 D-97	TSS	2	U	mg/L	P340882	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P341123	MS, RPD
1969670	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	UY	mg N/L	P340914	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.10	IY	mg N/L	P340558	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.021	Y	mg N/L	P340588	
	EPA 365.1 Rev. 2.0	Total-P	0.003	IY	mg P/L	P340582	
	SM 5310 B-00	Organic Carbon	2.8	Y	mg C/L	P340632	
1969674	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P340479	

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: 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: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample. The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

Sample Location: BOILING CREEK AT BOAT LAUN

Collection Date/Time: 02/21/2018 12:30

Field ID: G4NW0385

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1969667	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P340457	
	EPA 300.0 Rev. 2.1	Chloride	2.9		mg Cl/L	P340796	
		Sulfate	0.61		mg SO4/L	P340800	
	SM 2120 B	Color (true)	60	A	PCU	P340449	

Field ID: G4NW0385

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1969667	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P340919	
	SM 2540 C-97	TDS	29		mg/L	P340806	
	SM 2540 D-97	TSS	2	I	mg/L	P340882	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P341123	MS, RPD
1969671	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P340914	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.18	I	mg N/L	P340558	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.050		mg N/L	P340588	
	EPA 365.1 Rev. 2.0	Total-P	0.006		mg P/L	P340582	
	SM 5310 B-00	Organic Carbon	4.2		mg C/L	P340632	
1969675	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P340479	

Ref. Method and Comment:

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

SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Non-Conformance Report

NCR ID: 6918

Event(s)

NW-DIST-2018-02-22-01

Job(s)

TLH-2018-02-22-30

Sample(s)

1969670

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 2/26/2018

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: P340457

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P340796

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P340800

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340914

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340968

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P340558

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P340559

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340588

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340582

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P340479

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

Reference Method: SM 2120 B
Batch ID: P340449

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P340450

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P340876

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

Reference Method: SM 2320 B-97
Batch ID: P340919

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

Reference Method: SM 2540 C-97
Batch ID: P340806

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P340882

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P340880

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P341123

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P340632

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: P340796

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P340800

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P340800

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340914

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340968

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P340558

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: P340559

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340588

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	103		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340582

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: P340479

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.9		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P340876

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	95 - 108

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P340919

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.0		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P340880

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	93.5		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P341123

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.7		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P340632

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: P340796

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1969665	Chloride	96.1		P	90 - 110
1969667	Chloride	97.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P340800

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1969665	Sulfate	98.2		P	90 - 110
1969667	Sulfate	97.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340914

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1969615	Ammonia-N	110	110	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340968

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1969677	Ammonia-N	92.8	102	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P340558

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1969624	Kjeldahl Nitrogen	99.1	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P340559

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1969834	Kjeldahl Nitrogen	101	98.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340588

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1969668	NO2NO3-N	98.6	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340582

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1969624	Total-P	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P340479

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1969674	O-Phosphate-P	97.9	97.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P340880

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1969418	Fluoride	96.2	98.1	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P341123

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1969839	Fluoride	94.9	108	P/F	91 - 105

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P340457

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969661	Turbidity	2.60	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P340796

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969665	Chloride	2.17	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P340800

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969665	Sulfate	1.96	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340914

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969615	Ammonia-N	0.314	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340968

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969677	Ammonia-N	5.82	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P340558

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969624	Kjeldahl Nitrogen	1.12	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P340559

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969834	Kjeldahl Nitrogen	2.57	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340588

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969668	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340582

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969624	Total-P	0.440	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P340479

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969674	O-Phosphate-P	0.0	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P340449

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969667	Color (true)	0.149	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P340450

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969666	Color (true)	1.37	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P340876

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969418	Total Alkalinity	0.654	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P340919

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969839	Total Alkalinity	0.957	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P340806

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969622	TDS	4.91	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P340880

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969418	Fluoride	1.46	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P341123

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969839	Fluoride	9.61	Spike	F	0 - 3.0

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P340632

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1969610	Organic Carbon	0.691	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: A82235
Included Lab Sample IDs: 1969664, 1969665, 1969666, 1969667

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.1	98.1	P/P	85 - 115
Color (true)	97.9	99.2	P/P	85 - 115
Color (true)	98.1	97.9	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A82236
Included Lab Sample IDs: 1969664, 1969665, 1969666, 1969667, 1969676

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	100	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A82246
Included Lab Sample IDs: 1969672, 1969673, 1969674, 1969675, 1969678

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	101	P/P	90 - 110
O-Phosphate-P	101	99.9	P/P	90 - 110
O-Phosphate-P	99.9	99.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A82286
Included Lab Sample IDs: 1969668, 1969669, 1969670, 1969671, 1969677

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	99.5	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A82301
Included Lab Sample IDs: 1969668, 1969669, 1969670, 1969671, 1969677

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.5	98.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A82302

Included Lab Sample IDs: 1969668, 1969669, 1969670, 1969671, 1969677

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	102	P/P	90 - 110
Total-P	102	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A82322

Included Lab Sample IDs: 1969664, 1969665, 1969666, 1969667

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	98.3	P/P	90 - 110
Chloride	98.3	99.6	P/P	90 - 110
Sulfate	101	98.2	P/P	90 - 110
Sulfate	98.2	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A82347

Included Lab Sample IDs: 1969668, 1969669, 1969670, 1969671, 1969677

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.6	95.4	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A82400

Included Lab Sample IDs: 1969664, 1969665

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	98.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A82400

Included Lab Sample IDs: 1969664, 1969665

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A82416

Included Lab Sample IDs: 1969668, 1969669, 1969670, 1969671

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

Reference Method: SM 2320 B-97

Run ID: A82421

Included Lab Sample IDs: 1969666, 1969667, 1969676

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.7	99.6	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A82430

Included Lab Sample IDs: 1969677

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.6	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A82484

Included Lab Sample IDs: 1969666, 1969667, 1969676

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	99.0	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	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					2.60	
EPA 300.0 Rev. 2.1	Chloride	97.7	96.1	97.5		2.17	
	Sulfate	97.6	98.2	97.9		1.96	
EPA 350.1 Rev. 2.0	Ammonia-N	97.8	110	110			0.314
	Ammonia-N	100	92.8	102			5.82
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	99.1	101			1.12
	Kjeldahl Nitrogen	101	101	98.0			2.57
EPA 353.2 Rev. 2.0	NO2NO3-N	103	98.6	98.6			0.0
EPA 365.1 Rev. 2.0	Total-P	103	101	102			0.440
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.9	97.9	97.9			0.0
SM 2120 B	Color (true)					0.149	
	Color (true)					1.37	
SM 2320 B-97	Total Alkalinity	101				0.654	
	Total Alkalinity	99.0				0.957	
SM 2540 C-97	TDS					4.91	
SM 4500 F-C-97	Fluoride	93.5	96.2	98.1			1.46
	Fluoride	94.7	94.9	108			9.61
SM 5310 B-00	Organic Carbon	99.7					0.691

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1969664, 1969665, 1969666, 1969667, 1969676
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1969664, 1969665, 1969666, 1969667
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1969664, 1969665, 1969666, 1969667
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1969668, 1969669, 1969670, 1969671, 1969677
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1969668, 1969669, 1969670, 1969671, 1969677

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1969668, 1969669, 1969670, 1969671, 1969677
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1969668, 1969669, 1969670, 1969671, 1969677
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1969672, 1969673, 1969674, 1969675, 1969678
SM 2120 B / E31780	True Color measured at 450 nm	1969664, 1969665, 1969666, 1969667
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1969664, 1969665, 1969666, 1969667, 1969676
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1969664, 1969665, 1969666, 1969667
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1969664, 1969665, 1969666, 1969667, 1969676
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1969664, 1969665, 1969666, 1969667, 1969676
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1969668, 1969669, 1969670, 1969671, 1969677

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	02/22/2018			02/22/2018 15:15	Julia Storbeck	1969664, 1969665, 1969666, 1969667, 1969676
EPA 300.0 Rev. 2.1	02/22/2018			02/28/2018	Julia Storbeck	1969664, 1969665, 1969666, 1969667
EPA 350.1 Rev. 2.0	02/22/2018			03/02/2018	Ping Hua	1969668, 1969669, 1969670, 1969671
	02/22/2018			03/05/2018	Ping Hua	1969677
EPA 351.2 Rev. 2.0	02/22/2018	02/26/2018	Adrian Shelby	02/28/2018	Joseph Suarez	1969668, 1969669, 1969670, 1969671, 1969677
EPA 353.2 Rev. 2.0	02/22/2018			02/26/2018	Lauren Bottorf	1969668, 1969669, 1969670, 1969671, 1969677
EPA 365.1 Rev. 2.0	02/22/2018	02/26/2018	Sima Feizi	02/27/2018	Beverly Y. Sanders	1969668, 1969669, 1969670, 1969671, 1969677
EPA 365.1 Rev. 2.0 dissolved	02/22/2018			02/22/2018 16:42	Megan Treadwell	1969674
	02/22/2018			02/22/2018 16:59	Megan Treadwell	1969672
	02/22/2018			02/22/2018 17:00	Megan Treadwell	1969673
	02/22/2018			02/22/2018 17:01	Megan Treadwell	1969675
	02/22/2018			02/22/2018 17:08	Megan Treadwell	1969678
SM 2120 B	02/22/2018			02/22/2018 14:53	Tanya Welborn	1969667
	02/22/2018			02/22/2018 14:58	Tanya Welborn	1969665
	02/22/2018			02/22/2018 14:59	Tanya Welborn	1969666
	02/22/2018			02/22/2018 15:14	Tanya Welborn	1969664
SM 2320 B-97	02/22/2018			03/02/2018	Lauren Bottorf	1969664, 1969665
	02/22/2018			03/04/2018	Dale L. Simmons	1969666, 1969667, 1969676
SM 2540 C-97	02/22/2018			02/23/2018	Ping Hua	1969664, 1969665, 1969666, 1969667
SM 2540 D-97	02/22/2018			02/23/2018	Ping Hua	1969664, 1969665, 1969666, 1969667, 1969676
SM 4500 F-C-97	02/22/2018			03/02/2018	Lauren Bottorf	1969664, 1969665
	02/22/2018			03/08/2018	Dale L. Simmons	1969666, 1969667, 1969676
SM 5310 B-00	02/22/2018			02/26/2018	Megan Treadwell	1969668, 1969669, 1969670, 1969671, 1969677