

Chemical Analysis Report

NW-DIST-2018-08-22-02

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

Event Description: **Laurel Hill West**
Request ID: **RQ-2018-08-20-14**
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.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Colin Wright, Program Administrator

Date Certified: 11-SEP-2018 15:01



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: Turkey Creek above Williams Rd

Collection Date/Time: 08/21/2018 11:25

Field ID: G4NW0409

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018920	EPA 180.1 Rev. 2.0	Turbidity	7.1		NTU	P350640	
	EPA 300.0 Rev. 2.1	Chloride	4.5		mg Cl/L	P350845	
		Sulfate	0.97		mg SO4/L	P350848	
	SM 2120 B	Color (true)	62	A	PCU	P350617	
	SM 2320 B-97	Total Alkalinity	3.5		mg CaCO3/L	P350793	
	SM 2540 C-97	TDS	24	I	mg/L	P351020	
	SM 2540 D-97	TSS	10		mg/L	P351015	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P350796	
2018926	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P350721	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.37	Y	mg N/L	P350891	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.33		mg N/L	P350701	
	EPA 365.1 Rev. 2.0	Total-P	0.030		mg P/L	P350763	
	SM 5310 B-00	Organic Carbon	5.5		mg C/L	P350833	
2018932	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.011		mg P/L	P350606	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

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

**Sample Location: East Branch Pine Log Creek above Bear Bay
Flats Road**

Collection Date/Time: 08/21/2018 11:55

Field ID: G4NW0208

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018921	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P350640	
	EPA 300.0 Rev. 2.1	Chloride	4.3		mg Cl/L	P350845	
		Sulfate	0.24	I	mg SO4/L	P350848	
	SM 2120 B	Color (true)	96		PCU	P350617	
	SM 2320 B-97	Total Alkalinity	10		mg CaCO3/L	P350793	
	SM 2540 C-97	TDS	44		mg/L	P351020	
	SM 2540 D-97	TSS	3	I	mg/L	P351015	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P350796	
2018927	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P350721	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.77	Y	mg N/L	P350891	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.014		mg N/L	P350701	
	EPA 365.1 Rev. 2.0	Total-P	0.049		mg P/L	P350763	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P350833	
2018933	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.018		mg P/L	P350606	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

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

Sample Location: Pine Log Creek upstream of Long Road

Collection Date/Time: 08/21/2018 12:25

Field ID: G4NW0315

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018922	EPA 180.1 Rev. 2.0	Turbidity	5.3		NTU	P350640	
	EPA 300.0 Rev. 2.1	Chloride	3.1		mg Cl/L	P350845	
		Sulfate	0.79		mg SO4/L	P350848	
	SM 2120 B	Color (true)	71		PCU	P350617	
	SM 2320 B-97	Total Alkalinity	4.7		mg CaCO3/L	P350793	
	SM 2540 C-97	TDS	35		mg/L	P351021	
	SM 2540 D-97	TSS	8	I	mg/L	P351016	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P350796	
2018928	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P350721	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40	Y	mg N/L	P350891	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P350701	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P350763	
	SM 5310 B-00	Organic Carbon	7.1		mg C/L	P350833	
2018934	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P350606	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

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

Sample Location: Beech Tree Creek above un-named road

Collection Date/Time: 08/21/2018 12:50

Field ID: G4NW0330

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018923	EPA 180.1 Rev. 2.0	Turbidity	8.8		NTU	P350640	
	EPA 300.0 Rev. 2.1	Chloride	2.5		mg Cl/L	P350845	
		Sulfate	0.65		mg SO4/L	P350848	
	SM 2120 B	Color (true)	40		PCU	P350617	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P350793	
	SM 2540 C-97	TDS	20	I	mg/L	P351021	
	SM 2540 D-97	TSS	10	I	mg/L	P351016	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P350796	
2018929	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P350839	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.14	I	mg N/L	P350891	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.029		mg N/L	P350702	
	EPA 365.1 Rev. 2.0	Total-P	0.006		mg P/L	P350763	
	SM 5310 B-00	Organic Carbon	3.8		mg C/L	P350833	
2018935	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P350606	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: Long Creek upstream of Long Road

Collection Date/Time: 08/21/2018 13:05

Field ID: G4NW0308

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018924	EPA 180.1 Rev. 2.0	Turbidity	4.6		NTU	P350640	
	EPA 300.0 Rev. 2.1	Chloride	3.7		mg Cl/L	P350845	
		Sulfate	0.43	I	mg SO4/L	P350848	
	SM 2120 B	Color (true)	51		PCU	P350618	
	SM 2320 B-97	Total Alkalinity	2.7		mg CaCO3/L	P350793	
	SM 2540 C-97	TDS	23	I	mg/L	P351021	
	SM 2540 D-97	TSS	6	I	mg/L	P351016	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P350796	
2018930	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P350839	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.30		mg N/L	P350891	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.23		mg N/L	P350853	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P350763	
	SM 5310 B-00	Organic Carbon	4.4		mg C/L	P350833	
2018936	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P350606	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: Pond Creek in McCloud Bay upstream of Hwy 393 **Collection Date/Time: 08/21/2018 13:40**

Field ID: G4NW0349

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2018925	EPA 180.1 Rev. 2.0	Turbidity	5.5		NTU	P350640	
	EPA 300.0 Rev. 2.1	Chloride	3.9		mg Cl/L	P350845	
		Sulfate	1.1		mg SO4/L	P350848	
	SM 2120 B	Color (true)	56	A	PCU	P350618	
	SM 2320 B-97	Total Alkalinity	4.3		mg CaCO3/L	P350793	
	SM 2540 C-97	TDS	29		mg/L	P351021	
	SM 2540 D-97	TSS	7	I	mg/L	P351016	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P350796	
2018931	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P350839	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.34		mg N/L	P350891	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.21		mg N/L	P350702	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P350901	
	SM 5310 B-00	Organic Carbon	5.3		mg C/L	P350833	
2018937	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P350607	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Non-Conformance Report

NCR ID: 7193

<u>Event(s)</u>	<u>Job(s)</u>	<u>Sample(s)</u>	<u>Test(s)</u>
NW-DIST-2018-08-22-02	TLH-2018-08-22-21	2018926	
NW-DIST-2018-08-22-02	TLH-2018-08-22-21	2018927	
NW-DIST-2018-08-22-02	TLH-2018-08-22-21	2018928	

NCR Type: CUSTODY

NCR Category: General

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

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

Authorized by/Date: Peter D. Kaus 9/11/2018

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: P350640

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350845

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350848

Component	Result	Code	Units
Sulfate	0.20	U	mg SO ₄ /L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350721

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350839

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350891

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350701

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350702

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350853

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350763

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350901

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350606

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350607

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

Reference Method: SM 2120 B
Batch ID: P350617

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P350618

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P350793

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

Reference Method: SM 2540 C-97
Batch ID: P351020

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P351021

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P351015

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P351016

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P350796

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P350833

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: P350845

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350848

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350721

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350839

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350891

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350701

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350702

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350853

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350763

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.3		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350901

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350606

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350607

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

Reference Method: SM 2120 B
Batch ID: P350617

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

Reference Method: SM 2120 B
Batch ID: P350618

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

Reference Method: SM 2320 B-97
Batch ID: P350793

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	105		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P350796

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P350833

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350845

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018855	Chloride	94.1		P	90 - 110
2018925	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350848

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018855	Sulfate	98.3		P	90 - 110
2018925	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350721

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018875	Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350839

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018996	Ammonia-N	102	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350891

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018996	Kjeldahl Nitrogen	95.0	94.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350701

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018874	NO2NO3-N	106	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350702

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018929	NO2NO3-N	103	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350853

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018996	NO2NO3-N	99.5	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350763

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018868	Total-P	99.1	98.3	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350901

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019022	Total-P	98.7	99.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350606

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018871	O-Phosphate-P	96.5	96.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350607

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018997	O-Phosphate-P	97.1	98.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P350796

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019110	Fluoride	99.6	99.6	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P350833

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2018797	Organic Carbon	97.5	97.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350845

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018855	Chloride	0.0733	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350848

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018855	Sulfate	0.0235	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350721

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018875	Ammonia-N	0.648	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350839

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018996	Ammonia-N	0.930	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350891

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018996	Kjeldahl Nitrogen	0.573	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350701

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018874	NO2NO3-N	0.475	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350702

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018929	NO2NO3-N	0.844	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350853

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018996	NO2NO3-N	2.48	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350763

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018868	Total-P	0.756	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350901

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019022	Total-P	0.591	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350606

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018871	O-Phosphate-P	0.104	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350607

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018997	O-Phosphate-P	1.23	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P350617

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018920	Color (true)	1.92	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P350618

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018925	Color (true)	1.52	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P350793

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019110	Total Alkalinity	0.105	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P351020

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019012	TDS	6.64	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P351021

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019013	TDS	4.12	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P350796

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019110	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P350833

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2018797	Organic Carbon	0.478	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 300.0 Rev. 2.1

Run ID: A86049

Included Lab Sample IDs: 2018920, 2018921, 2018922, 2018923, 2018924, 2018925

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	101	P/P	90 - 110
Chloride	103	102	P/P	90 - 110
Sulfate	102	101	P/P	90 - 110
Sulfate	103	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A86064

Included Lab Sample IDs: 2018932, 2018933, 2018934, 2018935, 2018936, 2018937

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.8	98.0	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A86065

Included Lab Sample IDs: 2018920, 2018921, 2018922, 2018923, 2018924, 2018925

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.4	99.5	P/P	90 - 115
Color (true)	99.5	102	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A86071

Included Lab Sample IDs: 2018920, 2018921, 2018922, 2018923, 2018924, 2018925

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A86101

Included Lab Sample IDs: 2018926, 2018927, 2018928, 2018929, 2018931

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	102	P/P	90 - 110
NO2NO3-N	102	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A86114

Included Lab Sample IDs: 2018926, 2018927, 2018928

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	104	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A86129

Included Lab Sample IDs: 2018920, 2018921, 2018922, 2018923, 2018924, 2018925

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

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A86129

Included Lab Sample IDs: 2018920, 2018921, 2018922, 2018923, 2018924, 2018925

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A86147

Included Lab Sample IDs: 2018926, 2018927, 2018928, 2018929, 2018930

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	99.8	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A86150

Included Lab Sample IDs: 2018926, 2018927, 2018928, 2018929, 2018930, 2018931

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.4	96.8	P/P	90 - 110
Organic Carbon	97.3	96.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A86153

Included Lab Sample IDs: 2018929, 2018930, 2018931

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A86155

Included Lab Sample IDs: 2018930

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A86206

Included Lab Sample IDs: 2018926, 2018927, 2018928, 2018929, 2018930, 2018931

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A86208

Included Lab Sample IDs: 2018931

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	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		Precision	
					LCS	MS
EPA 300.0 Rev. 2.1	Chloride	103	94.1	101	0.0733	
	Sulfate	102	98.3	101	0.0235	
EPA 350.1 Rev. 2.0	Ammonia-N	102	102	103		0.648
	Ammonia-N	97.0	102	101		0.930
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	95.0	94.3		0.573
EPA 353.2 Rev. 2.0	NO2NO3-N	102	106	105		0.475
	NO2NO3-N	103	103	104		0.844
	NO2NO3-N	100	99.5	102		2.48
EPA 365.1 Rev. 2.0	Total-P	97.3	99.1	98.3		0.756
	Total-P	98.9	98.7	99.4		0.591
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.5	96.5	96.4		0.104
	O-Phosphate-P	99.4	97.1	98.3		1.23
SM 2120 B	Color (true)	99.2			1.92	
	Color (true)	99.2			1.52	
SM 2320 B-97	Total Alkalinity	105			0.105	
SM 2540 C-97	TDS				6.64	
	TDS				4.12	
SM 4500 F-C-97	Fluoride	100	99.6	99.6		0.0
SM 5310 B-00	Organic Carbon	99.8	97.5	97.0		0.478

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2018920, 2018921, 2018922, 2018923, 2018924, 2018925
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2018920, 2018921, 2018922, 2018923, 2018924, 2018925
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2018920, 2018921, 2018922, 2018923, 2018924, 2018925
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2018926, 2018927, 2018928, 2018929, 2018930, 2018931
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2018926, 2018927, 2018928, 2018929, 2018930, 2018931
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2018926, 2018927, 2018928, 2018929, 2018930, 2018931
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2018926, 2018927, 2018928, 2018929, 2018930, 2018931
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2018932, 2018933, 2018934, 2018935, 2018936, 2018937
SM 2120 B / E31780	True Color measured at 450 nm	2018920, 2018921, 2018922, 2018923, 2018924, 2018925
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2018920, 2018921, 2018922, 2018923, 2018924, 2018925
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2018920, 2018921, 2018922, 2018923, 2018924, 2018925
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2018920, 2018921, 2018922, 2018923, 2018924, 2018925
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2018920, 2018921, 2018922, 2018923, 2018924, 2018925
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2018926, 2018927, 2018928, 2018929, 2018930, 2018931

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	08/22/2018			08/22/2018 17:25	Megan Treadwell	2018920, 2018921, 2018922, 2018923, 2018924, 2018925
EPA 300.0 Rev. 2.1	08/22/2018			08/24/2018 03:58	Lipi Saha	2018925
	08/22/2018			08/24/2018 05:10	Lipi Saha	2018920
	08/22/2018			08/24/2018 05:46	Lipi Saha	2018921
	08/22/2018			08/24/2018 05:58	Lipi Saha	2018922
	08/22/2018			08/24/2018 06:10	Lipi Saha	2018923
	08/22/2018			08/24/2018 06:22	Lipi Saha	2018924
EPA 350.1 Rev. 2.0	08/22/2018			08/24/2018 12:45	Ping Hua	2018926
	08/22/2018			08/24/2018 12:46	Ping Hua	2018927
	08/22/2018			08/24/2018 12:48	Ping Hua	2018928
	08/22/2018			08/27/2018 11:12	Ping Hua	2018930
	08/22/2018			08/27/2018 11:13	Ping Hua	2018931
	08/22/2018			08/27/2018 13:10	Ping Hua	2018929
EPA 351.2 Rev. 2.0	08/22/2018	08/29/2018 15:30	Adrian Shelby	08/30/2018 12:04	Joseph Suarez	2018926
	08/22/2018	08/29/2018 15:30	Adrian Shelby	08/30/2018 12:05	Joseph Suarez	2018927
	08/22/2018	08/29/2018 15:30	Adrian Shelby	08/30/2018 12:07	Joseph Suarez	2018928
	08/22/2018	08/29/2018 15:30	Adrian Shelby	08/30/2018 12:08	Joseph Suarez	2018929
	08/22/2018	08/29/2018 15:30	Adrian Shelby	08/30/2018 12:10	Joseph Suarez	2018930
	08/22/2018	08/29/2018 15:30	Adrian Shelby	08/30/2018 12:11	Joseph Suarez	2018931
EPA 353.2 Rev. 2.0	08/22/2018			08/24/2018 09:44	Beverly Y. Sanders	2018926
	08/22/2018			08/24/2018 09:45	Beverly Y. Sanders	2018927
	08/22/2018			08/24/2018 09:47	Beverly Y. Sanders	2018928
	08/22/2018			08/24/2018 09:54	Beverly Y. Sanders	2018929
	08/22/2018			08/24/2018 10:09	Beverly Y. Sanders	2018931
	08/22/2018			08/28/2018 11:47	Lauren Bottorf	2018930
EPA 365.1 Rev. 2.0	08/22/2018	08/27/2018 12:15	Sima Feizi	08/28/2018 11:51	Beverly Y. Sanders	2018926
	08/22/2018	08/27/2018 12:15	Sima Feizi	08/28/2018 11:52	Beverly Y. Sanders	2018927
	08/22/2018	08/27/2018 12:15	Sima Feizi	08/28/2018 11:53	Beverly Y. Sanders	2018928
	08/22/2018	08/27/2018 12:15	Sima Feizi	08/28/2018 11:54	Beverly Y. Sanders	2018929
	08/22/2018	08/27/2018 12:15	Sima Feizi	08/28/2018 11:55	Beverly Y. Sanders	2018930
	08/22/2018	08/29/2018 13:20	Sima Feizi	08/30/2018 11:53	Beverly Y. Sanders	2018931
EPA 365.1 Rev. 2.0 dissolved	08/22/2018			08/22/2018 14:56	Julia Storbeck	2018932
	08/22/2018			08/22/2018 14:57	Julia Storbeck	2018933
	08/22/2018			08/22/2018 14:58	Julia Storbeck	2018934
	08/22/2018			08/22/2018 14:59	Julia Storbeck	2018935
	08/22/2018			08/22/2018 15:00	Julia Storbeck	2018936, 2018937
SM 2120 B	08/22/2018			08/22/2018 16:06	William L. Brown IV	2018920
	08/22/2018			08/22/2018 16:07	William L. Brown IV	2018921
	08/22/2018			08/22/2018 16:08	William L. Brown IV	2018922, 2018923

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2120 B	08/22/2018			08/22/2018 16:12	William L. Brown IV	2018924
	08/22/2018			08/22/2018 16:14	William L. Brown IV	2018925
SM 2320 B-97	08/22/2018			08/25/2018 08:16	Dale L. Simmons	2018920
	08/22/2018			08/25/2018 08:27	Dale L. Simmons	2018921
	08/22/2018			08/25/2018 08:38	Dale L. Simmons	2018922
	08/22/2018			08/25/2018 08:47	Dale L. Simmons	2018923
	08/22/2018			08/25/2018 08:58	Dale L. Simmons	2018924
	08/22/2018			08/25/2018 09:10	Dale L. Simmons	2018925
	08/22/2018			08/24/2018 16:01	Yijie Li	2018920, 2018921, 2018922, 2018923, 2018924, 2018925
SM 2540 D-97	08/22/2018			08/24/2018 16:01	Yijie Li	2018920, 2018921, 2018922, 2018923, 2018924, 2018925
SM 4500 F-C-97	08/22/2018			08/25/2018 08:16	Dale L. Simmons	2018920
	08/22/2018			08/25/2018 08:27	Dale L. Simmons	2018921
	08/22/2018			08/25/2018 08:38	Dale L. Simmons	2018922
	08/22/2018			08/25/2018 08:47	Dale L. Simmons	2018923
	08/22/2018			08/25/2018 08:58	Dale L. Simmons	2018924
	08/22/2018			08/25/2018 09:10	Dale L. Simmons	2018925
	08/22/2018			08/27/2018 20:09	Megan Treadwell	2018926
SM 5310 B-00	08/22/2018			08/27/2018 20:27	Megan Treadwell	2018927
	08/22/2018			08/27/2018 21:09	Megan Treadwell	2018928
	08/22/2018			08/27/2018 21:22	Megan Treadwell	2018929
	08/22/2018			08/27/2018 21:35	Megan Treadwell	2018930
	08/22/2018			08/27/2018 21:51	Megan Treadwell	2018931
	08/22/2018					