

Chemical Analysis Report

NW-DIST-2019-09-11-02

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

Event Description: **Milton Run**
Request ID: **RQ-2019-09-09-50**
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

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Date Certified: 02-OCT-2019 11:43



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 by the Florida Department of Health Environmental Laboratory Certification Program 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: jakes bayou upstream of robinson point rd

Collection Date/Time: 09/10/2019 13:10

Field ID: G4NW0394

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2117966	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P370496	
	EPA 300.0	Bromide	21		mg Br/L	P370689	
	SM 2320 B-97	Total Alkalinity	43		mg CaCO3/L	P371102	
	SM 2540 D-97	TSS	3	UA	mg/L	P370881	
	SM 4500 F-C-97	Fluoride	0.34		mg F/L	P371519	
2117967	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P370667	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.26	I	mg N/L	P370598	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P370710	
	EPA 365.1 Rev. 2.0	Total-P	0.009	I	mg P/L	P370641	
	SM 5310 B-00	Organic Carbon	4.7		mg C/L	P370679	
2117968	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P370502	

Ref. Method and Comment:

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

Sample Location: PACE MILL CREEK UPSTREAM OF HWY 90

Collection Date/Time: 09/10/2019 12:15

Field ID: G4NW0481

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2117960	EPA 180.1 Rev. 2.0	Turbidity	3.5		NTU	P370496	
	EPA 300.0 Rev. 2.1	Chloride	7.1		mg Cl/L	P370811	
		Sulfate	1.3		mg SO4/L	P370814	
	SM 2120 B	Color (true)	48		PCU	P370531	
	SM 2320 B-97	Total Alkalinity	14		mg CaCO3/L	P371031	
	SM 2540 C-97	TDS	43	A	mg/L	P371062	
	SM 2540 D-97	TSS	6	IA	mg/L	P370876	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P371509	
2117962	EPA 350.1 Rev. 2.0	Ammonia-N	0.16		mg N/L	P370673	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.34		mg N/L	P370599	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.47		mg N/L	P370554	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P370566	
	SM 5310 B-00	Organic Carbon	3.1		mg C/L	P370678	
2117964	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P370500	

Ref. Method and Comment:

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

Sample Location: BUCKET BRANCH END OF BUCKET CREEK RD

Collection Date/Time: 09/10/2019 10:10

Field ID: G4NW0059

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2117961	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P370496	
	EPA 300.0 Rev. 2.1	Chloride	4.5		mg Cl/L	P370811	
		Sulfate	0.72		mg SO4/L	P370814	
	SM 2120 B	Color (true)	39		PCU	P370531	
	SM 2320 B-97	Total Alkalinity	3.9		mg CaCO3/L	P371031	
	SM 2540 C-97	TDS	27		mg/L	P371062	
	SM 2540 D-97	TSS	5	I	mg/L	P370876	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P371509	
2117963	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P370764	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.18	I	mg N/L	P370599	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.14		mg N/L	P370554	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P370566	
	SM 5310 B-00	Organic Carbon	2.9		mg C/L	P370678	
2117965	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P370501	

Ref. Method and Comment:

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P370496

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0
Batch ID: P370689

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P370811

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P370814

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P370667

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P370673

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P370764

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P370598

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P370599

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: P370554

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P370710

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P370566

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P370641

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P370500

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P370501

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P370502

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

Reference Method: SM 2120 B
Batch ID: P370531

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P371031

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P371102

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

Reference Method: SM 2540 C-97
Batch ID: P371062

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P370876

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P370881

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P371509

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P371519

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P370678

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

Reference Method: SM 5310 B-00
Batch ID: P370679

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 300.0
Batch ID: P370689

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Bromide	94.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P370811

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P370814

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P370667

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P370673

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P370764

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P370598

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P370599

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P370554

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P370710

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P370566

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P370641

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.4		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P370500

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: P370501

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P370502

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

Reference Method: SM 2120 B
Batch ID: P370531

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.3		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P371031

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 106

Reference Method: SM 2320 B-97
Batch ID: P371102

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 106

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P371509

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.7		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P371519

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.1		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P370678

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	104		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P370679

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	104		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0
Batch ID: P370689

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2117129	Bromide	92.6	93.4	P/P	90 - 110
2117707	Bromide	92.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P370811

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2117930	Chloride	99.5		P	90 - 110
2118051	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P370814

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2117930	Sulfate	101		P	90 - 110
2118051	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P370667

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2117713	Ammonia-N	96.4	97.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P370673

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2117566	Ammonia-N	93.7	96.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P370764

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2117963	Ammonia-N	102	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P370598

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2117717	Kjeldahl Nitrogen	93.8	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P370599

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2117932	Kjeldahl Nitrogen	106	107	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P370554

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2117714	NO2NO3-N	102	102	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P370710

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2117877	NO2NO3-N	93.4	92.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P370566

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2117566	Total-P	96.0	93.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P370641

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2117710	Total-P	90.0	94.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P370500

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2117938	O-Phosphate-P	96.4	97.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P370501

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2117965	O-Phosphate-P	96.4	96.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P370502

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2117968	O-Phosphate-P	96.0	97.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P371509

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2119156	Fluoride	97.0	97.0	P/P	89 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P371519

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2119124	Fluoride	95.1	95.1	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P370678

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2117872	Organic Carbon	106	105	P/P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P370679

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2117597	Organic Carbon	104	104	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P370496

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2117936	Turbidity	7.59	Sample	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P370689

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2117129	Bromide	0.738	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P370811

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2117930	Chloride	1.48	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P370814

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2117930	Sulfate	2.22	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P370667

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2117713	Ammonia-N	0.750	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P370673

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2117566	Ammonia-N	3.00	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P370764

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2117963	Ammonia-N	0.432	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P370598

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2117717	Kjeldahl Nitrogen	5.05	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P370599

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2117932	Kjeldahl Nitrogen	1.29	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P370554

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2117714	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P370710

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2117877	NO2NO3-N	0.537	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P370566

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2117566	Total-P	2.26	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P370641

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2117710	Total-P	4.04	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P370500

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2117938	O-Phosphate-P	0.876	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P370501

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2117965	O-Phosphate-P	0.489	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P370502

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2117968	O-Phosphate-P	1.76	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P370531

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2118050	Color (true)	2.60	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P371031

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2119156	Total Alkalinity	1.59	Sample	P	0 - 2.8

Reference Method: SM 2320 B-97
Batch ID: P371102

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2118624	Total Alkalinity	0.706	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P371062

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2117960	TDS	4.65	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P371509

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2119156	Fluoride	0.0	Spike	P	0 - 2.5

Reference Method: SM 4500 F-C-97
Batch ID: P371519

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2119124	Fluoride	0.0	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P370678

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2117872	Organic Carbon	0.520	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P370679

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2117597	Organic Carbon	0.451	Spike	P	0 - 20

Quality Assurance Report

Precision

* 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

Run ID: A94097

Included Lab Sample IDs: 2117966

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A94136

Included Lab Sample IDs: 2117960, 2117961, 2117966

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A94137

Included Lab Sample IDs: 2117964, 2117965, 2117968

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	99.2	P/P	90 - 110
O-Phosphate-P	99.2	99.9	P/P	90 - 110
O-Phosphate-P	99.9	100	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A94152

Included Lab Sample IDs: 2117960, 2117961

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	100	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A94154

Included Lab Sample IDs: 2117962, 2117963

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A94159

Included Lab Sample IDs: 2117960, 2117961

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	102	P/P	90 - 110
Chloride	102	103	P/P	90 - 110
Sulfate	103	104	P/P	90 - 110
Sulfate	104	105	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A94212

Included Lab Sample IDs: 2117967

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.4	97.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A94214

Included Lab Sample IDs: 2117962

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.7	97.3	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A94219

Included Lab Sample IDs: 2117962, 2117963, 2117967

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	106	106	P/P	90 - 110
Organic Carbon	107	107	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A94233

Included Lab Sample IDs: 2117967

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A94237

Included Lab Sample IDs: 2117962, 2117963

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A94240

Included Lab Sample IDs: 2117962, 2117963, 2117967

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	96.9	P/P	90 - 110
Kjeldahl Nitrogen	99.1	99.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A94244

Included Lab Sample IDs: 2117967

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A94258

Included Lab Sample IDs: 2117963

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: A94353

Included Lab Sample IDs: 2117960, 2117961

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A94353

Included Lab Sample IDs: 2117960, 2117961

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	105	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A94392

Included Lab Sample IDs: 2117966

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A94568

Included Lab Sample IDs: 2117960, 2117961

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

Reference Method: SM 4500 F-C-97

Run ID: A94575

Included Lab Sample IDs: 2117966

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	100	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 SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					7.59	
EPA 300.0	Bromide	94.8	92.6	93.4	92.5		0.738
EPA 300.0 Rev. 2.1	Chloride	101	99.5	101		1.48	
	Sulfate	102	101	101		2.22	
EPA 350.1 Rev. 2.0	Ammonia-N	99.1	96.4	97.2			0.750
	Ammonia-N	95.7	93.7	96.8			3.00
	Ammonia-N	101	102	102			0.432
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.6	93.8	100			5.05
	Kjeldahl Nitrogen	102	106	107			1.29
EPA 353.2 Rev. 2.0	NO2NO3-N	100	102	102			0.0
	NO2NO3-N	99.5	93.4	92.9			0.537
EPA 365.1 Rev. 2.0	Total-P	97.9	96.0	93.7			2.26
	Total-P	96.4	90.0	94.1			4.04
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.0	96.4	97.4			0.876
	O-Phosphate-P	103	96.4	96.9			0.489
	O-Phosphate-P	98.0	96.0	97.7			1.76
SM 2120 B	Color (true)	98.3				2.60	
SM 2320 B-97	Total Alkalinity	104				1.59	
	Total Alkalinity	103				0.706	
SM 2540 C-97	TDS					4.65	
SM 4500 F-C-97	Fluoride	95.7	97.0	97.0			0.0
	Fluoride	96.1	95.1	95.1			0.0
SM 5310 B-00	Organic Carbon	104	106	105			0.520
	Organic Carbon	104	104	104			0.451

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2117960, 2117961, 2117966
EPA 300.0 / E31780	Bromide in aqueous matrices	2117966
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2117960, 2117961
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2117960, 2117961
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2117962, 2117963, 2117967
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2117962, 2117963, 2117967
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2117962, 2117963, 2117967
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2117962, 2117963, 2117967
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2117964, 2117965, 2117968
SM 2120 B / E31780	True Color measured at 450 nm	2117960, 2117961
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2117960, 2117961, 2117966
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2117960, 2117961
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2117960, 2117961, 2117966
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2117960, 2117961, 2117966
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2117962, 2117963, 2117967

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	09/11/2019			09/11/2019 16:13	Samantha Davila	2117960, 2117961, 2117966
EPA 300.0	09/11/2019			09/13/2019 17:45	Jhamieka S. Greenwood	2117966
EPA 300.0 Rev. 2.1	09/11/2019			09/14/2019 04:32	Jhamieka S. Greenwood	2117960
	09/11/2019			09/14/2019 05:09	Jhamieka S. Greenwood	2117961
EPA 350.1 Rev. 2.0	09/11/2019			09/13/2019 13:03	Ping Hua	2117962
	09/11/2019			09/13/2019 13:15	Ping Hua	2117967
	09/11/2019			09/16/2019 12:20	Ping Hua	2117963
EPA 351.2 Rev. 2.0	09/11/2019	09/12/2019 13:00	Sima Feizi	09/13/2019 17:36	Julia Storbeck	2117967
	09/11/2019	09/12/2019 13:00	Sima Feizi	09/13/2019 18:04	Julia Storbeck	2117962
	09/11/2019	09/12/2019 13:00	Sima Feizi	09/13/2019 18:05	Julia Storbeck	2117963
EPA 353.2 Rev. 2.0	09/11/2019			09/12/2019 10:05	Beverly Y. Sanders	2117962
	09/11/2019			09/12/2019 10:07	Beverly Y. Sanders	2117963
	09/11/2019			09/16/2019 11:20	Beverly Y. Sanders	2117967
EPA 365.1 Rev. 2.0	09/11/2019	09/12/2019 13:45	Lipi Saha	09/13/2019 18:23	Rosalyn Ballman	2117962
	09/11/2019	09/12/2019 13:45	Lipi Saha	09/13/2019 18:24	Rosalyn Ballman	2117963
	09/11/2019	09/13/2019 13:45	Lipi Saha	09/16/2019 15:05	Rosalyn Ballman	2117967
EPA 365.1 Rev. 2.0 dissolved	09/11/2019			09/11/2019 16:00	Jhamieka S. Greenwood	2117965
	09/11/2019			09/11/2019 16:08	Jhamieka S. Greenwood	2117968
	09/11/2019			09/11/2019 16:20	Jhamieka S. Greenwood	2117964
SM 2120 B	09/11/2019			09/11/2019 17:37	Madeline Funaro	2117960
	09/11/2019			09/11/2019 17:38	Madeline Funaro	2117961
SM 2320 B-97	09/11/2019			09/18/2019 03:29	Dale L. Simmons	2117960
	09/11/2019			09/18/2019 03:42	Dale L. Simmons	2117961
	09/11/2019			09/19/2019 07:08	Dale L. Simmons	2117966
SM 2540 C-97	09/11/2019			09/13/2019 15:21	Yijie Li	2117960, 2117961
SM 2540 D-97	09/11/2019			09/13/2019 15:21	Yijie Li	2117960, 2117961, 2117966
SM 4500 F-C-97	09/11/2019			09/25/2019 17:42	Dale L. Simmons	2117960
	09/11/2019			09/25/2019 17:46	Dale L. Simmons	2117961
	09/11/2019			09/27/2019 00:04	Dale L. Simmons	2117966
SM 5310 B-00	09/11/2019			09/14/2019 04:28	Madeline Funaro	2117962
	09/11/2019			09/14/2019 04:41	Madeline Funaro	2117963
	09/11/2019			09/14/2019 10:49	Madeline Funaro	2117967