

Chemical Analysis Report

NW-DIST-2018-11-21-01

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

Event Description: **Dune Lakes Run**
Request ID: **RQ-2018-11-12-24**
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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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 13-DEC-2018 07:15

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

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: DESTIN HARBOR ACROSS FROM AJ's RESTAURANT

Collection Date/Time: 11/20/2018 09:40

Field ID: G3NW0127

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2043440	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P355041	
	SM 2320 B-97	Total Alkalinity	55		mg CaCO3/L	P355275	
	SM 2540 D-97	TSS	3	I	mg/L	P355465	
	SM 4500 F-C-97	Fluoride	0.41		mg F/L	P355710	
2043441	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P355374	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21	I	mg N/L	P355217	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.026		mg N/L	P355146	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P355230	
	SM 5310 B-00	Organic Carbon	5.8		mg C/L	P355327	
2043442	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P355044	

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: MORRIS LAKE

Collection Date/Time: 11/20/2018 10:30

Field ID: G3NW0126

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2043428	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P355041	
	SM 2320 B-97	Total Alkalinity	1.4	I	mg CaCO3/L	P355469	
	SM 2540 D-97	TSS	3	IA	mg/L	P355464	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P355474	
2043429	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P355305	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.46		mg N/L	P355216	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P355329	
	EPA 365.1 Rev. 2.0	Total-P	0.01		mg P/L	P355222	
	SM 5310 B-00	Organic Carbon	8.3		mg C/L	P355326	
2043430	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P355045	

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: STALLWORTH LAKE (CENTER)

Collection Date/Time: 11/20/2018 11:00

Field ID: G3NW0083

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2043431	EPA 180.1 Rev. 2.0	Turbidity	0.80		NTU	P355041	
	SM 2320 B-97	Total Alkalinity	23		mg CaCO3/L	P355469	
	SM 2540 D-97	TSS	2	I	mg/L	P355464	
	SM 4500 F-C-97	Fluoride	0.16		mg F/L	P355474	
2043434	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P355374	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.35	I	mg N/L	P355217	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.013		mg N/L	P355146	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P355230	
	SM 5310 B-00	Organic Carbon	8.8		mg C/L	P355326	
2043437	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P355044	

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: LITTLE REDFISH LAKE

Collection Date/Time: 11/20/2018 11:35

Field ID: G3NW0125

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2043432	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P355041	
	SM 2320 B-97	Total Alkalinity	23		mg CaCO3/L	P355275	
	SM 2540 D-97	TSS	3	U	mg/L	P355465	
	SM 4500 F-C-97	Fluoride	0.16		mg F/L	P355564	
2043435	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P355374	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.50		mg N/L	P355217	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.012		mg N/L	P355146	
	EPA 365.1 Rev. 2.0	Total-P	0.009	I	mg P/L	P355230	
	SM 5310 B-00	Organic Carbon	22		mg C/L	P355327	
2043438	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P355044	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: EASTERN LAKE OFF CENTER AVENUE

Collection Date/Time: 11/20/2018 12:15

Field ID: G3NW0124

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2043433	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P355041	
	SM 2320 B-97	Total Alkalinity	40		mg CaCO3/L	P355275	
	SM 2540 D-97	TSS	3	U	mg/L	P355465	
	SM 4500 F-C-97	Fluoride	0.27		mg F/L	P355277	
2043436	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P355374	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.31	I	mg N/L	P355217	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.016		mg N/L	P355146	
	EPA 365.1 Rev. 2.0	Total-P	0.009	I	mg P/L	P355230	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P355326	
2043439	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P355044	

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: P355041

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355305

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355374

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355216

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355217

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355146

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: P355329

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355222

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355230

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355044

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355045

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

Reference Method: SM 2320 B-97
Batch ID: P355275

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

Reference Method: SM 2320 B-97
Batch ID: P355469

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

Reference Method: SM 2540 D-97
Batch ID: P355464

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P355465

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P355277

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P355474

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P355564

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P355710

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P355326

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

Reference Method: SM 5310 B-00
Batch ID: P355327

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355305

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355374

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355216

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355217

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355146

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: P355329

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: P355222

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355230

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355044

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355045

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

Reference Method: SM 2320 B-97
Batch ID: P355275

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

Reference Method: SM 2320 B-97
Batch ID: P355469

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

Reference Method: SM 4500 F-C-97
Batch ID: P355277

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

Reference Method: SM 4500 F-C-97
Batch ID: P355474

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.9		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P355564

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P355710

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

Reference Method: SM 5310 B-00
Batch ID: P355326

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

Reference Method: SM 5310 B-00
Batch ID: P355327

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355305

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043387	Ammonia-N	100	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355374

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043309	Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355216

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043511	Kjeldahl Nitrogen	102	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355217

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043735	Kjeldahl Nitrogen	97.8	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355146

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043312	NO2NO3-N	102		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355329

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043284	NO2NO3-N	100	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355222

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043544	Total-P	97.8	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355230

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043735	Total-P	95.3	94.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355044

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043219	O-Phosphate-P	97.0	101	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355045

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043430	O-Phosphate-P	97.8	99.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P355277

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043307	Fluoride	99.5	99.5	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P355474

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043543	Fluoride	98.8	99.9	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P355710

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043440	Fluoride	97.5	97.5	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P355326

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043289	Organic Carbon	97.4	94.1	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P355327

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043216	Organic Carbon	94.8	94.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P355041

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043393	Turbidity	3.52	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355305

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043387	Ammonia-N	1.99	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355374

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043309	Ammonia-N	0.799	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355216

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043511	Kjeldahl Nitrogen	2.34	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355217

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043735	Kjeldahl Nitrogen	5.67	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355146

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043312	NO2NO3-N	0.698	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355329

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043284	NO2NO3-N	0.274	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355222

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043544	Total-P	5.43	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355230

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043735	Total-P	1.03	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355044

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043219	O-Phosphate-P	3.64	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355045

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043430	O-Phosphate-P	1.32	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P355275

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043307	Total Alkalinity	0.456	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
Batch ID: P355469

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043543	Total Alkalinity	1.09	Sample	P	0 - 1.6

Reference Method: SM 4500 F-C-97
Batch ID: P355277

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043307	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 4500 F-C-97
Batch ID: P355474

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043543	Fluoride	0.979	Spike	P	0 - 3.5

Reference Method: SM 4500 F-C-97
Batch ID: P355564

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2044801	Fluoride	0.469	Spike	P	0 - 3.5

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P355710

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043440	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P355326

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043289	Organic Carbon	2.29	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P355327

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043216	Organic Carbon	0.0467	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A87930

Included Lab Sample IDs: 2043428, 2043431, 2043432, 2043433, 2043440

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A87931

Included Lab Sample IDs: 2043430, 2043437, 2043438, 2043439, 2043442

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	100	P/P	90 - 110
O-Phosphate-P	99.4	99.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A87974

Included Lab Sample IDs: 2043434, 2043435, 2043436, 2043441

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

Reference Method: SM 2320 B-97

Run ID: A88028

Included Lab Sample IDs: 2043432, 2043433, 2043440

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.1	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A88028

Included Lab Sample IDs: 2043433

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	99.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A88036

Included Lab Sample IDs: 2043429, 2043434, 2043435, 2043436, 2043441

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	97.2	P/P	90 - 110
Kjeldahl Nitrogen	103	98.8	P/P	90 - 110
Kjeldahl Nitrogen	98.8	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A88037

Included Lab Sample IDs: 2043429

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A88038

Included Lab Sample IDs: 2043429, 2043434, 2043435, 2043436, 2043441

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

Reference Method: SM 5310 B-00

Run ID: A88042

Included Lab Sample IDs: 2043429, 2043434, 2043435, 2043436, 2043441

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.4	96.2	P/P	90 - 110
Organic Carbon	96.2	95.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A88043

Included Lab Sample IDs: 2043429

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A88053

Included Lab Sample IDs: 2043434, 2043435, 2043436, 2043441

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	103	99.4	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A88097

Included Lab Sample IDs: 2043428, 2043431

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	99.3	P/P	90 - 110
Total Alkalinity	98.5	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A88097

Included Lab Sample IDs: 2043428, 2043431

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	101	100	P/P	90 - 110
Fluoride	99.5	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A88134

Included Lab Sample IDs: 2043432

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

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A88191

Included Lab Sample IDs: 2043440

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	101	99.5	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					3.52	
EPA 350.1 Rev. 2.0	Ammonia-N	101	100	103			1.99
	Ammonia-N	97.9	102	103			0.799
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	102	98.5			2.34
	Kjeldahl Nitrogen	99.4	97.8	104			5.67
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102				0.698
	NO2NO3-N	100	100	101			0.274
EPA 365.1 Rev. 2.0	Total-P	103	97.8	104			5.43
	Total-P	98.4	95.3	94.3			1.03
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	97.0	101			3.64
	O-Phosphate-P	98.4	97.8	99.1			1.32
SM 2320 B-97	Total Alkalinity	100				0.456	
	Total Alkalinity	100				1.09	
SM 4500 F-C-97	Fluoride	96.9	99.5	99.5			0.0
	Fluoride	98.9	98.8	99.9			0.979
	Fluoride	101					0.469
	Fluoride	98.3	97.5	97.5			0.0
SM 5310 B-00	Organic Carbon	94.5	97.4	94.1			2.29
	Organic Carbon	94.6	94.8	94.9			0.0467

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2043428, 2043431, 2043432, 2043433, 2043440
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2043429, 2043434, 2043435, 2043436, 2043441
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2043429, 2043434, 2043435, 2043436, 2043441
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2043429, 2043434, 2043435, 2043436, 2043441
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2043429, 2043434, 2043435, 2043436, 2043441
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2043430, 2043437, 2043438, 2043439, 2043442
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2043428, 2043431, 2043432, 2043433, 2043440
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2043428, 2043431, 2043432, 2043433, 2043440
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2043428, 2043431, 2043432, 2043433, 2043440
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2043429, 2043434, 2043435, 2043436, 2043441

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	11/21/2018			11/21/2018 15:37	Megan Treadwell	2043428, 2043431, 2043432, 2043433, 2043440
EPA 350.1 Rev. 2.0	11/21/2018			11/29/2018 11:01	Ping Hua	2043429
	11/21/2018			11/29/2018 13:42	Ping Hua	2043434
	11/21/2018			11/29/2018 13:43	Ping Hua	2043435
	11/21/2018			11/29/2018 13:45	Ping Hua	2043436
	11/21/2018			11/29/2018 13:46	Ping Hua	2043441
EPA 351.2 Rev. 2.0	11/21/2018	11/28/2018 11:50	Adrian Shelby	11/29/2018 09:54	Joseph Suarez	2043429
	11/21/2018	11/28/2018 11:50	Adrian Shelby	11/29/2018 10:21	Joseph Suarez	2043434
	11/21/2018	11/28/2018 11:50	Adrian Shelby	11/29/2018 10:22	Joseph Suarez	2043435
	11/21/2018	11/28/2018 11:50	Adrian Shelby	11/29/2018 10:24	Joseph Suarez	2043436
	11/21/2018	11/28/2018 11:50	Adrian Shelby	11/29/2018 10:28	Joseph Suarez	2043441
EPA 353.2 Rev. 2.0	11/21/2018			11/27/2018 13:29	Lauren Bottorf	2043434
	11/21/2018			11/27/2018 13:30	Lauren Bottorf	2043435
	11/21/2018			11/27/2018 13:31	Lauren Bottorf	2043436
	11/21/2018			11/27/2018 13:32	Lauren Bottorf	2043441
	11/21/2018			11/29/2018 12:08	Lauren Bottorf	2043429
EPA 365.1 Rev. 2.0	11/21/2018	11/28/2018 12:35	Sima Feizi	11/29/2018 12:25	Beverly Y. Sanders	2043429
	11/21/2018	11/28/2018 12:35	Sima Feizi	11/29/2018 12:59	Beverly Y. Sanders	2043434
	11/21/2018	11/28/2018 12:35	Sima Feizi	11/29/2018 13:00	Beverly Y. Sanders	2043435
	11/21/2018	11/28/2018 12:35	Sima Feizi	11/29/2018 13:01	Beverly Y. Sanders	2043436
	11/21/2018	11/28/2018 12:35	Sima Feizi	11/29/2018 13:02	Beverly Y. Sanders	2043441
EPA 365.1 Rev. 2.0 dissolved	11/21/2018			11/21/2018 15:25	Jhamieka S. Greenwood	2043430
	11/21/2018			11/21/2018 16:05	Jhamieka S. Greenwood	2043437
	11/21/2018			11/21/2018 16:06	Jhamieka S. Greenwood	2043438
	11/21/2018			11/21/2018 16:07	Jhamieka S. Greenwood	2043439, 2043442
SM 2320 B-97	11/21/2018			11/29/2018 01:30	Dale L. Simmons	2043433
	11/21/2018			11/29/2018 01:40	Dale L. Simmons	2043432
	11/21/2018			11/29/2018 01:51	Dale L. Simmons	2043440
	11/21/2018			11/30/2018 09:35	Dale L. Simmons	2043428
	11/21/2018			11/30/2018 12:12	Dale L. Simmons	2043431
SM 2540 D-97	11/21/2018			11/26/2018 16:02	Yijie Li	2043428, 2043431, 2043432, 2043433, 2043440
SM 4500 F-C-97	11/21/2018			11/28/2018 23:28	Dale L. Simmons	2043433
	11/21/2018			11/30/2018 09:35	Dale L. Simmons	2043428
	11/21/2018			11/30/2018 12:12	Dale L. Simmons	2043431
	11/21/2018			12/04/2018 13:53	Dale L. Simmons	2043432
	11/21/2018			12/05/2018 05:34	Dale L. Simmons	2043440
SM 5310 B-00	11/21/2018			11/29/2018 02:22	Megan Treadwell	2043429
	11/21/2018			11/29/2018 02:35	Megan Treadwell	2043434

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-00	11/21/2018			11/29/2018 02:48	Megan Treadwell	2043436
	11/21/2018			11/29/2018 06:00	Megan Treadwell	2043435
	11/21/2018			11/29/2018 06:26	Megan Treadwell	2043441