

Chemical Analysis Report

NW-DIST-2018-10-23-01

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-2018-10-15-27**
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: Colin Wright, Program Administrator

Date Certified: 08-NOV-2018 16:47

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light-colored rectangular background.

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: OPEN BRANCH ABOVE EGLIN 374

Collection Date/Time: 10/22/2018 10:45

Field ID: G3NW0105

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2034705	EPA 180.1 Rev. 2.0	Turbidity	0.95		NTU	P353560	
	EPA 300.0 Rev. 2.1	Chloride	1.6		mg Cl/L	P353878	
		Sulfate	0.54	I	mg SO4/L	P353880	
	SM 2120 B	Color (true)	7.0		PCU	P353524	
	SM 2320 B-97	Total Alkalinity	0.70	I	mg CaCO3/L	P353896	
	SM 2540 C-97	TDS	15	U	mg/L	P354122	
	SM 2540 D-97	TSS	3	I	mg/L	P354018	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P353901	
2034706	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P353947	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P353742	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.025		mg N/L	P353771	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P353579	
	SM 5310 B-00	Organic Carbon	0.78	I	mg C/L	P353943	
2034707	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P353541	

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: 10/22/2018 12:45

Field ID: G3NW0125

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2034708	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P353560	
	SM 2320 B-97	Total Alkalinity	47		mg CaCO3/L	P353815	
	SM 2540 D-97	TSS	3	I	mg/L	P354023	
	SM 4500 F-C-97	Fluoride	0.39		mg F/L	P353818	
2034709	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P353950	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.54		mg N/L	P354046	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P353596	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P353591	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P353944	
2034710	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P353543	

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: P353560

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353878

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353880

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353947

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353950

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353742

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354046

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353596

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: P353771

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: P353579

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353591

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353541

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353543

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

Reference Method: SM 2120 B
Batch ID: P353524

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P353815

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

Reference Method: SM 2320 B-97
Batch ID: P353896

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

Reference Method: SM 2540 C-97
Batch ID: P354122

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P354018

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P354023

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P353818

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P353901

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P353943

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

Reference Method: SM 5310 B-00
Batch ID: P353944

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: P353878

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353880

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353947

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: P353950

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353742

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354046

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	93.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353596

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353771

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353579

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353591

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353541

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353543

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

Reference Method: SM 2120 B
Batch ID: P353524

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.1		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P353815

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 107

Reference Method: SM 2320 B-97
Batch ID: P353896

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P353818

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.8		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P353901

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

Reference Method: SM 5310 B-00
Batch ID: P353943

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.0		P	85 - 115

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P353944

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353878

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2034415	Chloride	97.8		P	90 - 110
2034688	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353880

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2034415	Sulfate	97.2		P	90 - 110
2034688	Sulfate	103		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353947

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2034718	Ammonia-N	99.3	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353950

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2034775	Ammonia-N	104	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353742

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2034691	Kjeldahl Nitrogen	100	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354046

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2034561	Kjeldahl Nitrogen	102	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353596

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2034558	NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353771

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2034623	NO2NO3-N	100	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353579

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2034788	Total-P	100	103	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353591

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2034775	Total-P	97.2	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353541

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2034789	O-Phosphate-P	97.0	97.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353543

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2034860	O-Phosphate-P	98.5	98.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P353818

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2034476	Fluoride	96.7	96.7	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P353901

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2035860	Fluoride	98.3	99.6	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P353943

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2034527	Organic Carbon	99.7		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P353944

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2033515	Organic Carbon	93.6	94.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P353560

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2034761	Turbidity	0.264	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353878

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2034415	Chloride	2.21	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353880

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2034415	Sulfate	2.76	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353947

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2034718	Ammonia-N	1.83	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353950

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2034775	Ammonia-N	1.36	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353742

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2034691	Kjeldahl Nitrogen	3.14	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354046

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2034561	Kjeldahl Nitrogen	1.92	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353596

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2034558	NO2NO3-N	1.24	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353771

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2034623	NO2NO3-N	0.870	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353579

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2034788	Total-P	2.85	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353591

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2034775	Total-P	3.51	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353541

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2034789	O-Phosphate-P	0.412	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353543

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2034860	O-Phosphate-P	0.126	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P353524

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2034717	Color (true)	1.90	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P353815

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2034476	Total Alkalinity	0.598	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
Batch ID: P353896

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035860	Total Alkalinity	0.234	Sample	P	0 - 1.6

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
 Batch ID: P354122

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2034717	TDS	1.65	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P353818

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2034476	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 4500 F-C-97
 Batch ID: P353901

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2035860	Fluoride	0.979	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
 Batch ID: P353943

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2034527	Organic Carbon	0.917	Spike	P	0 - 20

Reference Method: SM 5310 B-00
 Batch ID: P353944

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2033515	Organic Carbon	1.00	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B
Run ID: A87230
Included Lab Sample IDs: 2034705

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A87237
Included Lab Sample IDs: 2034707, 2034710

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A87245
Included Lab Sample IDs: 2034705, 2034708

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A87255
Included Lab Sample IDs: 2034709

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: A87313
Included Lab Sample IDs: 2034706, 2034709

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	99.8	P/P	90 - 110
Total-P	99.8	99.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A87323
Included Lab Sample IDs: 2034706

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

Reference Method: SM 2320 B-97
Run ID: A87344
Included Lab Sample IDs: 2034708

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

Reference Method: SM 4500 F-C-97
Run ID: A87344
Included Lab Sample IDs: 2034708

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

Reference Method: SM 4500 F-C-97

Run ID: A87344

Included Lab Sample IDs: 2034708

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	97.6	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A87375

Included Lab Sample IDs: 2034705

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

Reference Method: SM 2320 B-97

Run ID: A87382

Included Lab Sample IDs: 2034705

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.1	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A87382

Included Lab Sample IDs: 2034705

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A87386

Included Lab Sample IDs: 2034706

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.7	97.6	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A87403

Included Lab Sample IDs: 2034706, 2034709

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.2	95.4	P/P	90 - 110
Organic Carbon	96.4	95.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A87407

Included Lab Sample IDs: 2034706, 2034709

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A87446

Included Lab Sample IDs: 2034709

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.0	97.2	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 180.1 Rev. 2.0	Turbidity				0.264	
EPA 300.0 Rev. 2.1	Chloride	103	97.8	101	2.21	
	Sulfate	103	97.2	103	2.76	
EPA 350.1 Rev. 2.0	Ammonia-N	102	99.3	102		1.83
	Ammonia-N	102	104	106		1.36
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	100	105		3.14
	Kjeldahl Nitrogen	93.5	102	104		1.92
EPA 353.2 Rev. 2.0	NO2NO3-N	100	100	102		1.24
	NO2NO3-N	99.0	100	99.5		0.870
EPA 365.1 Rev. 2.0	Total-P	101	100	103		2.85
	Total-P	102	97.2	101		3.51
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.5	97.0	97.4		0.412
	O-Phosphate-P	98.9	98.5	98.3		0.126
SM 2120 B	Color (true)	99.1			1.90	
SM 2320 B-97	Total Alkalinity	103			0.598	
	Total Alkalinity	103			0.234	
SM 2540 C-97	TDS				1.65	
SM 4500 F-C-97	Fluoride	96.8	96.7	96.7		0.0
	Fluoride	98.1	98.3	99.6		0.979
SM 5310 B-00	Organic Carbon	93.0	99.7			0.917
	Organic Carbon	93.2	93.6	94.6		1.00

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2034705, 2034708
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2034705
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2034705
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2034706, 2034709
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2034706, 2034709
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2034706, 2034709
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2034706, 2034709
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2034707, 2034710
SM 2120 B / E31780	True Color measured at 450 nm	2034705
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2034705, 2034708
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2034705
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2034705, 2034708
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2034705, 2034708
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2034706, 2034709

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	10/23/2018			10/23/2018 15:47	Megan Treadwell	2034705, 2034708
EPA 300.0 Rev. 2.1	10/23/2018			10/27/2018 09:57	Lipi Saha	2034705
EPA 350.1 Rev. 2.0	10/23/2018			10/30/2018 11:51	Ping Hua	2034706
	10/23/2018			10/30/2018 15:02	Ping Hua	2034709
EPA 351.2 Rev. 2.0	10/23/2018	10/26/2018 12:00	Adrian Shelby	10/30/2018 10:22	Virginia P. Brown	2034706
	10/23/2018	10/31/2018 12:15	Adrian Shelby	11/01/2018 10:11	Virginia P. Brown	2034709
EPA 353.2 Rev. 2.0	10/23/2018			10/24/2018 13:26	Lauren Bottorf	2034709
	10/23/2018			10/26/2018 13:06	Lauren Bottorf	2034706
EPA 365.1 Rev. 2.0	10/23/2018	10/24/2018 13:05	Sima Feizi	10/26/2018 12:00	Beverly Y. Sanders	2034706
	10/23/2018	10/24/2018 13:05	Sima Feizi	10/26/2018 12:17	Beverly Y. Sanders	2034709
EPA 365.1 Rev. 2.0 dissolved	10/23/2018			10/23/2018 16:32	Julia Storbeck	2034707
	10/23/2018			10/23/2018 16:45	Julia Storbeck	2034710
SM 2120 B	10/23/2018			10/23/2018 14:59	Chelsea Hernandez	2034705
SM 2320 B-97	10/23/2018			10/26/2018 12:05	Dale L. Simmons	2034708
	10/23/2018			10/28/2018 20:45	Dale L. Simmons	2034705
SM 2540 C-97	10/23/2018			10/25/2018 15:41	Yijie Li	2034705
SM 2540 D-97	10/23/2018			10/25/2018 15:41	Yijie Li	2034705, 2034708
SM 4500 F-C-97	10/23/2018			10/26/2018 09:58	Dale L. Simmons	2034708
	10/23/2018			10/28/2018 20:45	Dale L. Simmons	2034705
SM 5310 B-00	10/23/2018			10/30/2018 12:31	Megan Treadwell	2034706
	10/23/2018			10/30/2018 19:21	Megan Treadwell	2034709