Chemical Analysis Report

SW-DIST-2018-01-31-01

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

Event Description: **Woodscreek and Double Branch**
Request ID: **RQ-2018-01-29-14**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
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13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 21-FEB-2018 14:19

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: Double Branch @ State Street **Collection Date/Time: 01/30/2018 11:25**

Field ID: G1SW0088 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1963053	EPA 180.1 Rev. 2.0	Turbidity	3.8		NTU	P339090	
	SM 2320 B-97	Total Alkalinity	93		mg CaCO3/L	P339474	
	SM 2540 D-97	TSS	3	I	mg/L	P339624	
	SM 4500 F-C-97	Fluoride	0.19		mg F/L	P339731	
1963055	EPA 350.1 Rev. 2.0	Ammonia-N	0.045		mg N/L	P339290	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.99		mg N/L	P339103	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.045		mg N/L	P339146	
	EPA 365.1 Rev. 2.0	Total-P	0.093		mg P/L	P339152	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P339266	
1963057	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.048		mg P/L	P339115	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Woodscreek @ Slowspeed Sign **Collection Date/Time: 01/30/2018 12:40**

Field ID: G1SW0087 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1963054	EPA 180.1 Rev. 2.0	Turbidity	4.4		NTU	P339090	
	SM 2320 B-97	Total Alkalinity	103		mg CaCO3/L	P339728	
	SM 2540 D-97	TSS	10	IA	mg/L	P339626	
	SM 4500 F-C-97	Fluoride	0.81		mg F/L	P339653	
1963056	EPA 350.1 Rev. 2.0	Ammonia-N	0.080		mg N/L	P339681	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.53		mg N/L	P339106	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.043		mg N/L	P339527	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P339151	
	SM 5310 B-00	Organic Carbon	4.8		mg C/L	P339269	
1963058	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.064		mg P/L	P339122	

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.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P339090

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P339290

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P339681

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339103

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339106

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P339146

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P339527

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P339151

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P339152

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339115

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339122

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

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P339474

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

Reference Method: SM 2320 B-97
Batch ID: P339728

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

Reference Method: SM 2540 D-97
Batch ID: P339624

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P339626

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P339653

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P339731

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P339266

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

Reference Method: SM 5310 B-00
Batch ID: P339269

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: P339290

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P339290

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P339681

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339103

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339106

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P339146

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P339527

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P339151

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: P339152

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339115

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.8		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339122

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

Reference Method: SM 2320 B-97
Batch ID: P339474

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	97.0		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P339728

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	97.0		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P339653

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.3		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P339731

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.3		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P339266

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.6		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P339269

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.4		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P339290

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963030	Ammonia-N	95.6	95.3	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P339681

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P339681

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963617	Ammonia-N	107	108	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339103

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963083	Kjeldahl Nitrogen	91.3	91.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339106

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963219	Kjeldahl Nitrogen	90.2	91.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P339146

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1962948	NO2NO3-N	104	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P339527

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963056	NO2NO3-N	105	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P339151

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963056	Total-P	98.1	97.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339115

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963085	O-Phosphate-P	95.8	97.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339122

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963058	O-Phosphate-P	94.6	97.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P339731

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963441	Fluoride	93.7	94.3	P/P	91 - 105

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P339266

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963118	Organic Carbon	102	102	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P339269

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963056	Organic Carbon	99.0	98.1	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P339090

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963047	Turbidity	0.479	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P339290

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963030	Ammonia-N	0.298	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P339681

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963617	Ammonia-N	0.799	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339103

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963083	Kjeldahl Nitrogen	0.152	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339106

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963219	Kjeldahl Nitrogen	0.563	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P339146

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P339146

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1962948	NO2NO3-N	1.45	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P339527

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963056	NO2NO3-N	0.396	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P339151

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963056	Total-P	0.553	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P339152

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963048	Total-P	2.60	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339115

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963085	O-Phosphate-P	1.27	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339122

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963058	O-Phosphate-P	1.94	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P339474

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1962768	Total Alkalinity	3.85	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P339728

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963860	Total Alkalinity	0.519	Sample	P	0 - 4.8

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-97
Batch ID: P339653

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963619	Fluoride	0.986	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P339731

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963441	Fluoride	0.477	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P339266

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963118	Organic Carbon	0.235	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P339269

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963056	Organic Carbon	0.769	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: A81765
Included Lab Sample IDs: 1963053, 1963054

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: A81776
Included Lab Sample IDs: 1963057, 1963058

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.4	P/P	90 - 110
O-Phosphate-P	99.4	99.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A81787
Included Lab Sample IDs: 1963055

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A81808
Included Lab Sample IDs: 1963055, 1963056

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

Reference Method: SM 5310 B-00
Run ID: A81830
Included Lab Sample IDs: 1963055, 1963056

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.6	97.2	P/P	90 - 110
Organic Carbon	97.6	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A81832
Included Lab Sample IDs: 1963055

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A81838
Included Lab Sample IDs: 1963055

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A81840
Included Lab Sample IDs: 1963056

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.1	96.2	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A81901
Included Lab Sample IDs: 1963053

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.6	97.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A81917
Included Lab Sample IDs: 1963056

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

Reference Method: SM 4500 F-C-97
Run ID: A81946
Included Lab Sample IDs: 1963054

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-97
Run ID: A81946
Included Lab Sample IDs: 1963054

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	103	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A81981
Included Lab Sample IDs: 1963054

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.1	95.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A81981
Included Lab Sample IDs: 1963053

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A81995
Included Lab Sample IDs: 1963056

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	104	103	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	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					0.479	
EPA 350.1 Rev. 2.0	Ammonia-N	96.8	95.6	95.3			0.298
	Ammonia-N	97.3	107	108			0.799
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	91.3	91.5			0.152
	Kjeldahl Nitrogen	98.0	90.2	91.0			0.563
EPA 353.2 Rev. 2.0	NO2NO3-N	104	104	103			1.45
	NO2NO3-N	103	105	105			0.396
EPA 365.1 Rev. 2.0	Total-P	103	98.1	97.5			0.553
	Total-P	99.9					2.60
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.8	95.8	97.2			1.27
	O-Phosphate-P	100	94.6	97.7			1.94
SM 2320 B-97	Total Alkalinity	97.0				3.85	
	Total Alkalinity	97.0				0.519	
SM 4500 F-C-97	Fluoride	96.3					0.986
	Fluoride	97.3	93.7	94.3			0.477
SM 5310 B-00	Organic Carbon	96.6	102	102			0.235
	Organic Carbon	98.4	99.0	98.1			0.769

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1963053, 1963054
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1963055, 1963056
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1963055, 1963056
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1963055, 1963056
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1963055, 1963056
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1963057, 1963058
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1963053, 1963054
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1963053, 1963054
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1963053, 1963054
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1963055, 1963056

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	01/31/2018			01/31/2018 15:52	DeAsia Armster	1963053, 1963054
EPA 350.1 Rev. 2.0	01/31/2018			02/02/2018	Ping Hua	1963055
	01/31/2018			02/12/2018	Julia Storbeck	1963056
EPA 351.2 Rev. 2.0	01/31/2018	02/01/2018	Adrian Shelby	02/02/2018	Joseph Suarez	1963055
	01/31/2018	02/01/2018	Adrian Shelby	02/05/2018	Joseph Suarez	1963056
EPA 353.2 Rev. 2.0	01/31/2018			02/01/2018	Beverly Y. Sanders	1963055
	01/31/2018			02/08/2018	Beverly Y. Sanders	1963056
EPA 365.1 Rev. 2.0	01/31/2018	02/01/2018	Sima Feizi	02/02/2018	Beverly Y. Sanders	1963055, 1963056
EPA 365.1 Rev. 2.0 dissolved	01/31/2018			01/31/2018 16:52	Megan Treadwell	1963058
	01/31/2018			01/31/2018 16:59	Megan Treadwell	1963057
SM 2320 B-97	01/31/2018			02/07/2018	Lauren Bottorf	1963053
	01/31/2018			02/09/2018	Lauren Bottorf	1963054
SM 2540 D-97	01/31/2018			02/03/2018	Yijie Li	1963053, 1963054
SM 4500 F-C-97	01/31/2018			02/09/2018	Lauren Bottorf	1963054
	01/31/2018			02/10/2018	Lauren Bottorf	1963053
SM 5310 B-00	01/31/2018			02/02/2018	Megan Treadwell	1963055
	01/31/2018			02/03/2018	Megan Treadwell	1963056