Chemical Analysis Report

NW-DIST-2018-08-09-01

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

Event Description: **Choctawhatchee North run**
Request ID: **RQ-2018-08-06-35**
Customer: **NW-DIST**
Project ID: **SMP**

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Certified by: Colin Wright, Program Administrator

Date Certified: 22-AUG-2018 10:43

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 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: Choctawhatchee River upstream of Holmes Creek **Collection Date/Time: 08/08/2018 11:15**

Field ID: G3NW0129 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2015667	EPA 180.1 Rev. 2.0	Turbidity	12	A	NTU	P349866	
	EPA 300.0 Rev. 2.1	Chloride	3.7		mg Cl/L	P350034	
		Sulfate	1.9		mg SO4/L	P350035	
	SM 2120 B	Color (true)	99	A	PCU	P349871	
	SM 2320 B-97	Total Alkalinity	24		mg CaCO3/L	P350148	
	SM 2540 C-97	TDS	54		mg/L	P350350	
	SM 2540 D-97	TSS	7	I	mg/L	P350303	
	SM 4500 F-C-97	Fluoride	0.041	I	mg F/L	P350151	
2015671	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P350236	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.41		mg N/L	P350155	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.20		mg N/L	P350251	
	EPA 365.1 Rev. 2.0	Total-P	0.037		mg P/L	P350140	
	SM 5310 B-00	Organic Carbon	7.7		mg C/L	P350246	
2015675	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.014		mg P/L	P349931	

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: Seven Runs end of Dead River Road **Collection Date/Time: 08/08/2018 12:05**

Field ID: G3NW0115 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2015668	EPA 180.1 Rev. 2.0	Turbidity	5.6		NTU	P349866	
	EPA 300.0 Rev. 2.1	Chloride	2.7		mg Cl/L	P350034	
		Sulfate	1.6		mg SO4/L	P350035	
	SM 2120 B	Color (true)	110		PCU	P349871	
	SM 2320 B-97	Total Alkalinity	5.6		mg CaCO3/L	P350148	
	SM 2540 C-97	TDS	34		mg/L	P350350	
	SM 2540 D-97	TSS	2	IA	mg/L	P350303	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P350151	
2015672	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P350236	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.48		mg N/L	P350155	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.073		mg N/L	P350251	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P350140	
	SM 5310 B-00	Organic Carbon	8.9		mg C/L	P350246	
2015676	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P349931	

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: Choctawhatchee River South of Carlisle Lake **Collection Date/Time: 08/08/2018 12:55**

Field ID: G3NW0130 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2015669	EPA 180.1 Rev. 2.0	Turbidity	16		NTU	P349866	
	EPA 300.0 Rev. 2.1	Chloride	4.0		mg Cl/L	P350034	
		Sulfate	2.0		mg SO4/L	P350035	
	SM 2120 B	Color (true)	40	A	PCU	P349875	
	SM 2320 B-97	Total Alkalinity	31		mg CaCO3/L	P350148	
	SM 2540 C-97	TDS	58		mg/L	P350350	
	SM 2540 D-97	TSS	14		mg/L	P350303	
	SM 4500 F-C-97	Fluoride	0.045	I	mg F/L	P350151	
2015673	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P350236	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.38		mg N/L	P350155	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.31		mg N/L	P350251	
	EPA 365.1 Rev. 2.0	Total-P	0.047		mg P/L	P350140	
	SM 5310 B-00	Organic Carbon	6.6		mg C/L	P350246	
2015677	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.014		mg P/L	P349931	

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: Choctawhatchee River upstream Hwy 90 Boat Ramp **Collection Date/Time: 08/08/2018 13:40**

Field ID: G3NW0052 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2015670	EPA 180.1 Rev. 2.0	Turbidity	17		NTU	P349866	
	EPA 300.0 Rev. 2.1	Chloride	4.4		mg Cl/L	P350034	
		Sulfate	2.2		mg SO4/L	P350035	
	SM 2120 B	Color (true)	24		PCU	P349875	
	SM 2320 B-97	Total Alkalinity	33		mg CaCO3/L	P350148	
	SM 2540 C-97	TDS	63		mg/L	P350350	
	SM 2540 D-97	TSS	18		mg/L	P350303	
	SM 4500 F-C-97	Fluoride	0.048	I	mg F/L	P350151	
2015674	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P350236	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.36		mg N/L	P350155	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.41		mg N/L	P350252	
	EPA 365.1 Rev. 2.0	Total-P	0.053		mg P/L	P350140	
	SM 5310 B-00	Organic Carbon	5.1		mg C/L	P350246	
2015678	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.018		mg P/L	P349931	

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: P349866

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350034

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350035

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350236

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350155

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350251

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350252

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350140

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349931

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

Quality Assurance Report
Method Blank Results

Reference Method: SM 2120 B
Batch ID: P349871

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P349875

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P350148

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

Reference Method: SM 2540 C-97
Batch ID: P350350

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P350303

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P350151

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P350246

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: P350034

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350035

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350236

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350155

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350251

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: P350252

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: P350140

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349931

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

Reference Method: SM 2120 B
Batch ID: P349871

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	96.6		P	85 - 115

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2120 B
Batch ID: P349875

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	97.2		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P350148

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

Reference Method: SM 4500 F-C-97
Batch ID: P350151

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.5		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P350246

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350034

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2015697	Chloride	99.4		P	90 - 110
2015702	Chloride	97.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350035

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2015697	Sulfate	99.8		P	90 - 110
2015702	Sulfate	97.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350236

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2015546	Ammonia-N	97.1	98.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350155

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2015549	Kjeldahl Nitrogen	99.3	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350251

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2015537	NO2NO3-N	93.7	95.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350252

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2015692	NO2NO3-N	98.5	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350140

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2015547	Total-P	100	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349931

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2015675	O-Phosphate-P	94.8	96.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P350151

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2016260	Fluoride	99.4	98.0	P/P	91 - 105

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P350246

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2015409	Organic Carbon	104		P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P349866

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2015667	Turbidity	3.25	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350034

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2015702	Chloride	0.557	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350035

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2015702	Sulfate	0.365	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350236

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2015546	Ammonia-N	1.03	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350155

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2015549	Kjeldahl Nitrogen	1.76	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350251

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2015537	NO2NO3-N	1.59	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350252

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2015692	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350140

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2015547	Total-P	0.681	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349931

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2015675	O-Phosphate-P	1.37	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P349871

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2015667	Color (true)	0.883	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P349875

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2015669	Color (true)	0.841	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P350148

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2016260	Total Alkalinity	0.622	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P350350

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2016082	TDS	3.05	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P350151

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2016260	Fluoride	0.953	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P350246

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2015409	Organic Carbon	0.0640	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: A85783
Included Lab Sample IDs: 2015667, 2015668, 2015669, 2015670

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

Reference Method: SM 2120 B
Run ID: A85785
Included Lab Sample IDs: 2015667, 2015668, 2015669, 2015670

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.2	98.7	P/P	90 - 115
Color (true)	98.7	98.2	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A85809
Included Lab Sample IDs: 2015675, 2015676, 2015677, 2015678

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.1	98.5	P/P	90 - 110
O-Phosphate-P	98.9	98.1	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A85845
Included Lab Sample IDs: 2015667, 2015668, 2015669, 2015670

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

Reference Method: SM 2320 B-97
Run ID: A85893
Included Lab Sample IDs: 2015667, 2015668, 2015669, 2015670

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: A85893
Included Lab Sample IDs: 2015667, 2015668, 2015669, 2015670

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A85911
Included Lab Sample IDs: 2015674

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	98.9	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A85923
Included Lab Sample IDs: 2015671, 2015672, 2015673, 2015674

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A85924
Included Lab Sample IDs: 2015671, 2015672, 2015673

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A85932
Included Lab Sample IDs: 2015671, 2015672, 2015673, 2015674

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A85934
Included Lab Sample IDs: 2015671, 2015672, 2015673, 2015674

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

Reference Method: SM 5310 B-00
Run ID: A85935
Included Lab Sample IDs: 2015671, 2015672, 2015673, 2015674

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.0	97.1	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					3.25	
EPA 300.0 Rev. 2.1	Chloride	99.8	97.9	99.4		0.557	
	Sulfate	100	97.1	99.8		0.365	
EPA 350.1 Rev. 2.0	Ammonia-N	96.4	97.1	98.2			1.03
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	99.3	102			1.76
EPA 353.2 Rev. 2.0	NO2NO3-N	102	93.7	95.2			1.59
	NO2NO3-N	100	98.5	98.5			0.0
EPA 365.1 Rev. 2.0	Total-P	98.8	100	101			0.681
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.1	94.8	96.3			1.37
SM 2120 B	Color (true)	96.6				0.883	
	Color (true)	97.2				0.841	
SM 2320 B-97	Total Alkalinity	103				0.622	
SM 2540 C-97	TDS					3.05	
SM 4500 F-C-97	Fluoride	98.5	99.4	98.0			0.953
SM 5310 B-00	Organic Carbon	94.8	104				0.0640

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2015667, 2015668, 2015669, 2015670
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2015667, 2015668, 2015669, 2015670
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2015667, 2015668, 2015669, 2015670
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2015671, 2015672, 2015673, 2015674
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2015671, 2015672, 2015673, 2015674
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2015671, 2015672, 2015673, 2015674
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2015671, 2015672, 2015673, 2015674
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2015675, 2015676, 2015677, 2015678
SM 2120 B / E31780	True Color measured at 450 nm	2015667, 2015668, 2015669, 2015670
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2015667, 2015668, 2015669, 2015670
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2015667, 2015668, 2015669, 2015670
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2015667, 2015668, 2015669, 2015670
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2015667, 2015668, 2015669, 2015670
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2015671, 2015672, 2015673, 2015674

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	08/09/2018			08/09/2018 16:23	Sima Feizi	2015667, 2015668, 2015669, 2015670
EPA 300.0 Rev. 2.1	08/09/2018			08/13/2018 19:40	Lipi Saha	2015667
	08/09/2018			08/13/2018 20:16	Lipi Saha	2015668
	08/09/2018			08/13/2018 20:28	Lipi Saha	2015669
	08/09/2018			08/13/2018 20:40	Lipi Saha	2015670
EPA 350.1 Rev. 2.0	08/09/2018			08/16/2018 10:09	Ping Hua	2015671
	08/09/2018			08/16/2018 10:10	Ping Hua	2015672
	08/09/2018			08/16/2018 10:12	Ping Hua	2015673
	08/09/2018			08/16/2018 10:13	Ping Hua	2015674
EPA 351.2 Rev. 2.0	08/09/2018	08/15/2018 10:30	Adrian Shelby	08/16/2018 10:38	Joseph Suarez	2015671
	08/09/2018	08/15/2018 10:30	Adrian Shelby	08/16/2018 10:40	Joseph Suarez	2015672
	08/09/2018	08/15/2018 10:30	Adrian Shelby	08/16/2018 10:41	Joseph Suarez	2015673
	08/09/2018	08/15/2018 10:30	Adrian Shelby	08/16/2018 10:43	Joseph Suarez	2015674
EPA 353.2 Rev. 2.0	08/09/2018			08/16/2018 12:55	Lauren Bottorf	2015671
	08/09/2018			08/16/2018 12:56	Lauren Bottorf	2015672
	08/09/2018			08/16/2018 12:57	Lauren Bottorf	2015673
	08/09/2018			08/16/2018 13:04	Lauren Bottorf	2015674
EPA 365.1 Rev. 2.0	08/09/2018	08/15/2018 13:20	Sima Feizi	08/16/2018 09:10	Beverly Y. Sanders	2015674
	08/09/2018	08/15/2018 13:20	Sima Feizi	08/16/2018 11:53	Beverly Y. Sanders	2015671, 2015672
	08/09/2018	08/15/2018 13:20	Sima Feizi	08/16/2018 11:54	Beverly Y. Sanders	2015673
EPA 365.1 Rev. 2.0 dissolved	08/09/2018			08/09/2018 14:09	Megan Treadwell	2015675
	08/09/2018			08/09/2018 14:20	Megan Treadwell	2015676
	08/09/2018			08/09/2018 14:21	Megan Treadwell	2015677
	08/09/2018			08/09/2018 14:22	Megan Treadwell	2015678
SM 2120 B	08/09/2018			08/09/2018 15:32	Tanya Welborn	2015667
	08/09/2018			08/09/2018 15:33	Tanya Welborn	2015668
	08/09/2018			08/09/2018 16:00	Tanya Welborn	2015669
	08/09/2018			08/09/2018 16:01	Tanya Welborn	2015670
SM 2320 B-97	08/09/2018			08/15/2018 05:26	Dale L. Simmons	2015667
	08/09/2018			08/15/2018 05:39	Dale L. Simmons	2015668
	08/09/2018			08/15/2018 05:49	Dale L. Simmons	2015669
	08/09/2018			08/15/2018 06:00	Dale L. Simmons	2015670
SM 2540 C-97	08/09/2018			08/13/2018 17:05	William L. Brown IV	2015667, 2015668, 2015669, 2015670
SM 2540 D-97	08/09/2018			08/13/2018 17:05	William L. Brown IV	2015667, 2015668, 2015669, 2015670
SM 4500 F-C-97	08/09/2018			08/15/2018 05:26	Dale L. Simmons	2015667
	08/09/2018			08/15/2018 05:39	Dale L. Simmons	2015668
	08/09/2018			08/15/2018 05:49	Dale L. Simmons	2015669
	08/09/2018			08/15/2018 06:00	Dale L. Simmons	2015670
SM 5310 B-00	08/09/2018			08/15/2018 19:13	Megan Treadwell	2015671
	08/09/2018			08/15/2018 19:27	Megan Treadwell	2015672

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-00	08/09/2018			08/15/2018 19:40	Megan Treadwell	2015673
	08/09/2018			08/15/2018 19:54	Megan Treadwell	2015674