Chemical Analysis Report

TLH-ROC-2018-11-29-01

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

Event Description: **G2 Run 8**
Request ID: **RQ-2018-11-26-69**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
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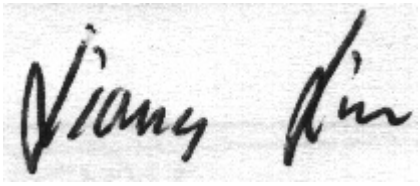
Certified by: Liang Lin, Environmental Administrator

Date Certified: 18-DEC-2018 15:21



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: Brothers River **Collection Date/Time: 11/29/2018 10:25**

Field ID: G2TLHR0013 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2045067	EPA 180.1 Rev. 2.0	Turbidity	6.5	A	NTU	P355355	
	EPA 300.0 Rev. 2.1	Chloride	6.1	A	mg Cl/L	P355698	
		Sulfate	5.9	A	mg SO4/L	P355700	
	SM 2120 B	Color (true)	57		PCU	P355430	
	SM 2320 B-97	Total Alkalinity	38		mg CaCO3/L	P355561	
	SM 2540 C-97	TDS	77		mg/L	P355922	
	SM 2540 D-97	TSS	2	I	mg/L	P355655	
	SM 4500 F-C-97	Fluoride	0.069	I	mg F/L	P355564	
2045071	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P355543	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.53		mg N/L	P355493	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.41		mg N/L	P355546	
	EPA 365.1 Rev. 2.0	Total-P	0.030		mg P/L	P355496	
	SM 5310 B-00	Organic Carbon	5.6		mg C/L	P355515	
2045075	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P355342	

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: Soul Creek **Collection Date/Time: 11/29/2018 10:50**

Field ID: G2TLHR0014 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2045068	EPA 180.1 Rev. 2.0	Turbidity	4.4	A	NTU	P355356	
	EPA 300.0 Rev. 2.1	Chloride	13		mg Cl/L	P355698	
		Sulfate	6.4		mg SO4/L	P355700	
	SM 2120 B	Color (true)	53		PCU	P355430	
	SM 2320 B-97	Total Alkalinity	39		mg CaCO3/L	P355561	
	SM 2540 C-97	TDS	85		mg/L	P355922	
	SM 2540 D-97	TSS	2	I	mg/L	P355655	
	SM 4500 F-C-97	Fluoride	0.072	I	mg F/L	P355564	
2045072	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P355543	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40		mg N/L	P355493	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.18		mg N/L	P355546	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P355496	
	SM 5310 B-00	Organic Carbon	5.6		mg C/L	P355515	
2045076	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P355342	

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: Double Bayou 800m Upstream from Lake Wimico **Collection Date/Time: 11/29/2018 11:15**

Field ID: G2TLHR0003 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2045069	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P355356	
	EPA 300.0 Rev. 2.1	Chloride	53		mg Cl/L	P355698	
		Sulfate	8.0		mg SO4/L	P355700	
	SM 2120 B	Color (true)	68		PCU	P355430	
	SM 2320 B-97	Total Alkalinity	31		mg CaCO3/L	P355561	
	SM 2540 C-97	TDS	136		mg/L	P355922	
	SM 2540 D-97	TSS	4	I	mg/L	P355655	
	SM 4500 F-C-97	Fluoride	0.066	I	mg F/L	P355564	
2045073	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P355543	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.44		mg N/L	P355493	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.020		mg N/L	P355546	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P355496	
	SM 5310 B-00	Organic Carbon	8.4		mg C/L	P355516	
2045077	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P355342	

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: Horseshoe Creek 100m Upstream from intercoastal/Lake Wimico

Collection Date/Time: 11/29/2018 11:40

Field ID: G2TLHR0033

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2045070	EPA 180.1 Rev. 2.0	Turbidity	4.7		NTU	P355356	
	EPA 300.0 Rev. 2.1	Chloride	42		mg Cl/L	P355698	
		Sulfate	7.7		mg SO4/L	P355700	
	SM 2120 B	Color (true)	100		PCU	P355430	
	SM 2320 B-97	Total Alkalinity	29		mg CaCO3/L	P355561	
	SM 2540 C-97	TDS	126	A	mg/L	P355922	
	SM 2540 D-97	TSS	3	IA	mg/L	P355655	
	SM 4500 F-C-97	Fluoride	0.070	I	mg F/L	P355564	
2045074	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P355544	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.52		mg N/L	P355493	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.055		mg N/L	P355546	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P355496	
	SM 5310 B-00	Organic Carbon	9.9		mg C/L	P355516	
2045078	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P355342	

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: P355355

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P355356

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355698

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355700

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355543

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355544

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355493

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355546

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355496

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: P355342

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

Reference Method: SM 2120 B
Batch ID: P355430

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P355561

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

Reference Method: SM 2540 C-97
Batch ID: P355922

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P355655

Component	Result	Code	Units
TSS	2	U	mg/L

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

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P355515

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

Reference Method: SM 5310 B-00
Batch ID: P355516

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: P355698

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355700

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355543

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355544

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355493

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355546

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355496

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: P355342

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

Reference Method: SM 2120 B
Batch ID: P355430

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	104		P	85 - 115

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P355561

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

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 5310 B-00
Batch ID: P355515

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.2		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P355516

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: P355698

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045067	Chloride	98.5		P	90 - 110
2045119	Chloride	95.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355700

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045067	Sulfate	97.1		P	90 - 110
2045119	Sulfate	96.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355543

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045072	Ammonia-N	97.7	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355544

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045105	Ammonia-N	96.2	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355493

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045071	Kjeldahl Nitrogen	92.7	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355546

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2044802	NO2NO3-N	100	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355496

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045072	Total-P	94.8	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355342

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045075	O-Phosphate-P	94.3	97.0	P/P	90 - 110

Reference Method: SM 5310 B-00
Batch ID: P355515

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2044577	Organic Carbon	99.1	94.2	P/P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P355516

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045073	Organic Carbon	98.7	96.6	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P355355

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045067	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P355356

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045068	Turbidity	3.22	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355698

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045067	Chloride	0.483	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355700

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045067	Sulfate	1.54	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355543

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045072	Ammonia-N	2.42	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355544

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045105	Ammonia-N	2.74	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355493

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045071	Kjeldahl Nitrogen	3.97	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355546

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2044802	NO2NO3-N	0.501	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355496

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045072	Total-P	3.05	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355342

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045075	O-Phosphate-P	2.62	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P355430

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045119	Color (true)	0.00695	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P355561

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2044801	Total Alkalinity	0.733	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P355922

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045070	TDS	6.35	Sample	P	0 - 10

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

Reference Method: SM 5310 B-00
Batch ID: P355515

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2044577	Organic Carbon	2.63	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P355516

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045073	Organic Carbon	1.47	Spike	P	0 - 20

Quality Assurance Report
Precision

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A88047
Included Lab Sample IDs: 2045075, 2045076, 2045077, 2045078

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.7	99.6	P/P	90 - 110
O-Phosphate-P	99.9	100	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A88051
Included Lab Sample IDs: 2045067, 2045068, 2045069, 2045070

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

Reference Method: SM 2120 B
Run ID: A88072
Included Lab Sample IDs: 2045067, 2045068, 2045069, 2045070

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	103	P/P	90 - 115

Reference Method: SM 5310 B-00
Run ID: A88116
Included Lab Sample IDs: 2045071, 2045072, 2045073, 2045074

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.8	96.2	P/P	90 - 110
Organic Carbon	97.0	95.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A88126
Included Lab Sample IDs: 2045071, 2045072, 2045073, 2045074

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A88128
Included Lab Sample IDs: 2045071, 2045072, 2045073, 2045074

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

Reference Method: SM 2320 B-97
Run ID: A88134
Included Lab Sample IDs: 2045067, 2045068, 2045069, 2045070

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.7	101	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-97
Run ID: A88134
Included Lab Sample IDs: 2045067, 2045068, 2045069, 2045070

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A88137
Included Lab Sample IDs: 2045071, 2045072, 2045073, 2045074

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.4	99.2	P/P	90 - 110
Kjeldahl Nitrogen	99.2	98.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A88160
Included Lab Sample IDs: 2045071, 2045072, 2045073, 2045074

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A88194
Included Lab Sample IDs: 2045067, 2045068, 2045069, 2045070

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	99.6	P/P	90 - 110
Chloride	99.6	99.8	P/P	90 - 110
Sulfate	100	101	P/P	90 - 110
Sulfate	101	100	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					0.0	
	Turbidity					3.22	
EPA 300.0 Rev. 2.1	Chloride	97.7	98.5	95.9		0.483	
	Sulfate	99.2	97.1	96.4		1.54	
EPA 350.1 Rev. 2.0	Ammonia-N	99.1	97.7	100			2.42
	Ammonia-N	98.1	96.2	99.0			2.74
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	92.7	98.2			3.97
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	100	99.5			0.501
EPA 365.1 Rev. 2.0	Total-P	102	94.8	98.0			3.05
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.1	94.3	97.0			2.62
SM 2120 B	Color (true)	104				0.0069	
SM 2320 B-97	Total Alkalinity	100				0.733	
SM 2540 C-97	TDS					6.35	
SM 4500 F-C-97	Fluoride	101					0.469
SM 5310 B-00	Organic Carbon	96.2	99.1	94.2			2.63
	Organic Carbon	94.8	98.7	96.6			1.47

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2045067, 2045068, 2045069, 2045070
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2045067, 2045068, 2045069, 2045070
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2045067, 2045068, 2045069, 2045070
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2045071, 2045072, 2045073, 2045074
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2045071, 2045072, 2045073, 2045074
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2045071, 2045072, 2045073, 2045074
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2045071, 2045072, 2045073, 2045074
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2045075, 2045076, 2045077, 2045078
SM 2120 B / E31780	True Color measured at 450 nm	2045067, 2045068, 2045069, 2045070
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2045067, 2045068, 2045069, 2045070
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2045067, 2045068, 2045069, 2045070
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2045067, 2045068, 2045069, 2045070
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2045067, 2045068, 2045069, 2045070
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2045071, 2045072, 2045073, 2045074

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	11/29/2018			11/29/2018 17:05	Megan Treadwell	2045067, 2045068, 2045069, 2045070
EPA 300.0 Rev. 2.1	11/29/2018			12/06/2018 03:35	Lipi Saha	2045067
	11/29/2018			12/06/2018 05:12	Lipi Saha	2045068
	11/29/2018			12/06/2018 05:48	Lipi Saha	2045069
	11/29/2018			12/06/2018 06:00	Lipi Saha	2045070
EPA 350.1 Rev. 2.0	11/29/2018			12/04/2018 11:56	Adrian Shelby	2045071
	11/29/2018			12/04/2018 11:57	Adrian Shelby	2045072
	11/29/2018			12/04/2018 12:08	Adrian Shelby	2045073
	11/29/2018			12/04/2018 12:14	Adrian Shelby	2045074
EPA 351.2 Rev. 2.0	11/29/2018	12/03/2018 17:15	Adrian Shelby	12/04/2018 14:30	Joseph Suarez	2045071
	11/29/2018	12/03/2018 17:15	Adrian Shelby	12/04/2018 14:38	Joseph Suarez	2045072
	11/29/2018	12/03/2018 17:15	Adrian Shelby	12/04/2018 14:40	Joseph Suarez	2045073
	11/29/2018	12/03/2018 17:15	Adrian Shelby	12/04/2018 14:41	Joseph Suarez	2045074
EPA 353.2 Rev. 2.0	11/29/2018			12/04/2018 13:03	Lauren Bottorf	2045071
	11/29/2018			12/04/2018 13:13	Lauren Bottorf	2045072
	11/29/2018			12/04/2018 13:15	Lauren Bottorf	2045073
	11/29/2018			12/04/2018 13:16	Lauren Bottorf	2045074
EPA 365.1 Rev. 2.0	11/29/2018	12/03/2018 15:45	Adrian Shelby	12/05/2018 12:21	Beverly Y. Sanders	2045072
	11/29/2018	12/03/2018 15:45	Adrian Shelby	12/05/2018 12:22	Beverly Y. Sanders	2045071
	11/29/2018	12/03/2018 15:45	Adrian Shelby	12/05/2018 12:23	Beverly Y. Sanders	2045073
	11/29/2018	12/03/2018 15:45	Adrian Shelby	12/05/2018 12:24	Beverly Y. Sanders	2045074
EPA 365.1 Rev. 2.0 dissolved	11/29/2018			11/29/2018 16:48	Jhamieka S. Greenwood	2045075
	11/29/2018			11/29/2018 17:26	Jhamieka S. Greenwood	2045076
	11/29/2018			11/29/2018 17:27	Jhamieka S. Greenwood	2045077
	11/29/2018			11/29/2018 17:28	Jhamieka S. Greenwood	2045078
SM 2120 B	11/29/2018			11/30/2018 15:51	Chelsea Hernandez	2045067, 2045068
	11/29/2018			11/30/2018 15:52	Chelsea Hernandez	2045069
	11/29/2018			11/30/2018 15:53	Chelsea Hernandez	2045070
SM 2320 B-97	11/29/2018			12/04/2018 12:53	Dale L. Simmons	2045067
	11/29/2018			12/04/2018 13:04	Dale L. Simmons	2045068
	11/29/2018			12/04/2018 13:14	Dale L. Simmons	2045069
	11/29/2018			12/04/2018 13:25	Dale L. Simmons	2045070
SM 2540 C-97	11/29/2018			12/04/2018 13:26	Yijie Li	2045067, 2045068, 2045069, 2045070
SM 2540 D-97	11/29/2018			12/04/2018 13:26	Yijie Li	2045067, 2045068, 2045069, 2045070
SM 4500 F-C-97	11/29/2018			12/04/2018 12:53	Dale L. Simmons	2045067
	11/29/2018			12/04/2018 13:04	Dale L. Simmons	2045068
	11/29/2018			12/04/2018 13:14	Dale L. Simmons	2045069
	11/29/2018			12/04/2018 13:25	Dale L. Simmons	2045070
SM 5310 B-00	11/29/2018			12/04/2018 02:15	Megan Treadwell	2045071
	11/29/2018			12/04/2018 02:51	Megan Treadwell	2045072

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-00	11/29/2018			12/04/2018 03:28	Megan Treadwell	2045073
	11/29/2018			12/04/2018 04:23	Megan Treadwell	2045074