Chemical Analysis Report

WAS-SECT-2018-06-19-01

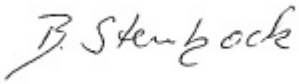
Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **NE TLH Lakes**
Request ID: **RQ-2018-05-28-11**
Customer: **WAS-SECT**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
Attn: Curtis Musson

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 10-JUL-2018 16:06



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: Upper Dianne Lake Middle **Collection Date/Time: 06/19/2018 10:05**

Field ID: G1WA0041 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2001937	EPA 180.1 Rev. 2.0	Turbidity	2.4	A	NTU	P347147	
	EPA 300.0 Rev. 2.1	Chloride	6.6	A	mg Cl/L	P347538	
		Sulfate	1.3	A	mg SO4/L	P347542	
	SM 2120 B	Color (true)	10		PCU	P347139	
	SM 2320 B-97	Total Alkalinity	33		mg CaCO3/L	P347375	RPD
	SM 2540 C-97	TDS	56		mg/L	P347756	
	SM 2540 D-97	TSS	2	I	mg/L	P347730	
	SM 4500 F-C-97	Fluoride	0.068	I	mg F/L	P347379	
2001942	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P347386	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.54		mg N/L	P347863	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P347364	
	EPA 365.1 Rev. 2.0	Total-P	0.027		mg P/L	P347411	
	SM 5310 B-00	Organic Carbon	5.4		mg C/L	P347412	
2001947	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P347131	

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 dissolved: O-Phosphate-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Lower Dianne Lake Middle **Collection Date/Time: 06/19/2018 12:12**

Field ID: G1WA0040 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2001938	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P347147	
	EPA 300.0 Rev. 2.1	Chloride	7.6		mg Cl/L	P347538	
		Sulfate	0.72		mg SO4/L	P347542	
	SM 2120 B	Color (true)	9.6		PCU	P347139	
	SM 2320 B-97	Total Alkalinity	27		mg CaCO3/L	P347375	RPD
	SM 2540 C-97	TDS	51		mg/L	P347756	
	SM 2540 D-97	TSS	3	I	mg/L	P347730	
	SM 4500 F-C-97	Fluoride	0.069	I	mg F/L	P347379	
2001943	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P347386	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.65		mg N/L	P347863	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P347364	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P347411	
	SM 5310 B-00	Organic Carbon	6.5		mg C/L	P347413	
2001948	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P347131	

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 dissolved: O-Phosphate-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Petty Gulf Lake Middle **Collection Date/Time: 06/19/2018 13:00**

Field ID: G1WA0022 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2001939	EPA 180.1 Rev. 2.0	Turbidity	4.5		NTU	P347147	
	EPA 300.0 Rev. 2.1	Chloride	4.7		mg Cl/L	P347538	
		Sulfate	0.75		mg SO4/L	P347542	
	SM 2120 B	Color (true)	9.5		PCU	P347139	
	SM 2320 B-97	Total Alkalinity	16		mg CaCO3/L	P347375	RPD
	SM 2540 C-97	TDS	36		mg/L	P347756	
	SM 2540 D-97	TSS	3	I	mg/L	P347730	
	SM 4500 F-C-97	Fluoride	0.053	I	mg F/L	P347379	
2001944	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P347386	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.74		mg N/L	P347863	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P347364	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P347411	
	SM 5310 B-00	Organic Carbon	6.8		mg C/L	P347413	
2001949	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P347131	

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 dissolved: O-Phosphate-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Pine Hill Lake Middle **Collection Date/Time: 06/19/2018 13:19**

Field ID: G1WA0054 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2001940	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P347147	
	EPA 300.0 Rev. 2.1	Chloride	6.1		mg Cl/L	P347538	
		Sulfate	0.98		mg SO4/L	P347542	
	SM 2120 B	Color (true)	12		PCU	P347139	
	SM 2320 B-97	Total Alkalinity	7.2		mg CaCO3/L	P347375	RPD
	SM 2540 C-97	TDS	30		mg/L	P347756	
	SM 2540 D-97	TSS	4	I	mg/L	P347730	
	SM 4500 F-C-97	Fluoride	0.048	I	mg F/L	P347379	
2001945	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P347387	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.47		mg N/L	P347864	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P347364	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P347411	
	SM 5310 B-00	Organic Carbon	5.3		mg C/L	P347413	
2001950	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P347131	

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 dissolved: O-Phosphate-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Lake Monkey Business Middle **Collection Date/Time: 06/19/2018 11:05**

Field ID: G1WA0036 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2001941	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P347147	
	EPA 300.0 Rev. 2.1	Chloride	5.9		mg Cl/L	P347538	
		Sulfate	0.98		mg SO4/L	P347542	
	SM 2120 B	Color (true)	9.3		PCU	P347139	
	SM 2320 B-97	Total Alkalinity	27		mg CaCO3/L	P347375	RPD
	SM 2540 C-97	TDS	46		mg/L	P347756	
	SM 2540 D-97	TSS	3	I	mg/L	P347730	
	SM 4500 F-C-97	Fluoride	0.073	I	mg F/L	P347379	
2001946	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P347387	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.50		mg N/L	P347864	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P347364	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P347423	
	SM 5310 B-00	Organic Carbon	5.4		mg C/L	P347413	
2001951	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P347211	

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: P347147

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347538

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347542

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347386

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347387

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347863

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347864

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347364

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347411

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
Batch ID: P347423

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347131

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347211

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

Reference Method: SM 2120 B
Batch ID: P347139

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P347375

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

Reference Method: SM 2540 C-97
Batch ID: P347756

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P347730

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P347379

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P347412

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

Quality Assurance Report
Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P347413

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: P347538

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347542

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347386

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347387

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347863

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347864

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347364

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: P347411

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	95.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347423

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	92.0		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347131

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347211

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

Reference Method: SM 2320 B-97
Batch ID: P347375

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

Reference Method: SM 4500 F-C-97
Batch ID: P347379

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.9		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P347412

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.7		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P347413

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.7		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347538

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2001937	Chloride	97.0		P	90 - 110
2001981	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347542

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2001937	Sulfate	97.0		P	90 - 110
2001981	Sulfate	103		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347386

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2001872	Ammonia-N	97.9	98.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347387

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2001945	Ammonia-N	94.0	94.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347863

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2001873	Kjeldahl Nitrogen	94.3	95.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347864

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2001945	Kjeldahl Nitrogen	97.4	97.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347364

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2001942	NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347411

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2001881	Total-P	93.9	92.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347423

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2001985	Total-P	98.1	95.0	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347211

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2001951	O-Phosphate-P	96.2	97.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P347379

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2002011	Fluoride	98.3	97.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P347412

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2001636	Organic Carbon	95.8	98.4	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P347413

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2001943	Organic Carbon	98.9	98.8	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P347147

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001937	Turbidity	1.70	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347538

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001937	Chloride	3.30	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347542

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001937	Sulfate	3.54	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347386

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001872	Ammonia-N	0.0477	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347387

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001945	Ammonia-N	0.611	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347863

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001873	Kjeldahl Nitrogen	0.809	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347864

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001945	Kjeldahl Nitrogen	0.317	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347364

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001942	NO2NO3-N	0.985	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347411

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001881	Total-P	1.00	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347423

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001985	Total-P	2.88	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347131

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001657	O-Phosphate-P	0.312	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347211

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001951	O-Phosphate-P	0.828	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P347139

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001888	Color (true)	0.279	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P347375

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002011	Total Alkalinity	6.11	Sample	F	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P347756

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002007	TDS	1.65	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P347379

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2002011	Fluoride	0.940	Spike	P	0 - 3.5

Quality Assurance Report
Precision

Reference Method: SM 5310 B-00
Batch ID: P347412

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001636	Organic Carbon	1.45	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P347413

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001943	Organic Carbon	0.0761	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 365.1 Rev. 2.0 dissolved
Run ID: A84681
Included Lab Sample IDs: 2001947, 2001948, 2001949, 2001950

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.6	98.0	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A84682
Included Lab Sample IDs: 2001937, 2001938, 2001939, 2001940, 2001941

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A84684
Included Lab Sample IDs: 2001937, 2001938, 2001939, 2001940, 2001941

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	99.0	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A84723
Included Lab Sample IDs: 2001951

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.1	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A84781
Included Lab Sample IDs: 2001942, 2001943, 2001944, 2001945, 2001946

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

Reference Method: SM 2320 B-97
Run ID: A84785
Included Lab Sample IDs: 2001937, 2001938, 2001939, 2001940, 2001941

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

Reference Method: SM 4500 F-C-97
Run ID: A84785
Included Lab Sample IDs: 2001937, 2001938, 2001939, 2001940, 2001941

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A84788
Included Lab Sample IDs: 2001942, 2001943, 2001944, 2001945, 2001946

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	103	P/P	90 - 110
Ammonia-N	101	101	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A84788
Included Lab Sample IDs: 2001942, 2001943, 2001944, 2001945, 2001946

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

Reference Method: SM 5310 B-00
Run ID: A84794
Included Lab Sample IDs: 2001942, 2001943, 2001944, 2001945, 2001946

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.6	96.0	P/P	90 - 110
Organic Carbon	97.0	95.6	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A84847
Included Lab Sample IDs: 2001937, 2001938, 2001939, 2001940, 2001941

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.2	99.0	P/P	90 - 110
Chloride	99.2	99.2	P/P	90 - 110
Sulfate	101	100	P/P	90 - 110
Sulfate	99.3	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A84934
Included Lab Sample IDs: 2001942, 2001943, 2001944, 2001945, 2001946

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.8	P/P	90 - 110
Total-P	99.5	98.2	P/P	90 - 110
Total-P	99.8	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A85016
Included Lab Sample IDs: 2001942, 2001943, 2001944

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A85028
Included Lab Sample IDs: 2001945, 2001946

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	98.2	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	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					1.70	
EPA 300.0 Rev. 2.1	Chloride	97.8	97.0	103		3.30	
	Sulfate	98.6	97.0	103		3.54	
EPA 350.1 Rev. 2.0	Ammonia-N	97.0	97.9	98.0			0.0477
	Ammonia-N	98.8	94.0	94.6			0.611
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	94.3	95.4			0.809
	Kjeldahl Nitrogen	98.5	97.4	97.8			0.317
EPA 353.2 Rev. 2.0	NO2NO3-N	100	101	102			0.985
EPA 365.1 Rev. 2.0	Total-P	95.0	93.9	92.9			1.00
	Total-P	92.0	98.1	95.0			2.88
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101					0.312
	O-Phosphate-P	97.9	96.2	97.0			0.828
SM 2120 B	Color (true)					0.279	
SM 2320 B-97	Total Alkalinity	100				6.11	
SM 2540 C-97	TDS					1.65	
SM 4500 F-C-97	Fluoride	97.9	98.3	97.1			0.940
SM 5310 B-00	Organic Carbon	96.7	95.8	98.4			1.45
	Organic Carbon	97.7	98.9	98.8			0.0761

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2001937, 2001938, 2001939, 2001940, 2001941
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2001937, 2001938, 2001939, 2001940, 2001941
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2001937, 2001938, 2001939, 2001940, 2001941
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2001942, 2001943, 2001944, 2001945, 2001946
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2001942, 2001943, 2001944, 2001945, 2001946
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2001942, 2001943, 2001944, 2001945, 2001946
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2001942, 2001943, 2001944, 2001945, 2001946
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2001947, 2001948, 2001949, 2001950, 2001951
SM 2120 B / E31780	True Color measured at 450 nm	2001937, 2001938, 2001939, 2001940, 2001941
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2001937, 2001938, 2001939, 2001940, 2001941
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2001937, 2001938, 2001939, 2001940, 2001941
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2001937, 2001938, 2001939, 2001940, 2001941
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2001937, 2001938, 2001939, 2001940, 2001941
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2001942, 2001943, 2001944, 2001945, 2001946

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	06/19/2018			06/19/2018 16:44	William L. Brown IV	2001937, 2001938, 2001939, 2001940, 2001941
EPA 300.0 Rev. 2.1	06/19/2018			06/25/2018 15:39	Lipi Saha	2001937
	06/19/2018			06/25/2018 16:39	Lipi Saha	2001938
	06/19/2018			06/25/2018 16:51	Lipi Saha	2001939
	06/19/2018			06/25/2018 17:03	Lipi Saha	2001940
	06/19/2018			06/25/2018 17:39	Lipi Saha	2001941
EPA 350.1 Rev. 2.0	06/19/2018			06/22/2018 13:24	Julia Storbeck	2001942
	06/19/2018			06/22/2018 13:33	Julia Storbeck	2001943
	06/19/2018			06/22/2018 13:34	Julia Storbeck	2001944
	06/19/2018			06/22/2018 13:40	Julia Storbeck	2001945
	06/19/2018			06/22/2018 13:52	Julia Storbeck	2001946
EPA 351.2 Rev. 2.0	06/19/2018	07/03/2018 10:40	Adrian Shelby	07/03/2018 19:34	Virginia P. Brown	2001942
	06/19/2018	07/03/2018 10:40	Adrian Shelby	07/03/2018 19:35	Virginia P. Brown	2001943
	06/19/2018	07/03/2018 10:40	Adrian Shelby	07/03/2018 19:37	Virginia P. Brown	2001944
	06/19/2018	07/03/2018 10:40	Adrian Shelby	07/05/2018 11:20	Tanya Welborn	2001945
	06/19/2018	07/03/2018 10:40	Adrian Shelby	07/05/2018 11:24	Tanya Welborn	2001946
EPA 353.2 Rev. 2.0	06/19/2018			06/22/2018 12:35	Lauren Bottorf	2001942
	06/19/2018			06/22/2018 12:36	Lauren Bottorf	2001943
	06/19/2018			06/22/2018 12:37	Lauren Bottorf	2001944
	06/19/2018			06/22/2018 12:39	Lauren Bottorf	2001945
	06/19/2018			06/22/2018 12:40	Lauren Bottorf	2001946
EPA 365.1 Rev. 2.0	06/19/2018	06/25/2018 09:50	Sima Feizi	06/29/2018 13:24	Beverly Y. Sanders	2001943
	06/19/2018	06/25/2018 09:50	Sima Feizi	06/29/2018 13:25	Beverly Y. Sanders	2001944
	06/19/2018	06/25/2018 09:50	Sima Feizi	06/29/2018 13:26	Beverly Y. Sanders	2001945
	06/19/2018	06/25/2018 09:50	Sima Feizi	06/29/2018 13:35	Beverly Y. Sanders	2001946
	06/19/2018	06/25/2018 09:50	Sima Feizi	06/29/2018 14:24	Beverly Y. Sanders	2001942
EPA 365.1 Rev. 2.0 dissolved	06/19/2018			06/19/2018 15:17	Megan Treadwell	2001947
	06/19/2018			06/19/2018 15:18	Megan Treadwell	2001948
	06/19/2018			06/19/2018 15:19	Megan Treadwell	2001949
	06/19/2018			06/19/2018 15:20	Megan Treadwell	2001950
	06/19/2018			06/20/2018 14:26	Megan Treadwell	2001951
SM 2120 B	06/19/2018			06/19/2018 16:13	Tanya Welborn	2001937
	06/19/2018			06/19/2018 16:14	Tanya Welborn	2001938
	06/19/2018			06/19/2018 16:15	Tanya Welborn	2001939
	06/19/2018			06/19/2018 16:16	Tanya Welborn	2001940, 2001941
SM 2320 B-97	06/19/2018			06/22/2018 05:55	Lauren Bottorf	2001937
	06/19/2018			06/22/2018 06:05	Lauren Bottorf	2001938
	06/19/2018			06/22/2018 06:17	Lauren Bottorf	2001939
	06/19/2018			06/22/2018 06:27	Lauren Bottorf	2001940

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-97	06/19/2018			06/22/2018 06:38	Lauren Bottorf	2001941
SM 2540 C-97	06/19/2018			06/22/2018 15:45	Yijie Li	2001937, 2001938, 2001939, 2001940, 2001941
SM 2540 D-97	06/19/2018			06/22/2018 15:45	Yijie Li	2001937, 2001938, 2001939, 2001940, 2001941
SM 4500 F-C-97	06/19/2018			06/22/2018 05:55	Lauren Bottorf	2001937
	06/19/2018			06/22/2018 06:05	Lauren Bottorf	2001938
	06/19/2018			06/22/2018 06:17	Lauren Bottorf	2001939
	06/19/2018			06/22/2018 06:27	Lauren Bottorf	2001940
	06/19/2018			06/22/2018 06:38	Lauren Bottorf	2001941
SM 5310 B-00	06/19/2018			06/22/2018 23:44	Blanca Fach	2001942
	06/19/2018			06/23/2018 01:01	Blanca Fach	2001943
	06/19/2018			06/23/2018 02:32	Blanca Fach	2001944
	06/19/2018			06/23/2018 02:49	Blanca Fach	2001945
	06/19/2018			06/23/2018 03:03	Blanca Fach	2001946