Chemical Analysis Report

SO-DIST-2019-10-24-01

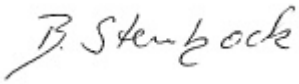
Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **SMP_WildernessWaterway**
Request ID: **RQ-2019-09-23-47**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: Miranda Carroll

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: 06-NOV-2019 17:47



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 by the Florida Department of Health Environmental Laboratory Certification Program 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: ENRE 10 off Chokoloskee **Collection Date/Time: 10/23/2019 11:30**

Field ID: G1SD0075 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2131122	EPA 180.1 Rev. 2.0	Turbidity	6.5		NTU	P373096	
	EPA 300.0	Bromide	54		mg Br/L	P373399	
	SM 2320 B-97	Total Alkalinity	177		mg CaCO3/L	P373394	
	SM 2540 D-97	TSS	5	I	mg/L	P373223	
	SM 4500 F-C-97	Fluoride	0.98		mg F/L	P373395	
2131124	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P373265	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.81		mg N/L	P373353	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.031		mg N/L	P373324	
	EPA 365.1 Rev. 2.0	Total-P	0.048		mg P/L	P373348	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P373177	
2131126	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P373090	

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: ENRE10 Lopez River **Collection Date/Time: 10/23/2019 11:45**

Field ID: G5SD0092 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2131128	EPA 180.1 Rev. 2.0	Turbidity	5.5	A	NTU	P373097	
	EPA 300.0	Bromide	53		mg Br/L	P373399	
	SM 2320 B-97	Total Alkalinity	174		mg CaCO3/L	P373394	
	SM 2540 D-97	TSS	5	I A	mg/L	P373223	
	SM 4500 F-C-97	Fluoride	0.96		mg F/L	P373395	
2131132	EPA 350.1 Rev. 2.0	Ammonia-N	0.049		mg N/L	P373457	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.79		mg N/L	P373353	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.048		mg N/L	P373325	
	EPA 365.1 Rev. 2.0	Total-P	0.044		mg P/L	P373348	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P373177	
2131136	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.018		mg P/L	P373090	

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: ENRE9 Lopez River **Collection Date/Time: 10/23/2019 12:00**

Field ID: G5SD0093 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2131129	EPA 180.1 Rev. 2.0	Turbidity	6.2		NTU	P373097	
	EPA 300.0	Bromide	50		mg Br/L	P373399	
	SM 2320 B-97	Total Alkalinity	184		mg CaCO3/L	P373394	
	SM 2540 D-97	TSS	6	I	mg/L	P373223	
	SM 4500 F-C-97	Fluoride	0.89		mg F/L	P373395	
2131133	EPA 350.1 Rev. 2.0	Ammonia-N	0.048		mg N/L	P373457	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.85		mg N/L	P373353	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.033		mg N/L	P373325	
	EPA 365.1 Rev. 2.0	Total-P	0.045		mg P/L	P373348	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P373177	
2131137	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.015		mg P/L	P373090	

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: ENRE11 Sunday Bay **Collection Date/Time: 10/23/2019 12:15**

Field ID: G5SD0094 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2131130	EPA 180.1 Rev. 2.0	Turbidity	6.6		NTU	P373097	
	EPA 300.0	Bromide	44		mg Br/L	P373399	
	SM 2320 B-97	Total Alkalinity	193		mg CaCO3/L	P373394	
	SM 2540 D-97	TSS	8	I	mg/L	P373223	
	SM 4500 F-C-97	Fluoride	0.79		mg F/L	P373395	
2131134	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P373457	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P373353	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P373325	
	EPA 365.1 Rev. 2.0	Total-P	0.035		mg P/L	P373348	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P373177	
2131138	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P373090	

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: ENRE 11 at Huston Bay **Collection Date/Time: 10/23/2019 12:40**

Field ID: G5SD0026 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2131131	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P373097	
	EPA 300.0	Bromide	42		mg Br/L	P373399	
	SM 2320 B-97	Total Alkalinity	194		mg CaCO3/L	P373394	
	SM 2540 D-97	TSS	3	U	mg/L	P373223	
	SM 4500 F-C-97	Fluoride	0.77		mg F/L	P373395	
2131135	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P373457	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P373353	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.023		mg N/L	P373325	
	EPA 365.1 Rev. 2.0	Total-P	0.036		mg P/L	P373348	
	SM 5310 B-00	Organic Carbon	20		mg C/L	P373177	
2131139	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P373090	

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: ENRE 11 at Huston Bay **Collection Date/Time: 10/23/2019 13:30**

Field ID: FB_10232019 Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2131123	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P373097	
	EPA 300.0	Bromide	0.013	U	mg Br/L	P373399	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P373443	
	SM 2540 D-97	TSS	2	U	mg/L	P373222	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P373446	
2131125	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P373456	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P373355	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P373436	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P373347	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P373175	
2131127	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P373091	

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: P373096

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P373097

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0
Batch ID: P373399

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P373265

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P373456

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P373457

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P373353

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P373355

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P373324

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P373325

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P373436

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P373347

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P373348

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P373090

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P373091

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

Reference Method: SM 2320 B-97
Batch ID: P373394

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

Reference Method: SM 2320 B-97
Batch ID: P373443

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

Reference Method: SM 2540 D-97
Batch ID: P373222

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P373223

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P373395

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P373446

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P373175

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

Reference Method: SM 5310 B-00
Batch ID: P373177

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0
Batch ID: P373399

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P373265

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: P373456

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P373457

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P373353

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P373355

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P373324

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P373325

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P373436

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P373347

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P373348

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: P373090

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P373091

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

Reference Method: SM 2320 B-97
Batch ID: P373394

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 106

Reference Method: SM 2320 B-97
Batch ID: P373443

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P373395

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.7		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P373446

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P373175

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	103		P	85 - 115

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P373177

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	103		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0
Batch ID: P373399

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2130885	Bromide	97.1	98.9	P/P	90 - 110
2131089	Bromide	94.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P373265

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2130271	Ammonia-N	103	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P373456

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2131469	Ammonia-N	99.7	99.7	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P373457

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2131665	Ammonia-N	103	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P373353

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2131592	Kjeldahl Nitrogen	96.7	97.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P373355

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2131165	Kjeldahl Nitrogen	94.0	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P373324

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2130437	NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P373325

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2131132	NO2NO3-N	102	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P373436

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2131955	NO2NO3-N	98.5		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P373347

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2131555	Total-P	97.8	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P373348

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2131133	Total-P	92.2	92.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P373090

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2131136	O-Phosphate-P	97.8	97.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P373091

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2131160	O-Phosphate-P	98.2	97.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P373395

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2131859	Fluoride	93.6	94.3	P/P	89 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P373446

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2131953	Fluoride	96.2	95.1	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P373175

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2130496	Organic Carbon	99.3	100	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P373177

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2131133	Organic Carbon	98.2	99.4	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P373096

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2131051	Turbidity	9.94	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P373097

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2131128	Turbidity	2.53	Sample	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P373399

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2130885	Bromide	1.78	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P373265

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2130271	Ammonia-N	0.368	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P373456

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2131469	Ammonia-N	0.0208	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P373457

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2131665	Ammonia-N	0.0589	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P373353

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2131592	Kjeldahl Nitrogen	0.933	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P373355

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2131165	Kjeldahl Nitrogen	4.44	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P373324

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2130437	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P373325

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2131132	NO2NO3-N	1.20	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P373436

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2131955	NO2NO3-N	0.351	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P373347

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2131555	Total-P	1.61	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P373348

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2131133	Total-P	0.667	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P373090

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2131136	O-Phosphate-P	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P373091

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2131160	O-Phosphate-P	0.266	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P373394

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2131859	Total Alkalinity	0.955	Sample	P	0 - 2.8

Quality Assurance Report
Precision

Reference Method: SM 2320 B-97
Batch ID: P373443

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2131953	Total Alkalinity	0.447	Sample	P	0 - 2.8

Reference Method: SM 4500 F-C-97
Batch ID: P373395

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2131859	Fluoride	0.477	Spike	P	0 - 2.5

Reference Method: SM 4500 F-C-97
Batch ID: P373446

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2131953	Fluoride	0.963	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P373175

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2130496	Organic Carbon	0.892	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P373177

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2131133	Organic Carbon	0.892	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A95219
Included Lab Sample IDs: 2131126, 2131127, 2131136, 2131137, 2131138, 2131139

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	99.2	P/P	90 - 110
O-Phosphate-P	99.8	99.2	P/P	90 - 110
O-Phosphate-P	99.9	101	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A95225
Included Lab Sample IDs: 2131122, 2131123, 2131128, 2131129, 2131130, 2131131

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

Reference Method: SM 5310 B-00
Run ID: A95259
Included Lab Sample IDs: 2131124, 2131125, 2131132, 2131133, 2131134, 2131135

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	101	P/P	90 - 110
Organic Carbon	103	100	P/P	90 - 110
Organic Carbon	99.6	98.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A95288
Included Lab Sample IDs: 2131124

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A95303
Included Lab Sample IDs: 2131124, 2131132, 2131133, 2131134, 2131135

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 2320 B-97
Run ID: A95328
Included Lab Sample IDs: 2131122, 2131128, 2131129, 2131130, 2131131

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A95328
Included Lab Sample IDs: 2131122, 2131128, 2131129, 2131130, 2131131

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.0	99.5	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0
Run ID: A95332
Included Lab Sample IDs: 2131122, 2131123, 2131128, 2131129, 2131130, 2131131

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	102	102	P/P	90 - 110
Bromide	102	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A95343
Included Lab Sample IDs: 2131124, 2131125, 2131132, 2131133, 2131134, 2131135

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A95355
Included Lab Sample IDs: 2131125

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: A95356
Included Lab Sample IDs: 2131123

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A95356
Included Lab Sample IDs: 2131123

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	98.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A95359
Included Lab Sample IDs: 2131125, 2131132, 2131133, 2131134, 2131135

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A95437
Included Lab Sample IDs: 2131124, 2131125, 2131132, 2131133, 2131134, 2131135

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	96.9	P/P	90 - 110
Kjeldahl Nitrogen	93.3	100	P/P	90 - 110
Kjeldahl Nitrogen	95.0	92.9	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						9.94	
	Turbidity						2.53	
EPA 300.0	Bromide	97.3	97.1	98.9	94.3			1.78
EPA 350.1 Rev. 2.0	Ammonia-N	99.1	103	103				0.368
	Ammonia-N	98.4	99.7	99.7				0.0208
	Ammonia-N	100	103	103				0.0589
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	96.7	97.7				0.933
	Kjeldahl Nitrogen	98.9	94.0	101				4.44
EPA 353.2 Rev. 2.0	NO2NO3-N	100	101	101				0.0
	NO2NO3-N	101	102	100				1.20
	NO2NO3-N	99.0	98.5					0.351
EPA 365.1 Rev. 2.0	Total-P	101	97.8	100				1.61
	Total-P	102	92.2	92.9				0.667
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	97.8	97.8				0.0
	O-Phosphate-P	99.7	98.2	97.7				0.266
SM 2320 B-97	Total Alkalinity	104					0.955	
	Total Alkalinity	104					0.447	
SM 4500 F-C-97	Fluoride	96.7	93.6	94.3				0.477
	Fluoride	96.9	96.2	95.1				0.963
SM 5310 B-00	Organic Carbon	103	99.3	100				0.892
	Organic Carbon	103	98.2	99.4				0.892

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2131122, 2131123, 2131128, 2131129, 2131130, 2131131
EPA 300.0 / E31780	Bromide in aqueous matrices	2131122, 2131123, 2131128, 2131129, 2131130, 2131131
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2131124, 2131125, 2131132, 2131133, 2131134, 2131135
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2131124, 2131125, 2131132, 2131133, 2131134, 2131135
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2131124, 2131125, 2131132, 2131133, 2131134, 2131135
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2131124, 2131125, 2131132, 2131133, 2131134, 2131135
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2131126, 2131127, 2131136, 2131137, 2131138, 2131139
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2131122, 2131123, 2131128, 2131129, 2131130, 2131131
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2131122, 2131123, 2131128, 2131129, 2131130, 2131131
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2131122, 2131123, 2131128, 2131129, 2131130, 2131131
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2131124, 2131125, 2131132, 2131133, 2131134, 2131135

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	10/24/2019			10/24/2019 15:01	Rosalyn Ballman	2131122, 2131123, 2131128, 2131129, 2131130, 2131131
EPA 300.0	10/24/2019			10/30/2019 08:20	Julia Storbeck	2131122
	10/24/2019			10/30/2019 08:37	Julia Storbeck	2131123
	10/24/2019			10/30/2019 08:54	Julia Storbeck	2131128
	10/24/2019			10/30/2019 09:45	Julia Storbeck	2131129
	10/24/2019			10/30/2019 10:03	Julia Storbeck	2131130
	10/24/2019			10/30/2019 10:20	Julia Storbeck	2131131
EPA 350.1 Rev. 2.0	10/24/2019			10/28/2019 12:25	Ping Hua	2131124
	10/24/2019			10/29/2019 13:16	Ping Hua	2131132
	10/24/2019			10/29/2019 13:17	Ping Hua	2131133
	10/24/2019			10/29/2019 13:19	Ping Hua	2131134
	10/24/2019			10/29/2019 13:20	Ping Hua	2131135
	10/24/2019			10/29/2019 14:05	Ping Hua	2131125
EPA 351.2 Rev. 2.0	10/24/2019	10/29/2019 12:47	Sima Feizi	11/01/2019 17:53	Jhamieka S. Greenwood	2131124
	10/24/2019	10/29/2019 12:47	Sima Feizi	11/01/2019 17:55	Jhamieka S. Greenwood	2131132
	10/24/2019	10/29/2019 12:47	Sima Feizi	11/01/2019 17:57	Jhamieka S. Greenwood	2131133
	10/24/2019	10/29/2019 12:47	Sima Feizi	11/01/2019 18:01	Jhamieka S. Greenwood	2131134
	10/24/2019	10/29/2019 12:47	Sima Feizi	11/01/2019 18:03	Jhamieka S. Greenwood	2131135
	10/24/2019	10/29/2019 13:05	Sima Feizi	11/01/2019 19:00	Jhamieka S. Greenwood	2131125
EPA 353.2 Rev. 2.0	10/24/2019			10/29/2019 10:18	Beverly Y. Sanders	2131124
	10/24/2019			10/29/2019 10:25	Beverly Y. Sanders	2131132
	10/24/2019			10/29/2019 10:31	Beverly Y. Sanders	2131133
	10/24/2019			10/29/2019 10:32	Beverly Y. Sanders	2131134
	10/24/2019			10/29/2019 10:33	Beverly Y. Sanders	2131135
	10/24/2019			10/30/2019 11:29	Beverly Y. Sanders	2131125
EPA 365.1 Rev. 2.0	10/24/2019	10/29/2019 13:09	Vijayalakshmi Reddy	10/30/2019 12:35	Lipi Saha	2131125
	10/24/2019	10/29/2019 13:09	Vijayalakshmi Reddy	10/30/2019 12:38	Lipi Saha	2131133
	10/24/2019	10/29/2019 13:09	Vijayalakshmi Reddy	10/30/2019 12:39	Lipi Saha	2131124
	10/24/2019	10/29/2019 13:09	Vijayalakshmi Reddy	10/30/2019 12:40	Lipi Saha	2131132
	10/24/2019	10/29/2019 13:09	Vijayalakshmi Reddy	10/30/2019 12:41	Lipi Saha	2131134
	10/24/2019	10/29/2019 13:09	Vijayalakshmi Reddy	10/30/2019 12:42	Lipi Saha	2131135
EPA 365.1 Rev. 2.0 dissolved	10/24/2019			10/24/2019 15:21	Julia Storbeck	2131136
	10/24/2019			10/24/2019 15:32	Julia Storbeck	2131127
	10/24/2019			10/24/2019 15:53	Julia Storbeck	2131126
	10/24/2019			10/24/2019 15:54	Julia Storbeck	2131137
	10/24/2019			10/24/2019 15:55	Julia Storbeck	2131138, 2131139
SM 2320 B-97	10/24/2019			10/29/2019 16:36	Dale L. Simmons	2131122
	10/24/2019			10/29/2019 16:49	Dale L. Simmons	2131128
	10/24/2019			10/29/2019 17:02	Dale L. Simmons	2131129

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-97	10/24/2019			10/29/2019 17:15	Dale L. Simmons	2131130
	10/24/2019			10/29/2019 17:28	Dale L. Simmons	2131131
	10/24/2019			10/30/2019 18:18	Dale L. Simmons	2131123
SM 2540 D-97	10/24/2019			10/25/2019 18:02	Rosalyn Ballman	2131122, 2131123, 2131128, 2131129, 2131130, 2131131
SM 4500 F-C-97	10/24/2019			10/29/2019 14:21	Dale L. Simmons	2131122
	10/24/2019			10/29/2019 14:25	Dale L. Simmons	2131128
	10/24/2019			10/29/2019 14:29	Dale L. Simmons	2131129
	10/24/2019			10/29/2019 14:34	Dale L. Simmons	2131130
	10/24/2019			10/29/2019 14:38	Dale L. Simmons	2131131
	10/24/2019			10/30/2019 18:18	Dale L. Simmons	2131123
SM 5310 B-00	10/24/2019			10/26/2019 01:29	Madeline Funaro	2131125
	10/24/2019			10/26/2019 09:33	Madeline Funaro	2131133
	10/24/2019			10/26/2019 10:48	Madeline Funaro	2131124
	10/24/2019			10/26/2019 11:06	Madeline Funaro	2131132
	10/24/2019			10/26/2019 11:54	Madeline Funaro	2131134
	10/24/2019			10/26/2019 12:08	Madeline Funaro	2131135