

Chemical Analysis Report

SO-DIST-2019-06-05-01

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

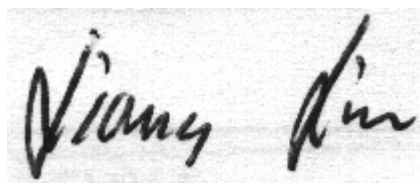
Event Description: **P Riv**
Request ID: **RQ-2019-06-03-58**
Customer: **SO-DIST**
Project ID: **SMP**

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

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: Liang Lin, Environmental Administrator

Date Certified: 20-JUN-2019 16:43

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored background.

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: Alligator N@JonesLoopRd

Collection Date/Time: 06/04/2019 08:50

Field ID: G2SD0032

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2091474	EPA 180.1 Rev. 2.0	Turbidity	7.9		NTU	P365136	
	EPA 300.0 Rev. 2.1	Chloride	63		mg Cl/L	P365311	
		Sulfate	36		mg SO4/L	P365314	
	SM 2120 B	Color (true)	24		PCU	P365147	
	SM 2320 B-97	Total Alkalinity	237		mg CaCO3/L	P365483	
	SM 2540 C-97	TDS	382		mg/L	P365634	
	SM 2540 D-97	TSS	3	I	mg/L	P365857	
	SM 4500 F-C-97	Fluoride	0.24		mg F/L	P365484	
2091476	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P365572	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.39		mg N/L	P365417	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P365376	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P365422	
	SM 5310 B-00	Organic Carbon	7.4		mg C/L	P365506	
2091478	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P365152	

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: Peace River Estuary

Collection Date/Time: 06/04/2019 09:25

Field ID: G3SD0148

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2091480	EPA 180.1 Rev. 2.0	Turbidity	3.4		NTU	P365136	
	EPA 300.0	Bromide	23		mg Br/L	P365319	
	SM 2320 B-97	Total Alkalinity	83		mg CaCO3/L	P365562	
	SM 2540 D-97	TSS	7	IA	mg/L	P365830	
	SM 4500 F-C-97	Fluoride	0.79		mg F/L	P365568	
2091482	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P365570	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.82		mg N/L	P365469	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P365287	
	EPA 365.1 Rev. 2.0	Total-P	0.48		mg P/L	P365284	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P365297	
2091484	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.40		mg P/L	P365153	

Ref. Method and Comment:

EPA 300.0: Bromide: Batch matrix spike recoveries and relative percent difference are unavailable because of high analyte concentration in the QC sample.

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Peace River Estuary

Collection Date/Time: 06/04/2019 09:30

Field ID: FB_06042019

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2091481	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P365136	
	EPA 300.0	Bromide	0.013	U	mg Br/L	P365319	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P365560	
	SM 2540 D-97	TSS	2	U	mg/L	P365860	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P365566	
2091483	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P365572	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P365417	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P365377	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P365422	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P365346	
2091485	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P365152	

Ref. Method and Comment:

EPA 300.0: Bromide: Batch matrix spike recoveries and relative percent difference are unavailable because of high analyte concentration in the QC sample.

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: PeaceRiverAboveHorseCrk

Collection Date/Time: 06/04/2019 10:40

Field ID: G3SD0154

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2091475	EPA 180.1 Rev. 2.0	Turbidity	7.0		NTU	P365136	
	EPA 300.0 Rev. 2.1	Chloride	32		mg Cl/L	P365311	
		Sulfate	93		mg SO4/L	P365314	
		Color (true)	44		PCU	P365147	
	SM 2320 B-97	Total Alkalinity	106		mg CaCO3/L	P365483	
	SM 2540 C-97	TDS	299		mg/L	P365634	
	SM 2540 D-97	TSS	9	I	mg/L	P365857	
	SM 4500 F-C-97	Fluoride	1.1		mg F/L	P365484	
2091477	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P365572	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P365417	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P365377	
	EPA 365.1 Rev. 2.0	Total-P	0.98		mg P/L	P365422	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P365346	
2091479	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.82		mg P/L	P365152	

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: P365136

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0
Batch ID: P365319

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365311

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365314

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365570

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365572

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P365417

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P365469

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P365287

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: P365376

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P365377

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P365284

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P365422

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P365152

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P365153

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

Reference Method: SM 2120 B
Batch ID: P365147

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P365483

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

Reference Method: SM 2320 B-97
Batch ID: P365560

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P365562

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-97
Batch ID: P365634

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P365830

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P365857

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P365860

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P365484

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P365566

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P365568

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P365297

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: P365346

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

Reference Method: SM 5310 B-00
Batch ID: P365506

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: P365319

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365311

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365314

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365570

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: P365572

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P365417

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P365469

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P365287

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	100		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P365376

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	98.0		P	90 - 110

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P365377

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P365284

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: P365422

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P365152

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P365153

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

Reference Method: SM 2120 B
Batch ID: P365147

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	100		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P365483

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 106

Reference Method: SM 2320 B-97
Batch ID: P365560

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

Reference Method: SM 2320 B-97
Batch ID: P365562

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	105		P	98 - 106

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P365484

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.1		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P365566

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.4		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P365568

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.4		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P365297

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

Reference Method: SM 5310 B-00
Batch ID: P365346

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.1		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P365506

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365311

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2091347	Chloride	98.0		P	90 - 110
2091429	Chloride	99.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365314

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2091347	Sulfate	98.5		P	90 - 110
2091429	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365570

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2091317	Ammonia-N	97.4	97.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365572

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2091515	Ammonia-N	97.5	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P365417

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2091442	Kjeldahl Nitrogen	104	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P365469

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2091624	Kjeldahl Nitrogen	101	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P365287

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2091129	NO2NO3-N	103	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P365376

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2091434	NO2NO3-N	100	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P365377

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2091477	NO2NO3-N	99.0	98.5	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P365284

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2091624	Total-P	92.2	92.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P365422

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2091476	Total-P	97.7	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P365152

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2091389	O-Phosphate-P	98.9	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P365153

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2091318	O-Phosphate-P	95.9	95.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P365484

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2091382	Fluoride	104	104	P/P	89 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P365566

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2092079	Fluoride	98.0	97.3	P/P	89 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P365568

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2090850	Fluoride	98.1	98.1	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P365297

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2091006	Organic Carbon	95.0	95.9	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P365346

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2091438	Organic Carbon	95.7	94.6	P/P	85 - 115

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P365506

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2093112	Organic Carbon	100		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P365136

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2091441	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365311

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2091347	Chloride	0.0465	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365314

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2091347	Sulfate	0.157	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365570

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2091317	Ammonia-N	0.434	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365572

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2091515	Ammonia-N	0.826	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P365417

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2091442	Kjeldahl Nitrogen	1.30	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P365469

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2091624	Kjeldahl Nitrogen	2.08	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P365287

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2091129	NO2NO3-N	0.952	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P365376

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2091434	NO2NO3-N	1.24	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P365377

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2091477	NO2NO3-N	0.506	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P365284

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2091624	Total-P	0.272	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P365422

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2091476	Total-P	6.54	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P365152

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2091389	O-Phosphate-P	0.605	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P365153

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2091318	O-Phosphate-P	0.0	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P365147

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2091432	Color (true)	1.46	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P365483

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2091382	Total Alkalinity	0.0345	Sample	P	0 - 2.8

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P365560

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2092079	Total Alkalinity	0.664	Sample	P	0 - 2.8

Reference Method: SM 2320 B-97
Batch ID: P365562

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2090850	Total Alkalinity	0.741	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P365634

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2091404	TDS	2.66	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P365484

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2091382	Fluoride	0.0	Spike	P	0 - 2.5

Reference Method: SM 4500 F-C-97
Batch ID: P365566

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2092079	Fluoride	0.476	Spike	P	0 - 2.5

Reference Method: SM 4500 F-C-97
Batch ID: P365568

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2090850	Fluoride	0.0	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P365297

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2091006	Organic Carbon	0.750	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P365346

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2091438	Organic Carbon	0.604	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 5310 B-00

Batch ID: P365506

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2093112	Organic Carbon	0.416	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 300.0 Rev. 2.1

Run ID: A91854

Included Lab Sample IDs: 2091474, 2091475

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A91888

Included Lab Sample IDs: 2091474, 2091475, 2091480, 2091481

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

Reference Method: SM 2120 B

Run ID: A91889

Included Lab Sample IDs: 2091474, 2091475

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.6	100	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A91890

Included Lab Sample IDs: 2091478, 2091479, 2091484, 2091485

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.3	98.0	P/P	90 - 110
O-Phosphate-P	99.4	99.0	P/P	90 - 110

Reference Method: EPA 300.0

Run ID: A91896

Included Lab Sample IDs: 2091480, 2091481

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	99.4	98.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A91947

Included Lab Sample IDs: 2091482

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	99.0	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A91953

Included Lab Sample IDs: 2091482

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A91977

Included Lab Sample IDs: 2091476, 2091477, 2091483

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A91977

Included Lab Sample IDs: 2091476, 2091477, 2091483

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	98.0	P/P	90 - 110
NO2NO3-N	99.0	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A91980

Included Lab Sample IDs: 2091482

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

Reference Method: SM 5310 B-00

Run ID: A91981

Included Lab Sample IDs: 2091477, 2091483

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.6	95.7	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A92039

Included Lab Sample IDs: 2091474, 2091475

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

Reference Method: SM 4500 F-C-97

Run ID: A92039

Included Lab Sample IDs: 2091474, 2091475

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A92041

Included Lab Sample IDs: 2091477

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A92045

Included Lab Sample IDs: 2091476, 2091483

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

Reference Method: SM 5310 B-00

Run ID: A92051

Included Lab Sample IDs: 2091476

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.8	96.6	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A92072

Included Lab Sample IDs: 2091480, 2091481

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	105	102	P/P	90 - 110
Total Alkalinity	109	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A92072

Included Lab Sample IDs: 2091480, 2091481

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	98.6	P/P	90 - 110
Fluoride	99.5	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A92075

Included Lab Sample IDs: 2091476, 2091477, 2091482, 2091483

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A92090

Included Lab Sample IDs: 2091476, 2091477, 2091483

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	97.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A92125

Included Lab Sample IDs: 2091482

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	106	107	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		LCS	Precision	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					0.0	
EPA 300.0	Bromide	99.2					
EPA 300.0 Rev. 2.1	Chloride	99.5	98.0	99.0		0.0465	
	Sulfate	99.6	98.5	100		0.157	
EPA 350.1 Rev. 2.0	Ammonia-N	97.0	97.4	97.0			0.434
	Ammonia-N	97.4	97.5	98.5			0.826
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.1	104	106			1.30
	Kjeldahl Nitrogen	102	101	103			2.08
EPA 353.2 Rev. 2.0	NO2NO3-N	100	103	102			0.952
	NO2NO3-N	98.0	100	98.5			1.24
	NO2NO3-N	98.0	99.0	98.5			0.506
EPA 365.1 Rev. 2.0	Total-P	101	92.2	92.5			0.272
	Total-P	103	97.7	105			6.54
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.9	98.9	99.5			0.605
	O-Phosphate-P	99.4	95.9	95.9			0.0
SM 2120 B	Color (true)	100				1.46	
SM 2320 B-97	Total Alkalinity	103				0.0345	
	Total Alkalinity	104				0.664	
	Total Alkalinity	105				0.741	
SM 2540 C-97	TDS					2.66	
SM 4500 F-C-97	Fluoride	97.1	104	104			0.0
	Fluoride	97.4	98.0	97.3			0.476
	Fluoride	97.4	98.1	98.1			0.0
SM 5310 B-00	Organic Carbon	96.7	95.0	95.9			0.750
	Organic Carbon	96.1	95.7	94.6			0.604
	Organic Carbon	95.8	100				0.416

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2091474, 2091475, 2091480, 2091481
EPA 300.0 / E31780	Bromide in aqueous matrices	2091480, 2091481
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2091474, 2091475
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2091474, 2091475
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2091476, 2091477, 2091482, 2091483
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2091476, 2091477, 2091482, 2091483
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2091476, 2091477, 2091482, 2091483
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2091476, 2091477, 2091482, 2091483
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2091478, 2091479, 2091484, 2091485
SM 2120 B / E31780	True Color measured at 450 nm	2091474, 2091475
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2091474, 2091475, 2091480, 2091481
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2091474, 2091475
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2091474, 2091475, 2091480, 2091481
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2091474, 2091475, 2091480, 2091481
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2091476, 2091477, 2091482, 2091483

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	06/05/2019			06/05/2019 16:52	Julia Storbeck	2091474, 2091475, 2091480, 2091481
EPA 300.0	06/05/2019			06/06/2019 13:48	Lipi Saha	2091480
	06/05/2019			06/06/2019 14:05	Lipi Saha	2091481
EPA 300.0 Rev. 2.1	06/05/2019			06/07/2019 07:17	Lipi Saha	2091474
	06/05/2019			06/07/2019 07:29	Lipi Saha	2091475
EPA 350.1 Rev. 2.0	06/05/2019			06/12/2019 14:45	Ping Hua	2091482
	06/05/2019			06/12/2019 15:54	Ping Hua	2091476
	06/05/2019			06/12/2019 15:56	Ping Hua	2091477
	06/05/2019			06/12/2019 16:02	Ping Hua	2091483
EPA 351.2 Rev. 2.0	06/05/2019	06/11/2019 10:00	Adrian Shelby	06/13/2019 11:20	Joseph Suarez	2091476
	06/05/2019	06/11/2019 10:00	Adrian Shelby	06/13/2019 11:22	Joseph Suarez	2091477
	06/05/2019	06/11/2019 10:00	Adrian Shelby	06/13/2019 11:24	Joseph Suarez	2091483
	06/05/2019	06/12/2019 10:45	Adrian Shelby	06/14/2019 12:50	Joseph Suarez	2091482
EPA 353.2 Rev. 2.0	06/05/2019			06/07/2019 10:33	Beverly Y. Sanders	2091482
	06/05/2019			06/10/2019 11:15	Beverly Y. Sanders	2091476
	06/05/2019			06/10/2019 11:22	Beverly Y. Sanders	2091477
	06/05/2019			06/10/2019 11:28	Beverly Y. Sanders	2091483
EPA 365.1 Rev. 2.0	06/05/2019	06/07/2019 11:40	Sima Feizi	06/10/2019 12:56	Julia Storbeck	2091482
	06/05/2019	06/11/2019 13:00	Adrian Shelby	06/12/2019 11:01	Rosalyn Ballman	2091477
	06/05/2019	06/11/2019 13:00	Adrian Shelby	06/12/2019 14:02	Rosalyn Ballman	2091476
	06/05/2019	06/11/2019 13:00	Adrian Shelby	06/12/2019 14:03	Rosalyn Ballman	2091483
EPA 365.1 Rev. 2.0 dissolved	06/05/2019			06/05/2019 17:07	Jhamieka S. Greenwood	2091485
	06/05/2019			06/05/2019 17:11	Jhamieka S. Greenwood	2091478
	06/05/2019			06/05/2019 17:45	Jhamieka S. Greenwood	2091479
	06/05/2019			06/05/2019 17:47	Jhamieka S. Greenwood	2091484
SM 2120 B	06/05/2019			06/05/2019 16:47	Madeline Funaro	2091474
	06/05/2019			06/05/2019 16:48	Madeline Funaro	2091475
SM 2320 B-97	06/05/2019			06/11/2019 22:40	Dale L. Simmons	2091474
	06/05/2019			06/11/2019 22:53	Dale L. Simmons	2091475
	06/05/2019			06/12/2019 23:26	Dale L. Simmons	2091481
	06/05/2019			06/13/2019 09:47	Dale L. Simmons	2091480
SM 2540 C-97	06/05/2019			06/10/2019 15:55	Yijie Li	2091474, 2091475
SM 2540 D-97	06/05/2019			06/10/2019 15:55	Yijie Li	2091474, 2091475, 2091480, 2091481
SM 4500 F-C-97	06/05/2019			06/11/2019 22:40	Dale L. Simmons	2091474
	06/05/2019			06/11/2019 22:53	Dale L. Simmons	2091475
	06/05/2019			06/12/2019 23:26	Dale L. Simmons	2091481
	06/05/2019			06/13/2019 08:39	Dale L. Simmons	2091480
SM 5310 B-00	06/05/2019			06/07/2019 03:08	Julia Storbeck	2091482
	06/05/2019			06/08/2019 07:14	Julia Storbeck	2091477
	06/05/2019			06/08/2019 07:27	Julia Storbeck	2091483

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-00	06/05/2019			06/12/2019 04:27	Madeline Funaro	2091476