Chemical Analysis Report

SO-DIST-2020-03-10-01

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

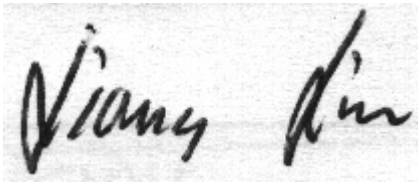
Event Description: **2020 SMP : Peace River**
Request ID: **RQ-2020-03-02-73**
Customer: **SO-DIST**
Project ID: **SMP**

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

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: 25-MAR-2020 17:37



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: Peace River Estuary **Collection Date/Time: 03/09/2020 09:25**

Field ID: G3SD0148 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2163563	EPA 180.1 Rev. 2.0	Turbidity	23		NTU	P380402	
	EPA 300.0 Rev. 2.1	Bromide	13		mg Br/L	P380677	
	SM 2320 B-2011	Total Alkalinity	91		mg CaCO3/L	P380861	
	SM 2540 D-2011	TSS	42		mg/L	P380984	
	SM 4500 F-C-2011	Fluoride	0.68		mg F/L	P380870	
2163564	EPA 350.1 Rev. 2.0	Ammonia-N	0.062		mg N/L	P380966	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P380525	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.078		mg N/L	P381125	
	EPA 365.1 Rev. 2.0	Total-P	0.78		mg P/L	P380798	
	SM 5310 B-2011	Organic Carbon	13		mg C/L	P380666	
2163565	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.37		mg P/L	P380375	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: PeaceRiver HorseCreek2 **Collection Date/Time: 03/09/2020 12:40**

Field ID: G3SD0154 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2163566	EPA 180.1 Rev. 2.0	Turbidity	5.2	A	NTU	P380403	
	EPA 300.0 Rev. 2.1	Chloride	35		mg Cl/L	P380614	
		Sulfate	83		mg SO4/L	P380671	
	SM 2120 B-2011	Color (true)	65		PCU	P380434	
	SM 2320 B-2011	Total Alkalinity	99		mg CaCO3/L	P380864	
	SM 2540 C-2011	TDS	298	A	mg/L	P381107	
	SM 2540 D-2011	TSS	5	I A	mg/L	P380980	
	SM 4500 F-C-2011	Fluoride	0.73		mg F/L	P380715	
2163567	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P380886	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.80		mg N/L	P380628	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.49		mg N/L	P380846	
	EPA 365.1 Rev. 2.0	Total-P	0.86		mg P/L	P380734	
	SM 5310 B-2011	Organic Carbon	12		mg C/L	P380666	
2163568	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.68		mg P/L	P380400	

Ref. Method and Comment:
SM 2540 D-2011: 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: P380402

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P380403

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380614

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380671

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380677

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P380886

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P380966

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P380525

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P380628

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P380846

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P381125

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380734

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380798

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P380375

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P380400

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

Reference Method: SM 2120 B-2011
Batch ID: P380434

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P380861

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

Reference Method: SM 2320 B-2011
Batch ID: P380864

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

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 C-2011
Batch ID: P381107

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P380980

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P380984

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P380715

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-2011
Batch ID: P380870

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P380666

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: P380614

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380671

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380677

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P380886

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P380966

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.3		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P380525

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	91.9		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P380628

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P380846

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P381125

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380734

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	108		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380798

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P380375

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: P380400

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	95.2		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P380434

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.9		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P380861

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 106

Reference Method: SM 2320 B-2011
Batch ID: P380864

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

Reference Method: SM 4500 F-C-2011
Batch ID: P380715

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.7		P	92 - 103

Reference Method: SM 4500 F-C-2011
Batch ID: P380870

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.1		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P380666

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380614

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2163477	Chloride	99.0		P	90 - 110
2163649	Chloride	99.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380671

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2163860	Sulfate	97.3		P	90 - 110
2164261	Sulfate	98.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380677

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2163647	Bromide	94.3	93.9	P/P	90 - 110
2163663	Bromide	94.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P380886

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2163656	Ammonia-N	98.7	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P380966

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2163734	Ammonia-N	101	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P380525

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2163538	Kjeldahl Nitrogen	99.4	98.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P380628

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2163653	Kjeldahl Nitrogen	100	98.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P380846

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2163639	NO2NO3-N	105	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P381125

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2162319	NO2NO3-N	99.0		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380734

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2163542	Total-P	106	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380798

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2163564	Total-P	99.8	97.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P380375

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2163406	O-Phosphate-P	97.8	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P380400

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2163501	O-Phosphate-P	92.9	93.6	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P380715

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2163662	Fluoride	101	100	P/P	89 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P380870

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2162914	Fluoride	97.1	97.1	P/P	89 - 106

Reference Method: SM 5310 B-2011
Batch ID: P380666

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2163656	Organic Carbon	96.8	113	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P380402

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163533	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P380403

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163566	Turbidity	1.93	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380614

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163649	Chloride	0.677	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380671

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163860	Sulfate	0.000688	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P380677

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163647	Bromide	0.407	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P380886

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163656	Ammonia-N	2.11	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P380966

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163734	Ammonia-N	0.121	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P380525

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163538	Kjeldahl Nitrogen	1.15	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P380628

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163653	Kjeldahl Nitrogen	1.58	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P380846

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163639	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P381125

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2162319	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380734

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163542	Total-P	1.91	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P380798

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163564	Total-P	1.11	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P380375

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163406	O-Phosphate-P	0.594	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P380400

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163501	O-Phosphate-P	0.701	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P380434

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163476	Color (true)	0.284	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2320 B-2011
Batch ID: P380861

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2162914	Total Alkalinity	0.425	Sample	P	0 - 2.8

Reference Method: SM 2320 B-2011
Batch ID: P380864

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163648	Total Alkalinity	0.484	Sample	P	0 - 2.8

Reference Method: SM 2540 C-2011
Batch ID: P381107

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163566	TDS	6.39	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P380715

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163662	Fluoride	0.992	Spike	P	0 - 2.5

Reference Method: SM 4500 F-C-2011
Batch ID: P380870

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2162914	Fluoride	0.0	Spike	P	0 - 2.5

Reference Method: SM 5310 B-2011
Batch ID: P380666

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2163656	Organic Carbon	15.2	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A98086
Included Lab Sample IDs: 2163563

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A98096
Included Lab Sample IDs: 2163566

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.9	98.8	P/P	90 - 110
Sulfate	99.3	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A98103
Included Lab Sample IDs: 2163565

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.9	99.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A98115
Included Lab Sample IDs: 2163568

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.5	95.3	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A98117
Included Lab Sample IDs: 2163563, 2163566

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	99.5	P/P	95 - 105

Reference Method: SM 2120 B-2011
Run ID: A98122
Included Lab Sample IDs: 2163566

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	94.6	102	P/P	90 - 115

Reference Method: SM 5310 B-2011
Run ID: A98194
Included Lab Sample IDs: 2163564, 2163567

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.2	97.4	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A98215
Included Lab Sample IDs: 2163566

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A98216
Included Lab Sample IDs: 2163567

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A98222
Included Lab Sample IDs: 2163567

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.8	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A98226
Included Lab Sample IDs: 2163564

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.3	94.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A98265
Included Lab Sample IDs: 2163567

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

Reference Method: SM 2320 B-2011
Run ID: A98269
Included Lab Sample IDs: 2163563, 2163566

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	103	P/P	90 - 110
Total Alkalinity	103	100	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A98269
Included Lab Sample IDs: 2163563

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	94.6	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A98271
Included Lab Sample IDs: 2163564

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A98276
Included Lab Sample IDs: 2163567

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A98309
Included Lab Sample IDs: 2163564

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A98318
Included Lab Sample IDs: 2163564

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

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

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision		
						LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						0.0	
	Turbidity						1.93	
EPA 300.0 Rev. 2.1	Bromide	97.4	94.3	93.9	94.3			0.407
	Chloride	98.8	99.7	99.0			0.677	
	Sulfate	97.5	97.3	98.6			0.0006	
EPA 350.1 Rev. 2.0	Ammonia-N	100	98.7	101				2.11
	Ammonia-N	99.3	101	101				0.121
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	91.9	99.4	98.1				1.15
	Kjeldahl Nitrogen	101	100	98.8				1.58
EPA 353.2 Rev. 2.0	NO2NO3-N	102	105	105				0.0
	NO2NO3-N	102	99.0					0.0
EPA 365.1 Rev. 2.0	Total-P	108	106	108				1.91
	Total-P	105	99.8	97.6				1.11
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	97.8	98.6				0.594
	O-Phosphate-P	95.2	92.9	93.6				0.701
SM 2120 B-2011	Color (true)	99.9					0.284	
SM 2320 B-2011	Total Alkalinity	102					0.425	
	Total Alkalinity	103					0.484	
SM 2540 C-2011	TDS						6.39	
SM 4500 F-C-2011	Fluoride	98.7	101	100				0.992
	Fluoride	94.1	97.1	97.1				0.0
SM 5310 B-2011	Organic Carbon	96.6	96.8	113				15.2

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2163563, 2163566
EPA 300.0 Rev. 2.1	Bromide in aqueous matrices	2163563
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2163566
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2163566
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2163564, 2163567
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2163564, 2163567
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2163564, 2163567
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2163564, 2163567
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2163565, 2163568
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2163566
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2163563, 2163566
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2163566
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2163563, 2163566
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2163563, 2163566
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2163564, 2163567

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	03/10/2020			03/10/2020 16:49	Blanca Fach	2163563, 2163566
EPA 300.0 Rev. 2.1	03/10/2020			03/12/2020 22:15	Lipi Saha	2163566
	03/10/2020			03/13/2020 17:30	Lipi Saha	2163563
	03/10/2020			03/13/2020 21:45	Lipi Saha	2163566
EPA 350.1 Rev. 2.0	03/10/2020			03/18/2020 13:14	Ping Hua	2163567
	03/10/2020			03/19/2020 11:03	Ping Hua	2163564
EPA 351.2 Rev. 2.0	03/10/2020	03/12/2020 12:05	Sima Feizi	03/13/2020 11:30	Jhamieka S. Greenwood	2163564
	03/10/2020	03/13/2020 12:19	Sima Feizi	03/16/2020 13:56	Julia Storbeck	2163567
EPA 353.2 Rev. 2.0	03/10/2020			03/16/2020 11:03	Beverly Y. Sanders	2163567
	03/10/2020			03/18/2020 09:28	Beverly Y. Sanders	2163564
EPA 365.1 Rev. 2.0	03/10/2020	03/16/2020 14:28	Yen Ta	03/17/2020 14:40	Benjamin T. Nordmann	2163567
	03/10/2020	03/17/2020 13:34	Yen Ta	03/18/2020 13:21	Benjamin T. Nordmann	2163564
EPA 365.1 Rev. 2.0 dissolved	03/10/2020			03/10/2020 17:00	Carlos Miranda	2163565
	03/10/2020			03/10/2020 18:38	Carlos Miranda	2163568
SM 2120 B-2011	03/10/2020			03/10/2020 18:26	Madeline Gruver	2163566
SM 2320 B-2011	03/10/2020			03/17/2020 21:57	Dale L. Simmons	2163563
	03/10/2020			03/18/2020 07:00	Dale L. Simmons	2163566
SM 2540 C-2011	03/10/2020			03/13/2020 15:32	Yijie Li	2163566
SM 2540 D-2011	03/10/2020			03/13/2020 15:32	Yijie Li	2163563, 2163566
SM 4500 F-C-2011	03/10/2020			03/13/2020 08:14	Dale L. Simmons	2163566
	03/10/2020			03/17/2020 18:58	Dale L. Simmons	2163563
SM 5310 B-2011	03/10/2020			03/12/2020 06:20	Lauren Lees	2163564
	03/10/2020			03/12/2020 06:36	Lauren Lees	2163567