

Chemical Analysis Report

SO-DIST-2019-08-01-01

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

Event Description: **Keys**
Request ID: **RQ-2019-07-08-40**
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: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 27-AUG-2019 16:02



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: 8079 @ENRG3 Nearshore#2

Collection Date/Time: 07/31/2019 10:20

Field ID: G5SD0084

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2107885	EPA 180.1 Rev. 2.0	Turbidity	0.90		NTU	P368330	
	EPA 300.0	Bromide	75		mg Br/L	P368846	
	SM 2320 B-97	Total Alkalinity	119		mg CaCO3/L	P368819	
	SM 2540 D-97	TSS	3	IA	mg/L	P368547	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P368829	
2107889	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P368804	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.20	I	mg N/L	P368452	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P368492	
	EPA 365.1 Rev. 2.0	Total-P	0.006	I	mg P/L	P368441	
	SM 5310 B-00	Organic Carbon	1.6	I	mg C/L	P368427	
2107893	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P368393	

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: 84 Resample

Collection Date/Time: 07/31/2019 10:30

Field ID: G5SD0111

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2107886	EPA 180.1 Rev. 2.0	Turbidity	0.90		NTU	P368330	
	EPA 300.0	Bromide	75		mg Br/L	P368846	
	SM 2320 B-97	Total Alkalinity	118		mg CaCO3/L	P368819	
	SM 2540 D-97	TSS	4	I	mg/L	P368547	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P368829	
2107890	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P368804	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.23	I	mg N/L	P368696	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P368492	
	EPA 365.1 Rev. 2.0	Total-P	0.005	I	mg P/L	P368441	
	SM 5310 B-00	Organic Carbon	1.4	I	mg C/L	P368427	
2107894	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P368393	

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: 85 Resample

Collection Date/Time: 07/31/2019 11:55

Field ID: G5SD0112

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2107887	EPA 180.1 Rev. 2.0	Turbidity	0.20		NTU	P368330	
	EPA 300.0	Bromide	75		mg Br/L	P368846	
	SM 2320 B-97	Total Alkalinity	123		mg CaCO3/L	P368819	
	SM 2540 D-97	TSS	3	I	mg/L	P368547	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P368829	
2107891	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P368804	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.19	I	mg N/L	P368454	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P368492	
	EPA 365.1 Rev. 2.0	Total-P	0.005	IJ	mg P/L	P368442	MS
	SM 5310 B-00	Organic Carbon	1.1	I	mg C/L	P368427	
2107895	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P368393	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0: Total-P: Refer to the narrative for an explanation of QC Codes.

Sample Location: 8079 @ENRG6 Out@Reef#2

Collection Date/Time: 07/31/2019 11:45

Field ID: G5SD0085

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2107888	EPA 180.1 Rev. 2.0	Turbidity	0.45		NTU	P368331	
	EPA 300.0	Bromide	73		mg Br/L	P368846	
	SM 2320 B-97	Total Alkalinity	120		mg CaCO3/L	P368819	
	SM 2540 D-97	TSS	2	IQ	mg/L	P369317	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P368829	
2107892	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P368804	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	U	mg N/L	P368454	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P368492	
	EPA 365.1 Rev. 2.0	Total-P	0.005	I	mg P/L	P368442	MS
	SM 5310 B-00	Organic Carbon	1.2	I	mg C/L	P368427	
2107896	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P368393	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample. Sample reanalyzed out of holding time within a batch of low conductivity samples because of analytical difficulties.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P368330

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P368331

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0
Batch ID: P368846

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P368804

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368452

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368454

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368696

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P368492

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368441

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368442

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P368393

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

Reference Method: SM 2320 B-97
Batch ID: P368819

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

Reference Method: SM 2540 D-97
Batch ID: P368547

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P369317

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P368829

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P368427

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: P368846

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: P368804

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368452

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368454

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368696

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P368492

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	99.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368441

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368442

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P368393

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P368819

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

Reference Method: SM 4500 F-C-97
Batch ID: P368829

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.5		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P368427

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	101		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0
Batch ID: P368846

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2107773	Bromide	96.6	98.0	P/P	90 - 110
2107774	Bromide	95.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P368804

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2107889	Ammonia-N	99.9	96.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368452

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2107520	Kjeldahl Nitrogen	105	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368454

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2107891	Kjeldahl Nitrogen	97.6	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368696

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109049	Kjeldahl Nitrogen	96.4	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P368492

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2107768	NO2NO3-N	97.7	98.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368441

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2107889	Total-P	90.0	94.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368442

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2107891	Total-P	90.0	89.4	F/F	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P368393

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2107895	O-Phosphate-P	94.7	96.8	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P368829

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2108971	Fluoride	94.5	97.4	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P368427

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2107782	Organic Carbon	99.1	100	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P368330

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2107843	Turbidity	2.12	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P368331

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2107943	Turbidity	0.844	Sample	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P368846

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2107773	Bromide	1.32	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P368804

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2107889	Ammonia-N	2.83	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368452

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2107520	Kjeldahl Nitrogen	1.09	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368454

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2107891	Kjeldahl Nitrogen	4.82	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368696

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109049	Kjeldahl Nitrogen	8.28	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P368492

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2107768	NO2NO3-N	0.979	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P368441

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2107889	Total-P	4.96	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P368442

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2107891	Total-P	0.641	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P368393

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2107895	O-Phosphate-P	2.19	Spike	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P368819

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2108971	Total Alkalinity	0.0218	Sample	P	0 - 2.8

Reference Method: SM 4500 F-C-97
 Batch ID: P368829

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2108971	Fluoride	1.95	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
 Batch ID: P368427

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2107782	Organic Carbon	0.706	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 180.1 Rev. 2.0

Run ID: A93206

Included Lab Sample IDs: 2107885, 2107886, 2107887, 2107888

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	101	P/P	95 - 105
Turbidity	101	100	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A93232

Included Lab Sample IDs: 2107893, 2107894, 2107895, 2107896

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	98.8	P/P	90 - 110
O-Phosphate-P	98.3	97.3	P/P	90 - 110
O-Phosphate-P	99.1	98.3	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A93248

Included Lab Sample IDs: 2107889, 2107890, 2107891, 2107892

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.1	98.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A93284

Included Lab Sample IDs: 2107889, 2107890, 2107891, 2107892

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A93319

Included Lab Sample IDs: 2107889, 2107890, 2107891, 2107892

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	97.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A93320

Included Lab Sample IDs: 2107889, 2107891, 2107892

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	104	P/P	90 - 110
Kjeldahl Nitrogen	104	102	P/P	90 - 110
Kjeldahl Nitrogen	107	99.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A93406

Included Lab Sample IDs: 2107889, 2107890, 2107891, 2107892

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.7	100	P/P	90 - 110
Ammonia-N	99.9	98.7	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A93413

Included Lab Sample IDs: 2107885, 2107886, 2107887, 2107888

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A93413

Included Lab Sample IDs: 2107885, 2107886, 2107887, 2107888

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	101	98.1	P/P	90 - 110
Fluoride	98.1	99.5	P/P	90 - 110

Reference Method: EPA 300.0

Run ID: A93422

Included Lab Sample IDs: 2107885, 2107886, 2107887, 2107888

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	103	105	P/P	90 - 110
Bromide	103	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A93436

Included Lab Sample IDs: 2107890

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.5	98.5	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 SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					2.12	
	Turbidity					0.844	
EPA 300.0	Bromide	97.3	96.6	98.0	95.4		1.32
EPA 350.1 Rev. 2.0	Ammonia-N	97.8	99.9	96.9			2.83
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	108	105	106			1.09
	Kjeldahl Nitrogen	106	97.6	103			4.82
	Kjeldahl Nitrogen	105	96.4	108			8.28
EPA 353.2 Rev. 2.0	NO2NO3-N	99.0	97.7	98.7			0.979
EPA 365.1 Rev. 2.0	Total-P	98.4	90.0	94.6			4.96
	Total-P	106	90.0	89.4			0.641
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	94.7	96.8			2.19
SM 2320 B-97	Total Alkalinity	104				0.0218	
SM 4500 F-C-97	Fluoride	97.5	94.5	97.4			1.95
SM 5310 B-00	Organic Carbon	101	99.1	100			0.706

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2107885, 2107886, 2107887, 2107888
EPA 300.0 / E31780	Bromide in aqueous matrices	2107885, 2107886, 2107887, 2107888
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2107889, 2107890, 2107891, 2107892
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2107889, 2107890, 2107891, 2107892
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2107889, 2107890, 2107891, 2107892
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2107889, 2107890, 2107891, 2107892
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2107893, 2107894, 2107895, 2107896
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2107885, 2107886, 2107887, 2107888
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2107885, 2107886, 2107887, 2107888
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2107885, 2107886, 2107887, 2107888
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2107889, 2107890, 2107891, 2107892

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	08/01/2019			08/01/2019 16:42	Adrian Shelby	2107885, 2107886, 2107887, 2107888
EPA 300.0	08/01/2019			08/09/2019 05:37	Jhamieka S. Greenwood	2107885
	08/01/2019			08/09/2019 05:54	Jhamieka S. Greenwood	2107886
	08/01/2019			08/09/2019 06:45	Jhamieka S. Greenwood	2107887
	08/01/2019			08/09/2019 07:02	Jhamieka S. Greenwood	2107888
EPA 350.1 Rev. 2.0	08/01/2019			08/10/2019 11:42	Ping Hua	2107889
	08/01/2019			08/10/2019 11:57	Ping Hua	2107890
	08/01/2019			08/10/2019 11:59	Ping Hua	2107891
	08/01/2019			08/10/2019 12:00	Ping Hua	2107892
EPA 351.2 Rev. 2.0	08/01/2019	08/05/2019 13:30	Adrian Shelby	08/07/2019 09:29	Joseph Suarez	2107889
	08/01/2019	08/05/2019 13:30	Adrian Shelby	08/07/2019 10:04	Joseph Suarez	2107891
	08/01/2019	08/05/2019 13:30	Adrian Shelby	08/07/2019 10:12	Joseph Suarez	2107892
	08/01/2019	08/08/2019 10:30	Adrian Shelby	08/12/2019 13:44	Joseph Suarez	2107890
EPA 353.2 Rev. 2.0	08/01/2019			08/06/2019 09:15	Beverly Y. Sanders	2107889
	08/01/2019			08/06/2019 09:16	Beverly Y. Sanders	2107890
	08/01/2019			08/06/2019 09:17	Beverly Y. Sanders	2107891
	08/01/2019			08/06/2019 09:18	Beverly Y. Sanders	2107892
EPA 365.1 Rev. 2.0	08/01/2019	08/05/2019 12:54	Vijayalakshmi Reddy	08/06/2019 11:38	Lipi Saha	2107889
	08/01/2019	08/05/2019 12:54	Vijayalakshmi Reddy	08/06/2019 11:43	Lipi Saha	2107890
	08/01/2019	08/05/2019 12:54	Vijayalakshmi Reddy	08/06/2019 11:45	Lipi Saha	2107891
	08/01/2019	08/05/2019 12:54	Vijayalakshmi Reddy	08/06/2019 11:46	Lipi Saha	2107892
EPA 365.1 Rev. 2.0 dissolved	08/01/2019			08/01/2019 15:00	Jhamieka S. Greenwood	2107895
	08/01/2019			08/01/2019 15:26	Jhamieka S. Greenwood	2107893
	08/01/2019			08/01/2019 15:27	Jhamieka S. Greenwood	2107894
	08/01/2019			08/01/2019 15:33	Jhamieka S. Greenwood	2107896
SM 2320 B-97	08/01/2019			08/10/2019 08:30	Dale L. Simmons	2107885
	08/01/2019			08/10/2019 08:42	Dale L. Simmons	2107886
	08/01/2019			08/10/2019 08:55	Dale L. Simmons	2107887
	08/01/2019			08/10/2019 09:07	Dale L. Simmons	2107888
SM 2540 D-97	08/01/2019			08/05/2019 14:05	Sima Feizi	2107885, 2107886, 2107887
	08/01/2019			08/12/2019 16:08	Yijie Li	2107888
SM 4500 F-C-97	08/01/2019			08/10/2019 05:09	Dale L. Simmons	2107885
	08/01/2019			08/10/2019 05:13	Dale L. Simmons	2107886
	08/01/2019			08/10/2019 05:59	Dale L. Simmons	2107887
	08/01/2019			08/10/2019 06:03	Dale L. Simmons	2107888
SM 5310 B-00	08/01/2019			08/03/2019 02:22	Madeline Funaro	2107889
	08/01/2019			08/03/2019 02:47	Madeline Funaro	2107890
	08/01/2019			08/03/2019 02:59	Madeline Funaro	2107891
	08/01/2019			08/03/2019 03:11	Madeline Funaro	2107892