

Chemical Analysis Report

SO-DIST-2019-08-07-02

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

Event Description: **2019 SMP : Gulf of Mexico**
Request ID: **RQ-2019-08-05-40**
Customer: **SO-DIST**
Project ID: **SMP**

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FLDEP South District Office
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Date Certified: 23-AUG-2019 10:34



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 8 Off Tripod Key

Collection Date/Time: 08/06/2019 10:20

Field ID: G1SD0054

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2109163	EPA 180.1 Rev. 2.0	Turbidity	14		NTU	P368632	
	EPA 300.0	Bromide	58		mg Br/L	P368847	
	SM 2320 B-97	Total Alkalinity	140		mg CaCO3/L	P368820	
	SM 2540 D-97	TSS	14		mg/L	P369319	
	SM 4500 F-C-97	Fluoride	1.0		mg F/L	P368830	
2109170	EPA 350.1 Rev. 2.0	Ammonia-N	0.12		mg N/L	P369083	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.71		mg N/L	P369193	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.025		mg N/L	P368862	
	EPA 365.1 Rev. 2.0	Total-P	0.066		mg P/L	P368781	
	SM 5310 B-00	Organic Carbon	6.5		mg C/L	P368984	
2109177	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.031		mg P/L	P368629	

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 8 Off Tripod Key

Collection Date/Time: 08/06/2019 10:25

Field ID: G1SD0054_DUP

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2109164	EPA 180.1 Rev. 2.0	Turbidity	13		NTU	P368632	
	EPA 300.0	Bromide	59		mg Br/L	P368847	
	SM 2320 B-97	Total Alkalinity	140		mg CaCO3/L	P368820	
	SM 2540 D-97	TSS	13		mg/L	P369319	
	SM 4500 F-C-97	Fluoride	1.0		mg F/L	P368830	
2109171	EPA 350.1 Rev. 2.0	Ammonia-N	0.12		mg N/L	P369083	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.72		mg N/L	P369193	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.024		mg N/L	P368862	
	EPA 365.1 Rev. 2.0	Total-P	0.063		mg P/L	P368781	
	SM 5310 B-00	Organic Carbon	6.6		mg C/L	P368984	
2109178	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.031		mg P/L	P368629	

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 8 Off Shell Key

Collection Date/Time: 08/06/2019 10:40

Field ID: G1SD0081

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2109165	EPA 180.1 Rev. 2.0	Turbidity	14		NTU	P368632	
	EPA 300.0	Bromide	56		mg Br/L	P368847	
	SM 2320 B-97	Total Alkalinity	145		mg CaCO3/L	P368820	
	SM 2540 D-97	TSS	13		mg/L	P369319	
	SM 4500 F-C-97	Fluoride	1.0		mg F/L	P368830	
2109172	EPA 350.1 Rev. 2.0	Ammonia-N	0.15		mg N/L	P369083	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.86		mg N/L	P369193	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.031		mg N/L	P368862	
	EPA 365.1 Rev. 2.0	Total-P	0.080		mg P/L	P368781	
	SM 5310 B-00	Organic Carbon	7.9		mg C/L	P368816	
2109179	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.042		mg P/L	P368627	

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 6 Site 2

Collection Date/Time: 08/06/2019 10:55

Field ID: G1SD0077

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2109184	EPA 180.1 Rev. 2.0	Turbidity	8.4		NTU	P368633	
	EPA 300.0	Bromide	61		mg Br/L	P369433	
	SM 2320 B-97	Total Alkalinity	138		mg CaCO3/L	P368820	
	SM 2540 D-97	TSS	7	I	mg/L	P369320	
	SM 4500 F-C-97	Fluoride	1.1		mg F/L	P368830	
2109186	EPA 350.1 Rev. 2.0	Ammonia-N	0.096		mg N/L	P369085	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.67		mg N/L	P368853	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.020		mg N/L	P368863	
	EPA 365.1 Rev. 2.0	Total-P	0.049		mg P/L	P368781	
	SM 5310 B-00	Organic Carbon	5.5		mg C/L	P368984	
2109188	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.022		mg P/L	P368629	

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 6

Collection Date/Time: 08/06/2019 11:05

Field ID: G1SD0065

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2109185	EPA 180.1 Rev. 2.0	Turbidity	7.5		NTU	P368633	
	EPA 300.0	Bromide	61		mg Br/L	P369433	
	SM 2320 B-97	Total Alkalinity	138		mg CaCO3/L	P368820	
	SM 2540 D-97	TSS	8	I	mg/L	P369320	
	SM 4500 F-C-97	Fluoride	1.1		mg F/L	P368830	
2109187	EPA 350.1 Rev. 2.0	Ammonia-N	0.050		mg N/L	P369085	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.62		mg N/L	P368853	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.013		mg N/L	P368863	
	EPA 365.1 Rev. 2.0	Total-P	0.043		mg P/L	P368781	
	SM 5310 B-00	Organic Carbon	5.7		mg C/L	P368984	
2109189	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.014		mg P/L	P368629	

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 2 Big Marco Pass

Collection Date/Time: 08/06/2019 12:20

Field ID: G1SD0078

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2109166	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P368632	
	EPA 300.0	Bromide	63		mg Br/L	P368847	
	SM 2320 B-97	Total Alkalinity	129		mg CaCO3/L	P368820	
	SM 2540 D-97	TSS	4	I	mg/L	P369319	
	SM 4500 F-C-97	Fluoride	1.1		mg F/L	P368830	
2109173	EPA 350.1 Rev. 2.0	Ammonia-N	0.027		mg N/L	P369083	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P369193	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P368862	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P368781	
	SM 5310 B-00	Organic Carbon	4.5		mg C/L	P368984	
2109180	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.009	I	mg P/L	P368629	

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 2 North Site

Collection Date/Time: 08/06/2019 12:35

Field ID: G1SD0079

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2109167	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P368632	
	EPA 300.0	Bromide	64		mg Br/L	P368847	
	SM 2320 B-97	Total Alkalinity	130		mg CaCO3/L	P368820	
	SM 2540 D-97	TSS	3	U	mg/L	P369319	
	SM 4500 F-C-97	Fluoride	1.1		mg F/L	P368830	
2109174	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P369085	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P368853	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P368862	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P368781	
	SM 5310 B-00	Organic Carbon	4.2		mg C/L	P368984	
2109181	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P368629	

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 2

Collection Date/Time: 08/06/2019 12:45

Field ID: G1SD0066

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2109168	EPA 180.1 Rev. 2.0	Turbidity	0.55		NTU	P368632	
	EPA 300.0	Bromide	69		mg Br/L	P368847	
	SM 2320 B-97	Total Alkalinity	127		mg CaCO3/L	P368820	
	SM 2540 D-97	TSS	3	U	mg/L	P369319	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P368830	
2109175	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P369085	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.45		mg N/L	P368853	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P368863	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P368781	
	SM 5310 B-00	Organic Carbon	3.3		mg C/L	P368984	
2109182	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P368629	

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 2 Site 2

Collection Date/Time: 08/06/2019 12:50

Field ID: G1SD0080

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2109169	EPA 180.1 Rev. 2.0	Turbidity	0.60		NTU	P368633	
	EPA 300.0	Bromide	70		mg Br/L	P369433	
	SM 2320 B-97	Total Alkalinity	127	A	mg CaCO3/L	P368820	
	SM 2540 D-97	TSS	4	IA	mg/L	P369320	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P368830	
2109176	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P369085	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.53		mg N/L	P368853	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P368863	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P368781	
	SM 5310 B-00	Organic Carbon	3.1		mg C/L	P368984	
2109183	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P368629	

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: P368632

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P368633

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0
Batch ID: P368847

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 300.0
Batch ID: P369433

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369083

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369085

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368853

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369193

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P368862

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: P368863

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368781

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P368627

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P368629

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

Reference Method: SM 2320 B-97
Batch ID: P368820

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

Reference Method: SM 2540 D-97
Batch ID: P369319

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P369320

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P368830

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P368816

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: P368984

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: P368847

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

Reference Method: EPA 300.0
Batch ID: P369433

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Bromide	96.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369083

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369085

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368853

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369193

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	95.3		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P368862

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: P368863

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368781

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P368627

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: P368629

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

Reference Method: SM 2320 B-97
Batch ID: P368820

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

Reference Method: SM 4500 F-C-97
Batch ID: P368830

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P368816

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

Reference Method: SM 5310 B-00
Batch ID: P368984

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0
Batch ID: P368847

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2108329	Bromide	96.5		P	90 - 110
2108778	Bromide	97.8	97.0	P/P	90 - 110

Reference Method: EPA 300.0
Batch ID: P369433

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2110767	Bromide	94.6	95.4	P/P	90 - 110
2110769	Bromide	94.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369083

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109173	Ammonia-N	103	104	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369085

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109174	Ammonia-N	105	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368853

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109186	Kjeldahl Nitrogen	101	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369193

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109173	Kjeldahl Nitrogen	100	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P368862

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2108972	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P368863

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109175	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368781

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109175	Total-P	93.1	92.7	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P368627

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109037	O-Phosphate-P	97.2	96.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P368629

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109044	O-Phosphate-P	97.0	97.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P368830

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109169	Fluoride	92.0	93.5	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P368816

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109204	Organic Carbon	99.6	99.9	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P368984

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109187	Organic Carbon	98.5	99.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P368632

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109144	Turbidity	2.37	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P368633

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109302	Turbidity	3.77	Sample	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P368847

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2108778	Bromide	0.780	Spike	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P369433

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2110767	Bromide	0.763	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369083

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109173	Ammonia-N	0.277	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369085

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109174	Ammonia-N	0.667	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368853

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109186	Kjeldahl Nitrogen	0.208	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369193

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109173	Kjeldahl Nitrogen	0.303	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P368862

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2108972	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P368863

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109175	NO2NO3-N	0.489	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368781

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109175	Total-P	0.396	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P368627

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109037	O-Phosphate-P	0.278	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P368629

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109044	O-Phosphate-P	0.0	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P368820

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109169	Total Alkalinity	0.181	Sample	P	0 - 2.8

Reference Method: SM 4500 F-C-97
Batch ID: P368830

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109169	Fluoride	0.953	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P368816

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109204	Organic Carbon	0.328	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P368984

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109187	Organic Carbon	0.663	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A93339

Included Lab Sample IDs: 2109177, 2109178, 2109179, 2109180, 2109181, 2109182, 2109183, 2109188, 2109189

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.0	P/P	90 - 110
O-Phosphate-P	99.0	98.8	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A93340

Included Lab Sample IDs: 2109163, 2109164, 2109165, 2109166, 2109167, 2109168, 2109169, 2109184, 2109185

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	100	P/P	95 - 105
Turbidity	100	102	P/P	95 - 105

Reference Method: SM 5310 B-00

Run ID: A93412

Included Lab Sample IDs: 2109172

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	102	100	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A93413

Included Lab Sample IDs: 2109163, 2109164, 2109165, 2109166, 2109167, 2109168, 2109169, 2109184, 2109185

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	105	108	P/P	90 - 110
Total Alkalinity	106	105	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A93413

Included Lab Sample IDs: 2109163, 2109164, 2109165, 2109166, 2109167, 2109168, 2109169, 2109184, 2109185

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

Reference Method: EPA 300.0

Run ID: A93422

Included Lab Sample IDs: 2109163, 2109164, 2109165, 2109166, 2109167, 2109168

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A93427

Included Lab Sample IDs: 2109170, 2109171, 2109172, 2109173, 2109174, 2109175, 2109176, 2109186, 2109187

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	100	P/P	90 - 110
NO2NO3-N	100	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A93453

Included Lab Sample IDs: 2109174, 2109175, 2109176, 2109186, 2109187

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.0	104	P/P	90 - 110
Kjeldahl Nitrogen	96.4	95.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A93469

Included Lab Sample IDs: 2109170, 2109171, 2109172, 2109173, 2109174, 2109175, 2109176, 2109186, 2109187

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	98.8	P/P	90 - 110
Total-P	98.8	98.5	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A93485

Included Lab Sample IDs: 2109170, 2109171, 2109173, 2109174, 2109175, 2109176, 2109186, 2109187

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A93532

Included Lab Sample IDs: 2109170, 2109171, 2109172, 2109173, 2109174, 2109175, 2109176, 2109186, 2109187

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	103	P/P	90 - 110
Ammonia-N	103	105	P/P	90 - 110
Ammonia-N	103	103	P/P	90 - 110
Ammonia-N	104	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A93600

Included Lab Sample IDs: 2109170, 2109171, 2109172, 2109173

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	105	P/P	90 - 110
Kjeldahl Nitrogen	105	109	P/P	90 - 110

Reference Method: EPA 300.0

Run ID: A93690

Included Lab Sample IDs: 2109169, 2109184, 2109185

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	103	103	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	MS
EPA 180.1 Rev. 2.0	Turbidity					2.37	
	Turbidity					3.77	
EPA 300.0	Bromide	103	97.8	97.0	96.5		0.780
	Bromide	96.6	94.6	95.4	94.7		0.763
EPA 350.1 Rev. 2.0	Ammonia-N	99.7	103	104			0.277
	Ammonia-N	104	105	104			0.667
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	101	101			0.208
	Kjeldahl Nitrogen	95.3	100	101			0.303
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	102			0.0
	NO2NO3-N	102	102	102			0.489
EPA 365.1 Rev. 2.0	Total-P	99.4	93.1	92.7			0.396
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	97.2	96.9			0.278
	O-Phosphate-P	102	97.0	97.0			0.0
SM 2320 B-97	Total Alkalinity	103				0.181	
SM 4500 F-C-97	Fluoride	97.9	92.0	93.5			0.953
SM 5310 B-00	Organic Carbon	101	99.6	99.9			0.328
	Organic Carbon	100	98.5	99.2			0.663

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2109163, 2109164, 2109165, 2109166, 2109167, 2109168, 2109169, 2109184, 2109185
EPA 300.0 / E31780	Bromide in aqueous matrices	2109163, 2109164, 2109165, 2109166, 2109167, 2109168, 2109169, 2109184, 2109185
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2109170, 2109171, 2109172, 2109173, 2109174, 2109175, 2109176, 2109186, 2109187
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2109170, 2109171, 2109172, 2109173, 2109174, 2109175, 2109176, 2109186, 2109187
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2109170, 2109171, 2109172, 2109173, 2109174, 2109175, 2109176, 2109186, 2109187
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2109170, 2109171, 2109172, 2109173, 2109174, 2109175, 2109176, 2109186, 2109187
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2109177, 2109178, 2109179, 2109180, 2109181, 2109182, 2109183, 2109188, 2109189
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2109163, 2109164, 2109165, 2109166, 2109167, 2109168, 2109169, 2109184, 2109185
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2109163, 2109164, 2109165, 2109166, 2109167, 2109168, 2109169, 2109184, 2109185
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2109163, 2109164, 2109165, 2109166, 2109167, 2109168, 2109169, 2109184, 2109185
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2109170, 2109171, 2109172, 2109173, 2109174, 2109175, 2109176, 2109186, 2109187

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	08/07/2019			08/07/2019 17:10	Rosalyn Ballman	2109163, 2109164, 2109165, 2109166, 2109167, 2109168, 2109169, 2109184, 2109185
EPA 300.0	08/07/2019			08/09/2019 14:27	Jhamieka S. Greenwood	2109163
	08/07/2019			08/09/2019 14:44	Jhamieka S. Greenwood	2109164
	08/07/2019			08/09/2019 15:01	Jhamieka S. Greenwood	2109165
	08/07/2019			08/09/2019 15:52	Jhamieka S. Greenwood	2109166
	08/07/2019			08/09/2019 16:10	Jhamieka S. Greenwood	2109167
	08/07/2019			08/09/2019 16:27	Jhamieka S. Greenwood	2109168
	08/07/2019			08/20/2019 00:17	Jhamieka S. Greenwood	2109169
	08/07/2019			08/20/2019 00:34	Jhamieka S. Greenwood	2109184
	08/07/2019			08/20/2019 00:51	Jhamieka S. Greenwood	2109185
EPA 350.1 Rev. 2.0	08/07/2019			08/14/2019 11:14	Ping Hua	2109173
	08/07/2019			08/14/2019 11:33	Ping Hua	2109170
	08/07/2019			08/14/2019 11:35	Ping Hua	2109171
	08/07/2019			08/14/2019 11:36	Ping Hua	2109172
	08/07/2019			08/14/2019 12:14	Ping Hua	2109174
	08/07/2019			08/14/2019 12:24	Ping Hua	2109175
	08/07/2019			08/14/2019 12:26	Ping Hua	2109176
	08/07/2019			08/14/2019 12:27	Ping Hua	2109186
	08/07/2019			08/14/2019 12:29	Ping Hua	2109187
EPA 351.2 Rev. 2.0	08/07/2019	08/12/2019 13:30	Sima Feizi	08/13/2019 09:34	Joseph Suarez	2109174
	08/07/2019	08/12/2019 13:30	Sima Feizi	08/13/2019 09:36	Joseph Suarez	2109175
	08/07/2019	08/12/2019 13:30	Sima Feizi	08/13/2019 09:37	Joseph Suarez	2109176
	08/07/2019	08/12/2019 13:30	Sima Feizi	08/13/2019 09:39	Joseph Suarez	2109186
	08/07/2019	08/12/2019 13:30	Sima Feizi	08/13/2019 09:46	Joseph Suarez	2109187
	08/07/2019	08/16/2019 15:10	Sima Feizi	08/19/2019 10:36	Joseph Suarez	2109170
	08/07/2019	08/16/2019 15:10	Sima Feizi	08/19/2019 10:37	Joseph Suarez	2109171
	08/07/2019	08/16/2019 15:10	Sima Feizi	08/19/2019 10:39	Joseph Suarez	2109172
	08/07/2019	08/16/2019 15:10	Sima Feizi	08/19/2019 10:43	Joseph Suarez	2109173
EPA 353.2 Rev. 2.0	08/07/2019			08/12/2019 11:37	Beverly Y. Sanders	2109170
	08/07/2019			08/12/2019 11:38	Beverly Y. Sanders	2109171
	08/07/2019			08/12/2019 11:39	Beverly Y. Sanders	2109172
	08/07/2019			08/12/2019 11:41	Beverly Y. Sanders	2109173
	08/07/2019			08/12/2019 11:42	Beverly Y. Sanders	2109174
	08/07/2019			08/12/2019 11:49	Beverly Y. Sanders	2109175
	08/07/2019			08/12/2019 11:55	Beverly Y. Sanders	2109176
	08/07/2019			08/12/2019 11:56	Beverly Y. Sanders	2109186
	08/07/2019			08/12/2019 11:57	Beverly Y. Sanders	2109187
EPA 365.1 Rev. 2.0	08/07/2019	08/09/2019 13:46	Vijayalakshmi Reddy	08/13/2019 13:41	Lipi Saha	2109175

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 365.1 Rev. 2.0	08/07/2019	08/09/2019 13:46	Vijayalakshmi Reddy	08/13/2019 13:42	Lipi Saha	2109170
	08/07/2019	08/09/2019 13:46	Vijayalakshmi Reddy	08/13/2019 13:43	Lipi Saha	2109171
	08/07/2019	08/09/2019 13:46	Vijayalakshmi Reddy	08/13/2019 13:44	Lipi Saha	2109172, 2109173
	08/07/2019	08/09/2019 13:46	Vijayalakshmi Reddy	08/13/2019 13:45	Lipi Saha	2109174
	08/07/2019	08/09/2019 13:46	Vijayalakshmi Reddy	08/13/2019 13:46	Lipi Saha	2109176
	08/07/2019	08/09/2019 13:46	Vijayalakshmi Reddy	08/13/2019 13:47	Lipi Saha	2109186
	08/07/2019	08/09/2019 13:46	Vijayalakshmi Reddy	08/13/2019 13:55	Lipi Saha	2109187
	08/07/2019			08/07/2019 16:35	Jhamieka S. Greenwood	2109179
EPA 365.1 Rev. 2.0 dissolved	08/07/2019			08/07/2019 16:49	Jhamieka S. Greenwood	2109177
	08/07/2019			08/07/2019 16:50	Jhamieka S. Greenwood	2109178
	08/07/2019			08/07/2019 16:51	Jhamieka S. Greenwood	2109180, 2109181
	08/07/2019			08/07/2019 16:52	Jhamieka S. Greenwood	2109188
	08/07/2019			08/07/2019 16:53	Jhamieka S. Greenwood	2109182
	08/07/2019			08/07/2019 16:54	Jhamieka S. Greenwood	2109183
	08/07/2019			08/07/2019 16:56	Jhamieka S. Greenwood	2109189
	08/07/2019			08/10/2019 15:57	Dale L. Simmons	2109169
SM 2320 B-97	08/07/2019			08/10/2019 16:09	Dale L. Simmons	2109163
	08/07/2019			08/10/2019 16:21	Dale L. Simmons	2109164
	08/07/2019			08/10/2019 16:33	Dale L. Simmons	2109165
	08/07/2019			08/10/2019 16:45	Dale L. Simmons	2109166
	08/07/2019			08/10/2019 16:58	Dale L. Simmons	2109167
	08/07/2019			08/10/2019 17:10	Dale L. Simmons	2109168
	08/07/2019			08/10/2019 18:20	Dale L. Simmons	2109184
	08/07/2019			08/10/2019 18:32	Dale L. Simmons	2109185
SM 2540 D-97	08/07/2019			08/12/2019 16:08	Yijie Li	2109163, 2109164, 2109165, 2109166, 2109167, 2109168, 2109169, 2109184, 2109185
SM 4500 F-C-97	08/07/2019			08/10/2019 13:56	Dale L. Simmons	2109169
	08/07/2019			08/10/2019 14:08	Dale L. Simmons	2109163
	08/07/2019			08/10/2019 15:10	Dale L. Simmons	2109164
	08/07/2019			08/10/2019 15:14	Dale L. Simmons	2109165
	08/07/2019			08/10/2019 15:19	Dale L. Simmons	2109166
	08/07/2019			08/10/2019 15:22	Dale L. Simmons	2109167
	08/07/2019			08/10/2019 15:27	Dale L. Simmons	2109168
	08/07/2019			08/10/2019 15:31	Dale L. Simmons	2109184
SM 5310 B-00	08/07/2019			08/10/2019 15:35	Dale L. Simmons	2109185
	08/07/2019			08/10/2019 00:58	Madeline Funaro	2109172
	08/07/2019			08/13/2019 20:08	Madeline Funaro	2109187
	08/07/2019			08/13/2019 21:09	Madeline Funaro	2109170
	08/07/2019			08/13/2019 21:23	Madeline Funaro	2109171

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-00	08/07/2019			08/13/2019 21:49	Madeline Funaro	2109173
	08/07/2019			08/13/2019 22:01	Madeline Funaro	2109174
	08/07/2019			08/13/2019 22:14	Madeline Funaro	2109175
	08/07/2019			08/13/2019 22:26	Madeline Funaro	2109176
	08/07/2019			08/13/2019 22:38	Madeline Funaro	2109186