

Chemical Analysis Report

SE-DIST-2016-09-14-01

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

Event Description: **Key Largo 2**
Request ID: **RQ-2016-09-12-36**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
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2199 South Rock Road
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 07-OCT-2016 09:46



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 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: Barnes Sound Southeast of Main Key

Collection Date/Time: 09/13/2016 11:35

Field ID: G5SE0053

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1831131	EPA 180.1 Rev. 2.0	Turbidity	0.65		NTU	P311134	
	EPA 300.0 Rev. 2.1	Chloride	1.5E+04		mg Cl/L	P311621	
	SM 2320 B-97	Total Alkalinity	138		mg CaCO3/L	P311452	
	SM 2540 D-97	TSS	3	U	mg/L	P311789	
	SM 4500 F-C-97	Fluoride	1.0		mg F/L	P311627	
1831137	EPA 350.1 Rev. 2.0	Ammonia-N	0.081		mg N/L	P311307	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.70		mg N/L	P311413	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.013		mg N/L	P311858	
	EPA 365.1 Rev. 2.0	Total-P	0.007	I	mg P/L	P311664	
	SM 5310 B-00	Organic Carbon	6.7		mg C/L	P311164	
1831143	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P311151	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Manatee Bay @ Center

Collection Date/Time: 09/13/2016 11:50

Field ID: G5SE0052

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1831132	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P311134	
	EPA 300.0 Rev. 2.1	Chloride	1.2E+04		mg Cl/L	P311621	
	SM 2320 B-97	Total Alkalinity	148		mg CaCO3/L	P311452	
	SM 2540 D-97	TSS	3	U	mg/L	P311789	
	SM 4500 F-C-97	Fluoride	0.84		mg F/L	P311627	
1831138	EPA 350.1 Rev. 2.0	Ammonia-N	0.074		mg N/L	P311307	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.72		mg N/L	P311641	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.010		mg N/L	P311858	
	EPA 365.1 Rev. 2.0	Total-P	0.006	I	mg P/L	P311849	
	SM 5310 B-00	Organic Carbon	8.3		mg C/L	P311164	
1831144	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P311151	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Long Sound-Western Bay

Collection Date/Time: 09/13/2016 12:45

Field ID: G5SE0054

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1831133	EPA 180.1 Rev. 2.0	Turbidity	2.6	A	NTU	P311139	
	EPA 300.0 Rev. 2.1	Chloride	9.7E+03		mg Cl/L	P311621	
	SM 2320 B-97	Total Alkalinity	162		mg CaCO3/L	P311452	
	SM 2540 D-97	TSS	3	U	mg/L	P311789	
	SM 4500 F-C-97	Fluoride	0.71		mg F/L	P311627	
1831139	EPA 350.1 Rev. 2.0	Ammonia-N	0.099		mg N/L	P311307	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.98		mg N/L	P311641	

Field ID: G5SE0054

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1831139	EPA 353.2 Rev. 2.0	NO2NO3-N	0.009	I	mg N/L	P311858	
	EPA 365.1 Rev. 2.0	Total-P	0.005	I	mg P/L	P311849	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P311164	
1831145	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P311151	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: The result was confirmed on 09/14/2016.

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

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample. The result was confirmed on 09/15/2016.

Sample Location: Little Blackwater Sound @ Center

Collection Date/Time: 09/13/2016 12:30

Field ID: G5SE0055

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1831134	EPA 180.1 Rev. 2.0	Turbidity	0.80		NTU	P311134	
	EPA 300.0 Rev. 2.1	Chloride	1.2E+04		mg Cl/L	P311621	
	SM 2320 B-97	Total Alkalinity	147		mg CaCO3/L	P311452	
	SM 2540 D-97	TSS	3	U	mg/L	P311789	
	SM 4500 F-C-97	Fluoride	0.84		mg F/L	P311627	
1831140	EPA 350.1 Rev. 2.0	Ammonia-N	0.055		mg N/L	P311307	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.80	A	mg N/L	P311641	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P311858	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P311849	
	SM 5310 B-00	Organic Carbon	9.8		mg C/L	P311164	
1831146	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P311151	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample. The result was confirmed on 09/15/2016.

Sample Location: Field duplicate @ Long Sound-Western Bay

Collection Date/Time: 09/13/2016 12:50

Field ID: G5SE0054_duplicate

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1831135	EPA 180.1 Rev. 2.0	Turbidity	3.2		NTU	P311139	
	EPA 300.0 Rev. 2.1	Chloride	9.7E+03		mg Cl/L	P311621	
	SM 2320 B-97	Total Alkalinity	161		mg CaCO3/L	P311452	
	SM 2540 D-97	TSS	3	I	mg/L	P311789	
	SM 4500 F-C-97	Fluoride	0.72		mg F/L	P311627	
1831141	EPA 350.1 Rev. 2.0	Ammonia-N	0.13		mg N/L	P311307	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.95		mg N/L	P311641	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.012		mg N/L	P311858	
	EPA 365.1 Rev. 2.0	Total-P	0.005	I	mg P/L	P311849	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P311164	
1831147	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P311151	

Field ID: G5SE0054_duplicate

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Ref. Method and Comment:

EPA 180.1 Rev. 2.0: The result was confirmed on 09/14/2016.

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

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample. The result was confirmed on 09/15/2016.

Sample Location: Blackwater Sound - Northern Bay

Collection Date/Time: 09/13/2016 12:15

Field ID: G5SE0056

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1831136	EPA 180.1 Rev. 2.0	Turbidity	0.80		NTU	P311135	
	EPA 300.0 Rev. 2.1	Chloride	1.7E+04		mg Cl/L	P311621	
	SM 2320 B-97	Total Alkalinity	134		mg CaCO3/L	P311452	
	SM 2540 D-97	TSS	3	U	mg/L	P311789	
	SM 4500 F-C-97	Fluoride	1.1		mg F/L	P311627	
1831142	EPA 350.1 Rev. 2.0	Ammonia-N	0.054		mg N/L	P311307	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.65		mg N/L	P311641	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.022		mg N/L	P311858	
	EPA 365.1 Rev. 2.0	Total-P	0.006	I	mg P/L	P311849	
	SM 5310 B-00	Organic Carbon	7.1		mg C/L	P311164	
1831148	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P311151	
	dissolved						

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P311134

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P311135

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P311139

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P311621

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P311307

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311413

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311641

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311858

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311664

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311849

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311151

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

Reference Method: SM 2320 B-97
Batch ID: P311452

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

Reference Method: SM 2540 D-97
Batch ID: P311789

Component	Result	Code	Units
TSS	3	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P311627

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P311164

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: P311621

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P311307

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311413

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311641

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311858

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311664

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311849

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311849

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	94.3		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311151

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

Reference Method: SM 2320 B-97
Batch ID: P311452

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P311627

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.4		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P311164

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	107		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311621

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831161	Chloride	98.0	97.2	P/P	90 - 110
1831695	Chloride	95.9		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311413

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1830887	Kjeldahl Nitrogen	88.3	85.2	F/F	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311641

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831185	Kjeldahl Nitrogen	109	96.6	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311858

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831025	NO2NO3-N	98.9	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311664

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1830884	Total-P	97.2	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311849

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831139	Total-P	93.6	93.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311151

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831188	O-Phosphate-P	100	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P311627

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831182	Fluoride	97.0	97.0	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P311164

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826897	Organic Carbon	95.2	96.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P311134

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831090	Turbidity	6.85	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P311135

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831161	Turbidity	1.68	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P311139

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831133	Turbidity	3.79	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311621

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831161	Chloride	0.502	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P311307

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831105	Ammonia-N	1.91	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311413

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1830887	Kjeldahl Nitrogen	2.75	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311641

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831185	Kjeldahl Nitrogen	9.69	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311858

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831025	NO2NO3-N	1.50	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311664

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1830884	Total-P	5.08	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311849

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831139	Total-P	0.0534	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311151

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831188	O-Phosphate-P	0.598	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P311452

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831182	Total Alkalinity	0.284	Sample	P	0 - 4.8

Reference Method: SM 4500 F-C-97
Batch ID: P311627

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831182	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P311164

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826897	Organic Carbon	1.10	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: A71618
Included Lab Sample IDs: 1831131, 1831132, 1831133, 1831134, 1831135, 1831136

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	101	P/P	95 - 105
Turbidity	100	100	P/P	95 - 105
Turbidity	99.5	100	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A71621
Included Lab Sample IDs: 1831143, 1831144, 1831145, 1831146, 1831147, 1831148

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.4	97.7	P/P	90 - 110
O-Phosphate-P	98.9	98.4	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A71630

Included Lab Sample IDs: 1831137, 1831138, 1831139, 1831140, 1831141, 1831142

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	105	99.4	P/P	90 - 110
Organic Carbon	99.4	99.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A71673

Included Lab Sample IDs: 1831137, 1831138, 1831139, 1831140, 1831141, 1831142

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	102	P/P	90 - 110
Ammonia-N	102	101	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A71720

Included Lab Sample IDs: 1831131, 1831132, 1831133, 1831134, 1831135, 1831136

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A71740

Included Lab Sample IDs: 1831137

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.7	96.4	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A71749

Included Lab Sample IDs: 1831131, 1831132, 1831133, 1831134, 1831135, 1831136

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

Reference Method: SM 4500 F-C-97

Run ID: A71764

Included Lab Sample IDs: 1831131, 1831132, 1831133, 1831134, 1831135, 1831136

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A71829

Included Lab Sample IDs: 1831138, 1831139, 1831140, 1831141, 1831142

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.5	96.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A71832

Included Lab Sample IDs: 1831137, 1831138, 1831139, 1831140, 1831141, 1831142

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A71852

Included Lab Sample IDs: 1831138, 1831139, 1831140, 1831141, 1831142

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A71856

Included Lab Sample IDs: 1831137

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	99.5	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	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				6.85	
	Turbidity				1.68	
	Turbidity				3.79	
EPA 300.0 Rev. 2.1	Chloride	100	98.0 97.2 95.9			0.502
EPA 350.1 Rev. 2.0	Ammonia-N	102				1.91
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.2	88.3 85.2			2.75
	Kjeldahl Nitrogen	103	109 96.6			9.69
EPA 353.2 Rev. 2.0	NO2NO3-N	106	98.9 100			1.50
EPA 365.1 Rev. 2.0	Total-P	105	97.2 103			5.08
	Total-P	94.3	93.6 93.6			0.0534
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	100 101			0.598
SM 2320 B-97	Total Alkalinity	104			0.284	
SM 4500 F-C-97	Fluoride	98.4	97.0 97.0			0.0
SM 5310 B-00	Organic Carbon	107	95.2 96.4			1.10

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1831131, 1831132, 1831133, 1831134, 1831135, 1831136
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1831131, 1831132, 1831133, 1831134, 1831135, 1831136
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1831137, 1831138, 1831139, 1831140, 1831141, 1831142

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1831137, 1831138, 1831139, 1831140, 1831141, 1831142
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1831137, 1831138, 1831139, 1831140, 1831141, 1831142
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1831137, 1831138, 1831139, 1831140, 1831141, 1831142
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1831143, 1831144, 1831145, 1831146, 1831147, 1831148
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1831131, 1831132, 1831133, 1831134, 1831135, 1831136
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1831131, 1831132, 1831133, 1831134, 1831135, 1831136
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1831131, 1831132, 1831133, 1831134, 1831135, 1831136
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1831137, 1831138, 1831139, 1831140, 1831141, 1831142

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	09/14/2016			09/14/2016 15:33	Sima Feizi	1831131, 1831132, 1831133, 1831134, 1831135, 1831136
EPA 300.0 Rev. 2.1	09/14/2016			09/22/2016	Ping Hua	1831131, 1831132, 1831133, 1831134, 1831135, 1831136
EPA 350.1 Rev. 2.0	09/14/2016			09/15/2016	Joseph Suarez	1831137, 1831138, 1831139, 1831140, 1831141, 1831142
EPA 351.2 Rev. 2.0	09/14/2016	09/19/2016	Adrian Shelby	09/20/2016	Christopher Armour	1831137
	09/14/2016	09/22/2016	Adrian Shelby	09/23/2016	Virginia P. Brown	1831138, 1831139, 1831140, 1831141, 1831142
EPA 353.2 Rev. 2.0	09/14/2016			09/23/2016	Beverly Y. Sanders	1831137, 1831138, 1831139, 1831140, 1831141, 1831142
EPA 365.1 Rev. 2.0	09/14/2016	09/22/2016	Lipi Saha	09/23/2016	Lipi Saha	1831137
	09/14/2016	09/26/2016	Vijayalakshmi Reddy	09/27/2016	Lipi Saha	1831138, 1831139, 1831140, 1831141, 1831142
EPA 365.1 Rev. 2.0 dissolved	09/14/2016			09/14/2016 16:03	Julia Storbeck	1831145
	09/14/2016			09/14/2016 16:04	Julia Storbeck	1831147
	09/14/2016			09/14/2016 16:51	Julia Storbeck	1831143
	09/14/2016			09/14/2016 16:52	Julia Storbeck	1831144
	09/14/2016			09/14/2016 16:53	Julia Storbeck	1831146
	09/14/2016			09/14/2016 16:54	Julia Storbeck	1831148
SM 2320 B-97	09/14/2016			09/19/2016	Dale L. Simmons	1831131, 1831132
	09/14/2016			09/20/2016	Dale L. Simmons	1831133, 1831134, 1831135, 1831136
SM 2540 D-97	09/14/2016			09/19/2016	Yijie Li	1831131, 1831132, 1831133, 1831134, 1831135, 1831136
SM 4500 F-C-97	09/14/2016			09/21/2016	Dale L. Simmons	1831131, 1831132, 1831133, 1831134, 1831135, 1831136
SM 5310 B-00	09/14/2016			09/15/2016	Sofia Elnemr	1831137, 1831138, 1831139, 1831140, 1831141, 1831142