

Chemical Analysis Report

SE-DIST-2016-11-03-01

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

Event Description: **Key Largo week of 10/10 + DUP**

Request ID: **RQ-2016-10-10-12**

Customer: **SE-DIST**

Project ID: **SMP**

Send Reports to:

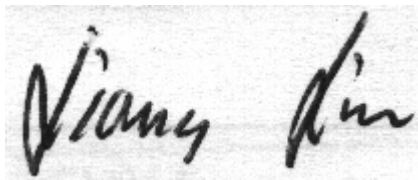
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
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Attn: Jordan Skaggs

For additional information please contact

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 29-NOV-2016 14:20

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

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical group are included in this report: Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited 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: FIELD BLANK

Collection Date/Time: 11/02/2016 08:00

Field ID: FIELD BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1846957	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P314543	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P315415	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P314921	
	SM 2540 D-97	TSS	2	U	mg/L	P315124	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P314924	
1846963	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P315024	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P315343	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P314875	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P315085	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P314657	
1846969	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P314541	

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.

SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: BARNES SOUND SE OF MAIN KEY

Collection Date/Time: 11/02/2016 12:00

Field ID: G5SE0053

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1846958	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P314543	
	EPA 300.0 Rev. 2.1	Chloride	1.7E+04		mg Cl/L	P315415	
	SM 2320 B-97	Total Alkalinity	138		mg CaCO3/L	P314853	
	SM 2540 D-97	TSS	6	I	mg/L	P315128	
	SM 4500 F-C-97	Fluoride	1.1		mg F/L	P314856	
1846964	EPA 350.1 Rev. 2.0	Ammonia-N	0.063		mg N/L	P315028	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.43		mg N/L	P315438	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.028		mg N/L	P314599	
	EPA 365.1 Rev. 2.0	Total-P	0.005	I	mg P/L	P315081	MS
	SM 5310 B-00	Organic Carbon	3.2		mg C/L	P314658	
1846970	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P314541	

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: MANATEE BAY @ CENTER

Collection Date/Time: 11/02/2016 12:15

Field ID: G5SE0052

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1846959	EPA 180.1 Rev. 2.0	Turbidity	0.55		NTU	P314543	
	EPA 300.0 Rev. 2.1	Chloride	1.6E+04		mg Cl/L	P315415	
	SM 2320 B-97	Total Alkalinity	149		mg CaCO3/L	P314853	
	SM 2540 D-97	TSS	3	U	mg/L	P315128	
	SM 4500 F-C-97	Fluoride	1.0		mg F/L	P314856	
1846965	EPA 350.1 Rev. 2.0	Ammonia-N	0.045		mg N/L	P315028	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.64		mg N/L	P315438	

Field ID: G5SE0052

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1846965	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P314599	
	EPA 365.1 Rev. 2.0	Total-P	0.004	U	mg P/L	P315081	MS
	SM 5310 B-00	Organic Carbon	5.3		mg C/L	P314658	
1846971	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P314541	

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: BLACKWATER SOUND-NORTHERN BAY

Collection Date/Time: 11/02/2016 12:45

Field ID: G5SE0056

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1846960	EPA 180.1 Rev. 2.0	Turbidity	0.75		NTU	P314544	
	EPA 300.0 Rev. 2.1	Chloride	1.7E+04		mg Cl/L	P315415	
	SM 2320 B-97	Total Alkalinity	133		mg CaCO3/L	P314853	
	SM 2540 D-97	TSS	5	I	mg/L	P315128	
	SM 4500 F-C-97	Fluoride	1.1		mg F/L	P314856	
1846966	EPA 350.1 Rev. 2.0	Ammonia-N	0.054		mg N/L	P315028	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.45		mg N/L	P315438	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.028		mg N/L	P314599	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P315081	MS
	SM 5310 B-00	Organic Carbon	3.9		mg C/L	P314658	
1846972	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P314541	

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: LITTLE BLACKWATER SOUND @ CENTER

Collection Date/Time: 11/02/2016 13:00

Field ID: G5SE0055

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1846961	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P314544	
	EPA 300.0 Rev. 2.1	Chloride	1.5E+04		mg Cl/L	P315415	
	SM 2320 B-97	Total Alkalinity	144		mg CaCO3/L	P314853	
	SM 2540 D-97	TSS	3	I	mg/L	P315128	
	SM 4500 F-C-97	Fluoride	0.98		mg F/L	P314856	
1846967	EPA 350.1 Rev. 2.0	Ammonia-N	0.046		mg N/L	P315028	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.57		mg N/L	P315516	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P314599	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P315081	MS
	SM 5310 B-00	Organic Carbon	5.2		mg C/L	P314658	
1846973	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P314541	

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: LONG SOUND-WESTERN BAY

Collection Date/Time: 11/02/2016 13:15

Field ID: G5SE0054

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1846962	EPA 180.1 Rev. 2.0	Turbidity	7.0		NTU	P314544	
	EPA 300.0 Rev. 2.1	Chloride	1.5E+04		mg Cl/L	P315415	
	SM 2320 B-97	Total Alkalinity	147		mg CaCO3/L	P314853	
	SM 2540 D-97	TSS	11		mg/L	P315128	
	SM 4500 F-C-97	Fluoride	0.96		mg F/L	P314856	
1846968	EPA 350.1 Rev. 2.0	Ammonia-N	0.065		mg N/L	P315028	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.67		mg N/L	P315438	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.014		mg N/L	P314599	
	EPA 365.1 Rev. 2.0	Total-P	0.006	I	mg P/L	P315148	
	SM 5310 B-00	Organic Carbon	5.2		mg C/L	P314658	
1846974	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P314541	

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: P314543

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P314544

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P315415

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P315024

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

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P315028

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P315343

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315438

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315516

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314599

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314875

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P315081

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P315085

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P315148

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314541

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

Reference Method: SM 2320 B-97
Batch ID: P314853

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P314921

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

Reference Method: SM 2540 D-97
Batch ID: P315124

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P315128

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P314856

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P314924

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P314657

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

Reference Method: SM 5310 B-00
Batch ID: P314658

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: P315415

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315024

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315024

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315028

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315343

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315438

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315516

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314599

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314875

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: P315081

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P315085

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.2		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P315148

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P314541

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

Reference Method: SM 2320 B-97

Batch ID: P314853

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	95 - 108

Reference Method: SM 2320 B-97

Batch ID: P314921

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 108

Reference Method: SM 4500 F-C-97

Batch ID: P314856

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

Reference Method: SM 4500 F-C-97

Batch ID: P314924

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.5		P	92 - 103

Reference Method: SM 5310 B-00

Batch ID: P314657

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

Reference Method: SM 5310 B-00

Batch ID: P314658

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P315415

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315415

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1846806	Chloride	99.0		P	90 - 110
1846938	Chloride	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315028

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1846846	Ammonia-N	103	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315343

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1847120	Kjeldahl Nitrogen	109	111	P/F	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315438

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1846966	Kjeldahl Nitrogen	108	99.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315516

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1847884	Kjeldahl Nitrogen	96.5	98.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314599

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1846964	NO2NO3-N	107	107	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314875

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1847889	NO2NO3-N	104	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P315081

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1846860	Total-P	92.5	89.2	P/F	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P315085

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1847053	Total-P	97.8	97.0	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P315148

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1847509	Total-P	93.8	95.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314541

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1846973	O-Phosphate-P	104	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P314856

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1846996	Fluoride	96.6	98.8	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P314924

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1846901	Fluoride	99.4	100	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P314658

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1846561	Organic Carbon	86.8	88.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P314543

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846917	Turbidity	10.5	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P314544

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846994	Turbidity	4.73	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315415

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846806	Chloride	0.189	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315024

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846044	Ammonia-N	0.947	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315028

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846846	Ammonia-N	1.45	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315343

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1847120	Kjeldahl Nitrogen	1.19	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315438

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846966	Kjeldahl Nitrogen	7.17	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315516

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1847884	Kjeldahl Nitrogen	1.95	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314599

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846964	NO2NO3-N	0.412	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314875

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1847889	NO2NO3-N	1.23	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P315081

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846860	Total-P	3.56	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P315085

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1847053	Total-P	0.726	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P315148

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1847509	Total-P	1.51	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314541

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846973	O-Phosphate-P	0.673	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P314853

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846996	Total Alkalinity	0.349	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P314921

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846901	Total Alkalinity	0.287	Sample	P	0 - 4.8

Reference Method: SM 4500 F-C-97
Batch ID: P314856

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846996	Fluoride	1.46	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P314924

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846901	Fluoride	0.494	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P314657

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846918	Organic Carbon	1.75	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P314658

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846561	Organic Carbon	2.12	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: A72602
Included Lab Sample IDs: 1846969, 1846970, 1846971, 1846972, 1846973, 1846974

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	102	102	P/P	90 - 110
O-Phosphate-P	94.8	96.2	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A72603
Included Lab Sample IDs: 1846957, 1846958, 1846959, 1846960, 1846961, 1846962

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A72621
Included Lab Sample IDs: 1846964, 1846965, 1846966, 1846967, 1846968

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

Reference Method: SM 5310 B-00
Run ID: A72642
Included Lab Sample IDs: 1846963, 1846964, 1846965, 1846966, 1846967, 1846968

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.0	91.4	P/P	90 - 110
Organic Carbon	98.2	99.1	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A72710
Included Lab Sample IDs: 1846958, 1846959, 1846960, 1846961, 1846962

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

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A72710

Included Lab Sample IDs: 1846958, 1846959, 1846960, 1846961, 1846962

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A72727

Included Lab Sample IDs: 1846963

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

Reference Method: SM 2320 B-97

Run ID: A72739

Included Lab Sample IDs: 1846957

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

Reference Method: SM 4500 F-C-97

Run ID: A72739

Included Lab Sample IDs: 1846957

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A72765

Included Lab Sample IDs: 1846963, 1846964, 1846965, 1846966, 1846967, 1846968

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	101	P/P	90 - 110
Ammonia-N	101	99.8	P/P	90 - 110
Ammonia-N	99.8	99.6	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A72830

Included Lab Sample IDs: 1846957, 1846958, 1846959, 1846960, 1846961, 1846962

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	100	P/P	90 - 110
Chloride	99.5	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A72836

Included Lab Sample IDs: 1846963, 1846964, 1846965, 1846966, 1846967

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A72891

Included Lab Sample IDs: 1846968

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A72901

Included Lab Sample IDs: 1846963

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A72920

Included Lab Sample IDs: 1846964, 1846965, 1846966, 1846968

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	106	P/P	90 - 110
Kjeldahl Nitrogen	103	108	P/P	90 - 110
Kjeldahl Nitrogen	106	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A72943

Included Lab Sample IDs: 1846967

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	100	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				10.5	
	Turbidity				4.73	
EPA 300.0 Rev. 2.1	Chloride	99.4	99.0 101		0.189	
EPA 350.1 Rev. 2.0	Ammonia-N	103				0.947
	Ammonia-N	105	103 105			1.45
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	111 109			1.19
	Kjeldahl Nitrogen	103	108 99.4			7.17
	Kjeldahl Nitrogen	99.8	96.5 98.9			1.95
EPA 353.2 Rev. 2.0	NO2NO3-N	104	107 107			0.412
	NO2NO3-N	102	104 103			1.23
EPA 365.1 Rev. 2.0	Total-P	97.2	92.5 89.2			3.56
	Total-P	96.2	97.8 97.0			0.726
	Total-P	101	93.8 95.3			1.51
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	104 104			0.673
SM 2320 B-97	Total Alkalinity	101			0.349	
	Total Alkalinity	102			0.287	

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
SM 4500 F-C-97	Fluoride	97.9	96.6	98.8		1.46
	Fluoride	98.5	99.4	100		0.494
SM 5310 B-00	Organic Carbon	101				1.75
	Organic Carbon	98.0	86.8	88.8		2.12

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1846957, 1846958, 1846959, 1846960, 1846961, 1846962
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1846957, 1846958, 1846959, 1846960, 1846961, 1846962
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1846963, 1846964, 1846965, 1846966, 1846967, 1846968
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1846963, 1846964, 1846965, 1846966, 1846967, 1846968
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1846963, 1846964, 1846965, 1846966, 1846967, 1846968
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1846963, 1846964, 1846965, 1846966, 1846967, 1846968
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1846969, 1846970, 1846971, 1846972, 1846973, 1846974
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1846957, 1846958, 1846959, 1846960, 1846961, 1846962
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1846957, 1846958, 1846959, 1846960, 1846961, 1846962
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1846957, 1846958, 1846959, 1846960, 1846961, 1846962
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1846963, 1846964, 1846965, 1846966, 1846967, 1846968

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	11/03/2016			11/03/2016 15:45	Julie Michelle Frank	1846957, 1846958, 1846959, 1846960, 1846961, 1846962
EPA 300.0 Rev. 2.1	11/03/2016			11/18/2016	Ping Hua	1846957, 1846958, 1846959, 1846960, 1846961, 1846962
EPA 350.1 Rev. 2.0	11/03/2016			11/10/2016	Julie Michelle Frank	1846963, 1846964, 1846965, 1846966, 1846967, 1846968
EPA 351.2 Rev. 2.0	11/03/2016	11/17/2016	Martin Acosta	11/18/2016	Joseph Suarez	1846963
	11/03/2016	11/18/2016	Adrian Shelby	11/21/2016	Joseph Suarez	1846964, 1846965, 1846966, 1846968
	11/03/2016	11/21/2016	Adrian Shelby	11/22/2016	Joseph Suarez	1846967
EPA 353.2 Rev. 2.0	11/03/2016			11/04/2016	Beverly Y. Sanders	1846964, 1846965, 1846966, 1846967, 1846968
	11/03/2016			11/09/2016	Beverly Y. Sanders	1846963
EPA 365.1 Rev. 2.0	11/03/2016	11/14/2016	Adrian Shelby	11/16/2016	Lipi Saha	1846963, 1846964, 1846965, 1846966, 1846967
	11/03/2016	11/15/2016	Adrian Shelby	11/18/2016	Lipi Saha	1846968
EPA 365.1 Rev. 2.0 dissolved	11/03/2016			11/03/2016 15:19	Julia Storbeck	1846973
	11/03/2016			11/03/2016 15:21	Julia Storbeck	1846969
	11/03/2016			11/03/2016 15:46	Julia Storbeck	1846970
	11/03/2016			11/03/2016 15:47	Julia Storbeck	1846971
	11/03/2016			11/03/2016 15:48	Julia Storbeck	1846972
	11/03/2016			11/03/2016 15:49	Julia Storbeck	1846974
SM 2320 B-97	11/03/2016			11/09/2016	Dale L. Simmons	1846958, 1846959, 1846960, 1846961, 1846962
	11/03/2016			11/10/2016	Dale L. Simmons	1846957
SM 2540 D-97	11/03/2016			11/07/2016	Sima Feizi	1846957, 1846958, 1846959, 1846960, 1846961, 1846962
SM 4500 F-C-97	11/03/2016			11/08/2016	Dale L. Simmons	1846958, 1846959, 1846960, 1846961, 1846962
	11/03/2016			11/10/2016	Dale L. Simmons	1846957
SM 5310 B-00	11/03/2016			11/04/2016	Julie Michelle Frank	1846963
	11/03/2016			11/05/2016	Julie Michelle Frank	1846964, 1846965, 1846966, 1846967, 1846968