Chemical Analysis Report

NW-DIST-2016-11-02-01

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

Event Description: **WBID 778A 843 786 874A 754**
Request ID: **RQ-2016-10-24-19**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 208A
Pensacola, FL 32502-5794
Attn: Michael King

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Thekkekalathil Chandrasekhar, PhD, QA Officer
Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 23-NOV-2016 13:03

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: CINCO BAYOU WEST OF CINCO BRIDGE **Collection Date/Time: 11/01/2016 11:10**

Field ID: G3NW0088 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1846554	EPA 180.1 Rev. 2.0	Turbidity	0.60		NTU	P314429	
	SM 2320 B-97	Total Alkalinity	91		mg CaCO3/L	P314853	
	SM 2540 D-97	TSS	3	I	mg/L	P315106	
	SM 4500 F-C-97	Fluoride	0.85		mg F/L	P314856	
1846561	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P315182	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.26	I	mg N/L	P315255	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P314596	
	EPA 365.1 Rev. 2.0	Total-P	0.008	I	mg P/L	P314963	MS
	SM 5310 B-00	Organic Carbon	2.6		mg C/L	P314658	
1846568	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P314420	

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: GARNIER BAYOU PARADISE POINT **Collection Date/Time: 11/01/2016 11:25**

Field ID: G3NW0087 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1846555	EPA 180.1 Rev. 2.0	Turbidity	0.50		NTU	P314429	
	SM 2320 B-97	Total Alkalinity	88		mg CaCO3/L	P314853	
	SM 2540 D-97	TSS	4	I	mg/L	P315106	
	SM 4500 F-C-97	Fluoride	0.80		mg F/L	P314856	
1846562	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P315182	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.19	I	mg N/L	P315255	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.048		mg N/L	P314596	
	EPA 365.1 Rev. 2.0	Total-P	0.007	I	mg P/L	P314963	MS
	SM 5310 B-00	Organic Carbon	2.5		mg C/L	P314658	
1846569	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P314420	

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: GARNIER BAYOU PARADISE POINT **Collection Date/Time: 11/01/2016 11:35**

Field ID: G3NW0087DUPLICATE Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1846556	EPA 180.1 Rev. 2.0	Turbidity	0.50		NTU	P314429	
	SM 2320 B-97	Total Alkalinity	88		mg CaCO3/L	P314853	
	SM 2540 D-97	TSS	4	I	mg/L	P315106	
	SM 4500 F-C-97	Fluoride	0.81		mg F/L	P314856	
1846563	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P315182	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.19	I	mg N/L	P315255	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.046		mg N/L	P314596	
	EPA 365.1 Rev. 2.0	Total-P	0.007	I	mg P/L	P314963	MS
	SM 5310 B-00	Organic Carbon	2.5		mg C/L	P314658	

Field ID: G3NW0087DUPLICATE Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1846570	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P314420	

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: POQUITO BAYOU MIDDLE **Collection Date/Time: 11/01/2016 11:40**

Field ID: G3NW0086 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1846557	EPA 180.1 Rev. 2.0	Turbidity	0.85		NTU	P314429	
	SM 2320 B-97	Total Alkalinity	88		mg CaCO3/L	P314853	
	SM 2540 D-97	TSS	3	U	mg/L	P315106	
	SM 4500 F-C-97	Fluoride	0.83		mg F/L	P314856	
1846564	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P315182	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21	I	mg N/L	P315255	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.020		mg N/L	P314596	
	EPA 365.1 Rev. 2.0	Total-P	0.006	I	mg P/L	P314963	MS
	SM 5310 B-00	Organic Carbon	2.5		mg C/L	P314658	
1846571	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P314420	

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: CHOCTAWHATCHEE BAY SEC B BACKGRN **Collection Date/Time: 11/01/2016 12:00**

Field ID: G3NW0089 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1846558	EPA 180.1 Rev. 2.0	Turbidity	0.65		NTU	P314429	
	SM 2320 B-97	Total Alkalinity	97		mg CaCO3/L	P314853	
	SM 2540 D-97	TSS	3	U	mg/L	P315106	
	SM 4500 F-C-97	Fluoride	0.87		mg F/L	P314856	
1846565	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P315182	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.23	I	mg N/L	P315255	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P314596	
	EPA 365.1 Rev. 2.0	Total-P	0.008	I	mg P/L	P314963	MS
	SM 5310 B-00	Organic Carbon	2.7		mg C/L	P314658	
1846572	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P314420	

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: LAKE EARL CENTER **Collection Date/Time: 11/01/2016 12:20**

Field ID: G3NW0090 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1846559	EPA 180.1 Rev. 2.0	Turbidity	2.1	A	NTU	P314429	
	SM 2320 B-97	Total Alkalinity	149		mg CaCO3/L	P314853	

Field ID: G3NW0090 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1846559	SM 2540 D-97	TSS	6	I	mg/L	P315106	
	SM 4500 F-C-97	Fluoride	0.72		mg F/L	P314856	
1846566	EPA 350.1 Rev. 2.0	Ammonia-N	0.030		mg N/L	P315182	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40		mg N/L	P315339	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P314596	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P314963	MS
	SM 5310 B-00	Organic Carbon	3.2		mg C/L	P314658	
1846573	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P314420	

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: FIELD BLANK **Collection Date/Time: 11/01/2016 12:25**

Field ID: FIELD BLANK Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1846560	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P314430	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P314854	
	SM 2540 D-97	TSS	2	U	mg/L	P315046	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P314857	
1846567	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P315183	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P315437	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P314518	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P314965	
	SM 5310 B-00	Organic Carbon	0.54	I	mg C/L	P314482	
1846574	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P314420	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 5310 B-00: The result was confirmed on 11/04/2016.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P314429

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P314430

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315182

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315183

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315255

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315339

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315437

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314518

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314596

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314963

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314965

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314420

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

Quality Assurance Report
Method Blank Results

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

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

Reference Method: SM 2320 B-97
Batch ID: P314854

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

Reference Method: SM 2540 D-97
Batch ID: P315046

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P315106

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: P314857

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P314482

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 350.1 Rev. 2.0
Batch ID: P315182

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315182

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: P315183

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315255

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315339

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: P315437

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314518

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	108		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314596

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314963

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	94.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314965

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314420

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	105		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: P314854

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: P314857

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

Reference Method: SM 5310 B-00
Batch ID: P314482

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.5		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 350.1 Rev. 2.0
Batch ID: P315183

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1847521	Ammonia-N	105	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315255

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315255

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845068	Kjeldahl Nitrogen	95.9	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315339

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1846853	Kjeldahl Nitrogen	103	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315437

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1846592	Kjeldahl Nitrogen	103	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314518

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1846534	NO2NO3-N	97.6	96.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314596

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1846561	NO2NO3-N	105	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314963

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1845069	Total-P	87.7	91.6	F/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314965

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1846503	Total-P	99.6	92.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314420

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1846571	O-Phosphate-P	101	103	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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P314857

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1846902	Fluoride	99.3	99.9	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P314482

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1846502	Organic Carbon	95.7	97.4	P/P	85 - 115

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: P314429

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846559	Turbidity	3.76	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P314430

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846650	Turbidity	1.87	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315182

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1844812	Ammonia-N	0.680	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315183

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1847521	Ammonia-N	1.15	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315255

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845068	Kjeldahl Nitrogen	4.34	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315339

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846853	Kjeldahl Nitrogen	1.27	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315437

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846592	Kjeldahl Nitrogen	0.832	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314518

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846534	NO2NO3-N	0.920	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314596

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846561	NO2NO3-N	0.460	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314963

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1845069	Total-P	4.25	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314965

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846503	Total-P	5.76	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314420

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846571	O-Phosphate-P	1.47	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

Quality Assurance Report
Precision

Reference Method: SM 2320 B-97
Batch ID: P314854

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846902	Total Alkalinity	0.0858	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: P314857

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846902	Fluoride	0.473	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P314482

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846502	Organic Carbon	1.56	Spike	P	0 - 20

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: A72581
Included Lab Sample IDs: 1846568, 1846569, 1846570, 1846571, 1846572, 1846573, 1846574

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.0	98.0	P/P	90 - 110
O-Phosphate-P	98.6	100	P/P	90 - 110
O-Phosphate-P	99.2	99.9	P/P	90 - 110
O-Phosphate-P	99.9	98.0	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A72583
Included Lab Sample IDs: 1846554, 1846555, 1846556, 1846557, 1846558, 1846559, 1846560

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	102	P/P	95 - 105
Turbidity	102	102	P/P	95 - 105

Reference Method: SM 5310 B-00
Run ID: A72591
Included Lab Sample IDs: 1846567

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.8	98.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A72599
Included Lab Sample IDs: 1846567

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A72621
Included Lab Sample IDs: 1846561, 1846562, 1846563, 1846564, 1846565, 1846566

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

Reference Method: SM 5310 B-00
Run ID: A72642
Included Lab Sample IDs: 1846561, 1846562, 1846563, 1846564, 1846565, 1846566

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	101	97.0	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A72710
Included Lab Sample IDs: 1846554, 1846555, 1846556, 1846557, 1846558, 1846559, 1846560

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

Reference Method: SM 4500 F-C-97
Run ID: A72710
Included Lab Sample IDs: 1846554, 1846555, 1846556, 1846557, 1846558, 1846559, 1846560

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A72811
Included Lab Sample IDs: 1846561, 1846562, 1846563, 1846564, 1846565, 1846566, 1846567

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A72814
Included Lab Sample IDs: 1846561, 1846562, 1846563, 1846564, 1846565, 1846566, 1846567

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.9	P/P	90 - 110
Ammonia-N	101	100	P/P	90 - 110
Ammonia-N	99.7	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A72874
Included Lab Sample IDs: 1846561, 1846562, 1846563, 1846564, 1846565

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	104	P/P	90 - 110
Kjeldahl Nitrogen	104	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A72901
Included Lab Sample IDs: 1846566

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A72920
Included Lab Sample IDs: 1846567

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

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

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					3.76	
	Turbidity					1.87	
EPA 350.1 Rev. 2.0	Ammonia-N	103					0.680
	Ammonia-N	103	105	103			1.15
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	95.9	101			4.34
	Kjeldahl Nitrogen	107	103	102			1.27
	Kjeldahl Nitrogen	104	103	102			0.832

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 353.2 Rev. 2.0	NO2NO3-N	108	97.6	96.6			0.920
	NO2NO3-N	104	105	105			0.460
EPA 365.1 Rev. 2.0	Total-P	94.9	87.7	91.6			4.25
	Total-P	97.6	99.6	92.5			5.76
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	105	101	103			1.47
SM 2320 B-97	Total Alkalinity	101				0.349	
	Total Alkalinity	102				0.0858	
SM 4500 F-C-97	Fluoride	97.9	96.6	98.8			1.46
	Fluoride	98.4	99.3	99.9			0.473
SM 5310 B-00	Organic Carbon	99.5	95.7	97.4			1.56
	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	1846554, 1846555, 1846556, 1846557, 1846558, 1846559, 1846560
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1846561, 1846562, 1846563, 1846564, 1846565, 1846566, 1846567
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1846561, 1846562, 1846563, 1846564, 1846565, 1846566, 1846567
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1846561, 1846562, 1846563, 1846564, 1846565, 1846566, 1846567
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1846561, 1846562, 1846563, 1846564, 1846565, 1846566, 1846567
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1846568, 1846569, 1846570, 1846571, 1846572, 1846573, 1846574
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1846554, 1846555, 1846556, 1846557, 1846558, 1846559, 1846560
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1846554, 1846555, 1846556, 1846557, 1846558, 1846559, 1846560
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1846554, 1846555, 1846556, 1846557, 1846558, 1846559, 1846560
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1846561, 1846562, 1846563, 1846564, 1846565, 1846566, 1846567

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	11/02/2016			11/02/2016 15:45	Julie Michelle Frank	1846554, 1846555, 1846556, 1846557, 1846558, 1846559, 1846560
EPA 350.1 Rev. 2.0	11/02/2016			11/15/2016	Julie Michelle Frank	1846561, 1846562, 1846563, 1846564, 1846565, 1846566, 1846567
EPA 351.2 Rev. 2.0	11/02/2016	11/16/2016	Adrian Shelby	11/17/2016	Joseph Suarez	1846561, 1846562, 1846563, 1846564, 1846565
	11/02/2016	11/17/2016	Martin Acosta	11/18/2016	Joseph Suarez	1846566
	11/02/2016	11/18/2016	Adrian Shelby	11/21/2016	Joseph Suarez	1846567
EPA 353.2 Rev. 2.0	11/02/2016			11/03/2016	Beverly Y. Sanders	1846567
	11/02/2016			11/04/2016	Beverly Y. Sanders	1846561, 1846562, 1846563, 1846564, 1846565, 1846566
EPA 365.1 Rev. 2.0	11/02/2016	11/10/2016	Adrian Shelby	11/15/2016	Lipi Saha	1846561, 1846562, 1846563, 1846564, 1846565, 1846566, 1846567
EPA 365.1 Rev. 2.0 dissolved	11/02/2016			11/02/2016 15:08	Julia Storbeck	1846571
	11/02/2016			11/02/2016 15:18	Julia Storbeck	1846574
	11/02/2016			11/02/2016 15:29	Julia Storbeck	1846569
	11/02/2016			11/02/2016 15:30	Julia Storbeck	1846570
	11/02/2016			11/02/2016 15:35	Julia Storbeck	1846568
	11/02/2016			11/02/2016 15:41	Julia Storbeck	1846573
	11/02/2016			11/02/2016 16:07	Julia Storbeck	1846572
SM 2320 B-97	11/02/2016			11/09/2016	Dale L. Simmons	1846554, 1846555, 1846556, 1846557, 1846558, 1846559, 1846560
SM 2540 D-97	11/02/2016			11/04/2016	Yijie Li	1846554, 1846555, 1846556, 1846557, 1846558, 1846559, 1846560
SM 4500 F-C-97	11/02/2016			11/08/2016	Dale L. Simmons	1846554, 1846555, 1846556, 1846557, 1846558, 1846559
	11/02/2016			11/09/2016	Dale L. Simmons	1846560
SM 5310 B-00	11/02/2016			11/02/2016	Julie Michelle Frank	1846567
	11/02/2016			11/05/2016	Julie Michelle Frank	1846561, 1846562, 1846563, 1846564, 1846565, 1846566