Chemical Analysis Report

SW-DIST-2016-06-09-03

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

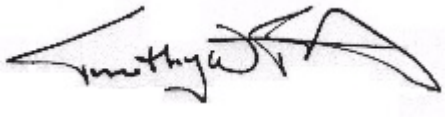
Event Description: **RUN 5**
Request ID: **RQ-2016-06-06-35**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
Attn: Stephen Clingerman

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

Certified by: Timothy Fitzpatrick, Program Administrator

Date Certified: 05-JUL-2016 10:32



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: Blue Bird Spring **Collection Date/Time: 06/08/2016 10:55**

Field ID: G5SW0028 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1807000	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P306012	
	EPA 300.0 Rev. 2.1	Chloride	87		mg Cl/L	P306580	
		Sulfate	22		mg SO4/L	P306582	
	SM 2120 B	Color (true)	37	A	PCU	P305949	
	SM 2320 B-97	Total Alkalinity	122	A	mg CaCO3/L	P306031	
	SM 2540 C-97	TDS	306	A	mg/L	P306557	
	SM 2540 D-97	TSS	2	U	mg/L	P306282	
	SM 4500 F-C-97	Fluoride	0.092	I	mg F/L	P306036	
1807004	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P306271	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.64		mg N/L	P306058	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.26		mg N/L	P306151	
	EPA 365.1 Rev. 2.0	Total-P	0.053		mg P/L	P306221	
	SM 5310 B-00	Organic Carbon	6.0		mg C/L	P306402	
1807008	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P305929	

Ref. Method and Comment:
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Sample Location: Tooke Lake (c) **Collection Date/Time: 06/08/2016 11:55**

Field ID: G5SW0121 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1807001	EPA 180.1 Rev. 2.0	Turbidity	1.7	A	NTU	P306013	
	EPA 300.0 Rev. 2.1	Chloride	7.0		mg Cl/L	P306580	
		Sulfate	4.0		mg SO4/L	P306582	
	SM 2120 B	Color (true)	15		PCU	P305949	
	SM 2320 B-97	Total Alkalinity	5.9		mg CaCO3/L	P306169	
	SM 2540 C-97	TDS	53		mg/L	P306557	
	SM 2540 D-97	TSS	2	U	mg/L	P306282	
	SM 4500 F-C-97	Fluoride	0.050	I	mg F/L	P306036	
1807005	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P306272	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P306058	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P306306	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P306221	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P306402	
1807009	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P305929	

Ref. Method and Comment:
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Sample Location: Tooke Lake (N) **Collection Date/Time: 06/08/2016 11:45**

Field ID: G5SW0122 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1807002	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P306013	
	EPA 300.0 Rev. 2.1	Chloride	7.0		mg Cl/L	P306580	
		Sulfate	4.0		mg SO4/L	P306582	

Field ID: G5SW0122 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1807002	SM 2120 B	Color (true)	15		PCU	P305950	
	SM 2320 B-97	Total Alkalinity	5.6		mg CaCO3/L	P306169	
	SM 2540 C-97	TDS	54		mg/L	P306557	
	SM 2540 D-97	TSS	2	U	mg/L	P306282	
	SM 4500 F-C-97	Fluoride	0.049	I	mg F/L	P306036	
1807006	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P306272	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.98	J	mg N/L	P306059	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P306151	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P306221	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P306402	
1807010	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P305929	

Ref. Method and Comment:
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Refer to the narrative for an explanation of QC Codes.

Sample Location: Skinner Lake (C) **Collection Date/Time: 06/08/2016 13:05**

Field ID: g5sw0043 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1807003	EPA 180.1 Rev. 2.0	Turbidity	0.45		NTU	P306013	
	EPA 300.0 Rev. 2.1	Chloride	1.7		mg Cl/L	P306580	
		Sulfate	0.20	U	mg SO4/L	P306582	
	SM 2120 B	Color (true)	17		PCU	P305950	
	SM 2320 B-97	Total Alkalinity	41		mg CaCO3/L	P306031	
	SM 2540 C-97	TDS	50		mg/L	P306557	
	SM 2540 D-97	TSS	2	U	mg/L	P306282	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P306036	
1807007	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P306272	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.48		mg N/L	P306059	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P306151	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P306221	
	SM 5310 B-00	Organic Carbon	5.1		mg C/L	P306402	
1807011	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P305930	

Ref. Method and Comment:
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P306012

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P306013

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P306580

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P306582

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306271

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306272

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P306058

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P306059

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306151

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306306

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306221

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305929

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305930

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

Reference Method: SM 2120 B
Batch ID: P305949

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P305950

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P306031

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

Reference Method: SM 2320 B-97
Batch ID: P306169

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

Reference Method: SM 2540 C-97
Batch ID: P306557

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P306282

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P306036

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P306402

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: P306580

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P306582

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306271

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306272

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P306058

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: P306059

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: P306151

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306151

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306306

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306221

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: P305929

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305930

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

Reference Method: SM 2320 B-97
Batch ID: P306031

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

Reference Method: SM 2320 B-97
Batch ID: P306169

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P306036

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P306402

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.4		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P306580

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1806956	Chloride	98.1		P	90 - 110
1806977	Chloride	97.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P306582

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1806956	Sulfate	96.0		P	90 - 110
1806977	Sulfate	97.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306271

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1806891	Ammonia-N	100	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306272

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1807005	Ammonia-N	100	99.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P306058

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1806892	Kjeldahl Nitrogen	104	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P306059

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1807006	Kjeldahl Nitrogen	95.4	110	P/F	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306151

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1807004	NO2NO3-N	95.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306306

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1806957	NO2NO3-N	98.2	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306221

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1807004	Total-P	102	104	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305929

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1806916	O-Phosphate-P	97.4	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305930

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1807011	O-Phosphate-P	104	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P306036

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1807000	Fluoride	98.9	100	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P306402

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1806860	Organic Carbon	93.9	94.8	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P306012

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806913	Turbidity	9.09	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P306013

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1807001	Turbidity	4.68	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P306580

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806956	Chloride	0.0333	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P306582

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806956	Sulfate	1.01	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306271

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806891	Ammonia-N	0.106	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306272

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1807005	Ammonia-N	0.654	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P306058

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806892	Kjeldahl Nitrogen	2.88	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P306059

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1807006	Kjeldahl Nitrogen	8.09	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306151

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1807004	NO2NO3-N	0.451	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306306

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806957	NO2NO3-N	0.966	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306221

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1807004	Total-P	1.70	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305929

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806916	O-Phosphate-P	1.83	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305930

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1807011	O-Phosphate-P	0.385	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P305949

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1807000	Color (true)	1.28	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P305950

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1807029	Color (true)	2.07	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P306031

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1807000	Total Alkalinity	0.254	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P306169

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1807644	Total Alkalinity	0.208	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P306557

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1807000	TDS	1.64	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P306036

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1807000	Fluoride	0.974	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P306402

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1806860	Organic Carbon	0.605	Spike	P	0 - 20

Quality Assurance Report
Precision

* 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: A69952
Included Lab Sample IDs: 1807008, 1807009, 1807010, 1807011

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.9	100	P/P	90 - 110
O-Phosphate-P	99.0	99.1	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A69960
Included Lab Sample IDs: 1807000, 1807001, 1807002, 1807003

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	90 - 115
Color (true)	102	101	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A69980
Included Lab Sample IDs: 1807000, 1807001, 1807002, 1807003

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

Reference Method: SM 2320 B-97
Run ID: A69989
Included Lab Sample IDs: 1807000, 1807003

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.6	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A69989
Included Lab Sample IDs: 1807000, 1807001, 1807002, 1807003

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A70020
Included Lab Sample IDs: 1807004, 1807006, 1807007

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A70028
Included Lab Sample IDs: 1807001, 1807002

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A70038
Included Lab Sample IDs: 1807004, 1807005, 1807006, 1807007

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	96.1	P/P	90 - 110
Kjeldahl Nitrogen	98.1	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A70045
Included Lab Sample IDs: 1807000, 1807001, 1807002, 1807003

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	99.6	P/P	90 - 110
Chloride	99.7	100	P/P	90 - 110
Sulfate	95.2	97.8	P/P	90 - 110
Sulfate	98.2	95.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A70068
Included Lab Sample IDs: 1807004, 1807005, 1807006, 1807007

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A70077
Included Lab Sample IDs: 1807005

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: A70093
Included Lab Sample IDs: 1807004, 1807005, 1807006, 1807007

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

Reference Method: SM 5310 B-00
Run ID: A70103
Included Lab Sample IDs: 1807004, 1807005, 1807006, 1807007

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.2	96.6	P/P	90 - 110

Quality Assurance Report
Calibration Verification

* 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					9.09	
	Turbidity					4.68	
EPA 300.0 Rev. 2.1	Chloride	99.1	98.1	97.3		0.0333	
	Sulfate	97.2	96.0	97.4		1.01	
EPA 350.1 Rev. 2.0	Ammonia-N	101	100	100			0.106
	Ammonia-N	100	100	99.7			0.654
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	104	100			2.88
	Kjeldahl Nitrogen	104	95.4	110			8.09
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	95.8				0.451
	NO2NO3-N	99.0	98.2	99.2			0.966
EPA 365.1 Rev. 2.0	Total-P	101	102	104			1.70
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	97.4	99.2			1.83
	O-Phosphate-P	100	104	104			0.385
SM 2120 B	Color (true)					1.28	
	Color (true)					2.07	
SM 2320 B-97	Total Alkalinity	102				0.254	
	Total Alkalinity	103				0.208	
SM 2540 C-97	TDS					1.64	
SM 4500 F-C-97	Fluoride	101	98.9	100			0.974
SM 5310 B-00	Organic Carbon	94.4	93.9	94.8			0.605

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1807000, 1807001, 1807002, 1807003
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1807000, 1807001, 1807002, 1807003
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1807000, 1807001, 1807002, 1807003
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1807004, 1807005, 1807006, 1807007
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1807004, 1807005, 1807006, 1807007
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1807004, 1807005, 1807006, 1807007
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1807004, 1807005, 1807006, 1807007
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1807008, 1807009, 1807010, 1807011
SM 2120 B / E31780	True Color measured at 450 nm	1807000, 1807001, 1807002, 1807003
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1807000, 1807001, 1807002, 1807003
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1807000, 1807001, 1807002, 1807003
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1807000, 1807001, 1807002, 1807003
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1807000, 1807001, 1807002, 1807003
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1807004, 1807005, 1807006, 1807007

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	06/09/2016			06/09/2016 15:51	Rochelle Y Jackson	1807000, 1807001, 1807002, 1807003
EPA 300.0 Rev. 2.1	06/09/2016			06/15/2016	Elisa J Lutz	1807000, 1807001, 1807002, 1807003
EPA 350.1 Rev. 2.0	06/09/2016			06/15/2016	Diana M. Turner	1807004, 1807005, 1807006, 1807007
EPA 351.2 Rev. 2.0	06/09/2016	06/13/2016	Sofia Elnemr	06/14/2016	Christopher Armour	1807004, 1807005, 1807006, 1807007
EPA 353.2 Rev. 2.0	06/09/2016			06/13/2016	Beverly Y. Sanders	1807004, 1807006, 1807007
	06/09/2016			06/15/2016	Beverly Y. Sanders	1807005
EPA 365.1 Rev. 2.0	06/09/2016	06/15/2016	Vijayalakshmi Reddy	06/16/2016	Lipi Saha	1807004, 1807005, 1807006, 1807007
EPA 365.1 Rev. 2.0 dissolved	06/09/2016			06/09/2016 14:50	Julia Storbeck	1807011
	06/09/2016			06/09/2016 15:19	Julia Storbeck	1807008
	06/09/2016			06/09/2016 15:20	Julia Storbeck	1807009
	06/09/2016			06/09/2016 15:21	Julia Storbeck	1807010
SM 2120 B	06/09/2016			06/09/2016 17:12	Chrisoulla Rakowski	1807000
	06/09/2016			06/09/2016 17:13	Chrisoulla Rakowski	1807001
	06/09/2016			06/09/2016 17:16	Chrisoulla Rakowski	1807002
	06/09/2016			06/09/2016 17:17	Chrisoulla Rakowski	1807003
SM 2320 B-97	06/09/2016			06/11/2016	Dale L. Simmons	1807000, 1807003
	06/09/2016			06/13/2016	Dale L. Simmons	1807001
	06/09/2016			06/14/2016	Dale L. Simmons	1807002
SM 2540 C-97	06/09/2016			06/13/2016	Blanca Fach	1807000, 1807001, 1807002, 1807003
SM 2540 D-97	06/09/2016			06/13/2016	Blanca Fach	1807000, 1807001, 1807002, 1807003
SM 4500 F-C-97	06/09/2016			06/11/2016	Dale L. Simmons	1807000, 1807001, 1807002, 1807003
SM 5310 B-00	06/09/2016			06/16/2016	Diana M. Turner	1807004, 1807005, 1807006, 1807007