

Chemical Analysis Report

NW-DIST-2016-06-16-01

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

Event Description: **TMDL Bioassessment**
Request ID: **RQ-2016-06-06-22**
Customer: **NW-DIST**
Project ID: **SMP**

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Date Certified: 12-JUL-2016 14:05



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: POND CREEK @ CR 393

Collection Date/Time: 06/15/2016 12:30

Field ID: G4NW0195

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1808743	EPA 180.1 Rev. 2.0	Turbidity	3.1		NTU	P306452	
	EPA 300.0 Rev. 2.1	Chloride	4.6		mg Cl/L	P306878	
		Sulfate	0.95		mg SO4/L	P306880	
	SM 2120 B	Color (true)	62		PCU	P306347	
	SM 2320 B-97	Total Alkalinity	8.7		mg CaCO3/L	P306821	
	SM 2540 C-97	TDS	28		mg/L	P307023	
	SM 2540 D-97	TSS	3	I	mg/L	P306963	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P307271	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P306687	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.22		mg N/L	P306367	
1808749	EPA 353.2 Rev. 2.0	NO2NO3-N	0.29		mg N/L	P306585	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P306461	
	SM 5310 B-00	Organic Carbon	3.7		mg C/L	P306882	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.012		mg P/L	P306334	
	dissolved						

Ref. Method and Comment:

EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: POND CREEK IN MCCLOUD BAY LAKE ELLA RD.

Collection Date/Time: 06/15/2016 13:10

Field ID: G4NW0350

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1808744	EPA 180.1 Rev. 2.0	Turbidity	3.8		NTU	P306452	
	EPA 300.0 Rev. 2.1	Chloride	4.1		mg Cl/L	P306878	
		Sulfate	1.0		mg SO4/L	P306880	
	SM 2120 B	Color (true)	55		PCU	P306347	
	SM 2320 B-97	Total Alkalinity	6.3		mg CaCO3/L	P306821	
	SM 2540 C-97	TDS	27		mg/L	P307023	
	SM 2540 D-97	TSS	5	I	mg/L	P306963	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P307271	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P306687	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.23		mg N/L	P306367	
1808750	EPA 353.2 Rev. 2.0	NO2NO3-N	0.54		mg N/L	P306585	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P306502	
	SM 5310 B-00	Organic Carbon	3.4		mg C/L	P306882	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.009	I	mg P/L	P306334	
	dissolved						

Ref. Method and Comment:

EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: POND CREEK IN MCCLOUD BAY AT PIPELINE OFF SUNBURST DRIVE

Collection Date/Time: 06/15/2016 13:30

Field ID: G4NW0351

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1808745	EPA 180.1 Rev. 2.0	Turbidity	3.6		NTU	P306452	

Field ID: G4NW0351

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1808745	EPA 300.0 Rev. 2.1	Chloride	3.7		mg Cl/L	P306878	
		Sulfate	1.5		mg SO4/L	P306880	
	SM 2120 B	Color (true)	51		PCU	P306347	
	SM 2320 B-97	Total Alkalinity	4.9		mg CaCO3/L	P306821	
	SM 2540 C-97	TDS	23	I	mg/L	P307023	
	SM 2540 D-97	TSS	3	I	mg/L	P306963	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P307271	
1808751	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P306687	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.19	I	mg N/L	P306367	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.42		mg N/L	P306585	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P306502	
	SM 5310 B-00	Organic Carbon	3.2		mg C/L	P306882	
1808757	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	I	mg P/L	P306334	

Ref. Method and Comment:

EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: LONG CREEK UPSTREAM OF CR 2

Collection Date/Time: 06/15/2016 12:15

Field ID: G4NW0304

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1808746	EPA 180.1 Rev. 2.0	Turbidity	3.4		NTU	P306452	
	EPA 300.0 Rev. 2.1	Chloride	4.5		mg Cl/L	P306878	
		Sulfate	0.65		mg SO4/L	P306880	
	SM 2120 B	Color (true)	72		PCU	P306347	
	SM 2320 B-97	Total Alkalinity	9.7		mg CaCO3/L	P306821	
	SM 2540 C-97	TDS	31		mg/L	P307024	
	SM 2540 D-97	TSS	4	I	mg/L	P306964	
1808752	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P307271	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P306688	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.33		mg N/L	P306367	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.22		mg N/L	P306585	
	EPA 365.1 Rev. 2.0	Total-P	0.035		mg P/L	P306502	
1808758	SM 5310 B-00	Organic Carbon	5.4		mg C/L	P306882	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.037		mg P/L	P306334	

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: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: LONG CREEK LONG RD.

Collection Date/Time: 06/15/2016 13:05

Field ID: G4NW0308

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1808747	EPA 180.1 Rev. 2.0	Turbidity	4.0		NTU	P306452	
	EPA 300.0 Rev. 2.1	Chloride	3.1		mg Cl/L	P306878	
		Sulfate	0.61		mg SO4/L	P306880	
	SM 2120 B	Color (true)	54		PCU	P306347	

Field ID: G4NW0308

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1808747	SM 2320 B-97	Total Alkalinity	2.7		mg CaCO3/L	P306821	
	SM 2540 C-97	TDS	15	U	mg/L	P307024	
	SM 2540 D-97	TSS	5	I	mg/L	P306964	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P307271	
1808753	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P306688	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.20		mg N/L	P306367	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.31		mg N/L	P306834	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P306542	
	SM 5310 B-00	Organic Carbon	3.4		mg C/L	P306883	
1808759	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P306336	

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: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: BEECH TREE CREEK UNNAMED RD

Collection Date/Time: 06/15/2016 13:35

Field ID: G4NW0330

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1808748	EPA 180.1 Rev. 2.0	Turbidity	4.1		NTU	P306452	
	EPA 300.0 Rev. 2.1	Chloride	2.2		mg Cl/L	P306878	
		Sulfate	0.69		mg SO4/L	P306880	
	SM 2120 B	Color (true)	38		PCU	P306347	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P306821	
	SM 2540 C-97	TDS	15	U	mg/L	P307024	
	SM 2540 D-97	TSS	11		mg/L	P306964	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P307271	
1808754	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P306688	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.12	I	mg N/L	P306367	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.050		mg N/L	P306586	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P306542	
	SM 5310 B-00	Organic Carbon	2.6		mg C/L	P306883	
1808760	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.018		mg P/L	P306336	

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: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: The result was confirmed on 06/28/2016.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The result was confirmed on 06/28/2016.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P306452

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P306878

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P306880

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306687

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306688

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P306367

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306585

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306586

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306834

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306461

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306502

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306542

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P306334

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P306336

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

Reference Method: SM 2120 B
Batch ID: P306347

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P306821

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

Reference Method: SM 2540 C-97
Batch ID: P307023

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P307024

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P306963

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P306964

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P307271

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P306882

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

Reference Method: SM 5310 B-00
Batch ID: P306883

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: P306878

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P306880

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306687

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	93.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306688

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P306367

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

Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P306367

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306585

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: P306586

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306834

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: P306461

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.7		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306502

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306542

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P306334

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P306336

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P306821

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P307271

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.2		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P306882

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.8		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P306883

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: P306878

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1808737	Chloride	103		P	90 - 110
1808802	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P306880

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1808737	Sulfate	103		P	90 - 110
1808802	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306687

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1808580	Ammonia-N	94.3	92.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306688

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1808804	Ammonia-N	95.5	97.7	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306585

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1808607	NO2NO3-N	95.2	97.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306586

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1808754	NO2NO3-N	99.0	99.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306834

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1808753	NO2NO3-N	99.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306461

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1808578	Total-P	99.6	96.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306502

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1808751	Total-P	95.5	95.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306542

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1808753	Total-P	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P306334

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1808503	O-Phosphate-P	99.0	99.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P306336

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1808759	O-Phosphate-P	99.4	98.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P307271

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1808509	Fluoride	96.8	96.8	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P306882

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1808535	Organic Carbon	94.0	93.6	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P306883

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1808817	Organic Carbon	97.0		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P306452

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1808575	Turbidity	7.94	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P306878

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1808737	Chloride	0.00819	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P306880

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1808737	Sulfate	3.82	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306687

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1808580	Ammonia-N	1.82	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P306688

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1808804	Ammonia-N	2.12	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P306367

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P306367

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1808607	Kjeldahl Nitrogen	0.711	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306585

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1808607	NO2NO3-N	1.27	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306586

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1808754	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P306834

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1808753	NO2NO3-N	0.196	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306461

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1808578	Total-P	2.78	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306502

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1808751	Total-P	0.502	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P306542

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1808753	Total-P	0.386	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P306334

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1808503	O-Phosphate-P	0.0854	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P306336

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1808759	O-Phosphate-P	0.484	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P306347

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1808576	Color (true)	0.599	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P306821

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1808497	Total Alkalinity	0.0437	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P307023

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1808533	TDS	0.499	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P307024

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1808812	TDS	0.281	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P306963

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1808533	TSS	1.87	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P307271

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1808509	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P306882

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1808535	Organic Carbon	0.338	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P306883

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1808817	Organic Carbon	0.0949	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: A70081
Included Lab Sample IDs: 1808755, 1808756, 1808757, 1808758, 1808759, 1808760

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.1	98.2	P/P	90 - 110
O-Phosphate-P	98.4	97.1	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A70087
Included Lab Sample IDs: 1808743, 1808744, 1808745, 1808746, 1808747, 1808748

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.5	101	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A70118
Included Lab Sample IDs: 1808743, 1808744, 1808745, 1808746, 1808747, 1808748

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A70131
Included Lab Sample IDs: 1808749, 1808750, 1808751, 1808752, 1808753, 1808754

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.4	97.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A70135
Included Lab Sample IDs: 1808749

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A70150
Included Lab Sample IDs: 1808749, 1808750, 1808751, 1808752, 1808754

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.5	98.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A70150

Included Lab Sample IDs: 1808749, 1808750, 1808751, 1808752, 1808754

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A70166

Included Lab Sample IDs: 1808750, 1808751, 1808752, 1808753, 1808754

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	100	P/P	90 - 110
Total-P	99.5	99.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A70173

Included Lab Sample IDs: 1808749, 1808750, 1808751, 1808752, 1808753, 1808754

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	96.4	97.6	P/P	90 - 110
Ammonia-N	97.6	98.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A70213

Included Lab Sample IDs: 1808753

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

Reference Method: SM 2320 B-97

Run ID: A70215

Included Lab Sample IDs: 1808743, 1808744, 1808745, 1808746, 1808747, 1808748

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	104	P/P	90 - 110
Total Alkalinity	104	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A70233

Included Lab Sample IDs: 1808743, 1808744, 1808745, 1808746, 1808747, 1808748

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.0	100	P/P	90 - 110
Chloride	99.8	99.0	P/P	90 - 110
Sulfate	100	96.4	P/P	90 - 110
Sulfate	96.4	99.9	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A70234

Included Lab Sample IDs: 1808749, 1808750, 1808751, 1808752, 1808753, 1808754

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.4	94.8	P/P	90 - 110
Organic Carbon	97.8	97.4	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A70370

Included Lab Sample IDs: 1808743, 1808744, 1808745, 1808746, 1808747, 1808748

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	99.0	P/P	90 - 110
Fluoride	99.0	98.6	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				7.94	
EPA 300.0 Rev. 2.1	Chloride	102	103 103		0.0081	
	Sulfate	102	103 101		3.82	
EPA 350.1 Rev. 2.0	Ammonia-N	93.4	94.3 92.5			1.82
	Ammonia-N	96.2	95.5 97.7			2.12
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	108				0.711
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	95.2 97.2			1.27
	NO2NO3-N	100	99.0 99.0			0.0
	NO2NO3-N	102	99.2			0.196
EPA 365.1 Rev. 2.0	Total-P	97.7	99.6 96.2			2.78
	Total-P	98.8	95.5 95.0			0.502
	Total-P	98.9	100 100			0.386
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	99.0 99.1			0.0854
	O-Phosphate-P	100	99.4 98.9			0.484
SM 2120 B	Color (true)				0.599	
SM 2320 B-97	Total Alkalinity	103			0.0437	
SM 2540 C-97	TDS				0.499	
	TDS				0.281	
SM 2540 D-97	TSS				1.87	
SM 4500 F-C-97	Fluoride	98.2	96.8 96.8			0.0
SM 5310 B-00	Organic Carbon	96.8	94.0 93.6			0.338
	Organic Carbon	94.4	97.0			0.0949

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1808743, 1808744, 1808745, 1808746, 1808747, 1808748
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1808743, 1808744, 1808745, 1808746, 1808747, 1808748
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1808743, 1808744, 1808745, 1808746, 1808747, 1808748
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1808749, 1808750, 1808751, 1808752, 1808753, 1808754
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1808749, 1808750, 1808751, 1808752, 1808753, 1808754
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1808749, 1808750, 1808751, 1808752, 1808753, 1808754

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1808749, 1808750, 1808751, 1808752, 1808753, 1808754
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1808755, 1808756, 1808757, 1808758, 1808759, 1808760
SM 2120 B / E31780	True Color measured at 450 nm	1808743, 1808744, 1808745, 1808746, 1808747, 1808748
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1808743, 1808744, 1808745, 1808746, 1808747, 1808748
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1808743, 1808744, 1808745, 1808746, 1808747, 1808748
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1808743, 1808744, 1808745, 1808746, 1808747, 1808748
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1808743, 1808744, 1808745, 1808746, 1808747, 1808748
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1808749, 1808750, 1808751, 1808752, 1808753, 1808754

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	06/16/2016			06/16/2016 16:07	Rochelle Y Jackson	1808743, 1808744, 1808745, 1808746, 1808747, 1808748
EPA 300.0 Rev. 2.1	06/16/2016			06/24/2016	Julia Storbeck	1808743, 1808744, 1808745, 1808746, 1808747, 1808748
EPA 350.1 Rev. 2.0	06/16/2016			06/22/2016	Diana M. Turner	1808749, 1808750, 1808751, 1808752, 1808753, 1808754
EPA 351.2 Rev. 2.0	06/16/2016	06/17/2016	Sofia Elnemr	06/20/2016	Rochelle Y Jackson	1808749, 1808750, 1808751, 1808752, 1808753, 1808754
EPA 353.2 Rev. 2.0	06/16/2016			06/21/2016	Beverly Y. Sanders	1808749, 1808750, 1808751, 1808752, 1808754
	06/16/2016			06/24/2016	Virginia P. Brown	1808753
EPA 365.1 Rev. 2.0	06/16/2016	06/20/2016	Vijayalakshmi Reddy	06/21/2016	Lipi Saha	1808749
	06/16/2016	06/21/2016	Vijayalakshmi Reddy	06/22/2016	Lipi Saha	1808750, 1808751, 1808752, 1808753, 1808754
EPA 365.1 Rev. 2.0 dissolved	06/16/2016			06/16/2016 12:17	Virginia P. Brown	1808755
	06/16/2016			06/16/2016 12:18	Virginia P. Brown	1808756
	06/16/2016			06/16/2016 12:23	Virginia P. Brown	1808757
	06/16/2016			06/16/2016 12:24	Virginia P. Brown	1808758
	06/16/2016			06/16/2016 12:26	Virginia P. Brown	1808759
	06/16/2016			06/16/2016 12:29	Virginia P. Brown	1808760
SM 2120 B	06/16/2016			06/16/2016 13:26	Rochelle Y Jackson	1808743
	06/16/2016			06/16/2016 13:27	Rochelle Y Jackson	1808744
	06/16/2016			06/16/2016 13:28	Rochelle Y Jackson	1808745
	06/16/2016			06/16/2016 13:29	Rochelle Y Jackson	1808746, 1808747
	06/16/2016			06/16/2016 13:30	Rochelle Y Jackson	1808748
SM 2320 B-97	06/16/2016			06/22/2016	Rochelle Y Jackson	1808743, 1808744, 1808745, 1808746, 1808747, 1808748
SM 2540 C-97	06/16/2016			06/20/2016	Sima Feizi	1808743, 1808744, 1808745, 1808746, 1808747, 1808748
SM 2540 D-97	06/16/2016			06/20/2016	Sima Feizi	1808743, 1808744, 1808745, 1808746, 1808747, 1808748
SM 4500 F-C-97	06/16/2016			07/01/2016	Dale L. Simmons	1808743, 1808744, 1808745, 1808746, 1808747, 1808748
SM 5310 B-00	06/16/2016			06/23/2016	Diana M. Turner	1808749
	06/16/2016			06/24/2016	Diana M. Turner	1808750, 1808751, 1808752, 1808753, 1808754