

Chemical Analysis Report

SO-DIST-2016-07-13-04

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

Event Description: **SMP: Manuels, Oak, Winkler, Chapel, Carrel**

Request ID: **RQ-2016-07-11-17**

Customer: **SO-DIST**

Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: Ben Paswater

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Certified by: Colin Wright, Environmental Administrator

Date Certified: 05-AUG-2016 15:09

A handwritten signature in black ink, appearing to read "Colin Wright", is placed over a light gray rectangular background.

Case Narrative

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

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

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

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

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Manuel Branch Upstream of Weir

Collection Date/Time: 07/12/2016 10:50

Field ID: G3SD071116-1

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1815652	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P307902	
	EPA 300.0 Rev. 2.1	Chloride	80		mg Cl/L	P308925	
		Sulfate	23		mg SO4/L	P308929	
	SM 2120 B	Color (true)	63		PCU	P307826	
	SM 2320 B-97	Total Alkalinity	192		mg CaCO3/L	P308419	
	SM 2540 C-97	TDS	350		mg/L	P308628	
	SM 2540 D-97	TSS	3	I	mg/L	P308594	
	SM 4500 F-C-97	Fluoride	0.20		mg F/L	P308423	
1815658	EPA 350.1 Rev. 2.0	Ammonia-N	0.042		mg N/L	P308343	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.59		mg N/L	P308111	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.081		mg N/L	P308286	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P308316	
	SM 5310 B-00	Organic Carbon	9.4		mg C/L	P308412	
1815664	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.099		mg P/L	P307859	

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: Carrell Canal Below FMCC Weir

Collection Date/Time: 07/12/2016 11:05

Field ID: G3SD071116-2

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1815653	EPA 180.1 Rev. 2.0	Turbidity	5.4		NTU	P307902	
	EPA 300.0 Rev. 2.1	Chloride	66		mg Cl/L	P308925	
		Sulfate	34		mg SO4/L	P308929	
	SM 2120 B	Color (true)	63	A	PCU	P307826	
	SM 2320 B-97	Total Alkalinity	226		mg CaCO3/L	P308419	
	SM 2540 C-97	TDS	410		mg/L	P308628	
	SM 2540 D-97	TSS	8	I	mg/L	P308594	
	SM 4500 F-C-97	Fluoride	0.21		mg F/L	P308423	
1815659	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P308343	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P308111	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P308286	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P308316	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P308412	
1815665	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.038		mg P/L	P307859	

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: Chapel Creek South of SR78

Collection Date/Time: 07/12/2016 11:50

Field ID: G3SD071116-3

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1815654	EPA 180.1 Rev. 2.0	Turbidity	3.6		NTU	P307902	
	EPA 300.0 Rev. 2.1	Chloride	49		mg Cl/L	P308925	
		Sulfate	2.9		mg SO4/L	P308929	

Field ID: G3SD071116-3

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1815654	SM 2120 B	Color (true)	150		PCU	P307826	
	SM 2320 B-97	Total Alkalinity	142		mg CaCO3/L	P308419	
	SM 2540 C-97	TDS	236		mg/L	P308628	
	SM 2540 D-97	TSS	5	I	mg/L	P308594	
	SM 4500 F-C-97	Fluoride	0.16		mg F/L	P308423	
1815660	EPA 350.1 Rev. 2.0	Ammonia-N	0.067		mg N/L	P308343	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P308111	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P308286	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P308316	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P308412	
1815666	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.072		mg P/L	P307859	

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: Winkler Canal @ Princeton St.

Collection Date/Time: 07/12/2016 11:20

Field ID: G3SD071116-4

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1815655	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P307902	
	EPA 300.0 Rev. 2.1	Chloride	65		mg Cl/L	P308925	
		Sulfate	29		mg SO4/L	P308929	
	SM 2120 B	Color (true)	24		PCU	P307826	
	SM 2320 B-97	Total Alkalinity	166		mg CaCO3/L	P308419	
	SM 2540 C-97	TDS	311		mg/L	P308628	
	SM 2540 D-97	TSS	3	I	mg/L	P308594	
	SM 4500 F-C-97	Fluoride	0.27		mg F/L	P308423	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.059		mg N/L	P308343	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.52		mg N/L	P308111	
1815661	EPA 353.2 Rev. 2.0	NO2NO3-N	0.034		mg N/L	P308286	
	EPA 365.1 Rev. 2.0	Total-P	0.040		mg P/L	P308316	
	SM 5310 B-00	Organic Carbon	5.7		mg C/L	P308412	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.020		mg P/L	P307859	

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: Oak Creek @ Oak Creek Preserve

Collection Date/Time: 07/12/2016 14:15

Field ID: G3SD071116-5

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1815656	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P307902	
	EPA 300.0 Rev. 2.1	Chloride	44		mg Cl/L	P308925	
		Sulfate	15		mg SO4/L	P308929	
	SM 2120 B	Color (true)	24		PCU	P307826	
	SM 2320 B-97	Total Alkalinity	299		mg CaCO3/L	P308419	
	SM 2540 C-97	TDS	410		mg/L	P308628	
	SM 2540 D-97	TSS	2	I	mg/L	P308594	

Field ID: G3SD071116-5

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1815656	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P308423	
1815662	EPA 350.1 Rev. 2.0	Ammonia-N	0.029		mg N/L	P308344	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.61		mg N/L	P308111	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.24		mg N/L	P308286	
	EPA 365.1 Rev. 2.0	Total-P	0.054		mg P/L	P308316	
	SM 5310 B-00	Organic Carbon	8.6		mg C/L	P308412	
1815668	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.024		mg P/L	P307860	

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: Oak Creek @ Kentucky St.

Collection Date/Time: 07/12/2016 14:00

Field ID: G3SD071116-6

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1815657	EPA 180.1 Rev. 2.0	Turbidity	1.3	A	NTU	P307903	
	EPA 300.0 Rev. 2.1	Chloride	63		mg Cl/L	P308925	
		Sulfate	23		mg SO4/L	P308929	
	SM 2120 B	Color (true)	55		PCU	P307826	
	SM 2320 B-97	Total Alkalinity	244		mg CaCO3/L	P308419	
	SM 2540 C-97	TDS	396		mg/L	P308628	
	SM 2540 D-97	TSS	3	I	mg/L	P308594	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P308423	
1815663	EPA 350.1 Rev. 2.0	Ammonia-N	0.058		mg N/L	P308344	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.86		mg N/L	P308111	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.042		mg N/L	P308286	
	EPA 365.1 Rev. 2.0	Total-P	0.071		mg P/L	P308016	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P308412	
1815669	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.040		mg P/L	P307860	

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: P307902

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P307903

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: P308925

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308929

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308343

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308344

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308111

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308286

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308016

Component	Result	Code	Units
Total-P	0.005	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308316

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307859

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307860

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

Reference Method: SM 2120 B
Batch ID: P307826

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P308419

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

Reference Method: SM 2540 C-97
Batch ID: P308628

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P308594

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P308423

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P308412

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: P308925

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308929

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308929

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308343

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308344

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.9		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308111

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	107		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308286

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: P308016

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308316

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307859

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: P307860

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P308419

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	105		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P308423

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.3		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P308412

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.7		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308925

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815569	Chloride	100		P	90 - 110
1815756	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308929

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815569	Sulfate	97.4		P	90 - 110
1815756	Sulfate	97.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308343

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815575	Ammonia-N	95.9	98.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308344

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815662	Ammonia-N	98.8	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308111

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815658	Kjeldahl Nitrogen	108	105	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P308286

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815595	NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P308016

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815663	Total-P	96.2	95.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P308316

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815641	Total-P	100	96.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P307859

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815596	O-Phosphate-P	97.0	98.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P307860

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815668	O-Phosphate-P	97.6	98.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
 Batch ID: P308423

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815741	Fluoride	97.1	99.7	P/P	91 - 105

Reference Method: SM 5310 B-00
 Batch ID: P308412

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1815471	Organic Carbon	93.6	93.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P307902

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815603	Turbidity	9.12	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P307903

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815657	Turbidity	4.58	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308925

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815569	Chloride	0.0930	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308929

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815569	Sulfate	0.436	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308343

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815575	Ammonia-N	1.94	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308344

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815662	Ammonia-N	1.29	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308111

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815658	Kjeldahl Nitrogen	2.11	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308286

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815595	NO2NO3-N	0.885	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308016

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815663	Total-P	0.373	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308316

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815641	Total-P	3.51	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307859

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815596	O-Phosphate-P	1.23	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307860

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815668	O-Phosphate-P	0.818	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P307826

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815653	Color (true)	0.944	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P308419

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815741	Total Alkalinity	0.584	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P308628

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815743	TDS	8.64	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P308423

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815741	Fluoride	1.92	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P308412

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815471	Organic Carbon	0.377	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: SM 2120 B

Run ID: A70524

Included Lab Sample IDs: 1815652, 1815653, 1815654, 1815655, 1815656, 1815657

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	96.9	97.3	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A70533

Included Lab Sample IDs: 1815664, 1815665, 1815666, 1815667, 1815668, 1815669

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A70544

Included Lab Sample IDs: 1815652, 1815653, 1815654, 1815655, 1815656, 1815657

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: EPA 365.1 Rev. 2.0

Run ID: A70617

Included Lab Sample IDs: 1815663

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	99.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A70649

Included Lab Sample IDs: 1815658, 1815659, 1815660, 1815661, 1815662, 1815663

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A70675

Included Lab Sample IDs: 1815658, 1815659, 1815660, 1815661, 1815662, 1815663

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

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A70693

Included Lab Sample IDs: 1815658, 1815659, 1815660, 1815661, 1815662, 1815663

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.5	98.4	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A70694

Included Lab Sample IDs: 1815652, 1815653, 1815654, 1815655, 1815656, 1815657

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

Reference Method: SM 4500 F-C-97

Run ID: A70694

Included Lab Sample IDs: 1815652, 1815653, 1815654, 1815655, 1815656, 1815657

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A70700

Included Lab Sample IDs: 1815658, 1815659, 1815660, 1815662

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	98.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A70703

Included Lab Sample IDs: 1815661

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A70729

Included Lab Sample IDs: 1815658, 1815659, 1815660, 1815661, 1815662, 1815663

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	106	105	P/P	90 - 110
Kjeldahl Nitrogen	107	106	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A70802

Included Lab Sample IDs: 1815652, 1815653, 1815654, 1815655, 1815656, 1815657

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	103	P/P	90 - 110
Chloride	104	102	P/P	90 - 110
Sulfate	98.8	100	P/P	90 - 110
Sulfate	99.8	98.8	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	MS
EPA 180.1 Rev. 2.0	Turbidity				9.12	
	Turbidity				4.58	
EPA 300.0 Rev. 2.1	Chloride	102	100	100	0.0930	
	Sulfate	97.9	97.4	97.7	0.436	
EPA 350.1 Rev. 2.0	Ammonia-N	97.4	95.9	98.1		1.94
	Ammonia-N	95.9	98.8	101		1.29
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	108	105		2.11
EPA 353.2 Rev. 2.0	NO2NO3-N	102	101	102		0.885
EPA 365.1 Rev. 2.0	Total-P	96.5	96.2	95.8		0.373
	Total-P	99.1	100	96.0		3.51
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	97.0	98.3		1.23
	O-Phosphate-P	105	97.6	98.6		0.818
SM 2120 B	Color (true)				0.944	
SM 2320 B-97	Total Alkalinity	105			0.584	
SM 2540 C-97	TDS				8.64	
SM 4500 F-C-97	Fluoride	99.3	97.1	99.7		1.92
SM 5310 B-00	Organic Carbon	96.7	93.6	93.0		0.377

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1815652, 1815653, 1815654, 1815655, 1815656, 1815657
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1815652, 1815653, 1815654, 1815655, 1815656, 1815657
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1815652, 1815653, 1815654, 1815655, 1815656, 1815657
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1815658, 1815659, 1815660, 1815661, 1815662, 1815663
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1815658, 1815659, 1815660, 1815661, 1815662, 1815663
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1815658, 1815659, 1815660, 1815661, 1815662, 1815663
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1815658, 1815659, 1815660, 1815661, 1815662, 1815663
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1815664, 1815665, 1815666, 1815667, 1815668, 1815669
SM 2120 B / E31780	True Color measured at 450 nm	1815652, 1815653, 1815654, 1815655, 1815656, 1815657
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1815652, 1815653, 1815654, 1815655, 1815656, 1815657
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1815652, 1815653, 1815654, 1815655, 1815656, 1815657
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1815652, 1815653, 1815654, 1815655, 1815656, 1815657
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1815652, 1815653, 1815654, 1815655, 1815656, 1815657
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1815658, 1815659, 1815660, 1815661, 1815662, 1815663

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	07/13/2016			07/13/2016 15:26	Sima Feizi	1815652, 1815653, 1815654, 1815655, 1815656, 1815657
EPA 300.0 Rev. 2.1	07/13/2016			07/29/2016	Ping Hua	1815652, 1815653, 1815654, 1815655, 1815656, 1815657
EPA 350.1 Rev. 2.0	07/13/2016			07/20/2016	Diana M. Turner	1815658, 1815659, 1815660, 1815661, 1815662, 1815663
EPA 351.2 Rev. 2.0	07/13/2016	07/18/2016	Sofia Elnemr	07/22/2016	Christopher Armour	1815658, 1815659, 1815660, 1815661, 1815662, 1815663
EPA 353.2 Rev. 2.0	07/13/2016			07/20/2016	Beverly Y. Sanders	1815658, 1815659, 1815660, 1815661, 1815662, 1815663
EPA 365.1 Rev. 2.0	07/13/2016	07/15/2016	Vijayalakshmi Reddy	07/19/2016	Lipi Saha	1815663
	07/13/2016	07/21/2016	Vijayalakshmi Reddy	07/22/2016	Lipi Saha	1815658, 1815659, 1815660, 1815661, 1815662
EPA 365.1 Rev. 2.0 dissolved	07/13/2016			07/13/2016 15:15	Julia Storbeck	1815668
	07/13/2016			07/13/2016 16:00	Julia Storbeck	1815664
	07/13/2016			07/13/2016 16:01	Julia Storbeck	1815665, 1815666
	07/13/2016			07/13/2016 16:02	Julia Storbeck	1815667
	07/13/2016			07/13/2016 16:03	Julia Storbeck	1815669
SM 2120 B	07/13/2016			07/13/2016 13:05	Rochelle Y Jackson	1815652
	07/13/2016			07/13/2016 13:07	Rochelle Y Jackson	1815653
	07/13/2016			07/13/2016 13:08	Rochelle Y Jackson	1815655
	07/13/2016			07/13/2016 13:09	Rochelle Y Jackson	1815656
	07/13/2016			07/13/2016 13:10	Rochelle Y Jackson	1815654, 1815657
SM 2320 B-97	07/13/2016			07/20/2016	Dale L. Simmons	1815652, 1815653, 1815654, 1815655, 1815656, 1815657
SM 2540 C-97	07/13/2016			07/18/2016	Yijie Li	1815652, 1815653, 1815654, 1815655, 1815656, 1815657
SM 2540 D-97	07/13/2016			07/18/2016	Yijie Li	1815652, 1815653, 1815654, 1815655, 1815656, 1815657
SM 4500 F-C-97	07/13/2016			07/20/2016	Dale L. Simmons	1815652, 1815653, 1815654, 1815655, 1815656, 1815657
SM 5310 B-00	07/13/2016			07/20/2016	Sofia Elnemr	1815658
	07/13/2016			07/21/2016	Sofia Elnemr	1815659, 1815660, 1815661, 1815662, 1815663