

Chemical Analysis Report

SO-DIST-2016-12-08-03

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

Event Description: **SMP: Lee Streams**
Request ID: **RQ-2016-12-05-19**
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
Attn: Ben Paswater

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

Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 30-DEC-2016 14:03



Case Narrative

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

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

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

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

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

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

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

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

Precision is reported as relative percent difference unless otherwise noted.

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

QC Codes used in this report may include:

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

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

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

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

Sample Location: MANUEL BRANCH UPSTREAM OF WEIR

Collection Date/Time: 12/07/2016 13:20

Field ID: G3SD120716-1

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1856175	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P316444	
	EPA 300.0 Rev. 2.1	Chloride	110		mg Cl/L	P316975	
		Sulfate	29		mg SO4/L	P316978	
	SM 2120 B	Color (true)	73		PCU	P316451	
	SM 2320 B-97	Total Alkalinity	198		mg CaCO3/L	P316897	
	SM 2540 C-97	TDS	447	A	mg/L	P317007	
	SM 2540 D-97	TSS	3	I	mg/L	P317030	
	SM 4500 F-C-97	Fluoride	0.21		mg F/L	P316900	
1856179	EPA 350.1 Rev. 2.0	Ammonia-N	0.046		mg N/L	P317036	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.84		mg N/L	P316742	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P316941	
	EPA 365.1 Rev. 2.0	Total-P	0.20		mg P/L	P316591	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P316491	
1856183	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.13		mg P/L	P316525	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: MANUEL BRANCH UPSTREAM OF WEIR dup

Collection Date/Time: 12/07/2016 13:30

Field ID: G3SD120716-2

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1856176	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P316444	
	EPA 300.0 Rev. 2.1	Chloride	120		mg Cl/L	P316975	
		Sulfate	28		mg SO4/L	P316978	
	SM 2120 B	Color (true)	72		PCU	P316451	
	SM 2320 B-97	Total Alkalinity	199		mg CaCO3/L	P316897	
	SM 2540 C-97	TDS	465		mg/L	P317007	
	SM 2540 D-97	TSS	2	I	mg/L	P317030	
	SM 4500 F-C-97	Fluoride	0.21		mg F/L	P316900	
1856180	EPA 350.1 Rev. 2.0	Ammonia-N	0.042		mg N/L	P316799	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.82		mg N/L	P316742	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P316941	
	EPA 365.1 Rev. 2.0	Total-P	0.20		mg P/L	P316591	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P316491	
1856184	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.14		mg P/L	P316529	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: CARRELL CANAL BELOW FMCC WEIR

Collection Date/Time: 12/07/2016 13:45

Field ID: G3SD120716-3

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1856177	EPA 180.1 Rev. 2.0	Turbidity	6.2		NTU	P316444	
	EPA 300.0 Rev. 2.1	Chloride	72		mg Cl/L	P316975	
		Sulfate	43		mg SO4/L	P316978	

Field ID: G3SD120716-3

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1856177	SM 2120 B	Color (true)	57		PCU	P316451	
	SM 2320 B-97	Total Alkalinity	246		mg CaCO3/L	P316897	
	SM 2540 C-97	TDS	447		mg/L	P317007	
	SM 2540 D-97	TSS	12		mg/L	P317030	
	SM 4500 F-C-97	Fluoride	0.21		mg F/L	P316900	
1856181	EPA 350.1 Rev. 2.0	Ammonia-N	0.46		mg N/L	P317036	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.7		mg N/L	P316742	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.063		mg N/L	P316941	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P316591	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P316491	
1856185	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.045		mg P/L	P316529	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: CARRELL CANAL BELOW FMCC WEIR DUP

Collection Date/Time: 12/07/2016 13:50

Field ID: G3SD120716-4

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1856178	EPA 180.1 Rev. 2.0	Turbidity	6.8		NTU	P316444	
	EPA 300.0 Rev. 2.1	Chloride	75		mg Cl/L	P316975	
		Sulfate	46		mg SO4/L	P316978	
	SM 2120 B	Color (true)	56		PCU	P316451	
	SM 2320 B-97	Total Alkalinity	239		mg CaCO3/L	P316897	
	SM 2540 C-97	TDS	383		mg/L	P317007	
	SM 2540 D-97	TSS	10		mg/L	P317030	
	SM 4500 F-C-97	Fluoride	0.21		mg F/L	P316900	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.41		mg N/L	P317036	
1856182	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P316743	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.061		mg N/L	P316941	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P316931	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P316491	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.050		mg P/L	P316529	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P316444

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P316975

Component	Result	Code	Units
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Quality Assurance Report

Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316975

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316978

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316799

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317036

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316742

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316743

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316941

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316591

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316931

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 dissolved
 Batch ID: P316525

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P316529

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

Reference Method: SM 2120 B
 Batch ID: P316451

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
 Batch ID: P316897

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

Reference Method: SM 2540 C-97
 Batch ID: P317007

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
 Batch ID: P317030

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
 Batch ID: P316900

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
 Batch ID: P316491

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: P316975

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: P316975

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316978

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316799

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: P317036

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316742

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316743

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316941

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316591

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316931

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316525

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316529

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

Reference Method: SM 2320 B-97
Batch ID: P316897

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.4		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P316900

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P316491

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316975

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855959	Chloride	102		P	90 - 110
1856201	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316978

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855959	Sulfate	93.9		P	90 - 110
1856201	Sulfate	94.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316799

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1856180	Ammonia-N	101	105	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317036

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1856179	Ammonia-N	97.4	95.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316742

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1856169	Kjeldahl Nitrogen	106	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316743

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1856210	Kjeldahl Nitrogen	106	99.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316941

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1856158	NO2NO3-N	105	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316591

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1856139	Total-P	103	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316931

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857126	Total-P	104	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316525

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1856297	O-Phosphate-P	96.3	98.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316529

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1856185	O-Phosphate-P	101	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P316900

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1856655	Fluoride	97.9	99.7	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P316491

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1856066	Organic Carbon	96.3	96.1	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P316444

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856166	Turbidity	1.94	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316975

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856201	Chloride	0.447	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316978

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856201	Sulfate	0.219	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316799

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856180	Ammonia-N	2.31	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317036

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856179	Ammonia-N	1.22	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316742

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856169	Kjeldahl Nitrogen	0.902	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316743

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856210	Kjeldahl Nitrogen	5.19	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316941

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856158	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316591

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856139	Total-P	0.958	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316931

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857126	Total-P	0.598	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316525

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856297	O-Phosphate-P	2.16	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316529

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856185	O-Phosphate-P	0.957	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P316451

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856168	Color (true)	2.39	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P316897

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856655	Total Alkalinity	0.179	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P317007

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856175	TDS	0.0	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P316900

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856655	Fluoride	0.946	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P316491

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856066	Organic Carbon	0.119	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 180.1 Rev. 2.0
Run ID: A73258
Included Lab Sample IDs: 1856175, 1856176, 1856177, 1856178

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

Reference Method: SM 2120 B
Run ID: A73259
Included Lab Sample IDs: 1856175, 1856176, 1856177, 1856178

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	102	P/P	85 - 115

Reference Method: SM 5310 B-00
Run ID: A73268
Included Lab Sample IDs: 1856179, 1856180, 1856181, 1856182

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A73279
Included Lab Sample IDs: 1856183

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.0	97.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A73280

Included Lab Sample IDs: 1856184, 1856185, 1856186

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.0	96.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A73342

Included Lab Sample IDs: 1856179, 1856180, 1856181

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A73369

Included Lab Sample IDs: 1856179, 1856180, 1856181, 1856182

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A73375

Included Lab Sample IDs: 1856175, 1856176, 1856177, 1856178

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	105	P/P	90 - 110
Chloride	105	103	P/P	90 - 110
Sulfate	102	99.3	P/P	90 - 110
Sulfate	99.3	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A73377

Included Lab Sample IDs: 1856180

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A73405

Included Lab Sample IDs: 1856179, 1856180, 1856181, 1856182

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.5	96.3	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A73415

Included Lab Sample IDs: 1856175, 1856176, 1856177, 1856178

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.9	97.3	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A73415

Included Lab Sample IDs: 1856175, 1856176, 1856177, 1856178

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A73456

Included Lab Sample IDs: 1856182

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A73473

Included Lab Sample IDs: 1856179, 1856181, 1856182

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	96.4	97.5	P/P	90 - 110
Ammonia-N	97.5	98.2	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					1.94	
EPA 300.0 Rev. 2.1	Chloride	104	102	102		0.447	
	Sulfate	98.6	94.4	93.9		0.219	
EPA 350.1 Rev. 2.0	Ammonia-N	101	101	105			2.31
	Ammonia-N	99.1	97.4	95.1			1.22
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	106	105			0.902
	Kjeldahl Nitrogen	103	106	99.4			5.19
EPA 353.2 Rev. 2.0	NO2NO3-N	104	105	105			0.0
EPA 365.1 Rev. 2.0	Total-P	98.3	103	102			0.958
	Total-P	104	104	105			0.598
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.6	96.3	98.4			2.16
	O-Phosphate-P	102	101	102			0.957
SM 2120 B	Color (true)					2.39	
SM 2320 B-97	Total Alkalinity	98.4				0.179	
SM 2540 C-97	TDS					0.0	
SM 4500 F-C-97	Fluoride	98.9	97.9	99.7			0.946
SM 5310 B-00	Organic Carbon	97.6	96.3	96.1			0.119

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1856175, 1856176, 1856177, 1856178

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1856175, 1856176, 1856177, 1856178
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1856175, 1856176, 1856177, 1856178
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1856179, 1856180, 1856181, 1856182
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1856179, 1856180, 1856181, 1856182
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1856179, 1856180, 1856181, 1856182
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1856179, 1856180, 1856181, 1856182
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1856183, 1856184, 1856185, 1856186
SM 2120 B / E31780	True Color measured at 450 nm	1856175, 1856176, 1856177, 1856178
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1856175, 1856176, 1856177, 1856178
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1856175, 1856176, 1856177, 1856178
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1856175, 1856176, 1856177, 1856178
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1856175, 1856176, 1856177, 1856178
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1856179, 1856180, 1856181, 1856182

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	12/08/2016			12/08/2016 16:30	Sima Feizi	1856175, 1856176, 1856177, 1856178
EPA 300.0 Rev. 2.1	12/08/2016			12/16/2016	Ping Hua	1856175, 1856176, 1856177, 1856178
EPA 350.1 Rev. 2.0	12/08/2016			12/13/2016	Sofia Elnemr	1856180
	12/08/2016			12/19/2016	Sofia Elnemr	1856179, 1856181, 1856182
EPA 351.2 Rev. 2.0	12/08/2016	12/14/2016	Adrian Shelby	12/15/2016	Joseph Suarez	1856179, 1856180, 1856181, 1856182
EPA 353.2 Rev. 2.0	12/08/2016			12/14/2016	Beverly Y. Sanders	1856179, 1856180, 1856181, 1856182
EPA 365.1 Rev. 2.0	12/08/2016	12/12/2016	Vijayalakshmi Reddy	12/13/2016	Lipi Saha	1856179, 1856180, 1856181
	12/08/2016	12/16/2016	Vijayalakshmi Reddy	12/19/2016	Beverly Y. Sanders	1856182
EPA 365.1 Rev. 2.0 dissolved	12/08/2016			12/08/2016 15:30	Julia Storbeck	1856183
	12/08/2016			12/09/2016 13:05	Julia Storbeck	1856185
	12/08/2016			12/09/2016 13:08	Julia Storbeck	1856184
	12/08/2016			12/09/2016 13:11	Julia Storbeck	1856186
SM 2120 B	12/08/2016			12/08/2016 16:17	Jared I. Manley	1856175
	12/08/2016			12/08/2016 16:18	Jared I. Manley	1856176
	12/08/2016			12/08/2016 16:19	Jared I. Manley	1856177, 1856178
SM 2320 B-97	12/08/2016			12/15/2016	Dale L. Simmons	1856175, 1856176, 1856177, 1856178
SM 2540 C-97	12/08/2016			12/12/2016	Sima Feizi	1856175, 1856176, 1856177, 1856178
SM 2540 D-97	12/08/2016			12/12/2016	Sima Feizi	1856175, 1856176, 1856177, 1856178
SM 4500 F-C-97	12/08/2016			12/15/2016	Dale L. Simmons	1856175, 1856176, 1856177, 1856178
SM 5310 B-00	12/08/2016			12/09/2016	Julie Michelle Frank	1856179, 1856180, 1856181, 1856182