

Chemical Analysis Report

NW-DIST-2016-12-02-01

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

Event Description: **ENR C WBID 782 49A 789 722**

Request ID: **RQ-2016-11-21-07**

Customer: **NW-DIST**

Project ID: **SMP**

Send Reports to:
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 23-DEC-2016 11:38



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: Rocky Bayou 1/2 mile east of bridge

Collection Date/Time: 12/01/2016 10:50

Field ID: G3NW0033

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1854158	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P316108	
	SM 2320 B-97	Total Alkalinity	49		mg CaCO3/L	P316632	
	SM 2540 D-97	TSS	3	U	mg/L	P316685	
	SM 4500 F-C-97	Fluoride	0.43		mg F/L	P316636	
1854162	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P316242	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.18	I	mg N/L	P316459	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.032		mg N/L	P316220	
	EPA 365.1 Rev. 2.0	Total-P	0.009	I	mg P/L	P316341	
	SM 5310 B-00	Organic Carbon	3.2		mg C/L	P316152	
1854166	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P316111	

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: Basin Bayou at Inlet

Collection Date/Time: 12/01/2016 11:45

Field ID: G3NW0101

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1854159	EPA 180.1 Rev. 2.0	Turbidity	1.4	A	NTU	P316109	
	SM 2320 B-97	Total Alkalinity	31	A	mg CaCO3/L	P316632	
	SM 2540 D-97	TSS	3	I	mg/L	P316684	
	SM 4500 F-C-97	Fluoride	0.24		mg F/L	P316636	
1854163	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P316242	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.17	I	mg N/L	P316459	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P316220	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P316342	
	SM 5310 B-00	Organic Carbon	3.7		mg C/L	P316376	
1854167	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P316111	

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: Basin Bayou North End

Collection Date/Time: 12/01/2016 11:55

Field ID: G3NW0102

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1854160	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P316109	
	SM 2320 B-97	Total Alkalinity	38		mg CaCO3/L	P316632	
	SM 2540 D-97	TSS	5	I	mg/L	P316685	
	SM 4500 F-C-97	Fluoride	0.31		mg F/L	P316636	
1854164	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P316473	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.37	I	mg N/L	P316569	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P316220	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P316342	
	SM 5310 B-00	Organic Carbon	7.0		mg C/L	P316152	
1854168	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P316111	

Field ID: G3NW0102

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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: La Grange Bayou, Middle

Collection Date/Time: 12/01/2016 12:50

Field ID: G3NW0036

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1854161	EPA 180.1 Rev. 2.0	Turbidity	3.5		NTU	P316109	
	SM 2320 B-97	Total Alkalinity	84		mg CaCO3/L	P316632	
	SM 2540 D-97	TSS	9	I	mg/L	P316685	
	SM 4500 F-C-97	Fluoride	0.71		mg F/L	P316636	
1854165	EPA 350.1 Rev. 2.0	Ammonia-N	0.022		mg N/L	P316474	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.32	I	mg N/L	P316569	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P316220	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P316342	
	SM 5310 B-00	Organic Carbon	3.1		mg C/L	P316152	
1854169	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P316111	
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: Choctawhatchee River abv Smokehouse Lake

Collection Date/Time: 12/01/2016 14:00

Field ID: G3NW0073

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1854155	EPA 180.1 Rev. 2.0	Turbidity	7.5		NTU	P316108	
	EPA 300.0 Rev. 2.1	Chloride	7.1		mg Cl/L	P316908	
		Sulfate	2.7		mg SO4/L	P316905	
	SM 2120 B	Color (true)	9.1	A	PCU	P316104	
	SM 2320 B-97	Total Alkalinity	66	A	mg CaCO3/L	P316306	
	SM 2540 C-97	TDS	85		mg/L	P316695	
	SM 2540 D-97	TSS	10		mg/L	P316682	
	SM 4500 F-C-97	Fluoride	0.048	I	mg F/L	P316204	
1854156	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P316473	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.13	I	mg N/L	P316564	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.58		mg N/L	P316399	
	EPA 365.1 Rev. 2.0	Total-P	0.035		mg P/L	P316373	
	SM 5310 B-00	Organic Carbon	1.6		mg C/L	P316151	
1854157	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.016		mg P/L	P316110	
Ref. Method and Comment: EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample. 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

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P316108

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P316109

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316905

Component	Result	Code	Units
Sulfate	0.20	U	mg SO ₄ /L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316908

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316242

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316473

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316474

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316459

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316564

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316569

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316220

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316399

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316341

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316342

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316373

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316110

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316111

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

Reference Method: SM 2120 B
Batch ID: P316104

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P316306

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

Reference Method: SM 2320 B-97
Batch ID: P316632

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

Reference Method: SM 2540 C-97
Batch ID: P316695

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P316682

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P316684

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P316685

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P316204

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P316636

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P316151

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

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P316152

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

Reference Method: SM 5310 B-00
Batch ID: P316376

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: P316905

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316908

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316242

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316473

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316474

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316459

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316564

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: P316564

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316569

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: P316220

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316399

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: P316341

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316342

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316373

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316110

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316111

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P316306

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.8		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P316632

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.7		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P316204

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.8		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P316636

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

Reference Method: SM 5310 B-00
Batch ID: P316151

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.0		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P316152

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

Reference Method: SM 5310 B-00
Batch ID: P316376

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316905

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1853877	Sulfate	95.4		P	90 - 110
1853878	Sulfate	96.2		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316908

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1853878	Chloride	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316242

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1853071	Ammonia-N	99.1	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316473

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1854099	Ammonia-N	99.8	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316474

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1853069	Ammonia-N	100	99.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316459

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1854163	Kjeldahl Nitrogen	97.8	96.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316564

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1854139	Kjeldahl Nitrogen	99.7	88.8	P/F	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316569

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1853591	Kjeldahl Nitrogen	99.1	96.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316220

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1854138	NO2NO3-N	103	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316399

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1854099	NO2NO3-N	99.5	103	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316341

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1853639	Total-P	96.0	97.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316342

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1854163	Total-P	105	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316373

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1854156	Total-P	108	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316110

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1854113	O-Phosphate-P	95.9	95.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316111

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1854167	O-Phosphate-P	99.1	99.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P316204

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1854155	Fluoride	98.0	96.8	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P316636

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1854159	Fluoride	99.9	101	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P316151

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1853758	Organic Carbon	94.4	94.9	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P316152

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1853636	Organic Carbon	95.2	95.5	P/P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P316376

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1854960	Organic Carbon	92.7	94.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P316108

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1854096	Turbidity	1.26	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P316109

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1854159	Turbidity	12.5	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316905

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1853878	Sulfate	0.474	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316908

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1853878	Chloride	0.238	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316242

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1853071	Ammonia-N	2.24	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316473

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1854099	Ammonia-N	1.69	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316474

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1853069	Ammonia-N	0.958	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316459

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1854163	Kjeldahl Nitrogen	1.51	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316564

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1854139	Kjeldahl Nitrogen	6.43	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316569

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1853591	Kjeldahl Nitrogen	2.26	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316220

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1854138	NO2NO3-N	0.957	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316399

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1854099	NO2NO3-N	3.25	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316341

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1853639	Total-P	1.54	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316342

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1854163	Total-P	2.17	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P316373

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1854156	Total-P	1.57	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P316110

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1854113	O-Phosphate-P	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P316111

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1854167	O-Phosphate-P	0.503	Spike	P	0 - 20

Reference Method: SM 2120 B

Batch ID: P316104

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1854155	Color (true)	4.38	Sample	P	0 - 20

Reference Method: SM 2320 B-97

Batch ID: P316306

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1854155	Total Alkalinity	0.388	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97

Batch ID: P316632

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1854159	Total Alkalinity	0.382	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97

Batch ID: P316695

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1854098	TDS	4.05	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97

Batch ID: P316204

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1854155	Fluoride	1.05	Spike	P	0 - 3.0

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P316636

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1854159	Fluoride	0.993	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P316151

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1853758	Organic Carbon	0.386	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P316152

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1853636	Organic Carbon	0.233	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P316376

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1854960	Organic Carbon	1.04	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: SM 2120 B
Run ID: A73144
Included Lab Sample IDs: 1854155

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	100	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A73146
Included Lab Sample IDs: 1854155, 1854158, 1854159, 1854160, 1854161

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A73147
Included Lab Sample IDs: 1854157, 1854166, 1854167, 1854168, 1854169

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.4	98.4	P/P	90 - 110
O-Phosphate-P	98.4	98.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A73154

Included Lab Sample IDs: 1854156, 1854162, 1854164, 1854165

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	97.9	P/P	90 - 110
Organic Carbon	97.8	100	P/P	90 - 110
Organic Carbon	97.9	98.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A73177

Included Lab Sample IDs: 1854155

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A73189

Included Lab Sample IDs: 1854162, 1854163, 1854164, 1854165

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A73197

Included Lab Sample IDs: 1854162, 1854163

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

Reference Method: SM 2320 B-97

Run ID: A73217

Included Lab Sample IDs: 1854155

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.3	98.2	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A73237

Included Lab Sample IDs: 1854163

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.8	96.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A73247

Included Lab Sample IDs: 1854156

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	98.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A73263

Included Lab Sample IDs: 1854156, 1854164, 1854165

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A73263

Included Lab Sample IDs: 1854156, 1854164, 1854165

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.4	99.6	P/P	90 - 110
Ammonia-N	99.6	99.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A73275

Included Lab Sample IDs: 1854162, 1854163, 1854164, 1854165

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.0	98.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A73301

Included Lab Sample IDs: 1854162, 1854163

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.3	98.2	P/P	90 - 110
Kjeldahl Nitrogen	98.2	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A73314

Included Lab Sample IDs: 1854156

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	98.0	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A73323

Included Lab Sample IDs: 1854158, 1854159, 1854160, 1854161

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.7	99.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A73323

Included Lab Sample IDs: 1854158, 1854159, 1854160, 1854161

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A73335

Included Lab Sample IDs: 1854156, 1854164, 1854165

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.4	92.9	P/P	90 - 110
Kjeldahl Nitrogen	98.6	97.4	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A73375

Included Lab Sample IDs: 1854155

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	104	103	P/P	90 - 110
Sulfate	101	98.4	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				1.26	
	Turbidity				12.5	
EPA 300.0 Rev. 2.1	Chloride	101	101		0.238	
	Sulfate	97.0	96.2 95.4		0.474	
EPA 350.1 Rev. 2.0	Ammonia-N	102	99.1 102			2.24
	Ammonia-N	103	99.8 102			1.69
	Ammonia-N	103	100 99.4			0.958
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	97.8 96.2			1.51
	Kjeldahl Nitrogen	100	99.7 88.8			6.43
	Kjeldahl Nitrogen	103	99.1 96.3			2.26
EPA 353.2 Rev. 2.0	NO2NO3-N	102	103 102			0.957
	NO2NO3-N	102	99.5 103			3.25
EPA 365.1 Rev. 2.0	Total-P	106	96.0 97.6			1.54
	Total-P	105	105 108			2.17
	Total-P	105	108 107			1.57
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.5	95.9 95.9			0.0
	O-Phosphate-P	102	99.1 99.6			0.503
SM 2120 B	Color (true)				4.38	
SM 2320 B-97	Total Alkalinity	98.8			0.388	
	Total Alkalinity	99.7			0.382	
SM 2540 C-97	TDS				4.05	
SM 4500 F-C-97	Fluoride	98.8	98.0 96.8			1.05
	Fluoride	99.3	99.9 101			0.993
SM 5310 B-00	Organic Carbon	96.0	94.4 94.9			0.386
	Organic Carbon	96.1	95.2 95.5			0.233
	Organic Carbon	99.0	92.7 94.4			1.04

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1854155, 1854158, 1854159, 1854160, 1854161
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1854155
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1854155
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1854156, 1854162, 1854163, 1854164, 1854165

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1854156, 1854162, 1854163, 1854164, 1854165
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1854156, 1854162, 1854163, 1854164, 1854165
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1854156, 1854162, 1854163, 1854164, 1854165
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1854157, 1854166, 1854167, 1854168, 1854169
SM 2120 B / E31780	True Color measured at 450 nm	1854155
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1854155, 1854158, 1854159, 1854160, 1854161
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1854155
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1854155, 1854158, 1854159, 1854160, 1854161
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1854155, 1854158, 1854159, 1854160, 1854161
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1854156, 1854162, 1854163, 1854164, 1854165

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	12/02/2016			12/02/2016 14:41	Sima Feizi	1854155, 1854158, 1854159, 1854160, 1854161
EPA 300.0 Rev. 2.1	12/02/2016			12/15/2016	Ping Hua	1854155
EPA 350.1 Rev. 2.0	12/02/2016			12/05/2016	Sofia Elnemr	1854162, 1854163
	12/02/2016			12/08/2016	Sofia Elnemr	1854156, 1854164, 1854165
EPA 351.2 Rev. 2.0	12/02/2016	12/09/2016	Martin Acosta	12/12/2016	Joseph Suarez	1854162, 1854163
	12/02/2016	12/12/2016	Adrian Shelby	12/13/2016	Joseph Suarez	1854156, 1854164, 1854165
EPA 353.2 Rev. 2.0	12/02/2016			12/06/2016	Beverly Y. Sanders	1854162, 1854163, 1854164, 1854165
	12/02/2016			12/08/2016	Beverly Y. Sanders	1854156
EPA 365.1 Rev. 2.0	12/02/2016	12/07/2016	Vijayalakshmi Reddy	12/09/2016	Lipi Saha	1854162, 1854163, 1854164, 1854165
	12/02/2016	12/08/2016	Vijayalakshmi Reddy	12/09/2016	Lipi Saha	1854156
EPA 365.1 Rev. 2.0 dissolved	12/02/2016			12/02/2016 15:36	Julia Storbeck	1854167
	12/02/2016			12/02/2016 15:47	Julia Storbeck	1854157
	12/02/2016			12/02/2016 15:48	Julia Storbeck	1854166
	12/02/2016			12/02/2016 15:49	Julia Storbeck	1854168
	12/02/2016			12/02/2016 15:50	Julia Storbeck	1854169
SM 2120 B	12/02/2016			12/02/2016 14:37	Jared I. Manley	1854155
SM 2320 B-97	12/02/2016			12/07/2016	Dale L. Simmons	1854155
	12/02/2016			12/09/2016	Dale L. Simmons	1854158, 1854159, 1854160, 1854161
SM 2540 C-97	12/02/2016			12/07/2016	Yijie Li	1854155
SM 2540 D-97	12/02/2016			12/07/2016	Yijie Li	1854155, 1854158, 1854159, 1854160, 1854161
SM 4500 F-C-97	12/02/2016			12/03/2016	Dale L. Simmons	1854155
	12/02/2016			12/09/2016	Dale L. Simmons	1854158, 1854159, 1854160, 1854161
SM 5310 B-00	12/02/2016			12/03/2016	Julie Michelle Frank	1854156, 1854162, 1854164, 1854165
	12/02/2016			12/07/2016	Julie Michelle Frank	1854163