

Chemical Analysis Report

NW-DIST-2017-01-11-01

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

Event Description: **Group 5 run WBID 135 291 87 7 71 25**
Request ID: **RQ-2017-01-16-38**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government st
Suite 208A
Pensacola, FL 32502-5794
Attn: Michael King

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Certified by: Colin Wright, Program Administrator

Date Certified: 31-JAN-2017 11:21

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on 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: JACK'S BRANCH AT JACK'S BRANCH ROAD (HWY 97) **Collection Date/Time: 01/10/2017 10:50**

Field ID: G5NW0037

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1863062	EPA 180.1 Rev. 2.0	Turbidity	4.9		NTU	P318112	
	EPA 300.0 Rev. 2.1	Chloride	3.3		mg Cl/L	P318468	
		Sulfate	2.6		mg SO4/L	P318474	
	SM 2120 B	Color (true)	50		PCU	P318102	
	SM 2320 B-97	Total Alkalinity	2.1	I	mg CaCO3/L	P318452	
	SM 2540 C-97	TDS	47		mg/L	P318599	
	SM 2540 D-97	TSS	3	I	mg/L	P318545	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P318456	
1863067	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P318212	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21		mg N/L	P318195	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.034		mg N/L	P318560	
	EPA 365.1 Rev. 2.0	Total-P	0.010		mg P/L	P318289	
	SM 5310 B-00	Organic Carbon	5.1		mg C/L	P318260	
1863072	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P318115	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: BOGGY CREEK AT SR 97A

Collection Date/Time: 01/10/2017 11:20

Field ID: G5NW0009

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1863063	EPA 180.1 Rev. 2.0	Turbidity	4.0		NTU	P318112	
	EPA 300.0 Rev. 2.1	Chloride	5.0		mg Cl/L	P318468	
		Sulfate	1.6		mg SO4/L	P318474	
	SM 2120 B	Color (true)	26		PCU	P318102	
	SM 2320 B-97	Total Alkalinity	3.0		mg CaCO3/L	P318452	
	SM 2540 C-97	TDS	41		mg/L	P318599	
	SM 2540 D-97	TSS	2	U	mg/L	P318545	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P318456	
1863068	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P318212	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.19	I	mg N/L	P318196	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.86		mg N/L	P318560	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P318289	
	SM 5310 B-00	Organic Carbon	2.3		mg C/L	P318260	
1863073	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P318115	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: LITTLE PINE BARREN CK.

Collection Date/Time: 01/10/2017 12:00

Field ID: G4NW0191

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1863064	EPA 180.1 Rev. 2.0	Turbidity	3.5	A	NTU	P318113	

Field ID: G4NW0191

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1863064	EPA 300.0 Rev. 2.1	Chloride	6.0		mg Cl/L	P318468	
		Sulfate	1.0		mg SO4/L	P318474	
	SM 2120 B	Color (true)	27		PCU	P318102	
	SM 2320 B-97	Total Alkalinity	5.4		mg CaCO3/L	P318452	
	SM 2540 C-97	TDS	38		mg/L	P318600	
	SM 2540 D-97	TSS	3	I	mg/L	P318546	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P318456	
1863069	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P318212	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.20	I	mg N/L	P318196	
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.0		mg N/L	P318560	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P318289	
	SM 5310 B-00	Organic Carbon	1.8		mg C/L	P318260	
1863074	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P318115	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: WIGGINS BRANCH ABV HWY 29 S OF CENTURY

Collection Date/Time: 01/10/2017 12:50

Field ID: G4NW0163

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1863065	EPA 180.1 Rev. 2.0	Turbidity	4.7		NTU	P318113	
	EPA 300.0 Rev. 2.1	Chloride	3.0		mg Cl/L	P318468	
		Sulfate	1.8		mg SO4/L	P318474	
	SM 2120 B	Color (true)	30	A	PCU	P318103	
	SM 2320 B-97	Total Alkalinity	14		mg CaCO3/L	P318453	
	SM 2540 C-97	TDS	32		mg/L	P318600	
	SM 2540 D-97	TSS	6	I	mg/L	P318546	
1863070	SM 4500 F-C-97	Fluoride	0.036	I	mg F/L	P318457	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.057		mg N/L	P318212	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.45		mg N/L	P318196	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.021		mg N/L	P318560	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P318290	
1863075	SM 5310 B-00	Organic Carbon	6.2		mg C/L	P318260	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P318116	

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: CANOE CREEK ABOVE HWY 29

Collection Date/Time: 01/10/2017 13:00

Field ID: G4NW0201

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1863066	EPA 180.1 Rev. 2.0	Turbidity	3.2		NTU	P318113	
	EPA 300.0 Rev. 2.1	Chloride	4.5		mg Cl/L	P318471	
		Sulfate	1.4		mg SO4/L	P318476	

Field ID: G4NW0201

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1863066	SM 2120 B	Color (true)	26		PCU	P318101	
	SM 2320 B-97	Total Alkalinity	2.7		mg CaCO3/L	P318453	
	SM 2540 C-97	TDS	35		mg/L	P318600	
	SM 2540 D-97	TSS	4	I	mg/L	P318546	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P318457	
1863071	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P318208	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.25		mg N/L	P318196	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.86		mg N/L	P318560	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P318290	
	SM 5310 B-00	Organic Carbon	2.3		mg C/L	P318260	
1863076	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P318116	

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: P318112

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P318113

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P318468

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P318471

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P318474

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P318476

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318208

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318212

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318195

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318196

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318560

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318289

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318290

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318115

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318116

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2120 B
Batch ID: P318101

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P318102

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P318103

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P318452

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

Reference Method: SM 2320 B-97
Batch ID: P318453

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

Reference Method: SM 2540 C-97
Batch ID: P318599

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P318600

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P318545

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P318546

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P318456

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P318457

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P318260

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: P318468

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318471

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318474

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318476

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318208

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318212

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318212

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318195

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318196

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318560

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318289

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	95.6		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318290

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	92.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318115

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: P318116

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

Reference Method: SM 2320 B-97
Batch ID: P318452

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P318453

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

Reference Method: SM 4500 F-C-97
Batch ID: P318456

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.5		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P318457

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.0		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P318260

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	101		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318468

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1863064	Chloride	99.6		P	90 - 110
1863312	Chloride	99.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318471

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1863364	Chloride	99.0		P	90 - 110
1863403	Chloride	98.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318474

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1863064	Sulfate	96.7		P	90 - 110
1863312	Sulfate	95.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318476

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1863364	Sulfate	95.3		P	90 - 110
1863403	Sulfate	96.9		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318208

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1862700	Ammonia-N	98.9	99.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318212

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1863019	Ammonia-N	98.7	99.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318195

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1863039	Kjeldahl Nitrogen	95.5	98.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318196

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1863069	Kjeldahl Nitrogen	104	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318560

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1863040	NO2NO3-N	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318290

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1863070	Total-P	91.4	91.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318115

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1863073	O-Phosphate-P	98.9	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318116

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1863075	O-Phosphate-P	101	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P318456

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1863443	Fluoride	95.9	95.2	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P318457

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1863363	Fluoride	96.4	96.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P318260

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1863017	Organic Carbon	103		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P318112

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1863014	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P318113

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1863064	Turbidity	1.14	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318468

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1863312	Chloride	0.290	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318471

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1863364	Chloride	0.0402	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318474

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1863312	Sulfate	0.00543	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318476

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318476

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1863364	Sulfate	0.249	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318208

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862700	Ammonia-N	0.904	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318212

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1863019	Ammonia-N	0.643	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318195

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1863039	Kjeldahl Nitrogen	1.70	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318196

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1863069	Kjeldahl Nitrogen	2.72	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318560

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1863040	NO2NO3-N	0.651	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318289

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1863037	Total-P	0.0861	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318290

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1863070	Total-P	0.443	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318115

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1863073	O-Phosphate-P	2.44	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318116

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1863075	O-Phosphate-P	0.0994	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P318101

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862928	Color (true)	2.30	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P318102

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1863033	Color (true)	1.42	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P318103

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1863065	Color (true)	4.10	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P318452

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1863443	Total Alkalinity	0.401	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P318453

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1863363	Total Alkalinity	0.625	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P318599

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1863033	TDS	8.24	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
 Batch ID: P318600

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862469	TDS	2.36	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P318456

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1863443	Fluoride	0.530	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
 Batch ID: P318457

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1863363	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
 Batch ID: P318260

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1863017	Organic Carbon	0.702	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: A73880
 Included Lab Sample IDs: 1863062, 1863063, 1863064, 1863065, 1863066

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	103	P/P	85 - 115
Color (true)	103	102	P/P	85 - 115
Color (true)	103	103	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
 Run ID: A73882
 Included Lab Sample IDs: 1863062, 1863063, 1863064, 1863065, 1863066

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A73883

Included Lab Sample IDs: 1863072, 1863073, 1863074, 1863075, 1863076

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.8	96.4	P/P	90 - 110
O-Phosphate-P	97.7	96.8	P/P	90 - 110
O-Phosphate-P	98.7	97.7	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A73916

Included Lab Sample IDs: 1863067, 1863068, 1863069, 1863070, 1863071

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	95.4	95.7	P/P	90 - 110
Ammonia-N	98.6	96.3	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A73931

Included Lab Sample IDs: 1863067, 1863068, 1863069, 1863070, 1863071

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.8	101	P/P	90 - 110
Organic Carbon	98.8	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A73948

Included Lab Sample IDs: 1863067, 1863068, 1863069, 1863070, 1863071

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	95.2	P/P	90 - 110
Kjeldahl Nitrogen	96.3	100	P/P	90 - 110
Kjeldahl Nitrogen	100	96.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A73977

Included Lab Sample IDs: 1863067, 1863068, 1863069, 1863070, 1863071

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.2	98.8	P/P	90 - 110
Total-P	98.8	96.8	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A73993

Included Lab Sample IDs: 1863062, 1863063, 1863064, 1863065, 1863066

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.2	99.2	P/P	90 - 110
Chloride	99.7	99.5	P/P	90 - 110
Chloride	99.7	99.7	P/P	90 - 110
Sulfate	92.9	97.4	P/P	90 - 110
Sulfate	96.3	96.6	P/P	90 - 110
Sulfate	97.4	91.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A74010

Included Lab Sample IDs: 1863062, 1863063, 1863064, 1863065, 1863066

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	104	P/P	90 - 110
Total Alkalinity	103	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A74010

Included Lab Sample IDs: 1863062, 1863063, 1863064, 1863065, 1863066

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	99.5	P/P	90 - 110
Fluoride	99.5	99.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A74046

Included Lab Sample IDs: 1863067, 1863068, 1863069, 1863070, 1863071

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	100	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					0.0	
	Turbidity					1.14	
EPA 300.0 Rev. 2.1	Chloride	100	99.5	99.6		0.290	
	Chloride	99.2	99.0	98.3		0.0402	
	Sulfate	96.5	95.1	96.7		0.0054	
	Sulfate	96.3	95.3	96.9		0.249	
EPA 350.1 Rev. 2.0	Ammonia-N	99.1	98.9	99.9			0.904
	Ammonia-N	98.5	98.7	99.6			0.643
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.9	95.5	98.0			1.70
	Kjeldahl Nitrogen	96.1	104	101			2.72
EPA 353.2 Rev. 2.0	NO2NO3-N	106	102	101			0.651
EPA 365.1 Rev. 2.0	Total-P	95.6					0.0861
	Total-P	92.2	91.4	91.0			0.443
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	98.9	102			2.44
	O-Phosphate-P	104	101	101			0.0994
SM 2120 B	Color (true)					2.30	
	Color (true)					1.42	
	Color (true)					4.10	
SM 2320 B-97	Total Alkalinity	103				0.401	
	Total Alkalinity	103				0.625	
SM 2540 C-97	TDS					8.24	
	TDS					2.36	
SM 4500 F-C-97	Fluoride	95.5	95.9	95.2			0.530

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
SM 4500 F-C-97	Fluoride	96.0	96.4	96.4		0.0
SM 5310 B-00	Organic Carbon	101	103			0.702

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1863062, 1863063, 1863064, 1863065, 1863066
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1863062, 1863063, 1863064, 1863065, 1863066
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1863062, 1863063, 1863064, 1863065, 1863066
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1863067, 1863068, 1863069, 1863070, 1863071
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1863067, 1863068, 1863069, 1863070, 1863071
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1863067, 1863068, 1863069, 1863070, 1863071
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1863067, 1863068, 1863069, 1863070, 1863071
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1863072, 1863073, 1863074, 1863075, 1863076
SM 2120 B / E31780	True Color measured at 450 nm	1863062, 1863063, 1863064, 1863065, 1863066
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1863062, 1863063, 1863064, 1863065, 1863066
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1863062, 1863063, 1863064, 1863065, 1863066
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1863062, 1863063, 1863064, 1863065, 1863066
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1863062, 1863063, 1863064, 1863065, 1863066
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1863067, 1863068, 1863069, 1863070, 1863071

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	01/11/2017			01/11/2017 15:58	Sima Feizi	1863062, 1863063, 1863064, 1863065, 1863066
EPA 300.0 Rev. 2.1	01/11/2017			01/19/2017	Ping Hua	1863062, 1863063, 1863064, 1863065, 1863066
EPA 350.1 Rev. 2.0	01/11/2017			01/12/2017	Sofia Elnemr	1863067, 1863068, 1863069, 1863070, 1863071
EPA 351.2 Rev. 2.0	01/11/2017	01/13/2017	Adrian Shelby	01/17/2017	Joseph Suarez	1863067, 1863068, 1863069, 1863070, 1863071
EPA 353.2 Rev. 2.0	01/11/2017			01/23/2017	Beverly Y. Sanders	1863067, 1863068, 1863069, 1863070, 1863071
EPA 365.1 Rev. 2.0	01/11/2017	01/17/2017	Vijayalakshmi Reddy	01/18/2017	Lipi Saha	1863067, 1863068, 1863069, 1863070, 1863071
EPA 365.1 Rev. 2.0 dissolved	01/11/2017			01/11/2017 15:39	Julia Storbeck	1863073
	01/11/2017			01/11/2017 15:44	Julia Storbeck	1863075
	01/11/2017			01/11/2017 15:58	Julia Storbeck	1863072
	01/11/2017			01/11/2017 16:04	Julia Storbeck	1863074
	01/11/2017			01/11/2017 16:05	Julia Storbeck	1863076
SM 2120 B	01/11/2017			01/11/2017 15:07	Jared I. Manley	1863066
	01/11/2017			01/11/2017 15:17	Jared I. Manley	1863062
	01/11/2017			01/11/2017 15:18	Jared I. Manley	1863063, 1863064
	01/11/2017			01/11/2017 15:22	Jared I. Manley	1863065
SM 2320 B-97	01/11/2017			01/19/2017	Dale L. Simmons	1863062, 1863063, 1863064, 1863065, 1863066
SM 2540 C-97	01/11/2017			01/13/2017	Yijie Li	1863062, 1863063, 1863064, 1863065, 1863066
SM 2540 D-97	01/11/2017			01/13/2017	Yijie Li	1863062, 1863063, 1863064, 1863065, 1863066
SM 4500 F-C-97	01/11/2017			01/19/2017	Dale L. Simmons	1863062, 1863063, 1863064, 1863065, 1863066
SM 5310 B-00	01/11/2017			01/12/2017	Julie Michelle Frank	1863067, 1863068, 1863069, 1863070, 1863071