

Chemical Analysis Report

NW-DIST-2017-07-27-02

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

Event Description: **S SR Co Run WBID 517 683 833 BLANK/DUP**

Request ID: **RQ-2017-07-24-16**

Customer: **NW-DIST**

Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government St
Suite 208A
Pensacola, FL 32502-5794
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 16-AUG-2017 16:25



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: Boiling Creek @ Boat Ramp

Collection Date/Time: 07/26/2017 10:55

Field ID: G4NW0385

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1917048	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P329276	
	EPA 300.0 Rev. 2.1	Chloride	3.1		mg Cl/L	P329310	
		Sulfate	0.53		mg SO4/L	P329307	
	SM 2120 B	Color (true)	34	A	PCU	P329256	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P329457	
	SM 2540 C-97	TDS	15	U	mg/L	P329996	
	SM 2540 D-97	TSS	2	UA	mg/L	P329526	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P329461	
1917053	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P329491	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.10	I	mg N/L	P329407	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.051		mg N/L	P329436	
	EPA 365.1 Rev. 2.0	Total-P	0.006		mg P/L	P329413	
	SM 5310 B-00	Organic Carbon	2.5		mg C/L	P329538	
1917058	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P329248	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: The result was confirmed on 07/27/2017.

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

Sample Location: Boiling Creek @ Boat Ramp

Collection Date/Time: 07/26/2017 11:00

Field ID: G4NW0385DUPLICATE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1917049	EPA 180.1 Rev. 2.0	Turbidity	2.0	A	NTU	P329276	
	EPA 300.0 Rev. 2.1	Chloride	3.1		mg Cl/L	P329310	
		Sulfate	0.59		mg SO4/L	P329307	
	SM 2120 B	Color (true)	34		PCU	P329256	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P329457	
	SM 2540 C-97	TDS	15	U	mg/L	P329996	
	SM 2540 D-97	TSS	7	I	mg/L	P329526	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P329461	
1917054	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P329491	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.13	I	mg N/L	P329407	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.052		mg N/L	P329436	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P329413	
	SM 5310 B-00	Organic Carbon	2.6		mg C/L	P329537	
1917059	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P329248	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: The result was confirmed on 07/27/2017.

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

Sample Location: Boiling Creek @ Boat Ramp

Collection Date/Time: 07/26/2017 11:05

Field ID: FIELDBLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1917050	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P329274	

Field ID: FIELDBLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1917050	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P329309	
		Sulfate	0.20	U	mg SO4/L	P329306	
	SM 2120 B	Color (true)	2.5	U	PCU	P329256	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P329457	
	SM 2540 C-97	TDS	15	U	mg/L	P329996	
	SM 2540 D-97	TSS	2	U	mg/L	P329526	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P329461	
1917055	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P329492	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P329407	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P329436	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P329413	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P329537	
1917060	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P329248	

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: Dean Creek upstream of SR 87

Collection Date/Time: 07/26/2017 11:55

Field ID: G4NW0362

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1917051	EPA 180.1 Rev. 2.0	Turbidity	0.69		NTU	P329274	
	EPA 300.0 Rev. 2.1	Chloride	4.5		mg Cl/L	P329309	
		Sulfate	1.2		mg SO4/L	P329306	
	SM 2120 B	Color (true)	56		PCU	P329256	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P329457	
	SM 2540 C-97	TDS	20	I	mg/L	P329996	
	SM 2540 D-97	TSS	2	U	mg/L	P329526	
1917056	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P329461	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P329492	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.096	I	mg N/L	P329407	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.013		mg N/L	P329436	
	EPA 365.1 Rev. 2.0	Total-P	0.003	I	mg P/L	P329413	
1917061	SM 5310 B-00	Organic Carbon	3.6		mg C/L	P329537	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P329248	

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: Tom King Bayou Creek

Collection Date/Time: 07/26/2017 13:00

Field ID: G4NW0193

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1917052	EPA 180.1 Rev. 2.0	Turbidity	6.1	A	NTU	P329274	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P329309	
		Sulfate	6.7		mg SO4/L	P329306	
	SM 2120 B	Color (true)	150		PCU	P329256	
	SM 2320 B-97	Total Alkalinity	5.1		mg CaCO3/L	P329457	

Field ID: G4NW0193

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1917052	SM 2540 C-97	TDS	85	Q	mg/L	P329779	
	SM 2540 D-97	TSS	2	U	mg/L	P329593	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P329461	
1917057	EPA 350.1 Rev. 2.0	Ammonia-N	0.037		mg N/L	P329492	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.42		mg N/L	P329407	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.46		mg N/L	P329693	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P329413	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P329537	
1917062	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P329248	

Ref. Method and Comment:

SM 2540 C-97: Sample reanalyzed out of holding time due to analytical difficulties.

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: P329274

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P329276

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P329306

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P329307

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P329309

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P329310

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329491

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329492

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329407

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329436

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: P329693

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: P329413

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329248

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

Reference Method: SM 2120 B
Batch ID: P329256

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P329457

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P329779

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P329996

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P329526

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P329593

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P329461

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P329537

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

Reference Method: SM 5310 B-00
Batch ID: P329538

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: P329306

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329307

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: P329307

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	94.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329309

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329310

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329491

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: P329492

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329407

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329436

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329693

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329413

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.4		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329248

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

Reference Method: SM 2320 B-97
Batch ID: P329457

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P329461

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.1		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P329537

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.0		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P329538

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329306

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1917103	Sulfate	96.0		P	90 - 110
1917117	Sulfate	94.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329307

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916818	Sulfate	93.3		P	90 - 110
1916981	Sulfate	94.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329309

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1917103	Chloride	99.7		P	90 - 110
1917117	Chloride	99.8		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329310

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916818	Chloride	94.8		P	90 - 110
1916981	Chloride	96.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329491

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916976	Ammonia-N	101	99.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329492

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1917056	Ammonia-N	102	95.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329407

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1917106	Kjeldahl Nitrogen	108	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329436

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916983	NO2NO3-N	103	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329693

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1917480	NO2NO3-N	102		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329413

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916983	Total-P	100	98.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329248

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1917059	O-Phosphate-P	96.8	98.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P329461

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1917171	Fluoride	96.2	95.6	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P329537

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1917105	Organic Carbon	95.0	94.6	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P329538

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916976	Organic Carbon	99.8		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P329274

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917052	Turbidity	6.36	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P329276

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917049	Turbidity	3.03	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329306

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917117	Sulfate	1.68	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329307

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916981	Sulfate	1.37	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329309

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917117	Chloride	1.29	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329310

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: P329310

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916981	Chloride	1.41	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329491

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916976	Ammonia-N	1.25	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329492

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917056	Ammonia-N	5.76	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329407

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917106	Kjeldahl Nitrogen	1.56	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329436

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916983	NO2NO3-N	1.25	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329693

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917480	NO2NO3-N	0.395	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329413

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916983	Total-P	1.69	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329248

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917059	O-Phosphate-P	1.64	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P329256

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917048	Color (true)	2.45	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P329457

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917171	Total Alkalinity	0.199	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P329779

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918154	TDS	7.80	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P329996

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916975	TDS	2.32	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P329461

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917171	Fluoride	0.498	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P329537

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917105	Organic Carbon	0.320	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P329538

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916976	Organic Carbon	0.942	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

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A77948

Included Lab Sample IDs: 1917048, 1917049, 1917050, 1917051, 1917052

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	104	P/P	90 - 110
Chloride	104	103	P/P	90 - 110
Sulfate	101	104	P/P	90 - 110
Sulfate	104	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A77996

Included Lab Sample IDs: 1917058, 1917059, 1917060, 1917061, 1917062

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.6	98.5	P/P	90 - 110
O-Phosphate-P	99.0	99.4	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A77997

Included Lab Sample IDs: 1917048, 1917049, 1917050, 1917051, 1917052

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	102	P/P	85 - 115
Color (true)	105	105	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A78004

Included Lab Sample IDs: 1917048, 1917049, 1917050, 1917051, 1917052

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	100	P/P	95 - 105
Turbidity	99.5	99.5	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A78075

Included Lab Sample IDs: 1917053, 1917054, 1917055, 1917056

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	P/P	90 - 110
NO2NO3-N	102	102	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A78079

Included Lab Sample IDs: 1917048, 1917049, 1917050, 1917051, 1917052

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A78079

Included Lab Sample IDs: 1917048, 1917049, 1917050, 1917051, 1917052

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	97.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A78080

Included Lab Sample IDs: 1917053, 1917054, 1917055, 1917056, 1917057

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	96.8	97.5	P/P	90 - 110
Total-P	98.0	96.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A78091

Included Lab Sample IDs: 1917053, 1917054, 1917055, 1917056, 1917057

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A78092

Included Lab Sample IDs: 1917053, 1917054, 1917055, 1917056, 1917057

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

Reference Method: SM 5310 B-00

Run ID: A78115

Included Lab Sample IDs: 1917053, 1917054, 1917055, 1917056, 1917057

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.2	99.2	P/P	90 - 110
Organic Carbon	99.2	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A78187

Included Lab Sample IDs: 1917057

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	102	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				6.36	
	Turbidity				3.03	
EPA 300.0 Rev. 2.1	Chloride	101	99.8 99.7		1.29	
	Chloride	97.5	96.1 94.8		1.41	
	Sulfate	97.4	94.9 96.0		1.68	
	Sulfate	94.3	94.3 93.3		1.37	
EPA 350.1 Rev. 2.0	Ammonia-N	99.1	101 99.2			1.25

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 350.1 Rev. 2.0	Ammonia-N	97.0	102	95.8		5.76
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	108	106		1.56
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	103	103	102		1.25
	NO ₂ NO ₃ -N	105	102			0.395
EPA 365.1 Rev. 2.0	Total-P	98.4	100	98.3		1.69
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	96.8	98.4		1.64
SM 2120 B	Color (true)				2.45	
SM 2320 B-97	Total Alkalinity	102			0.199	
SM 2540 C-97	TDS				7.80	
	TDS				2.32	
SM 4500 F-C-97	Fluoride	96.1	96.2	95.6		0.498
SM 5310 B-00	Organic Carbon	98.0	95.0	94.6		0.320
	Organic Carbon	95.6	99.8			0.942

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1917048, 1917049, 1917050, 1917051, 1917052
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1917048, 1917049, 1917050, 1917051, 1917052
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1917048, 1917049, 1917050, 1917051, 1917052
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1917053, 1917054, 1917055, 1917056, 1917057
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1917053, 1917054, 1917055, 1917056, 1917057
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1917053, 1917054, 1917055, 1917056, 1917057
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1917053, 1917054, 1917055, 1917056, 1917057
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1917058, 1917059, 1917060, 1917061, 1917062
SM 2120 B / E31780	True Color measured at 450 nm	1917048, 1917049, 1917050, 1917051, 1917052
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1917048, 1917049, 1917050, 1917051, 1917052
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1917048, 1917049, 1917050, 1917051, 1917052
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1917048, 1917049, 1917050, 1917051, 1917052
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1917048, 1917049, 1917050, 1917051, 1917052
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1917053, 1917054, 1917055, 1917056, 1917057

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	07/27/2017			07/27/2017 17:18	DeAsia Armster	1917048, 1917049, 1917050, 1917051, 1917052
EPA 300.0 Rev. 2.1	07/27/2017			07/28/2017	Julia Storbeck	1917048, 1917049, 1917050, 1917051, 1917052
EPA 350.1 Rev. 2.0	07/27/2017			08/01/2017	Sofia Elnemr	1917053, 1917054, 1917055, 1917056, 1917057
EPA 351.2 Rev. 2.0	07/27/2017	07/31/2017	Adrian Shelby	08/01/2017	Joseph Suarez	1917053, 1917054, 1917055, 1917056, 1917057
EPA 353.2 Rev. 2.0	07/27/2017			08/01/2017	Beverly Y. Sanders	1917053, 1917054, 1917055, 1917056
	07/27/2017			08/04/2017	Beverly Y. Sanders	1917057
EPA 365.1 Rev. 2.0	07/27/2017	07/31/2017	Adrian Shelby	08/01/2017	Lipi Saha	1917053, 1917054, 1917055, 1917056, 1917057
EPA 365.1 Rev. 2.0 dissolved	07/27/2017			07/27/2017 14:20	Ping Hua	1917059
	07/27/2017			07/27/2017 15:25	Ping Hua	1917058
	07/27/2017			07/27/2017 15:26	Ping Hua	1917060
	07/27/2017			07/27/2017 15:27	Ping Hua	1917061
	07/27/2017			07/27/2017 15:28	Ping Hua	1917062
SM 2120 B	07/27/2017			07/27/2017 15:32	Tanya Welborn	1917048
	07/27/2017			07/27/2017 15:33	Tanya Welborn	1917049
	07/27/2017			07/27/2017 15:34	Tanya Welborn	1917050, 1917051
	07/27/2017			07/27/2017 15:59	Tanya Welborn	1917052
SM 2320 B-97	07/27/2017			08/01/2017	Dale L. Simmons	1917048, 1917049, 1917050, 1917051, 1917052
SM 2540 C-97	07/27/2017			07/31/2017	DeAsia Armster	1917048, 1917049, 1917050, 1917051
	07/27/2017			08/03/2017	Yijie Li	1917052
SM 2540 D-97	07/27/2017			07/31/2017	DeAsia Armster	1917048, 1917049, 1917050, 1917051
	07/27/2017			08/01/2017	DeAsia Armster	1917052
SM 4500 F-C-97	07/27/2017			08/01/2017	Dale L. Simmons	1917048, 1917049, 1917050, 1917051, 1917052
SM 5310 B-00	07/27/2017			08/02/2017	Ping Hua	1917053, 1917054, 1917055, 1917056, 1917057