

Chemical Analysis Report

NW-DIST-2017-08-30-02

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

Event Description: **Baker/Crestview Run WBID 50 28 30G 336 321 83 91**
Request ID: **RQ-2017-07-31-30**
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

For additional information please contact
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 20-SEP-2017 16:17

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored 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: HURRICANE CREEK BELOW HURICANE LAKE Collection Date/Time: 08/29/2017 11:40

Field ID: G4NW0160

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1926288	EPA 180.1 Rev. 2.0	Turbidity	2.7		NTU	P331070	
	EPA 300.0 Rev. 2.1	Chloride	2.6		mg Cl/L	P331239	
		Sulfate	0.40	I	mg SO4/L	P331233	
	SM 2120 B	Color (true)	52		PCU	P331084	
	SM 2320 B-97	Total Alkalinity	3.1		mg CaCO3/L	P331521	
	SM 2540 C-97	TDS	29		mg/L	P331342	
	SM 2540 D-97	TSS	2	I	mg/L	P331531	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P331743	
1926294	EPA 350.1 Rev. 2.0	Ammonia-N	0.038		mg N/L	P331169	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.35		mg N/L	P331102	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.028		mg N/L	P331118	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P331130	
	SM 5310 B-00	Organic Carbon	5.5		mg C/L	P331244	
1926300	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P331074	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: BIG HORSE CREEK OLD RIVER RD.

Collection Date/Time: 08/29/2017 12:45

Field ID: G4NW0298

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1926289	EPA 180.1 Rev. 2.0	Turbidity	4.0		NTU	P331070	
	EPA 300.0 Rev. 2.1	Chloride	3.6		mg Cl/L	P331240	
		Sulfate	0.92		mg SO4/L	P331236	
	SM 2120 B	Color (true)	42		PCU	P331084	
	SM 2320 B-97	Total Alkalinity	2.7		mg CaCO3/L	P331521	
	SM 2540 C-97	TDS	36		mg/L	P331342	
	SM 2540 D-97	TSS	5	I	mg/L	P331531	
	SM 4500 F-C-97	Fluoride	0.035	I	mg F/L	P331743	
1926295	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P331169	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	I	mg N/L	P331104	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P331118	
	EPA 365.1 Rev. 2.0	Total-P	0.035		mg P/L	P331130	
	SM 5310 B-00	Organic Carbon	3.1		mg C/L	P331244	
1926301	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.014		mg P/L	P331074	

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: TITI CREEK ABOVE HWY 285

Collection Date/Time: 08/29/2017 13:55

Field ID: G4NW0365

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1926290	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P331070	
	EPA 300.0 Rev. 2.1	Chloride	2.1		mg Cl/L	P331240	

Field ID: G4NW0365

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1926290	EPA 300.0 Rev. 2.1	Sulfate	0.78		mg SO4/L	P331236	
	SM 2120 B	Color (true)	43		PCU	P331084	
	SM 2320 B-97	Total Alkalinity	0.72	I	mg CaCO3/L	P331521	
	SM 2540 C-97	TDS	21	I	mg/L	P331343	
	SM 2540 D-97	TSS	2	I	mg/L	P331532	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P331743	
1926296	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P331170	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.13	I	mg N/L	P331158	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.058		mg N/L	P331118	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P331130	
	SM 5310 B-00	Organic Carbon	2.8		mg C/L	P331336	
1926302	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P331075	

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: TRAMMEL CREEK EAST HWY 4

Collection Date/Time: 08/29/2017 14:45

Field ID: G4NW0052

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1926291	EPA 180.1 Rev. 2.0	Turbidity	11		NTU	P331070	
	EPA 300.0 Rev. 2.1	Chloride	4.4		mg Cl/L	P331240	
		Sulfate	3.7		mg SO4/L	P331236	
	SM 2120 B	Color (true)	57		PCU	P331084	
	SM 2320 B-97	Total Alkalinity	13		mg CaCO3/L	P331521	
	SM 2540 C-97	TDS	44		mg/L	P331343	
	SM 2540 D-97	TSS	25		mg/L	P331532	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P331743	
1926297	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P331170	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.32		mg N/L	P331158	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.16		mg N/L	P331118	
	EPA 365.1 Rev. 2.0	Total-P	0.060		mg P/L	P331130	
	SM 5310 B-00	Organic Carbon	4.7		mg C/L	P331336	
1926303	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.019		mg P/L	P331074	

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: TRAMMEL CREEK EAST HWY 4

Collection Date/Time: 08/29/2017 14:50

Field ID: G4NW0052DUPLICATE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1926292	EPA 180.1 Rev. 2.0	Turbidity	12		NTU	P331070	
	EPA 300.0 Rev. 2.1	Chloride	4.6		mg Cl/L	P331240	
		Sulfate	3.9		mg SO4/L	P331236	
	SM 2120 B	Color (true)	58	A	PCU	P331085	
	SM 2320 B-97	Total Alkalinity	13		mg CaCO3/L	P331521	
	SM 2540 C-97	TDS	49		mg/L	P331343	

Field ID: G4NW0052DUPLICATE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1926292	SM 2540 D-97	TSS	26		mg/L	P331532	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P331743	
1926298	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P331170	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.34		mg N/L	P331158	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.16		mg N/L	P331118	
	EPA 365.1 Rev. 2.0	Total-P	0.066		mg P/L	P331130	
	SM 5310 B-00	Organic Carbon	4.8		mg C/L	P331336	
1926304	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.019		mg P/L	P331074	

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: WILKINSON CREEK ABOVE WILKINSON
BLUFF RD**

Collection Date/Time: 08/29/2017 15:20

Field ID: G4NW0357

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1926293	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P331070	
	EPA 300.0 Rev. 2.1	Chloride	3.0		mg Cl/L	P331240	
		Sulfate	0.93		mg SO4/L	P331236	
	SM 2120 B	Color (true)	26		PCU	P331085	
	SM 2320 B-97	Total Alkalinity	1.5	I	mg CaCO3/L	P331522	
	SM 2540 C-97	TDS	21	I	mg/L	P331343	
	SM 2540 D-97	TSS	5	I	mg/L	P331532	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P331744	
1926299	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P331170	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.10	I	mg N/L	P331158	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.19		mg N/L	P331118	
	EPA 365.1 Rev. 2.0	Total-P	0.007		mg P/L	P331130	
	SM 5310 B-00	Organic Carbon	2.3		mg C/L	P331336	
1926305	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P331075	

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: P331070

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P331233

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331236

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331239

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331240

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P331169

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P331170

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P331102

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P331104

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P331158

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P331118

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P331130

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P331074

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P331075

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

Reference Method: SM 2120 B
Batch ID: P331084

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P331085

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P331521

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

Reference Method: SM 2320 B-97
Batch ID: P331522

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

Reference Method: SM 2540 C-97
Batch ID: P331342

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P331343

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P331531

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P331532

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P331743

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P331744

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P331244

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

Reference Method: SM 5310 B-00
Batch ID: P331336

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: P331233

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	92.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331236

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331239

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: P331239

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331240

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P331169

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: P331170

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: P331102

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P331104

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P331158

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P331118

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P331130

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P331074

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P331075

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

Reference Method: SM 2320 B-97
Batch ID: P331521

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

Reference Method: SM 2320 B-97
Batch ID: P331522

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

Reference Method: SM 4500 F-C-97
Batch ID: P331743

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.8		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P331744

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.3		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P331244

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

Reference Method: SM 5310 B-00
Batch ID: P331336

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.9		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331233

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331233

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926235	Sulfate	93.7		P	90 - 110
1926283	Sulfate	92.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331236

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926289	Sulfate	92.7		P	90 - 110
1926353	Sulfate	92.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331239

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926235	Chloride	96.1		P	90 - 110
1926283	Chloride	92.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331240

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926289	Chloride	95.9		P	90 - 110
1926353	Chloride	94.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P331169

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926240	Ammonia-N	94.0	93.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P331170

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926296	Ammonia-N	99.3	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P331104

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926295	Kjeldahl Nitrogen	106	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P331158

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926299	Kjeldahl Nitrogen	106	98.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P331118

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P331118

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926240	NO2NO3-N	106	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P331130

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926284	Total-P	101	96.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P331074

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926243	O-Phosphate-P	97.1	99.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P331075

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926302	O-Phosphate-P	98.0	99.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P331743

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926212	Fluoride	96.5	96.5	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P331744

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926521	Fluoride	97.3	97.9	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P331244

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926294	Organic Carbon	104	104	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P331336

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926239	Organic Carbon	103	102	P/P	85 - 115

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P331070

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926237	Turbidity	0.866	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331233

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926283	Sulfate	7.22	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331236

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926353	Sulfate	0.356	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331239

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926283	Chloride	5.96	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331240

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926353	Chloride	4.10	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P331169

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926240	Ammonia-N	0.0518	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P331170

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926296	Ammonia-N	0.700	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P331102

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926209	Kjeldahl Nitrogen	2.66	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P331104

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926295	Kjeldahl Nitrogen	3.99	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P331158

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926299	Kjeldahl Nitrogen	6.26	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P331118

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926240	NO2NO3-N	0.870	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P331130

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926284	Total-P	4.96	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P331074

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926243	O-Phosphate-P	2.24	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P331075

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926302	O-Phosphate-P	1.72	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P331084

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926235	Color (true)	0.896	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P331085

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926292	Color (true)	3.57	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P331521

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926212	Total Alkalinity	0.492	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P331522

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926521	Total Alkalinity	0.463	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P331342

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926217	TDS	2.20	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P331343

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926354	TDS	2.12	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P331743

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926212	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P331744

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926521	Fluoride	0.480	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P331244

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926294	Organic Carbon	0.532	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P331336

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926239	Organic Carbon	0.889	Spike	P	0 - 20

Quality Assurance Report Precision

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A78711

Included Lab Sample IDs: 1926288, 1926289, 1926290, 1926291, 1926292, 1926293

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: A78712

Included Lab Sample IDs: 1926300, 1926301, 1926302, 1926303, 1926304, 1926305

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

Reference Method: SM 2120 B

Run ID: A78715

Included Lab Sample IDs: 1926288, 1926289, 1926290, 1926291, 1926292, 1926293

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A78723

Included Lab Sample IDs: 1926294, 1926295, 1926296, 1926297, 1926298, 1926299

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A78741

Included Lab Sample IDs: 1926294, 1926295, 1926296, 1926297, 1926298, 1926299

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A78751

Included Lab Sample IDs: 1926297, 1926298

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A78762

Included Lab Sample IDs: 1926294, 1926295

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	106	P/P	90 - 110
Kjeldahl Nitrogen	106	103	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A78767

Included Lab Sample IDs: 1926288, 1926289, 1926290, 1926291, 1926292, 1926293

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	107	109	P/P	90 - 110
Chloride	109	108	P/P	90 - 110
Sulfate	105	107	P/P	90 - 110
Sulfate	100	100	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A78769

Included Lab Sample IDs: 1926294, 1926295

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	101	104	P/P	90 - 110
Organic Carbon	104	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A78778

Included Lab Sample IDs: 1926296, 1926297, 1926298, 1926299

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.4	99.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A78804

Included Lab Sample IDs: 1926294, 1926295, 1926296, 1926299

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

Reference Method: SM 5310 B-00

Run ID: A78811

Included Lab Sample IDs: 1926296, 1926297, 1926298, 1926299

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.2	98.2	P/P	90 - 110
Organic Carbon	98.2	101	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A78870

Included Lab Sample IDs: 1926288, 1926289, 1926290, 1926291, 1926292, 1926293

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	101	P/P	90 - 110
Total Alkalinity	99.9	104	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A78959

Included Lab Sample IDs: 1926288, 1926289, 1926290, 1926291, 1926292, 1926293

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	101	P/P	90 - 110
Fluoride	101	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				0.866	
EPA 300.0 Rev. 2.1	Chloride	97.4	92.8 96.1		5.96	
	Chloride	98.3	94.2 95.9		4.10	
	Sulfate	92.3	92.9 93.7		7.22	
	Sulfate	101	92.8 92.7		0.356	
EPA 350.1 Rev. 2.0	Ammonia-N	103	94.0 93.9			0.0518
	Ammonia-N	103	99.3 100			0.700
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103				2.66
	Kjeldahl Nitrogen	105	106 101			3.99
	Kjeldahl Nitrogen	101	106 98.9			6.26
EPA 353.2 Rev. 2.0	NO2NO3-N	104	106 105			0.870
EPA 365.1 Rev. 2.0	Total-P	101	101 96.0			4.96
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	97.1 99.3			2.24
	O-Phosphate-P	98.4	98.0 99.7			1.72
SM 2120 B	Color (true)				0.896	
	Color (true)				3.57	
SM 2320 B-97	Total Alkalinity	102			0.492	
	Total Alkalinity	103			0.463	
SM 2540 C-97	TDS				2.20	
	TDS				2.12	
SM 4500 F-C-97	Fluoride	97.8	96.5 96.5			0.0
	Fluoride	98.3	97.3 97.9			0.480
SM 5310 B-00	Organic Carbon	101	104 104			0.532
	Organic Carbon	98.9	103 102			0.889

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1926288, 1926289, 1926290, 1926291, 1926292, 1926293
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1926288, 1926289, 1926290, 1926291, 1926292, 1926293
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1926288, 1926289, 1926290, 1926291, 1926292, 1926293
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1926294, 1926295, 1926296, 1926297, 1926298, 1926299
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1926294, 1926295, 1926296, 1926297, 1926298, 1926299

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1926294, 1926295, 1926296, 1926297, 1926298, 1926299
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1926294, 1926295, 1926296, 1926297, 1926298, 1926299
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1926300, 1926301, 1926302, 1926303, 1926304, 1926305
SM 2120 B / E31780	True Color measured at 450 nm	1926288, 1926289, 1926290, 1926291, 1926292, 1926293
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1926288, 1926289, 1926290, 1926291, 1926292, 1926293
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1926288, 1926289, 1926290, 1926291, 1926292, 1926293
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1926288, 1926289, 1926290, 1926291, 1926292, 1926293
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1926288, 1926289, 1926290, 1926291, 1926292, 1926293
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1926294, 1926295, 1926296, 1926297, 1926298, 1926299

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	08/30/2017			08/30/2017 15:25	DeAsia Armster	1926288, 1926289, 1926290, 1926291, 1926292, 1926293
EPA 300.0 Rev. 2.1	08/30/2017			09/01/2017	Julia Storbeck	1926288
	08/30/2017			09/02/2017	Julia Storbeck	1926289, 1926290, 1926291, 1926292, 1926293
EPA 350.1 Rev. 2.0	08/30/2017			08/31/2017	Sofia Elnemr	1926294, 1926295, 1926296, 1926297, 1926298, 1926299
EPA 351.2 Rev. 2.0	08/30/2017	08/31/2017	Adrian Shelby	09/01/2017	Joseph Suarez	1926294, 1926295
	08/30/2017	09/01/2017	Adrian Shelby	09/05/2017	Joseph Suarez	1926296, 1926297, 1926298, 1926299
EPA 353.2 Rev. 2.0	08/30/2017			08/31/2017	Beverly Y. Sanders	1926294, 1926295, 1926296, 1926297, 1926298, 1926299
EPA 365.1 Rev. 2.0	08/30/2017	08/31/2017	Sima Feizi	09/01/2017	Lipi Saha	1926294, 1926295, 1926296, 1926297, 1926298, 1926299
EPA 365.1 Rev. 2.0 dissolved	08/30/2017			08/30/2017 13:47	Megan Treadwell	1926302
	08/30/2017			08/30/2017 14:14	Megan Treadwell	1926300
	08/30/2017			08/30/2017 14:15	Megan Treadwell	1926301
	08/30/2017			08/30/2017 14:16	Megan Treadwell	1926303, 1926304
	08/30/2017			08/30/2017 14:17	Megan Treadwell	1926305
SM 2120 B	08/30/2017			08/30/2017 16:19	Tanya Welborn	1926288
	08/30/2017			08/30/2017 16:20	Tanya Welborn	1926289
	08/30/2017			08/30/2017 16:21	Tanya Welborn	1926290, 1926291
	08/30/2017			08/30/2017 16:25	Tanya Welborn	1926292
	08/30/2017			08/30/2017 16:26	Tanya Welborn	1926293
SM 2320 B-97	08/30/2017			09/07/2017	Dale L. Simmons	1926288, 1926289, 1926290, 1926291, 1926292, 1926293
SM 2540 C-97	08/30/2017			09/01/2017	Yijie Li	1926288, 1926289, 1926290, 1926291, 1926292, 1926293
SM 2540 D-97	08/30/2017			09/01/2017	Yijie Li	1926288, 1926289, 1926290, 1926291, 1926292, 1926293
SM 4500 F-C-97	08/30/2017			09/16/2017	Dale L. Simmons	1926288, 1926289, 1926290, 1926291, 1926292, 1926293
SM 5310 B-00	08/30/2017			09/01/2017	Ping Hua	1926294, 1926295
	08/30/2017			09/05/2017	Ping Hua	1926296, 1926297, 1926298, 1926299