

Chemical Analysis Report

NW-DIST-2017-07-07-01

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

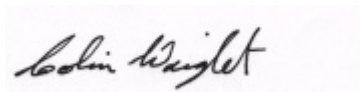
Event Description: **Laurel Hill Run WBID 42 100 101 117 35A 76 92**
Request ID: **RQ-2017-05-29-13**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Colin Wright, Program Administrator

Date Certified: 31-JUL-2017 10:05

A handwritten signature in black ink, appearing to read "Colin Wright", is placed over 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: EIGHTMILE CK.

Collection Date/Time: 07/05/2017 12:00

Field ID: G4NW0136

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1911543	EPA 180.1 Rev. 2.0	Turbidity	4.5		NTU	P328127	
	EPA 300.0 Rev. 2.1	Chloride	2.6		mg Cl/L	P328359	
		Sulfate	0.54		mg SO4/L	P328362	
	SM 2120 B	Color (true)	170		PCU	P328090	
	SM 2320 B-97	Total Alkalinity	10		mg CaCO3/L	P328318	
	SM 2540 C-97	TDS	41		mg/L	P328600	
	SM 2540 D-97	TSS	4	I	mg/L	P328650	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P328322	
1911550	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P328226	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.58		mg N/L	P328345	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.068		mg N/L	P328197	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P328256	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P328704	
1911557	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P328122	

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: CANEY CREEK

Collection Date/Time: 07/05/2017 12:35

Field ID: G4NW0397

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1911544	EPA 180.1 Rev. 2.0	Turbidity	3.4		NTU	P328127	
	EPA 300.0 Rev. 2.1	Chloride	4.1		mg Cl/L	P328359	
		Sulfate	0.35	I	mg SO4/L	P328362	
	SM 2120 B	Color (true)	87		PCU	P328090	
	SM 2320 B-97	Total Alkalinity	9.5		mg CaCO3/L	P328318	
	SM 2540 C-97	TDS	35		mg/L	P328600	
	SM 2540 D-97	TSS	5	I	mg/L	P328650	
	SM 4500 F-C-97	Fluoride	0.040	I	mg F/L	P328322	
1911551	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P328227	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.44		mg N/L	P328347	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P328197	
	EPA 365.1 Rev. 2.0	Total-P	0.056		mg P/L	P328256	
	SM 5310 B-00	Organic Carbon	8.3		mg C/L	P328704	
1911558	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.037		mg P/L	P328122	

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: BR. PINE LOG CK

Collection Date/Time: 07/05/2017 13:15

Field ID: G4NW0208

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1911545	EPA 180.1 Rev. 2.0	Turbidity	3.3		NTU	P328127	
	EPA 300.0 Rev. 2.1	Chloride	3.8		mg Cl/L	P328359	
		Sulfate	0.69		mg SO4/L	P328362	

Field ID: G4NW0208

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1911545	SM 2120 B	Color (true)	140		PCU	P328092	
	SM 2320 B-97	Total Alkalinity	11		mg CaCO3/L	P328318	
	SM 2540 C-97	TDS	36		mg/L	P328600	
	SM 2540 D-97	TSS	5	I	mg/L	P328650	
	SM 4500 F-C-97	Fluoride	0.035	I	mg F/L	P328322	
1911552	EPA 350.1 Rev. 2.0	Ammonia-N	0.028		mg N/L	P328227	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.84		mg N/L	P328347	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.019		mg N/L	P328197	
	EPA 365.1 Rev. 2.0	Total-P	0.055		mg P/L	P328256	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P328704	
1911559	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.020		mg P/L	P328122	

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: PINE LOG

Collection Date/Time: 07/05/2017 13:40

Field ID: G4NW0315

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1911546	EPA 180.1 Rev. 2.0	Turbidity	4.6		NTU	P328127	
	EPA 300.0 Rev. 2.1	Chloride	3.0		mg Cl/L	P328359	
		Sulfate	1.2		mg SO4/L	P328362	
	SM 2120 B	Color (true)	90		PCU	P328092	
	SM 2320 B-97	Total Alkalinity	4.7		mg CaCO3/L	P328318	
	SM 2540 C-97	TDS	27		mg/L	P328600	
	SM 2540 D-97	TSS	9	I	mg/L	P328650	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P328322	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P328227	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.35		mg N/L	P328347	
1911553	EPA 353.2 Rev. 2.0	NO2NO3-N	0.15		mg N/L	P328198	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P328256	
	SM 5310 B-00	Organic Carbon	6.9		mg C/L	P328704	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P328122	

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: LONG CREEK

Collection Date/Time: 07/05/2017 14:05

Field ID: G4NW0308

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1911547	EPA 180.1 Rev. 2.0	Turbidity	3.7		NTU	P328127	
	EPA 300.0 Rev. 2.1	Chloride	3.2		mg Cl/L	P328360	
		Sulfate	0.53		mg SO4/L	P328363	
	SM 2120 B	Color (true)	72		PCU	P328092	
	SM 2320 B-97	Total Alkalinity	2.3	I	mg CaCO3/L	P328318	
	SM 2540 C-97	TDS	17	I	mg/L	P328601	
	SM 2540 D-97	TSS	6	I	mg/L	P328651	

Field ID: G4NW0308

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1911547	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P328322	
1911554	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P328227	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29		mg N/L	P328347	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.24		mg N/L	P328198	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P328256	
	SM 5310 B-00	Organic Carbon	5.3		mg C/L	P328704	
1911561	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P328122	

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: BEECH TREE

Collection Date/Time: 07/05/2017 14:25

Field ID: G4NW0330

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1911548	EPA 180.1 Rev. 2.0	Turbidity	5.4		NTU	P328127	
	EPA 300.0 Rev. 2.1	Chloride	2.3		mg Cl/L	P328360	
		Sulfate	0.72		mg SO4/L	P328363	
	SM 2120 B	Color (true)	39		PCU	P328092	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P328318	
	SM 2540 C-97	TDS	20	I	mg/L	P328601	
	SM 2540 D-97	TSS	9	I	mg/L	P328651	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P328322	
1911555	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P328227	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	I	mg N/L	P328347	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.036		mg N/L	P328198	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P328256	
	SM 5310 B-00	Organic Carbon	3.3		mg C/L	P328705	
1911562	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P328122	

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: POND CK. IN MCCLLOUD BAY

Collection Date/Time: 07/05/2017 15:05

Field ID: G4NW0349

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1911549	EPA 180.1 Rev. 2.0	Turbidity	8.5	A	NTU	P328128	
	EPA 300.0 Rev. 2.1	Chloride	3.1		mg Cl/L	P328360	
		Sulfate	1.3		mg SO4/L	P328363	
	SM 2120 B	Color (true)	92	A	PCU	P328092	
	SM 2320 B-97	Total Alkalinity	4.3		mg CaCO3/L	P328318	
	SM 2540 C-97	TDS	28		mg/L	P328601	
	SM 2540 D-97	TSS	13		mg/L	P328651	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P328322	
1911556	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P328227	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40		mg N/L	P328347	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.23		mg N/L	P328198	

Field ID: G4NW0349

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1911556	EPA 365.1 Rev. 2.0	Total-P	0.025		mg P/L	P328256	
	SM 5310 B-00	Organic Carbon	6.6		mg C/L	P328705	
1911563	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	I	mg P/L	P328122	

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: P328127

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P328128

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P328359

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P328360

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P328362

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P328363

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P328226

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

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P328227

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P328227

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328345

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328347

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P328197

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P328198

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P328256

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P328122

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

Reference Method: SM 2120 B
Batch ID: P328090

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P328092

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P328318

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

Reference Method: SM 2540 C-97
Batch ID: P328600

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P328601

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P328650

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P328651

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P328322

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P328704

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

Reference Method: SM 5310 B-00
Batch ID: P328705

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: P328359

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: P328359

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: P328360

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328362

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328363

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	95.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P328226

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P328227

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328345

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328347

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P328197

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P328198

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P328256

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P328122

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

Reference Method: SM 2320 B-97
Batch ID: P328318

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

Reference Method: SM 4500 F-C-97
Batch ID: P328322

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

Reference Method: SM 5310 B-00
Batch ID: P328704

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.4		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P328705

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328359

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1911417	Chloride	96.4		P	90 - 110
1911418	Chloride	98.2		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328360

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1911630	Chloride	97.9		P	90 - 110
1911659	Chloride	95.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328362

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1911417	Sulfate	97.2		P	90 - 110
1911418	Sulfate	97.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328363

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1911630	Sulfate	95.9		P	90 - 110
1911659	Sulfate	96.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P328226

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1911488	Ammonia-N	95.4	94.7	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P328227

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1911551	Ammonia-N	96.4	97.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328345

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1911523	Kjeldahl Nitrogen	94.8	92.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328347

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1911581	Kjeldahl Nitrogen	108	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P328197

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1911533	NO2NO3-N	101	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P328198

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1911553	NO2NO3-N	100	101	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P328256

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1911580	Total-P	100	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P328122

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1911557	O-Phosphate-P	99.1	99.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P328322

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1911834	Fluoride	97.4	100	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P328704

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1911439	Organic Carbon	96.3	97.2	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P328705

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1911555	Organic Carbon	96.9	97.3	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P328127

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1911531	Turbidity	8.68	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P328128

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1911549	Turbidity	5.51	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328359

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1911417	Chloride	0.191	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328360

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1911630	Chloride	0.0490	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328362

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1911417	Sulfate	0.323	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328363

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1911630	Sulfate	0.125	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P328226

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1911488	Ammonia-N	0.640	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P328227

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1911551	Ammonia-N	1.07	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328345

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1911523	Kjeldahl Nitrogen	1.94	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328347

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1911581	Kjeldahl Nitrogen	2.42	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P328197

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1911533	NO2NO3-N	1.43	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P328198

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1911553	NO2NO3-N	0.563	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P328256

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1911580	Total-P	4.49	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P328122

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1911557	O-Phosphate-P	0.101	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P328090

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1911521	Color (true)	12.0	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P328092

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1911549	Color (true)	1.82	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P328318

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1911834	Total Alkalinity	0.0818	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P328600

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1911464	TDS	0.0	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P328601

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1911611	TDS	3.02	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P328322

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1911834	Fluoride	1.92	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P328704

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1911439	Organic Carbon	0.905	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P328705

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1911555	Organic Carbon	0.352	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: A77570
Included Lab Sample IDs: 1911543

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	100	P/P	90 - 115

Reference Method: SM 2120 B
Run ID: A77571
Included Lab Sample IDs: 1911545, 1911546, 1911547, 1911548, 1911549

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.7	99.7	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A77592
Included Lab Sample IDs: 1911557, 1911558, 1911559, 1911560, 1911561, 1911562, 1911563

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.6	99.7	P/P	90 - 110
O-Phosphate-P	99.7	99.3	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A77595
Included Lab Sample IDs: 1911543, 1911544, 1911545, 1911546, 1911547, 1911548, 1911549

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.0	P/P	95 - 105

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A77611

Included Lab Sample IDs: 1911550, 1911551, 1911552, 1911553, 1911554, 1911555, 1911556

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A77630

Included Lab Sample IDs: 1911550, 1911551, 1911552, 1911553, 1911554, 1911555, 1911556

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.6	99.7	P/P	90 - 110
Ammonia-N	99.7	98.3	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A77638

Included Lab Sample IDs: 1911543, 1911544, 1911545, 1911546, 1911547, 1911548, 1911549

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Chloride	101	101	P/P	90 - 110
Sulfate	94.5	99.0	P/P	90 - 110
Sulfate	98.8	94.5	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A77651

Included Lab Sample IDs: 1911543, 1911544, 1911545, 1911546, 1911547, 1911548, 1911549

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	101	P/P	90 - 110
Total Alkalinity	99.9	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A77651

Included Lab Sample IDs: 1911543, 1911544, 1911545, 1911546, 1911547, 1911548, 1911549

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.6	98.5	P/P	90 - 110
Fluoride	98.5	98.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A77670

Included Lab Sample IDs: 1911551, 1911552

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A77696

Included Lab Sample IDs: 1911550

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.9	91.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A77703

Included Lab Sample IDs: 1911550, 1911553, 1911554, 1911555, 1911556

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	99.2	P/P	90 - 110
Total-P	99.5	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A77704

Included Lab Sample IDs: 1911551, 1911552, 1911553, 1911554, 1911555, 1911556

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	91.5	94.3	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A77789

Included Lab Sample IDs: 1911550, 1911551, 1911552, 1911553, 1911554, 1911555, 1911556

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.8	97.2	P/P	90 - 110
Organic Carbon	97.2	96.8	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	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					8.68	
	Turbidity					5.51	
EPA 300.0 Rev. 2.1	Chloride	99.2	96.4	98.2		0.191	
	Chloride	97.7	97.9	95.6		0.0490	
	Sulfate	100	97.2	97.1		0.323	
	Sulfate	95.5	95.9	96.1		0.125	
EPA 350.1 Rev. 2.0	Ammonia-N	105	95.4	94.7			0.640
	Ammonia-N	99.1	96.4	97.7			1.07
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	110	94.8	92.7			1.94
	Kjeldahl Nitrogen	104	108	105			2.42
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	101	100			1.43
	NO ₂ NO ₃ -N	102	100	101			0.563
EPA 365.1 Rev. 2.0	Total-P	100	100	105			4.49
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.0	99.1	99.0			0.101
SM 2120 B	Color (true)					12.0	
	Color (true)					1.82	
SM 2320 B-97	Total Alkalinity	102				0.0818	
SM 2540 C-97	TDS					0.0	
	TDS					3.02	
SM 4500 F-C-97	Fluoride	96.1	97.4	100			1.92
SM 5310 B-00	Organic Carbon	97.4	96.3	97.2			0.905
	Organic Carbon	98.0	96.9	97.3			0.352

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1911543, 1911544, 1911545, 1911546, 1911547, 1911548, 1911549
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1911543, 1911544, 1911545, 1911546, 1911547, 1911548, 1911549
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1911543, 1911544, 1911545, 1911546, 1911547, 1911548, 1911549
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1911550, 1911551, 1911552, 1911553, 1911554, 1911555, 1911556
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1911550, 1911551, 1911552, 1911553, 1911554, 1911555, 1911556
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1911550, 1911551, 1911552, 1911553, 1911554, 1911555, 1911556
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1911550, 1911551, 1911552, 1911553, 1911554, 1911555, 1911556
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1911557, 1911558, 1911559, 1911560, 1911561, 1911562, 1911563
SM 2120 B / E31780	True Color measured at 450 nm	1911543, 1911544, 1911545, 1911546, 1911547, 1911548, 1911549
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1911543, 1911544, 1911545, 1911546, 1911547, 1911548, 1911549
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1911543, 1911544, 1911545, 1911546, 1911547, 1911548, 1911549
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1911543, 1911544, 1911545, 1911546, 1911547, 1911548, 1911549
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1911543, 1911544, 1911545, 1911546, 1911547, 1911548, 1911549
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1911550, 1911551, 1911552, 1911553, 1911554, 1911555, 1911556

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	07/07/2017			07/07/2017 11:18	DeAsia Armster	1911543
	07/07/2017			07/07/2017 11:19	DeAsia Armster	1911544
	07/07/2017			07/07/2017 11:20	DeAsia Armster	1911545
	07/07/2017			07/07/2017 11:22	DeAsia Armster	1911546
	07/07/2017			07/07/2017 11:24	DeAsia Armster	1911547
	07/07/2017			07/07/2017 11:25	DeAsia Armster	1911548
	07/07/2017			07/07/2017 11:33	DeAsia Armster	1911549
	07/07/2017			07/11/2017	Ping Hua	1911543, 1911544, 1911545, 1911546, 1911547, 1911548, 1911549
EPA 300.0 Rev. 2.1	07/07/2017			07/10/2017	Sofia Elnemr	1911550, 1911551, 1911552, 1911553, 1911554, 1911555, 1911556
EPA 350.1 Rev. 2.0	07/07/2017			07/10/2017	Sofia Elnemr	1911550, 1911551, 1911552, 1911553, 1911554, 1911555, 1911556
EPA 351.2 Rev. 2.0	07/07/2017	07/12/2017	Adrian Shelby	07/13/2017	Joseph Suarez	1911550, 1911551, 1911552, 1911553, 1911554, 1911555, 1911556
EPA 353.2 Rev. 2.0	07/07/2017			07/10/2017	Beverly Y. Sanders	1911550, 1911551, 1911552, 1911553, 1911554, 1911555, 1911556
EPA 365.1 Rev. 2.0	07/07/2017	07/11/2017	Vijayalakshmi Reddy	07/12/2017	Lipi Saha	1911551, 1911552
	07/07/2017	07/11/2017	Vijayalakshmi Reddy	07/13/2017	Lipi Saha	1911550, 1911553, 1911554, 1911555, 1911556
EPA 365.1 Rev. 2.0 dissolved	07/07/2017			07/07/2017 11:31	Anthony C. Onicha	1911557
	07/07/2017			07/07/2017 11:44	Anthony C. Onicha	1911558
	07/07/2017			07/07/2017 11:45	Anthony C. Onicha	1911559
	07/07/2017			07/07/2017 11:46	Anthony C. Onicha	1911560
	07/07/2017			07/07/2017 11:47	Anthony C. Onicha	1911561
	07/07/2017			07/07/2017 11:48	Anthony C. Onicha	1911562, 1911563
	07/07/2017			07/07/2017 11:20	Tanya Welborn	1911543
	07/07/2017			07/07/2017 11:44	Tanya Welborn	1911544
SM 2120 B	07/07/2017			07/07/2017 11:46	Tanya Welborn	1911545
	07/07/2017			07/07/2017 11:47	Tanya Welborn	1911546, 1911547
	07/07/2017			07/07/2017 11:48	Tanya Welborn	1911548
	07/07/2017			07/07/2017 11:50	Tanya Welborn	1911549
	07/07/2017			07/11/2017	Dale L. Simmons	1911543, 1911544, 1911545, 1911546, 1911547, 1911548, 1911549
	07/07/2017			07/11/2017	Yijie Li	1911543, 1911544, 1911545, 1911546, 1911547, 1911548, 1911549
	07/07/2017			07/11/2017	Yijie Li	1911543, 1911544, 1911545, 1911546, 1911547, 1911548, 1911549
	07/07/2017			07/11/2017	Dale L. Simmons	1911543, 1911544, 1911545, 1911546, 1911547, 1911548, 1911549
SM 2320 B-97	07/07/2017			07/11/2017	Dale L. Simmons	1911543, 1911544, 1911545, 1911546, 1911547, 1911548, 1911549
SM 2540 C-97	07/07/2017			07/11/2017	Yijie Li	1911543, 1911544, 1911545, 1911546, 1911547, 1911548, 1911549
SM 2540 D-97	07/07/2017			07/11/2017	Yijie Li	1911543, 1911544, 1911545, 1911546, 1911547, 1911548, 1911549
SM 4500 F-C-97	07/07/2017			07/11/2017	Dale L. Simmons	1911543, 1911544, 1911545, 1911546, 1911547, 1911548, 1911549
SM 5310 B-00	07/07/2017			07/18/2017	Sofia Elnemr	1911550, 1911551, 1911552, 1911553, 1911554, 1911555, 1911556