

Chemical Analysis Report

WQAP-2019-03-12-02

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

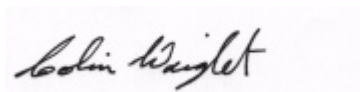
Event Description: **Crestview/ Laurel Hill**
Request ID: **RQ-2019-03-11-23**
Customer: **WQAP**
Project ID: **SMP**

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Certified by: Colin Wright, Program Administrator

Date Certified: 01-APR-2019 12:14

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light-colored 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 by the Florida Department of Health Environmental Laboratory Certification Program 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: DEADFALL CREEK UPSTREAM OF OLD RIVER RD **Collection Date/Time: 03/11/2019 13:15**

Field ID: G4NW0491

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2068722	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P360283	
	EPA 300.0 Rev. 2.1	Chloride	3.1		mg Cl/L	P360718	
		Sulfate	1.0		mg SO4/L	P360720	
	SM 2120 B	Color (true)	32		PCU	P360323	
	SM 2320 B-97	Total Alkalinity	1.5	I	mg CaCO3/L	P360800	
	SM 2540 C-97	TDS	19	I	mg/L	P360681	
	SM 2540 D-97	TSS	2	I	mg/L	P360654	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P360803	
2068728	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P360424	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.11	I	mg N/L	P360465	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.19		mg N/L	P360359	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P360473	
	SM 5310 B-00	Organic Carbon	2.7		mg C/L	P360634	
2068734	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P360296	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

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

Sample Location: OAK CREEK BELOW TOMMY STEELE ROAD Collection Date/Time: 03/11/2019 13:55

Field ID: G4NW0395

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2068723	EPA 180.1 Rev. 2.0	Turbidity	8.2	A	NTU	P360283	
	EPA 300.0 Rev. 2.1	Chloride	3.8		mg Cl/L	P360718	
		Sulfate	1.5		mg SO4/L	P360720	
	SM 2120 B	Color (true)	68		PCU	P360323	
	SM 2320 B-97	Total Alkalinity	3.2		mg CaCO3/L	P360800	
	SM 2540 C-97	TDS	31		mg/L	P360682	
	SM 2540 D-97	TSS	4	I	mg/L	P360656	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P360803	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P360424	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.26		mg N/L	P360465	
2068729	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P360359	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P360473	
	SM 5310 B-00	Organic Carbon	4.1		mg C/L	P360634	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.006	I	mg P/L	P360296	
	dissolved						

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: HURRICANE CREEK BELOW HURRICANE LAKE ROAD

Collection Date/Time: 03/11/2019 14:40

Field ID: G4NW0160

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2068724	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P360283	
	EPA 300.0 Rev. 2.1	Chloride	2.5		mg Cl/L	P360718	
		Sulfate	0.47	I	mg SO4/L	P360720	
	SM 2120 B	Color (true)	23	A	PCU	P360323	
	SM 2320 B-97	Total Alkalinity	3.5		mg CaCO3/L	P360800	
	SM 2540 C-97	TDS	15	I	mg/L	P360682	
	SM 2540 D-97	TSS	3	I	mg/L	P360656	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P360803	
2068730	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P360425	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.38		mg N/L	P360465	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.013		mg N/L	P360359	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P360526	
	SM 5310 B-00	Organic Carbon	3.9		mg C/L	P360634	
2068736	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P360296	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: PROVERTY CREEK UPSTREAM OF POVERTY CREEK RD **Collection Date/Time: 03/11/2019 10:15**

Field ID: G4NW0427

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2068725	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P360283	
	EPA 300.0 Rev. 2.1	Chloride	2.7		mg Cl/L	P360718	
		Sulfate	2.0		mg SO4/L	P360720	
	SM 2120 B	Color (true)	20		PCU	P360323	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P360800	
	SM 2540 C-97	TDS	21	I	mg/L	P360682	
	SM 2540 D-97	TSS	4	I	mg/L	P360656	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P360803	
2068731	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P360425	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.10	I	mg N/L	P360465	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.16		mg N/L	P360359	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P360526	
	SM 5310 B-00	Organic Carbon	2.3		mg C/L	P360634	
2068737	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P360296	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: HORSEHEAD CREEK UPSTREAM OF STEELE MILL CREEK RD **Collection Date/Time: 03/11/2019 11:05**

Field ID: G4NW0428

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2068740	EPA 180.1 Rev. 2.0	Turbidity	5.8		NTU	P360283	
	EPA 300.0 Rev. 2.1	Chloride	4.1		mg Cl/L	P360718	
		Sulfate	0.60		mg SO4/L	P360720	
	SM 2120 B	Color (true)	61		PCU	P360324	
	SM 2320 B-97	Total Alkalinity	6.2		mg CaCO3/L	P360800	
	SM 2540 C-97	TDS	21	I	mg/L	P360682	
	SM 2540 D-97	TSS	3	I	mg/L	P360656	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P360803	
2068741	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P360425	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29		mg N/L	P360465	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.16		mg N/L	P360359	
	EPA 365.1 Rev. 2.0	Total-P	0.039		mg P/L	P360526	
	SM 5310 B-00	Organic Carbon	4.5		mg C/L	P360635	
2068742	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.017		mg P/L	P360296	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: GREEN BRANCH UPSTREAM OF BUCK TYNER RD **Collection Date/Time: 03/11/2019 11:30**

Field ID: G4NW0207

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2068726	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P360283	
	EPA 300.0 Rev. 2.1	Chloride	4.1		mg Cl/L	P360718	
		Sulfate	0.83		mg SO4/L	P360720	
	SM 2120 B	Color (true)	37		PCU	P360324	
	SM 2320 B-97	Total Alkalinity	4.9		mg CaCO3/L	P360800	
	SM 2540 C-97	TDS	16	I	mg/L	P360682	
	SM 2540 D-97	TSS	2	I	mg/L	P360656	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P360803	
2068732	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P360425	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.18	I	mg N/L	P360465	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P360359	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P360526	
	SM 5310 B-00	Organic Carbon	3.2		mg C/L	P360635	
2068738	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P360296	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: DEADFALL CREEK UPSTREAM OF SHOCKLEY SPRINGS RD **Collection Date/Time: 03/11/2019 12:50**

Field ID: G4NW0490

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2068727	EPA 180.1 Rev. 2.0	Turbidity	3.0		NTU	P360283	
	EPA 300.0 Rev. 2.1	Chloride	2.9		mg Cl/L	P360718	
		Sulfate	1.3		mg SO4/L	P360720	
	SM 2120 B	Color (true)	32	A	PCU	P360324	
	SM 2320 B-97	Total Alkalinity	0.84	I	mg CaCO3/L	P360800	
	SM 2540 C-97	TDS	17	I	mg/L	P360682	
	SM 2540 D-97	TSS	2	I	mg/L	P360656	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P360803	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P360425	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.11	I	mg N/L	P360465	
2068733	EPA 353.2 Rev. 2.0	NO2NO3-N	0.091		mg N/L	P360359	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P360526	
	SM 5310 B-00	Organic Carbon	2.6		mg C/L	P360635	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P360296	
	dissolved						

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: 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: P360283

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360718

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360720

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360424

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360425

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360465

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360359

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360473

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360526

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360296

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

Reference Method: SM 2120 B
Batch ID: P360323

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P360324

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P360800

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

Reference Method: SM 2540 C-97
Batch ID: P360681

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P360682

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P360654

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P360656

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P360803

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P360634

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

Reference Method: SM 5310 B-00
Batch ID: P360635

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: P360718

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360720

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360424

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360425

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360465

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	107		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360359

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	101		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360473

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360526

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360296

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.6		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2120 B
Batch ID: P360323

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

Reference Method: SM 2120 B
Batch ID: P360324

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

Reference Method: SM 2320 B-97
Batch ID: P360800

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P360803

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.0		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P360634

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	100		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P360635

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360718

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2068543	Chloride	100		P	90 - 110
2068727	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360720

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2068543	Sulfate	102		P	90 - 110
2068727	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360424

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2068365	Ammonia-N	99.8	98.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360425

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2068731	Ammonia-N	99.3	99.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360465

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2068728	Kjeldahl Nitrogen	100	97.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360359

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2068545	NO2NO3-N	95.5	97.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360473

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2068546	Total-P	99.5	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360526

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2068732	Total-P	99.8	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360296

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2068736	O-Phosphate-P	98.7	99.6	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P360803

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2068696	Fluoride	96.1	96.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P360634

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2068286	Organic Carbon	97.2	97.1	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P360635

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2068733	Organic Carbon	97.8	99.1	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P360283

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2068723	Turbidity	5.75	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360718

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2068543	Chloride	2.32	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360424

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2068365	Ammonia-N	0.748	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360425

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2068731	Ammonia-N	0.209	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360465

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2068728	Kjeldahl Nitrogen	2.38	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360359

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2068545	NO2NO3-N	0.994	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360473

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2068546	Total-P	1.20	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360526

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2068732	Total-P	6.45	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360296

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2068736	O-Phosphate-P	0.908	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P360323

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2068724	Color (true)	0.851	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P360324

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2068727	Color (true)	0.503	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P360800

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2068696	Total Alkalinity	0.611	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P360682

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2068769	TDS	4.38	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P360656

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2068769	TSS	5.88	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P360803

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2068696	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P360634

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2068286	Organic Carbon	0.137	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P360635

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2068733	Organic Carbon	1.21	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: EPA 180.1 Rev. 2.0

Run ID: A89962

Included Lab Sample IDs: 2068722, 2068723, 2068724, 2068725, 2068726, 2068727, 2068740

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A89964

Included Lab Sample IDs: 2068734, 2068735, 2068736, 2068737, 2068738, 2068739, 2068742

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	98.4	P/P	90 - 110
O-Phosphate-P	98.3	97.6	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A89978

Included Lab Sample IDs: 2068722, 2068723, 2068724, 2068725, 2068726, 2068727, 2068740

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	103	P/P	90 - 115
Color (true)	103	102	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A89981

Included Lab Sample IDs: 2068728, 2068729, 2068730, 2068731, 2068732, 2068733, 2068741

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A90011

Included Lab Sample IDs: 2068728, 2068729, 2068730, 2068731, 2068732, 2068733, 2068741

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A90036

Included Lab Sample IDs: 2068728, 2068729, 2068730, 2068731, 2068732, 2068733, 2068741

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	107	P/P	90 - 110
Kjeldahl Nitrogen	107	108	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A90071

Included Lab Sample IDs: 2068722, 2068723, 2068724, 2068725, 2068726, 2068727, 2068740

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Chloride	99.9	101	P/P	90 - 110
Sulfate	100	102	P/P	90 - 110
Sulfate	102	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A90082

Included Lab Sample IDs: 2068728, 2068729, 2068730, 2068731, 2068732, 2068733, 2068741

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.1	96.2	P/P	90 - 110
Organic Carbon	96.2	96.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A90089

Included Lab Sample IDs: 2068728, 2068729

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	99.8	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A90132

Included Lab Sample IDs: 2068722, 2068723, 2068724, 2068725, 2068726, 2068727, 2068740

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A90132

Included Lab Sample IDs: 2068722, 2068723, 2068724, 2068725, 2068726, 2068727, 2068740

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.1	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A90147

Included Lab Sample IDs: 2068730, 2068731, 2068732, 2068733, 2068741

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

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 180.1 Rev. 2.0	Turbidity				5.75	
EPA 300.0 Rev. 2.1	Chloride	100	100	101	2.32	
	Sulfate	102	102	102		
EPA 350.1 Rev. 2.0	Ammonia-N	97.8	99.8	98.6		0.748
	Ammonia-N	98.7	99.3	99.1		0.209
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	100	97.7		2.38
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	101	95.5	97.0		0.994
EPA 365.1 Rev. 2.0	Total-P	103	99.5	101		1.20
	Total-P	97.8	99.8	107		6.45
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.6	98.7	99.6		0.908
SM 2120 B	Color (true)	103			0.851	
	Color (true)	102			0.503	
SM 2320 B-97	Total Alkalinity	101			0.611	
SM 2540 C-97	TDS				4.38	
SM 2540 D-97	TSS				5.88	
SM 4500 F-C-97	Fluoride	96.0	96.1	96.1		0.0
SM 5310 B-00	Organic Carbon	100	97.2	97.1		0.137
	Organic Carbon	97.6	97.8	99.1		1.21

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2068722, 2068723, 2068724, 2068725, 2068726, 2068727, 2068740
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2068722, 2068723, 2068724, 2068725, 2068726, 2068727, 2068740
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2068722, 2068723, 2068724, 2068725, 2068726, 2068727, 2068740
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2068728, 2068729, 2068730, 2068731, 2068732, 2068733, 2068741
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2068728, 2068729, 2068730, 2068731, 2068732, 2068733, 2068741
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2068728, 2068729, 2068730, 2068731, 2068732, 2068733, 2068741
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2068728, 2068729, 2068730, 2068731, 2068732, 2068733, 2068741
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2068734, 2068735, 2068736, 2068737, 2068738, 2068739, 2068742
SM 2120 B / E31780	True Color measured at 450 nm	2068722, 2068723, 2068724, 2068725, 2068726, 2068727, 2068740
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2068722, 2068723, 2068724, 2068725, 2068726, 2068727, 2068740
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2068722, 2068723, 2068724, 2068725, 2068726, 2068727, 2068740
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2068722, 2068723, 2068724, 2068725, 2068726, 2068727, 2068740
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2068722, 2068723, 2068724, 2068725, 2068726, 2068727, 2068740
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2068728, 2068729, 2068730, 2068731, 2068732, 2068733, 2068741

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	03/12/2019			03/12/2019 16:50	Adrian Shelby	2068722, 2068723, 2068724, 2068725, 2068726, 2068727, 2068740
EPA 300.0 Rev. 2.1	03/12/2019			03/19/2019 22:06	Lipi Saha	2068727
	03/12/2019			03/19/2019 23:07	Lipi Saha	2068722
	03/12/2019			03/19/2019 23:55	Lipi Saha	2068723
	03/12/2019			03/20/2019 00:07	Lipi Saha	2068724
	03/12/2019			03/20/2019 00:19	Lipi Saha	2068725
	03/12/2019			03/20/2019 00:31	Lipi Saha	2068726
	03/12/2019			03/20/2019 00:43	Lipi Saha	2068740
EPA 350.1 Rev. 2.0	03/12/2019			03/13/2019 12:14	Ping Hua	2068728
	03/12/2019			03/13/2019 12:16	Ping Hua	2068729
	03/12/2019			03/13/2019 12:28	Ping Hua	2068731
	03/12/2019			03/13/2019 12:32	Ping Hua	2068730
	03/12/2019			03/13/2019 12:34	Ping Hua	2068732
	03/12/2019			03/13/2019 12:35	Ping Hua	2068733
	03/12/2019			03/13/2019 12:37	Ping Hua	2068741
EPA 351.2 Rev. 2.0	03/12/2019	03/14/2019 12:00	Adrian Shelby	03/15/2019 11:44	Joseph Suarez	2068728
	03/12/2019	03/14/2019 12:00	Adrian Shelby	03/15/2019 11:48	Joseph Suarez	2068729
	03/12/2019	03/14/2019 12:00	Adrian Shelby	03/15/2019 11:50	Joseph Suarez	2068730
	03/12/2019	03/14/2019 12:00	Adrian Shelby	03/15/2019 11:51	Joseph Suarez	2068731
	03/12/2019	03/14/2019 12:00	Adrian Shelby	03/15/2019 11:53	Joseph Suarez	2068732
	03/12/2019	03/14/2019 12:00	Adrian Shelby	03/15/2019 11:55	Joseph Suarez	2068733
	03/12/2019	03/14/2019 12:00	Adrian Shelby	03/15/2019 11:59	Joseph Suarez	2068741
EPA 353.2 Rev. 2.0	03/12/2019			03/13/2019 11:15	Beverly Y. Sanders	2068728
	03/12/2019			03/13/2019 11:16	Beverly Y. Sanders	2068729
	03/12/2019			03/13/2019 11:18	Beverly Y. Sanders	2068730
	03/12/2019			03/13/2019 11:19	Beverly Y. Sanders	2068731
	03/12/2019			03/13/2019 11:20	Beverly Y. Sanders	2068732
	03/12/2019			03/13/2019 11:21	Beverly Y. Sanders	2068733
	03/12/2019			03/13/2019 11:22	Beverly Y. Sanders	2068741
EPA 365.1 Rev. 2.0	03/12/2019	03/15/2019 14:20	Sima Feizi	03/19/2019 12:02	Beverly Y. Sanders	2068728
	03/12/2019	03/15/2019 14:20	Sima Feizi	03/19/2019 12:03	Beverly Y. Sanders	2068729
	03/12/2019	03/15/2019 14:20	Sima Feizi	03/19/2019 13:13	Beverly Y. Sanders	2068730
	03/12/2019	03/15/2019 14:20	Sima Feizi	03/19/2019 13:14	Beverly Y. Sanders	2068731
	03/12/2019	03/15/2019 14:20	Sima Feizi	03/19/2019 13:15	Beverly Y. Sanders	2068732
	03/12/2019	03/15/2019 14:20	Sima Feizi	03/19/2019 13:16	Beverly Y. Sanders	2068733
	03/12/2019	03/15/2019 14:20	Sima Feizi	03/19/2019 13:17	Beverly Y. Sanders	2068741
EPA 365.1 Rev. 2.0 dissolved	03/12/2019			03/12/2019 15:20	Jhamieka S. Greenwood	2068736
	03/12/2019			03/12/2019 16:10	Jhamieka S. Greenwood	2068734
	03/12/2019			03/12/2019 16:11	Jhamieka S. Greenwood	2068735

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 365.1 Rev. 2.0 dissolved	03/12/2019			03/12/2019 16:12	Jhamieka S. Greenwood	2068737, 2068738
	03/12/2019			03/12/2019 16:13	Jhamieka S. Greenwood	2068739
	03/12/2019			03/12/2019 16:14	Jhamieka S. Greenwood	2068742
SM 2120 B	03/12/2019			03/12/2019 15:46	Mariam Hanna	2068722
	03/12/2019			03/12/2019 15:47	Mariam Hanna	2068723
	03/12/2019			03/12/2019 15:49	Mariam Hanna	2068724, 2068725
	03/12/2019			03/12/2019 15:53	Mariam Hanna	2068726
	03/12/2019			03/12/2019 15:55	Mariam Hanna	2068727, 2068740
SM 2320 B-97	03/12/2019			03/19/2019 22:40	Dale L. Simmons	2068722
	03/12/2019			03/19/2019 22:53	Dale L. Simmons	2068723
	03/12/2019			03/19/2019 23:08	Dale L. Simmons	2068724
	03/12/2019			03/19/2019 23:18	Dale L. Simmons	2068725
	03/12/2019			03/19/2019 23:30	Dale L. Simmons	2068726
	03/12/2019			03/19/2019 23:43	Dale L. Simmons	2068727
SM 2540 C-97	03/12/2019			03/19/2019 23:54	Dale L. Simmons	2068740
	03/12/2019			03/13/2019 14:03	Yijie Li	2068722, 2068723, 2068724, 2068725, 2068726, 2068727, 2068740
SM 2540 D-97	03/12/2019			03/13/2019 14:03	Yijie Li	2068722, 2068723, 2068724, 2068725, 2068726, 2068727, 2068740
SM 4500 F-C-97	03/12/2019			03/19/2019 22:40	Dale L. Simmons	2068722
	03/12/2019			03/19/2019 22:53	Dale L. Simmons	2068723
	03/12/2019			03/19/2019 23:08	Dale L. Simmons	2068724
	03/12/2019			03/19/2019 23:18	Dale L. Simmons	2068725
	03/12/2019			03/19/2019 23:30	Dale L. Simmons	2068726
	03/12/2019			03/19/2019 23:43	Dale L. Simmons	2068727
SM 5310 B-00	03/12/2019			03/19/2019 23:54	Dale L. Simmons	2068740
	03/12/2019			03/18/2019 07:29	Julia Storbeck	2068728
	03/12/2019			03/18/2019 07:42	Julia Storbeck	2068729
	03/12/2019			03/18/2019 07:57	Julia Storbeck	2068730
	03/12/2019			03/18/2019 08:13	Julia Storbeck	2068731
	03/12/2019			03/18/2019 08:55	Julia Storbeck	2068733
	03/12/2019			03/18/2019 10:16	Julia Storbeck	2068732
	03/12/2019			03/18/2019 10:30	Julia Storbeck	2068741
	03/12/2019					