

Chemical Analysis Report

CEN-DIST-2019-08-01-01

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

Event Description: **Spring Garden Creek / Cow Creek + D&B**
Request ID: **RQ-2019-05-06-52**
Customer: **CEN-DIST**
Project ID: **SMP**

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Date Certified: 21-AUG-2019 15:14



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: Cow Creek at Osteen - Maytown road

Collection Date/Time: 07/31/2019 10:50

Field ID: G2CE0086

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2107914	EPA 180.1 Rev. 2.0	Turbidity	0.75		NTU	P368331	
	EPA 300.0 Rev. 2.1	Chloride	11		mg Cl/L	P368587	
		Sulfate	0.20	U	mg SO4/L	P368589	
	SM 2120 B	Color (true)	820		PCU	P368326	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P368837	
	SM 2540 C-97	TDS	120		mg/L	P368811	
	SM 2540 D-97	TSS	2	U	mg/L	P368544	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P368840	
2107916	EPA 350.1 Rev. 2.0	Ammonia-N	0.018		mg N/L	P368822	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.9		mg N/L	P368692	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	U	mg N/L	P368445	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P368390	
	SM 5310 B-00	Organic Carbon	62		mg C/L	P368426	
2107918	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P368394	

Ref. Method and Comment:

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

EPA 353.2 Rev. 2.0: The MDL was elevated due to sample matrix interference.

Sample Location: Cow Creek at Osteen - Maytown road

Collection Date/Time: 07/31/2019 10:55

Field ID: G2CE0086_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2107920	EPA 180.1 Rev. 2.0	Turbidity	0.70		NTU	P368331	
	EPA 300.0 Rev. 2.1	Chloride	11		mg Cl/L	P368587	
		Sulfate	0.20	U	mg SO4/L	P369217	
	SM 2120 B	Color (true)	830		PCU	P368326	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P368837	
	SM 2540 C-97	TDS	120		mg/L	P368811	
	SM 2540 D-97	TSS	2	U	mg/L	P368544	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P368840	
2107921	EPA 350.1 Rev. 2.0	Ammonia-N	0.018		mg N/L	P368822	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.0		mg N/L	P368692	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	U	mg N/L	P368445	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P368390	
	SM 5310 B-00	Organic Carbon	63		mg C/L	P368426	
2107922	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P368394	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high 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.

EPA 353.2 Rev. 2.0: The MDL was elevated due to sample matrix interference.

Sample Location: FB_07312019

Collection Date/Time: 07/31/2019 11:10

Field ID: FB_07312019

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2107923	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P368331	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P368587	
		Sulfate	0.20	U	mg SO4/L	P368589	
	SM 2120 B	Color (true)	2.5	U	PCU	P368326	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P368837	
	SM 2540 C-97	TDS	15	U	mg/L	P368812	
	SM 2540 D-97	TSS	2	U	mg/L	P368545	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P368840	
2107924	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P368822	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P368455	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P368445	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P368443	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P368426	
2107925	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P368394	

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: Deep Creek @ 400m S of SR40

Collection Date/Time: 07/31/2019 13:20

Field ID: G2CE0167

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2107915	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P368331	
	EPA 300.0 Rev. 2.1	Chloride	22		mg Cl/L	P368587	
		Sulfate	0.20	U	mg SO4/L	P368589	
	SM 2120 B	Color (true)	1.1E+03		PCU	P368326	
	SM 2320 B-97	Total Alkalinity	4.0		mg CaCO3/L	P368837	
	SM 2540 C-97	TDS	237		mg/L	P368812	
	SM 2540 D-97	TSS	2	U	mg/L	P368545	
	SM 4500 F-C-97	Fluoride	0.055	I	mg F/L	P368840	
2107917	EPA 350.1 Rev. 2.0	Ammonia-N	0.058		mg N/L	P368822	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.6		mg N/L	P368692	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.032		mg N/L	P368445	
	EPA 365.1 Rev. 2.0	Total-P	0.062		mg P/L	P368390	
	SM 5310 B-00	Organic Carbon	93		mg C/L	P368426	
2107919	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.044		mg P/L	P368394	

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: P368331

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P368587

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P368589

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369217

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P368822

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368455

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368692

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P368445

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368390

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
Batch ID: P368443

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P368394

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

Reference Method: SM 2120 B
Batch ID: P368326

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P368837

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

Reference Method: SM 2540 C-97
Batch ID: P368811

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P368812

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P368544

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P368545

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P368840

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: P368426

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: P368587

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P368589

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369217

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P368822

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: P368455

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368692

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: P368445

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368390

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368443

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P368394

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

Reference Method: SM 2120 B
Batch ID: P368326

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

Reference Method: SM 2320 B-97
Batch ID: P368837

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P368840

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.5		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P368426

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P368587

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2107914	Chloride	101	102	P/P	90 - 110
2108226	Chloride	98.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P368589

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2107914	Sulfate	105	106	P/P	90 - 110
2108226	Sulfate	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369217

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2109470	Sulfate	101	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P368822

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2107844	Ammonia-N	101	98.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368455

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2107935	Kjeldahl Nitrogen	103	109	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368692

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2108779	Kjeldahl Nitrogen	103	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P368445

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2107844	NO2NO3-N	99.0	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368390

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2107869	Total-P	98.2	99.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368443

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2107936	Total-P	95.2	97.8	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P368394

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2107810	O-Phosphate-P	96.3	97.2	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P368840

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2107744	Fluoride	97.1	97.1	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P368426

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2107936	Organic Carbon	102	103	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P368331

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2107943	Turbidity	0.844	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P368587

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2107914	Chloride	0.508	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P368589

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2107914	Sulfate	0.388	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P369217

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2109470	Sulfate	0.283	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P368822

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2107844	Ammonia-N	1.03	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368455

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2107935	Kjeldahl Nitrogen	3.27	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P368692

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2108779	Kjeldahl Nitrogen	2.80	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P368445

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2107844	NO2NO3-N	0.305	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368390

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2107869	Total-P	1.11	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P368443

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2107936	Total-P	2.44	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P368394

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2107810	O-Phosphate-P	0.930	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P368326

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2107806	Color (true)	1.43	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P368837

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2107744	Total Alkalinity	0.315	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P368811

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2107770	TDS	1.29	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P368812

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2107934	TDS	1.99	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P368840

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2107744	Fluoride	0.0	Spike	P	0 - 2.5

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P368426

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2107936	Organic Carbon	0.650	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: A93205

Included Lab Sample IDs: 2107914, 2107915, 2107920, 2107923

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	105	P/P	90 - 115
Color (true)	103	103	P/P	90 - 115
Color (true)	105	103	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A93206

Included Lab Sample IDs: 2107914, 2107915, 2107920, 2107923

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	100	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A93232

Included Lab Sample IDs: 2107918, 2107919, 2107922, 2107925

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.3	98.5	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A93248

Included Lab Sample IDs: 2107916, 2107917, 2107921, 2107924

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A93256

Included Lab Sample IDs: 2107917

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A93263

Included Lab Sample IDs: 2107916, 2107921

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A93267

Included Lab Sample IDs: 2107916, 2107917, 2107921, 2107924

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	100	P/P	90 - 110
NO2NO3-N	103	104	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A93319

Included Lab Sample IDs: 2107924

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.5	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A93324

Included Lab Sample IDs: 2107914, 2107915, 2107920, 2107923

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.1	97.7	P/P	90 - 110
Sulfate	102	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A93325

Included Lab Sample IDs: 2107924

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A93414

Included Lab Sample IDs: 2107916, 2107917, 2107921, 2107924

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	103	P/P	90 - 110
Ammonia-N	103	104	P/P	90 - 110
Ammonia-N	106	103	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A93419

Included Lab Sample IDs: 2107914, 2107915, 2107920, 2107923

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	105	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A93419

Included Lab Sample IDs: 2107914, 2107915, 2107920, 2107923

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A93436

Included Lab Sample IDs: 2107916, 2107917, 2107921

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.8	95.1	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A93486

Included Lab Sample IDs: 2107920

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sulfate	103	101	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						0.844	
EPA 300.0 Rev. 2.1	Chloride	98.8	101	102	98.7			0.508
	Sulfate	104	105	106	103			0.388
	Sulfate	100	101	101				0.283
EPA 350.1 Rev. 2.0	Ammonia-N	103	101	98.9				1.03
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	103	109				3.27
	Kjeldahl Nitrogen	101	103	108				2.80
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	99.0	99.5				0.305
EPA 365.1 Rev. 2.0	Total-P	100	98.2	99.3				1.11
	Total-P	100	95.2	97.8				2.44
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.0	96.3	97.2				0.930
SM 2120 B	Color (true)	103					1.43	
SM 2320 B-97	Total Alkalinity	104					0.315	
SM 2540 C-97	TDS						1.29	
	TDS						1.99	
SM 4500 F-C-97	Fluoride	97.5	97.1	97.1				0.0
SM 5310 B-00	Organic Carbon	101	102	103				0.650

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2107914, 2107915, 2107920, 2107923
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2107914, 2107915, 2107920, 2107923
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2107914, 2107915, 2107920, 2107923
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2107916, 2107917, 2107921, 2107924
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2107916, 2107917, 2107921, 2107924
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2107916, 2107917, 2107921, 2107924
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2107916, 2107917, 2107921, 2107924
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2107918, 2107919, 2107922, 2107925
SM 2120 B / E31780	True Color measured at 450 nm	2107914, 2107915, 2107920, 2107923
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2107914, 2107915, 2107920, 2107923
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2107914, 2107915, 2107920, 2107923
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2107914, 2107915, 2107920, 2107923
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2107914, 2107915, 2107920, 2107923
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2107916, 2107917, 2107921, 2107924

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	08/01/2019			08/01/2019 16:42	Adrian Shelby	2107914, 2107915, 2107920, 2107923
EPA 300.0 Rev. 2.1	08/01/2019			08/06/2019 21:31	Jhamieka S. Greenwood	2107914
	08/01/2019			08/06/2019 22:56	Jhamieka S. Greenwood	2107915
	08/01/2019			08/06/2019 23:08	Jhamieka S. Greenwood	2107920
	08/01/2019			08/06/2019 23:20	Jhamieka S. Greenwood	2107923
	08/01/2019			08/15/2019 19:10	Jhamieka S. Greenwood	2107920
EPA 350.1 Rev. 2.0	08/01/2019			08/11/2019 10:46	Ping Hua	2107917
	08/01/2019			08/11/2019 11:01	Ping Hua	2107921
	08/01/2019			08/11/2019 11:04	Ping Hua	2107924
	08/01/2019			08/11/2019 13:49	Ping Hua	2107916
EPA 351.2 Rev. 2.0	08/01/2019	08/05/2019 13:30	Adrian Shelby	08/07/2019 12:16	Joseph Suarez	2107924
	08/01/2019	08/08/2019 10:30	Adrian Shelby	08/12/2019 12:36	Joseph Suarez	2107916
	08/01/2019	08/08/2019 10:30	Adrian Shelby	08/12/2019 12:37	Joseph Suarez	2107917
	08/01/2019	08/08/2019 10:30	Adrian Shelby	08/12/2019 12:39	Joseph Suarez	2107921
EPA 353.2 Rev. 2.0	08/01/2019			08/05/2019 09:26	Beverly Y. Sanders	2107917
	08/01/2019			08/05/2019 09:27	Beverly Y. Sanders	2107924
	08/01/2019			08/05/2019 12:23	Beverly Y. Sanders	2107916
	08/01/2019			08/05/2019 12:24	Beverly Y. Sanders	2107921
EPA 365.1 Rev. 2.0	08/01/2019	08/02/2019 12:14	Vijayalakshmi Reddy	08/05/2019 09:43	Lipi Saha	2107917
	08/01/2019	08/02/2019 12:14	Vijayalakshmi Reddy	08/05/2019 12:39	Lipi Saha	2107921
	08/01/2019	08/02/2019 12:14	Vijayalakshmi Reddy	08/05/2019 12:40	Lipi Saha	2107916
	08/01/2019	08/05/2019 12:54	Vijayalakshmi Reddy	08/06/2019 12:01	Lipi Saha	2107924
EPA 365.1 Rev. 2.0 dissolved	08/01/2019			08/01/2019 15:45	Jhamieka S. Greenwood	2107925
	08/01/2019			08/01/2019 15:46	Jhamieka S. Greenwood	2107918
	08/01/2019			08/01/2019 15:47	Jhamieka S. Greenwood	2107919, 2107922
SM 2120 B	08/01/2019			08/01/2019 16:00	Madeline Funaro	2107923
	08/01/2019			08/01/2019 16:10	Madeline Funaro	2107914
	08/01/2019			08/01/2019 16:17	Madeline Funaro	2107915, 2107920
SM 2320 B-97	08/01/2019			08/09/2019 03:33	Dale L. Simmons	2107914
	08/01/2019			08/09/2019 03:43	Dale L. Simmons	2107915
	08/01/2019			08/09/2019 03:51	Dale L. Simmons	2107920
	08/01/2019			08/09/2019 04:06	Dale L. Simmons	2107923
SM 2540 C-97	08/01/2019			08/05/2019 14:05	Sima Feizi	2107914, 2107915, 2107920, 2107923
SM 2540 D-97	08/01/2019			08/05/2019 14:05	Sima Feizi	2107914, 2107915, 2107920, 2107923
SM 4500 F-C-97	08/01/2019			08/09/2019 03:33	Dale L. Simmons	2107914
	08/01/2019			08/09/2019 03:43	Dale L. Simmons	2107915
	08/01/2019			08/09/2019 03:51	Dale L. Simmons	2107920
	08/01/2019			08/09/2019 04:06	Dale L. Simmons	2107923
SM 5310 B-00	08/01/2019			08/02/2019 22:04	Madeline Funaro	2107916
	08/01/2019			08/02/2019 22:16	Madeline Funaro	2107917

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-00	08/01/2019			08/02/2019 22:29	Madeline Funaro	2107921
	08/01/2019			08/02/2019 22:41	Madeline Funaro	2107924