

Chemical Analysis Report

NE-DIST-2018-10-16-01

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

Event Description: **Bull SCI and Milllog**

Request ID: **RQ-2018-10-08-16**

Customer: **NE-DIST**

Project ID: **SMP**

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Date Certified: 05-NOV-2018 13:36



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 groups are included in this report: Metals and 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: Mill Log at Russell Rd.

Collection Date/Time: 10/15/2018 12:05

Field ID: G2NE1150

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2032635	EPA 180.1 Rev. 2.0	Turbidity	4.1	A	NTU	P353453	
	EPA 300.0 Rev. 2.1	Chloride	20		mg Cl/L	P353499	
		Sulfate	7.5		mg SO4/L	P353500	
	SM 2120 B	Color (true)	160		PCU	P353171	
	SM 2320 B-97	Total Alkalinity	27		mg CaCO3/L	P353318	
	SM 2540 C-97	TDS	111		mg/L	P353520	
	SM 2540 D-97	TSS	3	I	mg/L	P353447	
	SM 4500 F-C-97	Fluoride	0.077	I	mg F/L	P353321	
2032636	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P353802	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.61		mg N/L	P353285	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.046		mg N/L	P353216	
	EPA 365.1 Rev. 2.0	Total-P	0.42		mg P/L	P353210	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P353426	
2032637	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.36		mg P/L	P353160	
2032643	EPA 200.7 Rev. 4.4	Calcium	11.1		mg/L	P353226	
		Iron	560		ug/L	P353226	
		Magnesium	3.57		mg/L	P353226	
		Potassium	6.5		mg/L	P353226	
		Sodium	10.5		mg/L	P353226	
		Zinc	5.0	U	ug/L	P353226	
	EPA 200.8 Rev. 5.4	Arsenic	0.64		ug/L	P353226	
		Cadmium	0.123		ug/L	P353226	
		Chromium	0.69	I	ug/L	P353226	
		Copper	0.34	I	ug/L	P353226	
		Lead	0.22		ug/L	P353226	
		Nickel	0.32	I	ug/L	P353226	
		Silver	0.010	U	ug/L	P353226	

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: Bull CR SW Crossing CR 215

Collection Date/Time: 10/15/2018 09:45

Field ID: 20030480

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2032632	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P353453	
	EPA 300.0 Rev. 2.1	Chloride	10		mg Cl/L	P353499	
		Sulfate	2.2		mg SO4/L	P353500	
	SM 2120 B	Color (true)	300		PCU	P353171	
	SM 2320 B-97	Total Alkalinity	4.2		mg CaCO3/L	P353318	
	SM 2540 C-97	TDS	81		mg/L	P353519	
	SM 2540 D-97	TSS	3	I	mg/L	P353446	
	SM 4500 F-C-97	Fluoride	0.072	I	mg F/L	P353321	
2032633	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P353861	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.65		mg N/L	P353285	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P353216	
	EPA 365.1 Rev. 2.0	Total-P	0.18		mg P/L	P353210	
	SM 5310 B-00	Organic Carbon	24		mg C/L	P353426	
2032634	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.16		mg P/L	P353160	

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: P353453

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353226

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353226

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353499

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353500

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353802

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353861

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353285

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353216

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353210

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353160

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

Reference Method: SM 2120 B
Batch ID: P353171

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P353318

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO3/L

Reference Method: SM 2540 C-97
Batch ID: P353519

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P353520

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P353446

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P353447

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P353321

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P353426

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353226

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	102		P	85 - 115
Iron	105		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	104		P	85 - 115
Sodium	102		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353226

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	101		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	98.9		P	85 - 115
Copper	99.9		P	85 - 115
Lead	96.0		P	85 - 115
Nickel	98.6		P	85 - 115
Silver	98.1		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353499

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353500

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353802

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353861

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353285

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353216

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353210

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353160

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.2		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P353171

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

Reference Method: SM 2320 B-97
Batch ID: P353318

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P353321

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.4		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P353426

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353226

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031978	Calcium	103		P	80 - 120
2031978	Iron	106		P	80 - 120
2031978	Magnesium	102		P	80 - 120
2031978	Potassium	100		P	80 - 120
2031978	Sodium	102		P	80 - 120
2031978	Zinc	100		P	80 - 120
2032011	Calcium	104		P	80 - 120
2032011	Iron	107	105	P/P	80 - 120
2032011	Magnesium	104		P	80 - 120
2032011	Potassium	106	105	P/P	80 - 120
2032011	Sodium	102		P	80 - 120
2032011	Zinc	98.3	98.9	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353226

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031978	Arsenic	103		P	80 - 120
2031978	Cadmium	106		P	80 - 120
2031978	Chromium	98.8		P	80 - 120
2031978	Copper	96.9		P	80 - 120
2031978	Lead	97.2		P	80 - 120
2031978	Nickel	96.8		P	80 - 120
2031978	Silver	99.1		P	80 - 120
2032011	Arsenic	98.3	98.4	P/P	80 - 120
2032011	Cadmium	102	105	P/P	80 - 120
2032011	Chromium	96.7	97.7	P/P	80 - 120
2032011	Copper	95.8	95.1	P/P	80 - 120
2032011	Lead	94.3	96.2	P/P	80 - 120
2032011	Nickel	94.5	96.8	P/P	80 - 120
2032011	Silver	98.2	99.3	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353499

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032492	Chloride	94.8		P	90 - 110
2032635	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353500

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032492	Sulfate	98.1		P	90 - 110
2032635	Sulfate	95.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353802

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032674	Ammonia-N	98.6	99.1	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353861

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032502	Ammonia-N	100	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353285

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032613	Kjeldahl Nitrogen	103	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353216

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032613	NO2NO3-N	99.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353210

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032612	Total-P	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353160

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032790	O-Phosphate-P	95.3	96.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P353321

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032005	Fluoride	98.4	98.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P353426

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032493	Organic Carbon	95.8	97.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P353453

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032635	Turbidity	1.21	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353226

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032011	Calcium	2.85	Spike	P	0 - 20
2032011	Iron	1.93	Spike	P	0 - 20
2032011	Magnesium	0.0298	Spike	P	0 - 20
2032011	Potassium	0.480	Spike	P	0 - 20
2032011	Sodium	1.52	Spike	P	0 - 20
2032011	Zinc	0.538	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353226

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032011	Arsenic	0.163	Spike	P	0 - 20
2032011	Cadmium	2.33	Spike	P	0 - 20
2032011	Chromium	1.11	Spike	P	0 - 20
2032011	Copper	0.728	Spike	P	0 - 20
2032011	Lead	2.00	Spike	P	0 - 20
2032011	Nickel	2.39	Spike	P	0 - 20
2032011	Silver	1.19	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353499

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032492	Chloride	0.738	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353500

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032492	Sulfate	1.41	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353802

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032674	Ammonia-N	0.456	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353861

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032502	Ammonia-N	0.336	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353285

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032613	Kjeldahl Nitrogen	1.36	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353216

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032613	NO2NO3-N	0.182	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353210

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032612	Total-P	0.787	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353160

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032790	O-Phosphate-P	0.970	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P353171

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032670	Color (true)	1.21	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P353318

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032005	Total Alkalinity	0.713	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P353519

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032609	TDS	4.26	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P353520

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032681	TDS	8.30	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P353321

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032005	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P353426

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032493	Organic Carbon	0.766	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 365.1 Rev. 2.0 dissolved

Run ID: A87080

Included Lab Sample IDs: 2032634, 2032637

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.5	P/P	90 - 110
O-Phosphate-P	99.5	97.8	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A87084

Included Lab Sample IDs: 2032632, 2032635

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A87095

Included Lab Sample IDs: 2032633, 2032636

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A87113

Included Lab Sample IDs: 2032633, 2032636

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

Reference Method: SM 2320 B-97

Run ID: A87130

Included Lab Sample IDs: 2032632, 2032635

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A87130

Included Lab Sample IDs: 2032632, 2032635

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

Reference Method: SM 5310 B-00

Run ID: A87189

Included Lab Sample IDs: 2032633, 2032636

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A87199

Included Lab Sample IDs: 2032632, 2032635

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A87206

Included Lab Sample IDs: 2032633, 2032636

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	103	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A87212

Included Lab Sample IDs: 2032632, 2032635

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A87292

Included Lab Sample IDs: 2032643

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	103	101	P/P	90 - 110
Iron	101	101	P/P	90 - 110
Magnesium	103	102	P/P	90 - 110
Potassium	102	103	P/P	90 - 110
Sodium	103	103	P/P	90 - 110
Zinc	99.3	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A87340

Included Lab Sample IDs: 2032636

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A87366

Included Lab Sample IDs: 2032633

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A87372

Included Lab Sample IDs: 2032643

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	94.9	95.2	P/P	90 - 110
Cadmium	99.6	97.8	P/P	90 - 110
Chromium	96.2	96.5	P/P	90 - 110
Copper	95.4	95.7	P/P	90 - 110
Lead	96.1	96.3	P/P	90 - 110
Nickel	95.8	95.8	P/P	90 - 110
Silver	95.2	94.7	P/P	90 - 110

Quality Assurance Report

Calibration Verification

* 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						1.21	
EPA 200.7 Rev. 4.4	Calcium	102	103	104				2.85
	Iron	105	106	107	105			1.93
	Magnesium	104	102	104				0.0298
	Potassium	104	100	106	105			0.480
	Sodium	102	102	102				1.52
	Zinc	101	100	98.3	98.9			0.538
EPA 200.8 Rev. 5.4	Arsenic	101	103	98.3	98.4			0.163
	Cadmium	101	106	102	105			2.33
	Chromium	98.9	98.8	96.7	97.7			1.11
	Copper	99.9	96.9	95.8	95.1			0.728
	Lead	96.0	97.2	94.3	96.2			2.00
	Nickel	98.6	96.8	94.5	96.8			2.39
	Silver	98.1	99.1	98.2	99.3			1.19
EPA 300.0 Rev. 2.1	Chloride	98.0	94.8	100			0.738	
	Sulfate	97.9	98.1	95.7			1.41	
EPA 350.1 Rev. 2.0	Ammonia-N	98.3	98.6	99.1				0.456
	Ammonia-N	101	100	101				0.336
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	103	102				1.36
EPA 353.2 Rev. 2.0	NO2NO3-N	100	99.8					0.182
EPA 365.1 Rev. 2.0	Total-P	98.7	101	101				0.787
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.2	95.3	96.4				0.970
SM 2120 B	Color (true)	99.7					1.21	
SM 2320 B-97	Total Alkalinity	102					0.713	
SM 2540 C-97	TDS						4.26	
	TDS						8.30	
SM 4500 F-C-97	Fluoride	98.4	98.4	98.4				0.0
SM 5310 B-00	Organic Carbon	97.8	95.8	97.2				0.766

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2032632, 2032635
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2032643
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2032643
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2032632, 2032635
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2032632, 2032635
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2032633, 2032636
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2032633, 2032636
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2032633, 2032636
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2032633, 2032636
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2032634, 2032637
SM 2120 B / E31780	True Color measured at 450 nm	2032632, 2032635
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2032632, 2032635
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2032632, 2032635

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2032632, 2032635
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2032632, 2032635
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2032633, 2032636

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	10/16/2018			10/16/2018 13:41	Megan Treadwell	2032632, 2032635
EPA 200.7 Rev. 4.4	10/16/2018	10/17/2018 15:30	Elliott D. Healy	10/25/2018 15:39	Betina Topolski	2032643
EPA 200.8 Rev. 5.4	10/16/2018	10/17/2018 15:30	Elliott D. Healy	10/29/2018 16:55	Robert K Palmer	2032643
EPA 300.0 Rev. 2.1	10/16/2018			10/22/2018 21:31	Lipi Saha	2032635
	10/16/2018			10/22/2018 23:56	Lipi Saha	2032632
EPA 350.1 Rev. 2.0	10/16/2018			10/26/2018 14:09	Ping Hua	2032636
	10/16/2018			10/29/2018 12:37	Ping Hua	2032633
EPA 351.2 Rev. 2.0	10/16/2018	10/18/2018 11:30	Adrian Shelby	10/22/2018 14:24	Joseph Suarez	2032633
	10/16/2018	10/18/2018 11:30	Adrian Shelby	10/22/2018 14:26	Joseph Suarez	2032636
EPA 353.2 Rev. 2.0	10/16/2018			10/17/2018 12:47	Lauren Bottorf	2032633
	10/16/2018			10/17/2018 12:48	Lauren Bottorf	2032636
EPA 365.1 Rev. 2.0	10/16/2018	10/17/2018 13:20	Sima Feizi	10/18/2018 10:54	Beverly Y. Sanders	2032633
	10/16/2018	10/17/2018 13:20	Sima Feizi	10/18/2018 10:55	Beverly Y. Sanders	2032636
EPA 365.1 Rev. 2.0 dissolved	10/16/2018			10/16/2018 15:13	Virginia P. Brown	2032634
	10/16/2018			10/16/2018 15:25	Virginia P. Brown	2032637
SM 2120 B	10/16/2018			10/16/2018 16:38	Chelsea Hernandez	2032632
	10/16/2018			10/16/2018 16:39	Chelsea Hernandez	2032635
SM 2320 B-97	10/16/2018			10/18/2018 04:53	Dale L. Simmons	2032632
	10/16/2018			10/18/2018 05:03	Dale L. Simmons	2032635
SM 2540 C-97	10/16/2018			10/18/2018 15:21	Yijie Li	2032632, 2032635
SM 2540 D-97	10/16/2018			10/18/2018 15:21	Yijie Li	2032632, 2032635
SM 4500 F-C-97	10/16/2018			10/18/2018 04:53	Dale L. Simmons	2032632
	10/16/2018			10/18/2018 05:03	Dale L. Simmons	2032635
SM 5310 B-00	10/16/2018			10/20/2018 04:16	Megan Treadwell	2032633
	10/16/2018			10/20/2018 04:28	Megan Treadwell	2032636