Chemical Analysis Report

SO-DIST-2018-09-13-04

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

Event Description: **Telegraph**
Request ID: **RQ-2018-08-27-10**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
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Certified by: Colin Wright, Program Administrator

Date Certified: 03-OCT-2018 11:40

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: Telegraph Swamp South **Collection Date/Time: 09/12/2018 12:20**

Field ID: G3SD0100 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2025287	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P351649	
	EPA 300.0 Rev. 2.1	Chloride	48	A	mg Cl/L	P352242	
		Sulfate	5.6	A	mg SO4/L	P352245	
	SM 2120 B	Color (true)	220		PCU	P351594	
	SM 2320 B-97	Total Alkalinity	62		mg CaCO3/L	P351715	
	SM 2540 C-97	TDS	221		mg/L	P352189	
	SM 2540 D-97	TSS	2	IA	mg/L	P351886	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P351719	
2025288	EPA 350.1 Rev. 2.0	Ammonia-N	0.033		mg N/L	P351824	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P351919	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.094		mg N/L	P351834	
	EPA 365.1 Rev. 2.0	Total-P	0.067		mg P/L	P351753	
	SM 5310 B-00	Organic Carbon	26		mg C/L	P352091	
2025289	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.040		mg P/L	P351616	
2025292	EPA 200.7 Rev. 4.4	Calcium	30.3		mg/L	P351756	
		Iron	690		ug/L	P351756	
		Magnesium	4.91		mg/L	P351756	
		Potassium	1.2		mg/L	P351756	
		Sodium	24.6		mg/L	P351756	
		Zinc	5.0	U	ug/L	P351756	
	EPA 200.8 Rev. 5.4	Arsenic	0.74		ug/L	P351756	
		Cadmium	0.020	U	ug/L	P351756	
		Chromium	0.59	I	ug/L	P351756	
		Copper	0.36	I	ug/L	P351756	
		Lead	0.13	I	ug/L	P351756	
		Nickel	0.38	I	ug/L	P351756	
		Silver	0.010	U	ug/L	P351756	

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: P351649

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P351756

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: P351756

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: P352242

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352245

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351824

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351919

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351834

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351753

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351616

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

Reference Method: SM 2120 B
Batch ID: P351594

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P351715

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

Reference Method: SM 2540 C-97
Batch ID: P352189

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P351886

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P351719

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P352091

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: P351756

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	106		P	85 - 115
Iron	108		P	85 - 115
Magnesium	111		P	85 - 115
Potassium	105		P	85 - 115
Sodium	106		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P351756

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	99.4		P	85 - 115
Cadmium	106		P	85 - 115
Chromium	109		P	85 - 115
Copper	93.5		P	85 - 115
Lead	106		P	85 - 115
Nickel	95.4		P	85 - 115
Silver	104		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352242

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352245

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351824

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: P351919

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: P351834

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351753

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351616

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

Reference Method: SM 2120 B
Batch ID: P351594

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	96.3		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P351715

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P351719

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.1		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P352091

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.2		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P351756

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2024826	Calcium	109		P	80 - 120
2024826	Iron	106		P	80 - 120
2024826	Magnesium	108		P	80 - 120
2024826	Potassium	102		P	80 - 120
2024826	Sodium	98.6		P	80 - 120
2024826	Zinc	104		P	80 - 120
2025161	Calcium	101		P	80 - 120
2025161	Iron	106	109	P/P	80 - 120
2025161	Magnesium	109	114	P/P	80 - 120
2025161	Potassium	104	108	P/P	80 - 120
2025161	Sodium	104	110	P/P	80 - 120
2025161	Zinc	102	101	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P351756

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2024826	Arsenic	98.1		P	80 - 120
2024826	Cadmium	105		P	80 - 120
2024826	Chromium	104		P	80 - 120
2024826	Copper	91.1		P	80 - 120
2024826	Lead	103		P	80 - 120
2024826	Nickel	90.8		P	80 - 120
2024826	Silver	101		P	80 - 120
2025161	Arsenic	103	102	P/P	80 - 120
2025161	Cadmium	107	106	P/P	80 - 120
2025161	Chromium	108	109	P/P	80 - 120
2025161	Copper	92.6	93.4	P/P	80 - 120
2025161	Lead	106	107	P/P	80 - 120
2025161	Nickel	96.0	95.8	P/P	80 - 120
2025161	Silver	105	105	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352242

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025287	Chloride	95.6		P	90 - 110
2025344	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352245

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025287	Sulfate	98.0		P	90 - 110
2025344	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351824

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025209	Ammonia-N	102	101	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351919

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025207	Kjeldahl Nitrogen	107	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351834

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025288	NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351753

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025208	Total-P	96.8	97.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351616

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025212	O-Phosphate-P	102	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P351719

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025258	Fluoride	99.3	99.3	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P352091

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025207	Organic Carbon	98.7	98.8	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P351649

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025204	Turbidity	6.46	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P351756

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025161	Calcium	0.865	Spike	P	0 - 20
2025161	Iron	2.21	Spike	P	0 - 20
2025161	Magnesium	2.42	Spike	P	0 - 20
2025161	Potassium	2.50	Spike	P	0 - 20
2025161	Sodium	3.30	Spike	P	0 - 20
2025161	Zinc	0.392	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P351756

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025161	Arsenic	0.339	Spike	P	0 - 20
2025161	Cadmium	0.782	Spike	P	0 - 20
2025161	Chromium	0.271	Spike	P	0 - 20
2025161	Copper	0.867	Spike	P	0 - 20
2025161	Lead	1.18	Spike	P	0 - 20
2025161	Nickel	0.159	Spike	P	0 - 20
2025161	Silver	0.227	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352242

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025287	Chloride	0.110	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352245

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025287	Sulfate	0.0938	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351824

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025209	Ammonia-N	0.805	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351919

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025207	Kjeldahl Nitrogen	4.67	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351834

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025288	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351753

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025208	Total-P	0.567	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351616

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025212	O-Phosphate-P	0.686	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P351594

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025258	Color (true)	1.15	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P351715

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025258	Total Alkalinity	0.538	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P352189

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025340	TDS	0.343	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P351719

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025258	Fluoride	0.0	Spike	P	0 - 3.5

Quality Assurance Report
Precision

Reference Method: SM 5310 B-00
Batch ID: P352091

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025207	Organic Carbon	0.0841	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: A86461
Included Lab Sample IDs: 2025287

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.0	100	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A86464
Included Lab Sample IDs: 2025289

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A86479
Included Lab Sample IDs: 2025287

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	102	102	P/P	95 - 105

Reference Method: SM 2320 B-97
Run ID: A86512
Included Lab Sample IDs: 2025287

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

Reference Method: SM 4500 F-C-97
Run ID: A86512
Included Lab Sample IDs: 2025287

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A86540
Included Lab Sample IDs: 2025288

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A86557
Included Lab Sample IDs: 2025288

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A86558
Included Lab Sample IDs: 2025288

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A86565
Included Lab Sample IDs: 2025292

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	99.3	107	P/P	90 - 110
Iron	98.8	102	P/P	90 - 110
Magnesium	98.5	102	P/P	90 - 110
Potassium	97.2	100	P/P	90 - 110
Sodium	96.4	102	P/P	90 - 110
Zinc	99.1	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A86619
Included Lab Sample IDs: 2025288

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	95.2	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A86647
Included Lab Sample IDs: 2025288

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.2	97.4	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A86668
Included Lab Sample IDs: 2025292

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	96.6	96.0	P/P	90 - 110
Cadmium	98.6	98.0	P/P	90 - 110
Chromium	105	105	P/P	90 - 110
Lead	105	105	P/P	90 - 110
Silver	102	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A86718
Included Lab Sample IDs: 2025287

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A86743
Included Lab Sample IDs: 2025292

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	91.1	91.2	P/P	90 - 110
Nickel	90.7	90.5	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	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						6.46	
EPA 200.7 Rev. 4.4	Calcium	106	109	101				0.865
	Iron	108	106	106	109			2.21
	Magnesium	111	108	109	114			2.42
	Potassium	105	102	104	108			2.50
	Sodium	106	98.6	104	110			3.30
	Zinc	101	104	102	101			0.392
EPA 200.8 Rev. 5.4	Arsenic	99.4	98.1	103	102			0.339
	Cadmium	106	105	107	106			0.782
	Chromium	109	104	108	109			0.271
	Copper	93.5	92.6	93.4	91.1			0.867
	Lead	106	103	106	107			1.18
	Nickel	95.4	90.8	96.0	95.8			0.159
	Silver	104	101	105	105			0.227
EPA 300.0 Rev. 2.1	Chloride	101	95.6	100			0.110	
	Sulfate	101	98.0	100			0.0938	
EPA 350.1 Rev. 2.0	Ammonia-N	103	102	101				0.805
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	107	102				4.67
EPA 353.2 Rev. 2.0	NO2NO3-N	102	101	101				0.0
EPA 365.1 Rev. 2.0	Total-P	101	96.8	97.4				0.567
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	102	102				0.686
SM 2120 B	Color (true)	96.3					1.15	
SM 2320 B-97	Total Alkalinity	103					0.538	
SM 2540 C-97	TDS						0.343	
SM 4500 F-C-97	Fluoride	99.1	99.3	99.3				0.0
SM 5310 B-00	Organic Carbon	99.2	98.7	98.8				0.0841

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2025287
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2025292
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2025292
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2025287
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2025287
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2025288
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2025288
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2025288
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2025288
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2025289
SM 2120 B / E31780	True Color measured at 450 nm	2025287
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2025287
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2025287
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2025287
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2025287

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2025288

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	09/13/2018			09/13/2018 16:38	Megan Treadwell	2025287
EPA 200.7 Rev. 4.4	09/13/2018	09/17/2018 15:55	Elliott D. Healy	09/18/2018 17:23	Betina Topolski	2025292
EPA 200.8 Rev. 5.4	09/13/2018	09/17/2018 15:55	Elliott D. Healy	09/22/2018 04:00	Allison Taylor	2025292
	09/13/2018	09/17/2018 15:55	Elliott D. Healy	09/25/2018 21:43	Allison Taylor	2025292
EPA 300.0 Rev. 2.1	09/13/2018			09/25/2018 02:26	Lipi Saha	2025287
EPA 350.1 Rev. 2.0	09/13/2018			09/18/2018 13:39	Ping Hua	2025288
EPA 351.2 Rev. 2.0	09/13/2018	09/19/2018 15:55	Adrian Shelby	09/20/2018 15:40	Joseph Suarez	2025288
EPA 353.2 Rev. 2.0	09/13/2018			09/18/2018 15:15	Lauren Bottorf	2025288
EPA 365.1 Rev. 2.0	09/13/2018	09/17/2018 13:00	Sima Feizi	09/18/2018 08:52	Beverly Y. Sanders	2025288
EPA 365.1 Rev. 2.0 dissolved	09/13/2018			09/13/2018 16:15	Julia Storbeck	2025289
SM 2120 B	09/13/2018			09/13/2018 14:37	DeAsia Armster	2025287
SM 2320 B-97	09/13/2018			09/15/2018 10:36	Dale L. Simmons	2025287
SM 2540 C-97	09/13/2018			09/17/2018 11:30	DeAsia Armster	2025287
SM 2540 D-97	09/13/2018			09/17/2018 11:30	DeAsia Armster	2025287
SM 4500 F-C-97	09/13/2018			09/15/2018 10:36	Dale L. Simmons	2025287
SM 5310 B-00	09/13/2018			09/20/2018 10:09	Megan Treadwell	2025288