

Chemical Analysis Report

NW-DIST-2019-02-19-01

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

Event Description: **CHOCTAWHATCHEE NORTH RUN**
Request ID: **RQ-2019-02-18-12**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 208
Pensacola, FL 32502-5794
Attn: Cheryl Bunch

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 05-MAR-2019 15:59

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored 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 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 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: SISTER RIVER MOUTH

Collection Date/Time: 02/18/2019 11:55

Field ID: G3NW0154

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2063351	EPA 180.1 Rev. 2.0	Turbidity	13	A	NTU	P359189	
	EPA 300.0 Rev. 2.1	Chloride	5.6		mg Cl/L	P359573	
		Sulfate	1.8		mg SO4/L	P359575	
	SM 2120 B	Color (true)	79		PCU	P359182	
	SM 2320 B-97	Total Alkalinity	28		mg CaCO3/L	P359424	
	SM 2540 C-97	TDS	61		mg/L	P359535	
	SM 2540 D-97	TSS	6	I	mg/L	P359441	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P359428	
2063352	EPA 350.1 Rev. 2.0	Ammonia-N	0.024		mg N/L	P359347	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.37		mg N/L	P359244	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.22		mg N/L	P359485	
	EPA 365.1 Rev. 2.0	Total-P	0.037		mg P/L	P359292	
	SM 5310 B-00	Organic Carbon	4.9		mg C/L	P359498	
2063353	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.009	I	mg P/L	P359178	
2063356	EPA 200.7 Rev. 4.4	Barium	17.6		ug/L	P359253	
		Calcium	9.78		mg/L	P359253	
		Iron	1.10E+03		ug/L	P359253	
		Magnesium	1.90		mg/L	P359253	
		Potassium	0.89	I	mg/L	P359253	
		Sodium	3.5		mg/L	P359253	
		Zinc	5.7	I	ug/L	P359253	
	EPA 200.8 Rev. 5.4	Aluminum	282		ug/L	P359253	
		Antimony	0.050	U	ug/L	P359253	
		Arsenic	0.49		ug/L	P359253	
		Boron**	11.3		ug/L	P359253	
		Cadmium	0.020	U	ug/L	P359253	
		Chromium	0.65	I	ug/L	P359253	
		Copper	0.40	U	ug/L	P359253	
		Lead	0.42		ug/L	P359253	
		Nickel	0.50	U	ug/L	P359253	
		Selenium	0.20	U	ug/L	P359253	
		Silver	0.010	U	ug/L	P359253	
		Thallium	0.10	U	ug/L	P359253	

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: P359189

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P359253

Component	Result	Code	Units
Barium	1.0	U	ug/L
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: P359253

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359573

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359575

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359347

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: P359244

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359485

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359292

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359178

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

Reference Method: SM 2120 B
Batch ID: P359182

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P359424

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

Reference Method: SM 2540 C-97
Batch ID: P359535

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P359441

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P359428

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: P359498

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: P359253

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	103		P	85 - 115
Calcium	109		P	85 - 115
Iron	110		P	85 - 115
Magnesium	112		P	85 - 115
Potassium	103		P	85 - 115
Sodium	100		P	85 - 115
Zinc	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P359253

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.4		P	85 - 115
Antimony	99.5		P	85 - 115
Arsenic	105		P	85 - 115
Boron	99.9		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	102		P	85 - 115
Copper	106		P	85 - 115
Lead	104		P	85 - 115
Nickel	102		P	85 - 115
Selenium	100		P	85 - 115
Silver	101		P	85 - 115
Thallium	102		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359573

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359575

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359347

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: P359244

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	94.6		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359485

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359292

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: P359178

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

Reference Method: SM 2120 B
Batch ID: P359182

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P359424

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

Reference Method: SM 4500 F-C-97
Batch ID: P359428

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.3		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P359498

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.3		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P359253

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063376	Barium	98.8		P	80 - 120
2063376	Calcium	104		P	80 - 120
2063376	Iron	106		P	80 - 120
2063376	Magnesium	104		P	80 - 120
2063376	Potassium	98.4		P	80 - 120
2063376	Sodium	99.7		P	80 - 120
2063376	Zinc	103		P	80 - 120
2063439	Barium	105	104	P/P	80 - 120
2063439	Calcium	111	108	P/P	80 - 120
2063439	Iron	112	110	P/P	80 - 120
2063439	Magnesium	116	113	P/P	80 - 120
2063439	Potassium	100	97.9	P/P	80 - 120
2063439	Sodium	99.6		P	80 - 120
2063439	Zinc	107	106	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P359253

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063376	Aluminum	96.1		P	80 - 120
2063376	Antimony	103		P	80 - 120
2063376	Arsenic	108		P	80 - 120
2063376	Boron	102		P	80 - 120
2063376	Cadmium	105		P	80 - 120
2063376	Chromium	105		P	80 - 120
2063376	Copper	105		P	80 - 120
2063376	Lead	107		P	80 - 120
2063376	Nickel	103		P	80 - 120
2063376	Selenium	101		P	80 - 120
2063376	Silver	99.3		P	80 - 120
2063376	Thallium	112		P	80 - 120
2063439	Aluminum	94.9	95.8	P/P	80 - 120
2063439	Antimony	98.7	99.8	P/P	80 - 120
2063439	Arsenic	106	107	P/P	80 - 120
2063439	Boron	103	104	P/P	80 - 120
2063439	Cadmium	102	104	P/P	80 - 120
2063439	Chromium	108	109	P/P	80 - 120
2063439	Copper	111	113	P/P	80 - 120
2063439	Lead	105	106	P/P	80 - 120
2063439	Nickel	108	110	P/P	80 - 120
2063439	Selenium	97.5	97.9	P/P	80 - 120
2063439	Silver	99.5	101	P/P	80 - 120
2063439	Thallium	107	107	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359573

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063007	Chloride	94.5		P	90 - 110
2063214	Chloride	99.4		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359575

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063007	Sulfate	99.0		P	90 - 110
2063214	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359347

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063359	Ammonia-N	99.4	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359244

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063247	Kjeldahl Nitrogen	102	98.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359485

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063325	NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359292

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063826	Total-P	98.6	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359178

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063479	O-Phosphate-P	95.5	97.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P359428

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063781	Fluoride	97.7	96.7	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P359498

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063112	Organic Carbon	94.6	96.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P359189

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063351	Turbidity	2.32	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P359253

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063439	Barium	0.976	Spike	P	0 - 20
2063439	Calcium	1.83	Spike	P	0 - 20
2063439	Iron	1.96	Spike	P	0 - 20
2063439	Magnesium	1.60	Spike	P	0 - 20
2063439	Potassium	1.76	Spike	P	0 - 20
2063439	Sodium	0.485	Spike	P	0 - 20
2063439	Zinc	1.12	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P359253

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063439	Aluminum	0.902	Spike	P	0 - 20
2063439	Antimony	1.11	Spike	P	0 - 20
2063439	Arsenic	0.988	Spike	P	0 - 20
2063439	Boron	0.813	Spike	P	0 - 20
2063439	Cadmium	2.01	Spike	P	0 - 20
2063439	Chromium	0.229	Spike	P	0 - 20
2063439	Copper	1.36	Spike	P	0 - 20
2063439	Lead	1.02	Spike	P	0 - 20
2063439	Nickel	1.49	Spike	P	0 - 20
2063439	Selenium	0.494	Spike	P	0 - 20
2063439	Silver	1.49	Spike	P	0 - 20
2063439	Thallium	0.702	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359573

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063007	Chloride	0.254	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359575

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063007	Sulfate	0.544	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359347

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063359	Ammonia-N	1.30	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359244

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063247	Kjeldahl Nitrogen	3.14	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359485

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063325	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359292

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063826	Total-P	2.66	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359178

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063479	O-Phosphate-P	1.48	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P359182

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063240	Color (true)	3.43	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P359424

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063781	Total Alkalinity	0.195	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P359535

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063358	TDS	4.30	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P359428

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063781	Fluoride	0.988	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P359498

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063112	Organic Carbon	0.939	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: A89509

Included Lab Sample IDs: 2063353

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.8	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A89510

Included Lab Sample IDs: 2063351

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.2	101	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A89511

Included Lab Sample IDs: 2063351

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A89559

Included Lab Sample IDs: 2063356

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	99.8	98.7	P/P	95 - 105
Calcium	101	100	P/P	95 - 105
Iron	102	102	P/P	95 - 105
Magnesium	102	102	P/P	95 - 105
Potassium	97.3	97.6	P/P	95 - 105
Sodium	98.6	97.3	P/P	95 - 105
Zinc	101	99.8	P/P	95 - 105

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A89571

Included Lab Sample IDs: 2063356

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.9	96.8	P/P	90 - 110
Antimony	96.9	97.6	P/P	90 - 110
Arsenic	102	101	P/P	90 - 110
Boron	99.0	98.9	P/P	90 - 110
Cadmium	97.4	97.9	P/P	90 - 110
Chromium	99.7	104	P/P	90 - 110
Copper	105	106	P/P	90 - 110
Lead	101	102	P/P	90 - 110
Nickel	101	103	P/P	90 - 110
Selenium	98.1	97.7	P/P	90 - 110
Silver	95.7	96.4	P/P	90 - 110
Thallium	95.5	98.1	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A89577

Included Lab Sample IDs: 2063352

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A89583

Included Lab Sample IDs: 2063352

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.0	92.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A89597

Included Lab Sample IDs: 2063352

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.5	98.2	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A89606

Included Lab Sample IDs: 2063351

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.4	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A89606

Included Lab Sample IDs: 2063351

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A89633

Included Lab Sample IDs: 2063352

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

Reference Method: SM 5310 B-00

Run ID: A89647

Included Lab Sample IDs: 2063352

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.2	93.6	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A89674

Included Lab Sample IDs: 2063351

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	102	P/P	90 - 110
Sulfate	102	102	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			Precision SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					2.32	
EPA 200.7 Rev. 4.4	Barium	103	98.8	105	104		0.976
	Calcium	109	104	111	108		1.83
	Iron	110	106	112	110		1.96
	Magnesium	112	104	116	113		1.60
	Potassium	103	98.4	100	97.9		1.76
	Sodium	100	99.7	99.6			0.485
	Zinc	104	103	107	106		1.12
EPA 200.8 Rev. 5.4	Aluminum	99.4	96.1	94.9	95.8		0.902
	Antimony	99.5	103	98.7	99.8		1.11
	Arsenic	105	108	106	107		0.988
	Boron	99.9	102	103	104		0.813
	Cadmium	101	105	102	104		2.01
	Chromium	102	105	108	109		0.229
	Copper	106	105	111	113		1.36
	Lead	104	107	105	106		1.02
	Nickel	102	103	108	110		1.49
	Selenium	100	101	97.5	97.9		0.494
	Silver	101	99.3	99.5	101		1.49
	Thallium	102	112	107	107		0.702
EPA 300.0 Rev. 2.1	Chloride	100	94.5	99.4		0.254	
	Sulfate	101	99.0	101		0.544	
EPA 350.1 Rev. 2.0	Ammonia-N	98.7	99.4	97.8			1.30
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	94.6	102	98.6			3.14
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	98.5	100	100			0.0
EPA 365.1 Rev. 2.0	Total-P	101	98.6	101			2.66
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.5	95.5	97.1			1.48
SM 2120 B	Color (true)	101				3.43	
SM 2320 B-97	Total Alkalinity	102				0.195	
SM 2540 C-97	TDS					4.30	
SM 4500 F-C-97	Fluoride	97.3	97.7	96.7			0.988
SM 5310 B-00	Organic Carbon	98.3	94.6	96.0			0.939

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2063351
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2063356
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2063356
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2063351
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2063351
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2063352
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2063352
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2063352
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2063352

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2063353
SM 2120 B / E31780	True Color measured at 450 nm	2063351
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2063351
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2063351
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2063351
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2063351
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2063352

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	02/19/2019			02/19/2019 17:21	Adrian Shelby	2063351
EPA 200.7 Rev. 4.4	02/19/2019	02/20/2019 17:30	Elliott D. Healy	02/21/2019 11:42	Betina Topolski	2063356
EPA 200.8 Rev. 5.4	02/19/2019	02/20/2019 17:30	Elliott D. Healy	02/21/2019 22:32	Allison Taylor	2063356
EPA 300.0 Rev. 2.1	02/19/2019			02/27/2019 03:51	Lipi Saha	2063351
EPA 350.1 Rev. 2.0	02/19/2019			02/21/2019 13:20	Ping Hua	2063352
EPA 351.2 Rev. 2.0	02/19/2019	02/20/2019 12:40	Jhamieka S. Greenwood	02/22/2019 11:04	Joseph Suarez	2063352
EPA 353.2 Rev. 2.0	02/19/2019			02/25/2019 10:36	Beverly Y. Sanders	2063352
EPA 365.1 Rev. 2.0	02/19/2019	02/21/2019 13:10	Sima Feizi	02/22/2019 15:31	Rosalyn Ballman	2063352
EPA 365.1 Rev. 2.0 dissolved	02/19/2019			02/19/2019 15:08	Jhamieka S. Greenwood	2063353
SM 2120 B	02/19/2019			02/19/2019 16:21	Chelsea Hernandez	2063351
SM 2320 B-97	02/19/2019			02/23/2019 06:30	Lauren Lees	2063351
SM 2540 C-97	02/19/2019			02/20/2019 16:21	Yijie Li	2063351
SM 2540 D-97	02/19/2019			02/20/2019 16:21	Yijie Li	2063351
SM 4500 F-C-97	02/19/2019			02/23/2019 06:30	Lauren Lees	2063351
SM 5310 B-00	02/19/2019			02/25/2019 10:03	Chelsea Hernandez	2063352