

Chemical Analysis Report

CEN-DIST-2018-11-30-01

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

Event Description: **Myrtle / Asher**
Request ID: **RQ-2018-11-26-80**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 19-DEC-2018 12:23

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

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: LAKE ASHER (ASH)

Collection Date/Time: 11/29/2018 10:20

Field ID: G2CE0183

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2045119	EPA 180.1 Rev. 2.0	Turbidity	7.9	A	NTU	P355418	
	EPA 300.0 Rev. 2.1	Chloride	26		mg Cl/L	P355698	
		Sulfate	8.7		mg SO4/L	P355700	
	SM 2120 B	Color (true)	43	A	PCU	P355430	
	SM 2320 B-97	Total Alkalinity	39		mg CaCO3/L	P355706	
	SM 2540 C-97	TDS	109		mg/L	P355922	
	SM 2540 D-97	TSS	8	I	mg/L	P355655	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P355709	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.040		mg N/L	P355544	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P355493	
2045120	EPA 353.2 Rev. 2.0	NO2NO3-N	0.029		mg N/L	P355547	
	EPA 365.1 Rev. 2.0	Total-P	0.086		mg P/L	P355496	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P355581	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P355433	
	dissolved						

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: LAKE MYRTLE @ 140M W OF CENTER OF SOUTH LOBE (2986B)

Collection Date/Time: 11/29/2018 11:00

Field ID: G2CE0190

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2045116	EPA 180.1 Rev. 2.0	Turbidity	3.0		NTU	P355418	
	EPA 300.0 Rev. 2.1	Chloride	31		mg Cl/L	P355698	
		Sulfate	4.1		mg SO4/L	P355700	
		Color (true)	47		PCU	P355430	
	SM 2320 B-97	Total Alkalinity	47		mg CaCO3/L	P355706	
	SM 2540 C-97	TDS	114		mg/L	P355922	
	SM 2540 D-97	TSS	4	I	mg/L	P355655	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P355709	
2045117	EPA 350.1 Rev. 2.0	Ammonia-N	0.033		mg N/L	P355544	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P355493	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.079		mg N/L	P355547	
	EPA 365.1 Rev. 2.0	Total-P	0.044		mg P/L	P355496	
	SM 5310 B-00	Organic Carbon	9.9		mg C/L	P355581	
2045118	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P355433	
2045124	EPA 200.7 Rev. 4.4	Calcium	14.8		mg/L	P355537	
		Iron	63	I	ug/L	P355537	
		Magnesium	3.49		mg/L	P355537	
		Potassium	4.0		mg/L	P355537	
		Sodium	22.4		mg/L	P355537	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P355537	
		Arsenic	0.78		ug/L	P355537	
		Cadmium	0.020	U	ug/L	P355537	
		Chromium	0.40	U	ug/L	P355537	
		Copper	0.33	I	ug/L	P355537	
		Lead	0.20		ug/L	P355537	
		Nickel	0.20	U	ug/L	P355537	
		Silver	0.010	U	ug/L	P355537	

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: P355418

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P355537

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: P355537

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: P355698

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355700

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355544

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355493

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: P355547

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355496

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355433

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

Reference Method: SM 2120 B
Batch ID: P355430

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P355706

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

Reference Method: SM 2540 C-97
Batch ID: P355922

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P355655

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P355709

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P355581

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: P355537

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	104		P	85 - 115
Iron	108		P	85 - 115
Magnesium	110		P	85 - 115
Potassium	106		P	85 - 115
Sodium	103		P	85 - 115
Zinc	96.7		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P355537

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	105		P	85 - 115
Cadmium	104		P	85 - 115
Chromium	102		P	85 - 115
Copper	99.5		P	85 - 115
Lead	106		P	85 - 115
Nickel	100		P	85 - 115
Silver	107		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355698

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355700

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355544

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355493

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: P355547

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355496

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355433

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.6		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P355430

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	104		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P355706

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.4		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P355709

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.8		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P355581

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.3		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P355537

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045146	Calcium	105		P	80 - 120
2045146	Iron	104	106	P/P	80 - 120
2045146	Magnesium	106	106	P/P	80 - 120
2045146	Potassium	105	104	P/P	80 - 120
2045146	Sodium	102		P	80 - 120
2045146	Zinc	97.2	97.8	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P355537

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045146	Arsenic	106	106	P/P	80 - 120
2045146	Cadmium	107	107	P/P	80 - 120
2045146	Chromium	101	102	P/P	80 - 120
2045146	Copper	97.8	96.2	P/P	80 - 120
2045146	Lead	107	107	P/P	80 - 120
2045146	Nickel	97.1	96.4	P/P	80 - 120
2045146	Silver	107	107	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355698

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045067	Chloride	98.5		P	90 - 110
2045119	Chloride	95.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355700

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045067	Sulfate	97.1		P	90 - 110
2045119	Sulfate	96.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355544

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045105	Ammonia-N	96.2	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355493

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045071	Kjeldahl Nitrogen	92.7	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355547

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045117	NO2NO3-N	101	101	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355496

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045072	Total-P	94.8	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355433

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045205	O-Phosphate-P	97.1	97.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P355709

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045102	Fluoride	98.4	98.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P355581

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045105	Organic Carbon	101	99.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P355418

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045119	Turbidity	0.504	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P355537

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045146	Calcium	0.912	Spike	P	0 - 20
2045146	Iron	0.943	Spike	P	0 - 20
2045146	Magnesium	0.189	Spike	P	0 - 20
2045146	Potassium	0.607	Spike	P	0 - 20
2045146	Sodium	2.38	Spike	P	0 - 20
2045146	Zinc	0.565	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P355537

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045146	Arsenic	0.0875	Spike	P	0 - 20
2045146	Cadmium	0.333	Spike	P	0 - 20
2045146	Chromium	0.769	Spike	P	0 - 20
2045146	Copper	1.50	Spike	P	0 - 20
2045146	Lead	0.0239	Spike	P	0 - 20
2045146	Nickel	0.639	Spike	P	0 - 20
2045146	Silver	0.227	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355698

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045067	Chloride	0.483	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355700

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045067	Sulfate	1.54	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355544

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045105	Ammonia-N	2.74	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355493

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045071	Kjeldahl Nitrogen	3.97	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355547

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045117	NO2NO3-N	0.355	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355496

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045072	Total-P	3.05	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355433

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045205	O-Phosphate-P	0.821	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P355430

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045119	Color (true)	0.00695	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P355706

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045102	Total Alkalinity	0.693	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P355922

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045070	TDS	6.35	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P355709

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045102	Fluoride	0.0	Spike	P	0 - 3.5

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P355581

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045105	Organic Carbon	1.11	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A88066

Included Lab Sample IDs: 2045116, 2045119

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

Reference Method: SM 2120 B

Run ID: A88072

Included Lab Sample IDs: 2045116, 2045119

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A88073

Included Lab Sample IDs: 2045118, 2045121

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.9	98.8	P/P	90 - 110
O-Phosphate-P	99.3	98.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A88111

Included Lab Sample IDs: 2045120

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A88126

Included Lab Sample IDs: 2045117, 2045120

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A88128

Included Lab Sample IDs: 2045117, 2045120

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A88137

Included Lab Sample IDs: 2045117, 2045120

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.2	98.9	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A88141

Included Lab Sample IDs: 2045117, 2045120

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A88141

Included Lab Sample IDs: 2045117, 2045120

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.8	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A88160

Included Lab Sample IDs: 2045117

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A88178

Included Lab Sample IDs: 2045124

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	102	P/P	95 - 105
Iron	101	101	P/P	95 - 105
Magnesium	102	102	P/P	95 - 105
Potassium	101	101	P/P	95 - 105
Sodium	102	102	P/P	95 - 105
Zinc	98.5	98.7	P/P	95 - 105

Reference Method: SM 2320 B-97

Run ID: A88191

Included Lab Sample IDs: 2045116, 2045119

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	98.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A88191

Included Lab Sample IDs: 2045116, 2045119

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A88194

Included Lab Sample IDs: 2045116, 2045119

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	99.6	P/P	90 - 110
Chloride	99.6	99.8	P/P	90 - 110
Sulfate	100	101	P/P	90 - 110
Sulfate	101	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A88262

Included Lab Sample IDs: 2045124

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A88262

Included Lab Sample IDs: 2045124

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cadmium	103	105	P/P	90 - 110
Chromium	103	103	P/P	90 - 110
Silver	106	107	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A88319

Included Lab Sample IDs: 2045124

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	101	102	P/P	90 - 110
Lead	106	107	P/P	90 - 110
Nickel	101	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				0.504	
EPA 200.7 Rev. 4.4	Calcium	104	105			0.912
	Iron	108	104 106			0.943
	Magnesium	110	106 106			0.189
	Potassium	106	105 104			0.607
	Sodium	103	102			2.38
	Zinc	96.7	97.2 97.8			0.565
EPA 200.8 Rev. 5.4	Arsenic	105	106 106			0.0875
	Cadmium	104	107 107			0.333
	Chromium	102	101 102			0.769
	Copper	99.5	97.8 96.2			1.50
	Lead	106	107 107			0.0239
	Nickel	100	97.1 96.4			0.639
	Silver	107	107 107			0.227
EPA 300.0 Rev. 2.1	Chloride	97.7	98.5 95.9		0.483	
	Sulfate	99.2	97.1 96.4		1.54	
EPA 350.1 Rev. 2.0	Ammonia-N	98.1	96.2 99.0			2.74
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	92.7 98.2			3.97
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	101 101			0.355
EPA 365.1 Rev. 2.0	Total-P	102	94.8 98.0			3.05
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.6	97.1 97.9			0.821
SM 2120 B	Color (true)	104			0.0069	
SM 2320 B-97	Total Alkalinity	99.4			0.693	
SM 2540 C-97	TDS				6.35	
SM 4500 F-C-97	Fluoride	97.8	98.4 98.4			0.0
SM 5310 B-00	Organic Carbon	99.3	101 99.4			1.11

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2045116, 2045119
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2045124
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2045124
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2045116, 2045119
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2045116, 2045119
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2045117, 2045120
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2045117, 2045120
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2045117, 2045120
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2045117, 2045120
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2045118, 2045121
SM 2120 B / E31780	True Color measured at 450 nm	2045116, 2045119
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2045116, 2045119
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2045116, 2045119
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2045116, 2045119
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2045116, 2045119

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2045117, 2045120

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	11/30/2018			11/30/2018 16:07	Megan Treadwell	2045116, 2045119
EPA 200.7 Rev. 4.4	11/30/2018	12/04/2018 15:00	Elliott D. Healy	12/05/2018 16:04	Betina Topolski	2045124
EPA 200.8 Rev. 5.4	11/30/2018	12/04/2018 15:00	Elliott D. Healy	12/08/2018 01:41	Allison Taylor	2045124
	11/30/2018	12/04/2018 15:00	Elliott D. Healy	12/12/2018 00:58	Allison Taylor	2045124
EPA 300.0 Rev. 2.1	11/30/2018			12/06/2018 03:59	Lipi Saha	2045119
	11/30/2018			12/06/2018 06:48	Lipi Saha	2045116
EPA 350.1 Rev. 2.0	11/30/2018			12/04/2018 12:26	Adrian Shelby	2045117
	11/30/2018			12/04/2018 12:27	Adrian Shelby	2045120
EPA 351.2 Rev. 2.0	11/30/2018	12/03/2018 17:15	Adrian Shelby	12/04/2018 14:48	Joseph Suarez	2045117
	11/30/2018	12/03/2018 17:15	Adrian Shelby	12/04/2018 14:49	Joseph Suarez	2045120
EPA 353.2 Rev. 2.0	11/30/2018			12/04/2018 13:25	Lauren Bottorf	2045117
	11/30/2018			12/04/2018 14:30	Lauren Bottorf	2045120
EPA 365.1 Rev. 2.0	11/30/2018	12/03/2018 15:45	Adrian Shelby	12/04/2018 09:47	Beverly Y. Sanders	2045120
	11/30/2018	12/03/2018 15:45	Adrian Shelby	12/05/2018 12:26	Beverly Y. Sanders	2045117
EPA 365.1 Rev. 2.0 dissolved	11/30/2018			11/30/2018 16:31	Jhamieka S. Greenwood	2045118
	11/30/2018			11/30/2018 16:38	Jhamieka S. Greenwood	2045121
SM 2120 B	11/30/2018			11/30/2018 15:56	Chelsea Hernandez	2045116
	11/30/2018			11/30/2018 15:57	Chelsea Hernandez	2045119
SM 2320 B-97	11/30/2018			12/05/2018 03:07	Dale L. Simmons	2045116
	11/30/2018			12/05/2018 03:19	Dale L. Simmons	2045119
SM 2540 C-97	11/30/2018			12/04/2018 13:26	Yijie Li	2045116, 2045119
SM 2540 D-97	11/30/2018			12/04/2018 13:26	Yijie Li	2045116, 2045119
SM 4500 F-C-97	11/30/2018			12/05/2018 03:07	Dale L. Simmons	2045116
	11/30/2018			12/05/2018 03:19	Dale L. Simmons	2045119
SM 5310 B-00	11/30/2018			12/04/2018 03:25	Megan Treadwell	2045117
	11/30/2018			12/04/2018 03:37	Megan Treadwell	2045120