

Chemical Analysis Report

SE-DIST-2021-09-23-01

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

Event Description: **SMP - IRC Boat 3**
Request ID: **RQ-2021-07-05-05**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
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2199 South Rock Road
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Attn: Drew Liddick

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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 15-OCT-2021 10:10

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 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: Kenansville Center

Collection Date/Time: 09/22/2021 11:00

Field ID: G3SE0047

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2277836	EPA 180.1 Rev. 2.0	Turbidity	2.4	A	NTU	P404133	
	EPA 300.0 Rev. 2.1	Chloride	81		mg Cl/L	P404317	
		Sulfate	32		mg SO4/L	P404319	
	SM 2120 B-2011	Color (true)	290		PCU	P404135	
	SM 2320 B-2011	Total Alkalinity	72		mg CaCO3/L	P404566	
	SM 2540 C-2011	TDS	316		mg/L	P404622	
	SM 2540 D-2011	TSS	3	I	mg/L	P404558	
	SM 4500 F-C-2011	Fluoride	0.17		mg F/L	P404570	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.080		mg N/L	P404171	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P404159	
2277837	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P404165	
	EPA 365.1 Rev. 2.0	Total-P	0.40		mg P/L	P404297	MS
	SM 5310 B-2011	Organic Carbon	33		mg C/L	P404342	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.28		mg P/L	P404125	
2277838	EPA 365.1 Rev. 2.0 dissolved						

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: South IRL outside Bob Summers Park

Collection Date/Time: 09/22/2021 13:15

Field ID: G5SE0088

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2277844	EPA 200.7 Rev. 4.4	Calcium	250		mg/L	P404310	
		Chromium	3.9	I	ug/L	P404310	
		Iron	180	I	ug/L	P404310	
		Magnesium	727		mg/L	P404310	
		Manganese	14		ug/L	P404310	
		Zinc	16	I	ug/L	P404310	
	EPA 200.8 Rev. 5.4	Aluminum	152		ug/L	P404310	
		Antimony	0.20	U	ug/L	P404310	
		Arsenic	2.13		ug/L	P404310	
		Beryllium	0.040	U	ug/L	P404310	
		Cadmium	0.080	U	ug/L	P404310	
		Copper	2.2	I	ug/L	P404310	
		Lead	0.80	U	ug/L	P404310	
		Nickel	2.0	U	ug/L	P404310	
		Selenium	0.80	U	ug/L	P404310	
		Silver	0.040	U	ug/L	P404310	
		Thallium	0.40	U	ug/L	P404310	

Ref. Method and Comment:

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium and magnesium are unavailable because of high analyte concentration in the QC sample.

Sample Location: South IRL outside Vero Beach Yacht Club

Collection Date/Time: 09/22/2021 13:30

Field ID: G5SE0089

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2277845	EPA 200.7 Rev. 4.4	Calcium	258		mg/L	P404310	
		Chromium	3.7	I	ug/L	P404310	
		Iron	140	I	ug/L	P404310	
		Magnesium	736		mg/L	P404310	
		Manganese	15		ug/L	P404310	
		Zinc	17	I	ug/L	P404310	
	EPA 200.8 Rev. 5.4	Aluminum	111		ug/L	P404310	
		Antimony	0.20	U	ug/L	P404310	
		Arsenic	2.16		ug/L	P404310	
		Beryllium	0.040	U	ug/L	P404310	
		Cadmium	0.080	U	ug/L	P404310	
		Copper	2.2	I	ug/L	P404310	
		Lead	0.80	U	ug/L	P404310	
		Nickel	2.0	U	ug/L	P404310	
		Selenium	0.80	U	ug/L	P404310	
		Silver	0.040	U	ug/L	P404310	
		Thallium	0.40	U	ug/L	P404310	

Ref. Method and Comment:

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium and magnesium are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P404133

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P404310

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Chromium	1.0	U	ug/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Manganese	1.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P404310

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Beryllium	0.010	U	ug/L
Cadmium	0.020	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: P404317

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P404319

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404171

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404159

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: P404165

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404297

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P404125

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

Reference Method: SM 2120 B-2011
Batch ID: P404135

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P404566

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

Reference Method: SM 2540 C-2011
Batch ID: P404622

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P404558

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P404570

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P404342

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: P404310

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	102		P	85 - 115
Chromium	97.7		P	85 - 115
Iron	104		P	85 - 115
Magnesium	101		P	85 - 115
Manganese	100		P	85 - 115
Zinc	96.3		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P404310

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	96.2		P	70 - 130
Antimony	100		P	70 - 130
Arsenic	93.5		P	70 - 130
Beryllium	89.5		P	70 - 130
Cadmium	94.7		P	70 - 130
Copper	94.6		P	70 - 130
Lead	97.2		P	70 - 130
Nickel	95.2		P	70 - 130
Selenium	96.5		P	70 - 130
Silver	100		P	70 - 130
Thallium	97.4		P	70 - 130

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P404317

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P404319

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P404171

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P404159

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

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P404165

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404297

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P404125

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

Reference Method: SM 2120 B-2011
Batch ID: P404135

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	96.2		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P404566

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.2		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P404570

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P404342

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P404310

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278679	Chromium	91.3	95.3	P/P	70 - 130
2278679	Iron	97.5	102	P/P	70 - 130
2278679	Manganese	95.1	96.6	P/P	70 - 130
2278679	Zinc	92.1	93.5	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P404310

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278679	Aluminum	105	102	P/P	70 - 130
2278679	Antimony	105	106	P/P	70 - 130
2278679	Arsenic	102	99.0	P/P	70 - 130
2278679	Beryllium	112	114	P/P	70 - 130
2278679	Cadmium	90.9	92.1	P/P	70 - 130
2278679	Copper	108	108	P/P	70 - 130
2278679	Lead	103	104	P/P	70 - 130
2278679	Nickel	105	106	P/P	70 - 130
2278679	Selenium	102	96.8	P/P	70 - 130
2278679	Silver	91.4	92.0	P/P	70 - 130
2278679	Thallium	99.4	103	P/P	70 - 130

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P404317

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2277646	Chloride	103		P	90 - 110
2277863	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P404319

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2277646	Sulfate	105		P	90 - 110
2277863	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404171

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2277703	Ammonia-N	96.4	96.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404159

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2277782	Kjeldahl Nitrogen	101	99.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404165

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2277782	NO2NO3-N	102	103	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404297

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2277935	Total-P	111	108	F/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P404125

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2277907	O-Phosphate-P	97.6	93.9	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P404570

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2278044	Fluoride	98.2	98.2	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P404342

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2277446	Organic Carbon	110	109	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P404133

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2277836	Turbidity	0.421	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P404310

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278679	Calcium	2.47	Spike	P	0 - 20
2278679	Chromium	4.13	Spike	P	0 - 20
2278679	Iron	4.36	Spike	P	0 - 20
2278679	Magnesium	1.61	Spike	P	0 - 20
2278679	Manganese	1.46	Spike	P	0 - 20
2278679	Zinc	1.44	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P404310

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278679	Aluminum	3.52	Spike	P	0 - 20
2278679	Antimony	1.04	Spike	P	0 - 20
2278679	Arsenic	2.61	Spike	P	0 - 20
2278679	Beryllium	2.01	Spike	P	0 - 20
2278679	Cadmium	1.36	Spike	P	0 - 20
2278679	Copper	0.121	Spike	P	0 - 20
2278679	Lead	0.991	Spike	P	0 - 20
2278679	Nickel	1.07	Spike	P	0 - 20
2278679	Selenium	5.77	Spike	P	0 - 20
2278679	Silver	0.673	Spike	P	0 - 20
2278679	Thallium	4.00	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P404317

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2277646	Chloride	0.863	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P404171

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2277703	Ammonia-N	0.198	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P404159

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2277782	Kjeldahl Nitrogen	0.810	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P404165

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2277782	NO2NO3-N	0.265	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P404297

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2277935	Total-P	2.57	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P404125

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2277907	O-Phosphate-P	3.86	Spike	P	0 - 20

Reference Method: SM 2120 B-2011

Batch ID: P404135

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2277875	Color (true)	1.75	Sample	P	0 - 20

Reference Method: SM 2320 B-2011

Batch ID: P404566

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278044	Total Alkalinity	1.83	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011

Batch ID: P404622

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278175	TDS	6.39	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011

Batch ID: P404570

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2278044	Fluoride	0.0	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011

Batch ID: P404342

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2277446	Organic Carbon	0.355	Spike	P	0 - 20

Quality Assurance Report Precision

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A107962

Included Lab Sample IDs: 2277838

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.4	100	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A107968

Included Lab Sample IDs: 2277836

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	100	P/P	95 - 105

Reference Method: SM 2120 B-2011

Run ID: A107969

Included Lab Sample IDs: 2277836

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	99.9	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A107976

Included Lab Sample IDs: 2277837

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A107981

Included Lab Sample IDs: 2277837

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A108003

Included Lab Sample IDs: 2277837

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A108024

Included Lab Sample IDs: 2277836

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.5	99.9	P/P	90 - 110
Sulfate	99.9	101	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A108055

Included Lab Sample IDs: 2277837

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	106	104	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A108056

Included Lab Sample IDs: 2277837

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A108062

Included Lab Sample IDs: 2277844, 2277845

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	100	101	P/P	90 - 110
Calcium	102	100	P/P	90 - 110
Chromium	98.9	99.1	P/P	90 - 110
Chromium	99.6	98.9	P/P	90 - 110
Iron	101	100	P/P	90 - 110
Iron	103	101	P/P	90 - 110
Magnesium	102	99.6	P/P	90 - 110
Magnesium	99.6	99.7	P/P	90 - 110
Manganese	102	102	P/P	90 - 110
Manganese	103	102	P/P	90 - 110
Zinc	96.5	98.8	P/P	90 - 110
Zinc	99.0	96.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A108124

Included Lab Sample IDs: 2277844, 2277845

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.5	100	P/P	90 - 110
Antimony	101	102	P/P	90 - 110
Arsenic	95.6	94.9	P/P	90 - 110
Beryllium	93.4	97.5	P/P	90 - 110
Cadmium	94.8	94.9	P/P	90 - 110
Copper	97.6	101	P/P	90 - 110
Lead	94.0	93.6	P/P	90 - 110
Nickel	97.0	100	P/P	90 - 110
Selenium	96.1	97.7	P/P	90 - 110
Silver	98.9	98.4	P/P	90 - 110
Thallium	96.6	96.5	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A108145

Included Lab Sample IDs: 2277836

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.2	97.9	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A108145

Included Lab Sample IDs: 2277836

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	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		LCS	Precision	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					0.421	
EPA 200.7 Rev. 4.4	Calcium	102					2.47
	Chromium	97.7	91.3	95.3			4.13
	Iron	104	97.5	102			4.36
	Magnesium	101					1.61
	Manganese	100	95.1	96.6			1.46
	Zinc	96.3	92.1	93.5			1.44
EPA 200.8 Rev. 5.4	Aluminum	96.2	105	102			3.52
	Antimony	100	105	106			1.04
	Arsenic	93.5	102	99.0			2.61
	Beryllium	89.5	112	114			2.01
	Cadmium	94.7	90.9	92.1			1.36
	Copper	94.6	108	108			0.121
	Lead	97.2	103	104			0.991
	Nickel	95.2	105	106			1.07
	Selenium	96.5	102	96.8			5.77
	Silver	100	91.4	92.0			0.673
	Thallium	97.4	99.4	103			4.00
EPA 300.0 Rev. 2.1	Chloride	99.3	103	102		0.863	
	Sulfate	99.4	105	102			
EPA 350.1 Rev. 2.0	Ammonia-N	98.0	96.4	96.2			0.198
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	101	99.7			0.810
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	104	102	103			0.265
EPA 365.1 Rev. 2.0	Total-P	106	111	108			2.57
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.5	97.6	93.9			3.86
SM 2120 B-2011	Color (true)	96.2				1.75	
SM 2320 B-2011	Total Alkalinity	98.2				1.83	
SM 2540 C-2011	TDS					6.39	
SM 4500 F-C-2011	Fluoride	101	98.2	98.2			0.0
SM 5310 B-2011	Organic Carbon	102	110	109			0.355

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2277836
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2277844, 2277845
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2277844, 2277845
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2277836
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2277836
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2277837
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2277837
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2277837
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2277837
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2277838
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2277836
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2277836
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2277836
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2277836
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2277836
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2277837

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	09/23/2021			09/23/2021 14:36	Khloe J Berg	2277836
EPA 200.7 Rev. 4.4	09/23/2021	09/29/2021 09:45	Emily M Philpot	09/29/2021 22:13	Josef B Mick	2277844
	09/23/2021	09/29/2021 09:45	Emily M Philpot	09/29/2021 22:21	Josef B Mick	2277844
	09/23/2021	09/29/2021 09:45	Emily M Philpot	09/29/2021 23:22	Josef B Mick	2277845
	09/23/2021	09/29/2021 09:45	Emily M Philpot	09/29/2021 23:30	Josef B Mick	2277845
EPA 200.8 Rev. 5.4	09/23/2021	09/29/2021 09:45	Emily M Philpot	10/02/2021 04:43	McKinley C Carter	2277844
	09/23/2021	09/29/2021 09:45	Emily M Philpot	10/02/2021 04:52	McKinley C Carter	2277845
EPA 300.0 Rev. 2.1	09/23/2021			09/28/2021 16:29	Roberta Tatti	2277836
EPA 350.1 Rev. 2.0	09/23/2021			09/24/2021 13:40	Ping Hua	2277837
EPA 351.2 Rev. 2.0	09/23/2021	09/24/2021 11:59	Benjamin T. Nordmann	09/27/2021 09:47	Alexandra J Mattheus	2277837
EPA 353.2 Rev. 2.0	09/23/2021			09/24/2021 11:43	Beverly Y. Sanders	2277837
EPA 365.1 Rev. 2.0	09/23/2021	09/28/2021 14:14	Simonne.V. Calhoun	09/29/2021 13:14	Lipi Saha	2277837
EPA 365.1 Rev. 2.0 dissolved	09/23/2021			09/23/2021 14:19	James L Waggeberby	2277838
SM 2120 B-2011	09/23/2021			09/23/2021 15:18	Madeline Gruver	2277836
SM 2320 B-2011	09/23/2021			10/02/2021 00:05	Dale L. Simmons	2277836
SM 2540 C-2011	09/23/2021			09/28/2021 14:27	Yijie Li	2277836
SM 2540 D-2011	09/23/2021			09/28/2021 14:27	Yijie Li	2277836
SM 4500 F-C-2011	09/23/2021			10/02/2021 00:05	Dale L. Simmons	2277836
SM 5310 B-2011	09/23/2021			09/28/2021 04:03	Khloe J Berg	2277837