

Chemical Analysis Report

SO-DIST-2021-08-26-01

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

Event Description: **2021 SMP : Myakka Cricks**

Request ID: **RQ-2021-08-23-37**

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: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 21-SEP-2021 10:59

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 "T" in "Tate".

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: Little Alligator Creek @ Midway Blvd

Collection Date/Time: 08/25/2021 08:40

Field ID: G3SD0071

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2272045	EPA 180.1 Rev. 2.0	Turbidity	3.3		NTU	P403041	
	SM 2320 B-2011	Total Alkalinity	151		mg CaCO3/L	P403124	
	SM 2540 D-2011	TSS	6	I	mg/L	P403397	
	SM 4500 F-C-2011	Fluoride	0.56		mg F/L	P403126	
2272046	EPA 350.1 Rev. 2.0	Ammonia-N	0.17		mg N/L	P403208	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P403313	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.017		mg N/L	P403247	
	EPA 365.1 Rev. 2.0	Total-P	0.33		mg P/L	P403084	
	SM 5310 B-2011	Organic Carbon	13		mg C/L	P403548	
2272047	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.27		mg P/L	P403039	
2272055	EPA 200.7 Rev. 4.4	Calcium	136		mg/L	P403025	
		Iron	190		ug/L	P403025	
		Magnesium	259		mg/L	P403025	
		Manganese	22.3		ug/L	P403025	
		Zinc	5.0	U	ug/L	P403025	
	EPA 200.8 Rev. 5.4	Aluminum	80	I	ug/L	P403025	
		Antimony	0.28	I	ug/L	P403025	
		Arsenic	2.77		ug/L	P403025	
		Beryllium	0.10	U	ug/L	P403025	
		Cadmium	0.080	U	ug/L	P403025	
		Chromium	1.6	U	ug/L	P403025	
		Copper	1.6	U	ug/L	P403025	
		Lead	0.80	U	ug/L	P403025	
		Nickel	2.0	U	ug/L	P403025	
		Selenium	0.80	U	ug/L	P403025	
		Silver	0.040	U	ug/L	P403025	
		Thallium	0.40	U	ug/L	P403025	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

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: Rock Creek @ Eisenhower Dr

Collection Date/Time: 08/25/2021 09:25

Field ID: G3SD0070

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2272048	EPA 180.1 Rev. 2.0	Turbidity	2.9		NTU	P403041	
	SM 2320 B-2011	Total Alkalinity	80		mg CaCO3/L	P403123	
	SM 2540 D-2011	TSS	3	IA	mg/L	P403397	
	SM 4500 F-C-2011	Fluoride	0.23		mg F/L	P403125	
2272049	EPA 350.1 Rev. 2.0	Ammonia-N	0.056		mg N/L	P403318	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P403312	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.052		mg N/L	P403182	
	EPA 365.1 Rev. 2.0	Total-P	0.41		mg P/L	P403140	
	SM 5310 B-2011	Organic Carbon	27		mg C/L	P403344	
2272050	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.34		mg P/L	P403037	

Ref. Method and Comment:

SM 2540 D-2011: 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: P403041

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P403025

Component	Result	Code	Units
Calcium	0.075	U	mg/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: P403025

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
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 350.1 Rev. 2.0
Batch ID: P403208

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403318

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403312

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403313

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: P403182

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403247

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P403084

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P403140

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P403037

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P403039

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

Reference Method: SM 2320 B-2011
Batch ID: P403123

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

Reference Method: SM 2320 B-2011
Batch ID: P403124

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

Reference Method: SM 2540 D-2011
Batch ID: P403397

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 4500 F-C-2011
Batch ID: P403125

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-2011
Batch ID: P403126

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P403344

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

Reference Method: SM 5310 B-2011
Batch ID: P403548

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: P403025

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	101		P	85 - 115
Iron	105		P	85 - 115
Magnesium	100		P	85 - 115
Manganese	101		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P403025

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	103		P	85 - 115
Antimony	104		P	85 - 115
Arsenic	97.5		P	85 - 115
Beryllium	97.3		P	85 - 115
Cadmium	100		P	85 - 115
Chromium	102		P	85 - 115
Copper	101		P	85 - 115
Lead	97.9		P	85 - 115
Nickel	101		P	85 - 115
Selenium	97.6		P	85 - 115
Silver	99.6		P	85 - 115
Thallium	101		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403208

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403318

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403312

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403313

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: P403182

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	97.5		P	90 - 110

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403247

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P403084

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P403140

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: P403037

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P403039

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

Reference Method: SM 2320 B-2011
Batch ID: P403123

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	94 - 106

Reference Method: SM 2320 B-2011
Batch ID: P403124

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P403125

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.8		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P403126

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.8		P	93 - 104

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P403344

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.2		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P403548

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P403025

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2271791	Iron	100	98.1	P/P	70 - 130
2271791	Manganese	94.5	93.6	P/P	70 - 130
2271791	Zinc	115	114	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P403025

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2271791	Aluminum	111	108	P/P	70 - 130
2271791	Antimony	104	103	P/P	70 - 130
2271791	Arsenic	110	108	P/P	70 - 130
2271791	Beryllium	103	102	P/P	70 - 130
2271791	Cadmium	94.9	94.1	P/P	70 - 130
2271791	Chromium	104	103	P/P	70 - 130
2271791	Copper	109	108	P/P	70 - 130
2271791	Lead	107	106	P/P	70 - 130
2271791	Nickel	112	110	P/P	70 - 130
2271791	Selenium	104	101	P/P	70 - 130
2271791	Silver	91.9	90.3	P/P	70 - 130
2271791	Thallium	109	110	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403208

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2272035	Ammonia-N	93.2	95.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403318

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2271977	Ammonia-N	97.0	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403312

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2272078	Kjeldahl Nitrogen	98.9	107	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403313

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2272046	Kjeldahl Nitrogen	103	98.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403182

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2271977	NO2NO3-N	97.0	97.0	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403247

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2272035	NO2NO3-N	97.8	96.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P403084

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2272046	Total-P	107	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P403140

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2272132	Total-P	105	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P403037

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2272098	O-Phosphate-P	97.5	97.6	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P403125

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2272101	Fluoride	98.4	98.4	P/P	92 - 107

Reference Method: SM 4500 F-C-2011
Batch ID: P403126

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2272034	Fluoride	98.9	100	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P403344

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2272049	Organic Carbon	101		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P403548

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2272182	Organic Carbon	99.8	97.5	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P403041

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2271970	Turbidity	3.36	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P403025

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2271791	Calcium	0.0501	Spike	P	0 - 20
2271791	Iron	1.90	Spike	P	0 - 20
2271791	Magnesium	1.09	Spike	P	0 - 20
2271791	Manganese	0.935	Spike	P	0 - 20
2271791	Zinc	0.863	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P403025

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2271791	Aluminum	2.98	Spike	P	0 - 20
2271791	Antimony	0.766	Spike	P	0 - 20
2271791	Arsenic	1.44	Spike	P	0 - 20
2271791	Beryllium	1.27	Spike	P	0 - 20
2271791	Cadmium	0.812	Spike	P	0 - 20
2271791	Chromium	0.930	Spike	P	0 - 20
2271791	Copper	0.813	Spike	P	0 - 20
2271791	Lead	0.527	Spike	P	0 - 20
2271791	Nickel	1.26	Spike	P	0 - 20
2271791	Selenium	3.04	Spike	P	0 - 20
2271791	Silver	1.73	Spike	P	0 - 20
2271791	Thallium	0.646	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403208

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2272035	Ammonia-N	2.11	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403318

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2271977	Ammonia-N	0.726	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403312

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2272078	Kjeldahl Nitrogen	4.24	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403313

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2272046	Kjeldahl Nitrogen	3.71	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403182

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2271977	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403247

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2272035	NO2NO3-N	0.985	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P403084

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2272046	Total-P	4.62	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P403140

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2272132	Total-P	1.02	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P403037

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2272098	O-Phosphate-P	0.103	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P403039

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2272069	O-Phosphate-P	0.960	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P403123

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2272101	Total Alkalinity	2.24	Sample	P	0 - 5.2

Quality Assurance Report Precision

Reference Method: SM 2320 B-2011
Batch ID: P403124

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2272034	Total Alkalinity	0.879	Sample	P	0 - 5.2

Reference Method: SM 4500 F-C-2011
Batch ID: P403125

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2272101	Fluoride	0.0	Spike	P	0 - 2.1

Reference Method: SM 4500 F-C-2011
Batch ID: P403126

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2272034	Fluoride	0.946	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P403344

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2272049	Organic Carbon	2.33	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P403548

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2272182	Organic Carbon	1.96	Spike	P	0 - 20

* 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: A107484

Included Lab Sample IDs: 2272047, 2272050

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.7	P/P	90 - 110
O-Phosphate-P	101	100	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A107487

Included Lab Sample IDs: 2272045, 2272048

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A107520

Included Lab Sample IDs: 2272055

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	103	104	P/P	90 - 110
Arsenic	97.1	98.5	P/P	90 - 110
Beryllium	99.9	97.2	P/P	90 - 110
Cadmium	99.9	101	P/P	90 - 110
Chromium	102	101	P/P	90 - 110
Copper	102	103	P/P	90 - 110
Lead	96.5	97.3	P/P	90 - 110
Nickel	103	104	P/P	90 - 110
Selenium	99.6	101	P/P	90 - 110
Silver	95.8	95.8	P/P	90 - 110
Thallium	99.3	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A107528

Included Lab Sample IDs: 2272046

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

Reference Method: SM 2320 B-2011

Run ID: A107535

Included Lab Sample IDs: 2272045, 2272048

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

Reference Method: SM 4500 F-C-2011

Run ID: A107535

Included Lab Sample IDs: 2272045, 2272048

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A107540

Included Lab Sample IDs: 2272055

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.8	99.4	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A107548

Included Lab Sample IDs: 2272055

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	96.3	96.4	P/P	90 - 110
Iron	95.4	94.4	P/P	90 - 110
Magnesium	95.7	94.8	P/P	90 - 110
Manganese	99.1	98.8	P/P	90 - 110
Zinc	103	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A107555

Included Lab Sample IDs: 2272049

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.5	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A107562

Included Lab Sample IDs: 2272049

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.4	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A107569

Included Lab Sample IDs: 2272046

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	99.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A107595

Included Lab Sample IDs: 2272046

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A107618

Included Lab Sample IDs: 2272049

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	98.4	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-2011

Run ID: A107635

Included Lab Sample IDs: 2272049

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.2	99.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A107640

Included Lab Sample IDs: 2272046, 2272049

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.5	97.2	P/P	90 - 110
Kjeldahl Nitrogen	97.9	94.6	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A107704

Included Lab Sample IDs: 2272046

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.2	96.8	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	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					3.36	
EPA 200.7 Rev. 4.4	Calcium	101					0.0501
	Iron	105	100	98.1			1.90
	Magnesium	100					1.09
	Manganese	101	94.5	93.6			0.935
	Zinc	102	115	114			0.863
EPA 200.8 Rev. 5.4	Aluminum	103	111	108			2.98
	Antimony	104	104	103			0.766
	Arsenic	97.5	110	108			1.44
	Beryllium	97.3	103	102			1.27
	Cadmium	100	94.9	94.1			0.812
	Chromium	102	104	103			0.930
	Copper	101	109	108			0.813
	Lead	97.9	107	106			0.527
	Nickel	101	112	110			1.26
	Selenium	97.6	104	101			3.04
	Silver	99.6	91.9	90.3			1.73
	Thallium	101	109	110			0.646
EPA 350.1 Rev. 2.0	Ammonia-N	99.0	93.2	95.4			2.11
	Ammonia-N	98.8	97.0	97.8			0.726
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.2	98.9	107			4.24
	Kjeldahl Nitrogen	101	103	98.1			3.71
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	97.5	97.0	97.0			0.0
	NO ₂ NO ₃ -N	99.5	97.8	96.8			0.985
EPA 365.1 Rev. 2.0	Total-P	103	107	100			4.62
	Total-P	106	105	104			1.02
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.2	97.5	97.6			0.103
	O-Phosphate-P	101					0.960
SM 2320 B-2011	Total Alkalinity	103				2.24	
	Total Alkalinity	102				0.879	
SM 4500 F-C-2011	Fluoride	99.8	98.4	98.4			0.0
	Fluoride	99.8	98.9	100			0.946
SM 5310 B-2011	Organic Carbon	98.2	101				2.33
	Organic Carbon	94.4	99.8	97.5			1.96

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2272045, 2272048
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2272055
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2272055
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2272046, 2272049
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2272046, 2272049
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2272046, 2272049
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2272046, 2272049
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2272047, 2272050
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2272045, 2272048
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2272045, 2272048
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2272045, 2272048
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2272046, 2272049

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	08/26/2021			08/26/2021 15:25	Sarah A Nixon	2272045, 2272048
EPA 200.7 Rev. 4.4	08/26/2021	08/26/2021 14:45	Elliott D. Healy	08/30/2021 21:44	Josef B Mick	2272055
	08/26/2021	08/26/2021 14:45	Elliott D. Healy	08/30/2021 21:51	Josef B Mick	2272055
EPA 200.8 Rev. 5.4	08/26/2021	08/26/2021 14:45	Elliott D. Healy	08/27/2021 15:18	Alexander Thompson	2272055
	08/26/2021	08/26/2021 14:45	Elliott D. Healy	08/27/2021 17:23	Alexander Thompson	2272055
	08/26/2021	08/26/2021 14:45	Elliott D. Healy	08/30/2021 12:33	Alexander Thompson	2272055
EPA 350.1 Rev. 2.0	08/26/2021			08/31/2021 11:30	Ping Hua	2272046
	08/26/2021			09/02/2021 11:22	Ping Hua	2272049
EPA 351.2 Rev. 2.0	08/26/2021	09/02/2021 13:17	Benjamin T. Nordmann	09/03/2021 11:25	Alexandra J Mattheus	2272046
	08/26/2021	09/02/2021 16:07	Benjamin T. Nordmann	09/03/2021 10:49	Alexandra J Mattheus	2272049
EPA 353.2 Rev. 2.0	08/26/2021			08/30/2021 11:39	Beverly Y. Sanders	2272049
	08/26/2021			09/01/2021 10:12	Beverly Y. Sanders	2272046
EPA 365.1 Rev. 2.0	08/26/2021	08/27/2021 14:47	Simonne.V. Calhoun	08/30/2021 11:27	Shengyu Ding	2272046
	08/26/2021	08/30/2021 14:00	Simonne.V. Calhoun	08/31/2021 11:13	Shengyu Ding	2272049
EPA 365.1 Rev. 2.0 dissolved	08/26/2021			08/26/2021 14:30	James L Waggeberby	2272050
	08/26/2021			08/26/2021 15:11	James L Waggeberby	2272047
SM 2320 B-2011	08/26/2021			08/27/2021 21:43	Dale L. Simmons	2272048
	08/26/2021			08/28/2021 00:26	Dale L. Simmons	2272045
SM 2540 D-2011	08/26/2021			08/30/2021 14:36	Yijie Li	2272045, 2272048
SM 4500 F-C-2011	08/26/2021			08/27/2021 21:43	Dale L. Simmons	2272048
	08/26/2021			08/27/2021 22:52	Dale L. Simmons	2272045
SM 5310 B-2011	08/26/2021			09/01/2021 20:36	Touraj Touran	2272049
	08/26/2021			09/08/2021 17:23	Madeline Gruver	2272046