

Chemical Analysis Report

SE-DIST-2022-06-29-01

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

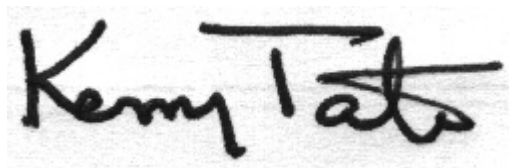
Event Description: **Port Mayaca 2022**
Request ID: **RQ-2022-06-27-41**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
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2199 South Rock Road
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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 19-JUL-2022 10:30

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: Lettuce Creek @ 710

Collection Date/Time: 06/28/2022 12:40

Field ID: G1SE0015

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2337878	DEP SOP: NU-094-1	Color (true)	340		PCU	P415985	
	EPA 180.1 Rev. 2.0	Turbidity	4.0		NTU	P415989	
	EPA 300.0 Rev. 2.1	Chloride	71		mg Cl/L	P416149	
		Sulfate	19		mg SO4/L	P416152	
	SM 2320 B-2011	Total Alkalinity	56		mg CaCO3/L	P416321	
	SM 2540 C-2011	TDS	301		mg/L	P416197	
	SM 2540 D-2011	TSS	4	I	mg/L	P416166	
2337879	SM 4500-F- C-2011	Fluoride	0.12		mg F/L	P416325	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.054		mg N/L	P416263	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.4		mg N/L	P416182	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.043		mg N/L	P416428	
	EPA 365.1 Rev. 2.0	Total-P	0.40		mg P/L	P416139	
2337882	SM 5310 B-2011	Organic Carbon	37		mg C/L	P416106	
	EPA 200.7 Rev. 4.4	Calcium	32.2		mg/L	P416003	
		Iron	790		ug/L	P416003	
		Magnesium	6.28		mg/L	P416003	
		Potassium	2.7		mg/L	P416003	
		Sodium	35.6		mg/L	P416003	
		Strontium	602		ug/L	P416003	
		Tin	3.0	U	ug/L	P416003	
		Titanium	3.7		ug/L	P416003	
		Vanadium	2.0	U	ug/L	P416003	
		Zinc	7.8	I	ug/L	P416003	
	EPA 200.8 Rev. 5.4	Aluminum	313		ug/L	P416003	
		Antimony	0.092	I	ug/L	P416003	
		Arsenic	1.87		ug/L	P416003	
		Barium	22.3		ug/L	P416003	
		Beryllium	0.034	I	ug/L	P416003	
		Boron	45.7		ug/L	P416003	
		Cadmium	0.020	U	ug/L	P416003	
		Chromium	0.77	I	ug/L	P416003	
		Cobalt	0.221		ug/L	P416003	
		Copper	0.72	I	ug/L	P416003	
		Lead	0.26	I	ug/L	P416003	
		Manganese	21.0		ug/L	P416003	
		Molybdenum	0.40	I	ug/L	P416003	
		Nickel	0.61	I	ug/L	P416003	
		Selenium	0.20	U	ug/L	P416003	
		Silver	0.010	U	ug/L	P416003	
		Thallium	0.10	U	ug/L	P416003	
	SM 2340 B-2011	Hardness	106		mg/L	P416003	

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P415985

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P415989

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P416003

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
Strontium	2.0	U	ug/L
Tin	3.0	U	ug/L
Titanium	0.75	U	ug/L
Vanadium	2.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P416003

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Barium	0.20	U	ug/L
Beryllium	0.010	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Cobalt	0.020	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Manganese	0.10	U	ug/L
Molybdenum	0.15	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: P416149

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P416152

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P416263

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P416182

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P416428

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P416139

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

Reference Method: SM 2320 B-2011
Batch ID: P416321

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

Reference Method: SM 2540 C-2011
Batch ID: P416197

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P416166

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P416325

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P416106

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P415985

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	96.1		P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P415989

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	95.8		P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P416003

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	104		P	85 - 115
Iron	100		P	85 - 115
Magnesium	101		P	85 - 115
Potassium	103		P	85 - 115
Sodium	104		P	85 - 115
Strontium	106		P	85 - 115
Tin	106		P	85 - 115
Titanium	106		P	85 - 115
Vanadium	98.5		P	85 - 115
Zinc	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P416003

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	103		P	85 - 115
Antimony	97.4		P	85 - 115
Arsenic	96.4		P	85 - 115
Barium	102		P	85 - 115
Beryllium	92.7		P	85 - 115
Boron	109		P	85 - 115
Cadmium	96.4		P	85 - 115
Chromium	96.2		P	85 - 115
Cobalt	99.1		P	85 - 115
Copper	96.9		P	85 - 115
Lead	97.6		P	85 - 115
Manganese	97.2		P	85 - 115
Molybdenum	97.2		P	85 - 115
Nickel	98.3		P	85 - 115
Selenium	96.1		P	85 - 115
Silver	97.5		P	85 - 115
Thallium	98.1		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P416149

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P416152

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P416263

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P416182

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P416428

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P416139

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

Reference Method: SM 2320 B-2011
Batch ID: P416321

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.2		P	94 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P416325

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.4		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P416106

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P416003

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2337973	Calcium	103	105	P/P	80 - 120
2337973	Iron	101	104	P/P	80 - 120
2337973	Magnesium	103	105	P/P	80 - 120
2337973	Potassium	106	109	P/P	80 - 120
2337973	Sodium	106	99.6	P/P	80 - 120
2337973	Strontium	105	106	P/P	80 - 120
2337973	Tin	106	107	P/P	80 - 120
2337973	Titanium	106	107	P/P	80 - 120
2337973	Vanadium	99.1	99.3	P/P	80 - 120
2337973	Zinc	104	104	P/P	80 - 120
2338026	Calcium	99.2		P	80 - 120
2338026	Iron	101		P	80 - 120
2338026	Magnesium	101		P	80 - 120
2338026	Potassium	101		P	80 - 120
2338026	Sodium	106		P	80 - 120
2338026	Strontium	106		P	80 - 120
2338026	Tin	105		P	80 - 120
2338026	Titanium	106		P	80 - 120
2338026	Vanadium	98.8		P	80 - 120
2338026	Zinc	103		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P416003

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2337973	Aluminum	102	98.5	P/P	80 - 120
2337973	Antimony	98.0	96.1	P/P	80 - 120
2337973	Arsenic	97.2	94.8	P/P	80 - 120
2337973	Barium	101	98.8	P/P	80 - 120
2337973	Beryllium	97.4	94.4	P/P	80 - 120
2337973	Boron	108	103	P/P	80 - 120
2337973	Cadmium	97.0	93.9	P/P	80 - 120
2337973	Chromium	96.2	92.8	P/P	80 - 120
2337973	Cobalt	97.8	95.2	P/P	80 - 120
2337973	Copper	97.2	94.6	P/P	80 - 120
2337973	Lead	96.8	94.3	P/P	80 - 120
2337973	Manganese	96.8	93.5	P/P	80 - 120
2337973	Molybdenum	96.9	95.0	P/P	80 - 120
2337973	Nickel	98.5	96.1	P/P	80 - 120
2337973	Selenium	95.8	93.9	P/P	80 - 120
2337973	Silver	95.9	95.4	P/P	80 - 120
2337973	Thallium	97.3	96.1	P/P	80 - 120
2338026	Aluminum	98.0		P	80 - 120
2338026	Antimony	97.2		P	80 - 120
2338026	Arsenic	97.3		P	80 - 120
2338026	Barium	100		P	80 - 120
2338026	Beryllium	95.0		P	80 - 120
2338026	Boron	104		P	80 - 120
2338026	Cadmium	96.2		P	80 - 120
2338026	Chromium	95.8		P	80 - 120
2338026	Cobalt	98.1		P	80 - 120
2338026	Copper	99.2		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P416003

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2338026	Lead	96.3		P	80 - 120
2338026	Manganese	96.7		P	80 - 120
2338026	Molybdenum	96.8		P	80 - 120
2338026	Nickel	98.4		P	80 - 120
2338026	Selenium	94.7		P	80 - 120
2338026	Silver	95.0		P	80 - 120
2338026	Thallium	97.4		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P416149

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2337729	Chloride	98.4		P	90 - 110
2337733	Chloride	99.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P416152

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2337729	Sulfate	98.8		P	90 - 110
2337733	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P416263

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2337715	Ammonia-N	98.0	95.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P416182

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2338271	Kjeldahl Nitrogen	108	93.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P416428

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2337646	NO2NO3-N	98.5	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P416139

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2337909	Total-P	102	104	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P416325

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2338014	Fluoride	99.2	99.2	P/P	94 - 104

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P416106

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2337911	Organic Carbon	100	100	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P415985

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2337846	Color (true)	1.23	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P415989

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2337729	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P416003

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2337973	Calcium	1.54	Spike	P	0 - 20
2337973	Iron	2.27	Spike	P	0 - 20
2337973	Magnesium	1.79	Spike	P	0 - 20
2337973	Potassium	2.95	Spike	P	0 - 20
2337973	Sodium	4.36	Spike	P	0 - 20
2337973	Strontium	0.295	Spike	P	0 - 20
2337973	Tin	0.949	Spike	P	0 - 20
2337973	Titanium	0.467	Spike	P	0 - 20
2337973	Vanadium	0.214	Spike	P	0 - 20
2337973	Zinc	0.275	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P416003

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2337973	Aluminum	3.33	Spike	P	0 - 20
2337973	Antimony	1.96	Spike	P	0 - 20
2337973	Arsenic	2.45	Spike	P	0 - 20
2337973	Barium	2.34	Spike	P	0 - 20
2337973	Beryllium	3.16	Spike	P	0 - 20
2337973	Boron	3.97	Spike	P	0 - 20
2337973	Cadmium	3.25	Spike	P	0 - 20
2337973	Chromium	3.59	Spike	P	0 - 20
2337973	Cobalt	2.62	Spike	P	0 - 20
2337973	Copper	2.75	Spike	P	0 - 20
2337973	Lead	2.61	Spike	P	0 - 20
2337973	Manganese	3.15	Spike	P	0 - 20
2337973	Molybdenum	1.91	Spike	P	0 - 20
2337973	Nickel	2.50	Spike	P	0 - 20
2337973	Selenium	1.91	Spike	P	0 - 20
2337973	Silver	0.577	Spike	P	0 - 20
2337973	Thallium	1.31	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P416149

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2337729	Chloride	0.118	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P416152

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2337729	Sulfate	0.0320	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P416263

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2337715	Ammonia-N	2.32	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P416182

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2338271	Kjeldahl Nitrogen	8.81	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P416428

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2337646	NO2NO3-N	0.966	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P416139

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2337909	Total-P	1.60	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P416321

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2338014	Total Alkalinity	0.255	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2011
Batch ID: P416197

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2337729	TDS	0.0	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 2540 D-2011
Batch ID: P416166

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2337729	TSS	6.67	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P416325

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2338014	Fluoride	0.0	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P416106

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2337911	Organic Carbon	0.0628	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A113156

Included Lab Sample IDs: 2337878

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.7	100	P/P	90 - 110
Sulfate	99.7	100	P/P	90 - 110

Reference Method: DEP SOP: NU-094-1

Run ID: A113169

Included Lab Sample IDs: 2337878

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.0	97.2	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A113170

Included Lab Sample IDs: 2337878

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A113218

Included Lab Sample IDs: 2337882

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	103	102	P/P	90 - 110
Antimony	99.0	97.0	P/P	90 - 110
Arsenic	100	98.1	P/P	90 - 110
Barium	99.7	98.8	P/P	90 - 110
Beryllium	98.2	96.2	P/P	90 - 110
Boron	103	103	P/P	90 - 110
Cadmium	98.2	97.2	P/P	90 - 110
Chromium	98.3	98.2	P/P	90 - 110
Cobalt	99.5	100	P/P	90 - 110
Copper	101	100	P/P	90 - 110
Lead	96.7	95.7	P/P	90 - 110
Manganese	98.6	98.7	P/P	90 - 110
Molybdenum	98.7	96.8	P/P	90 - 110
Nickel	101	101	P/P	90 - 110
Selenium	99.4	97.1	P/P	90 - 110
Silver	100	99.2	P/P	90 - 110
Thallium	97.0	95.3	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A113244

Included Lab Sample IDs: 2337879

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A113317

Included Lab Sample IDs: 2337882

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	97.6	98.3	P/P	90 - 110
Iron	98.0	97.7	P/P	90 - 110
Magnesium	97.7	97.6	P/P	90 - 110
Potassium	98.8	99.1	P/P	90 - 110
Sodium	99.3	98.7	P/P	90 - 110
Strontium	104	103	P/P	90 - 110
Tin	102	102	P/P	90 - 110
Titanium	102	101	P/P	90 - 110
Vanadium	102	101	P/P	90 - 110
Zinc	103	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A113332

Included Lab Sample IDs: 2337879

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.6	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A113340

Included Lab Sample IDs: 2337879

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	94.9	94.9	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A113365

Included Lab Sample IDs: 2337878

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.0	101	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A113365

Included Lab Sample IDs: 2337878

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A113420

Included Lab Sample IDs: 2337879

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A113474

Included Lab Sample IDs: 2337879

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

Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A113474

Included Lab Sample IDs: 2337879

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.4	104	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
DEP SOP: NU-094-1	Color (true)	96.1				1.23	
EPA 180.1 Rev. 2.0	Turbidity	95.8				0.0	
EPA 200.7 Rev. 4.4	Calcium	104	103	105	99.2		1.54
	Iron	100	101	104	101		2.27
	Magnesium	101	103	105	101		1.79
	Potassium	103	106	109	101		2.95
	Sodium	104	106	99.6	106		4.36
	Strontium	106	105	106	106		0.295
	Tin	106	106	107	105		0.949
	Titanium	106	106	107	106		0.467
	Vanadium	98.5	99.1	99.3	98.8		0.214
	Zinc	104	104	104	103		0.275
EPA 200.8 Rev. 5.4	Aluminum	103	102	98.5	98.0		3.33
	Antimony	97.4	98.0	96.1	97.2		1.96
	Arsenic	96.4	97.2	94.8	97.3		2.45
	Barium	102	101	98.8	100		2.34
	Beryllium	92.7	97.4	94.4	95.0		3.16
	Boron	109	108	103	104		3.97
	Cadmium	96.4	97.0	93.9	96.2		3.25
	Chromium	96.2	96.2	92.8	95.8		3.59
	Cobalt	99.1	97.8	95.2	98.1		2.62
	Copper	96.9	97.2	94.6	99.2		2.75
	Lead	97.6	96.8	94.3	96.3		2.61
	Manganese	97.2	96.8	93.5	96.7		3.15
	Molybdenum	97.2	96.8	96.9	95.0		1.91
	Nickel	98.3	98.5	96.1	98.4		2.50
	Selenium	96.1	95.8	93.9	94.7		1.91
	Silver	97.5	95.9	95.4	95.0		0.577
	Thallium	98.1	97.3	96.1	97.4		1.31
EPA 300.0 Rev. 2.1	Chloride	101	98.4	99.4		0.118	
	Sulfate	101	98.8	100		0.0320	
EPA 350.1 Rev. 2.0	Ammonia-N	95.2	98.0	95.4			2.32
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	108	93.3			8.81
EPA 353.2 Rev. 2.0	NO2NO3-N	102	98.5	100			0.966
EPA 365.1 Rev. 2.0	Total-P	102	102	104			1.60
SM 2320 B-2011	Total Alkalinity	99.2				0.255	
SM 2540 C-2011	TDS					0.0	
SM 2540 D-2011	TSS					6.67	
SM 4500-F- C-2011	Fluoride	98.4	99.2	99.2			0.0
SM 5310 B-2011	Organic Carbon	97.4	100	100			0.0628

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2337878
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2337878
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2337882
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2337882
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2337878
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2337878
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2337879

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2337879
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2337879
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2337879
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2337878
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2337882
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2337878
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2337878
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2337878
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2337879

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	06/29/2022			06/29/2022 15:56	Anna M. Plaviak	2337878
EPA 180.1 Rev. 2.0	06/29/2022			06/29/2022 14:11	Khloe J Berg	2337878
EPA 200.7 Rev. 4.4	06/29/2022	06/30/2022 08:57	Mackenzie Hunt	07/06/2022 19:46	McKinley C Carter	2337882
EPA 200.8 Rev. 5.4	06/29/2022	06/30/2022 08:57	Mackenzie Hunt	06/30/2022 15:04	Alexander Thompson	2337882
EPA 300.0 Rev. 2.1	06/29/2022			07/02/2022 04:30	Anna M. Plaviak	2337878
EPA 350.1 Rev. 2.0	06/29/2022			07/07/2022 11:14	Ping Hua	2337879
EPA 351.2 Rev. 2.0	06/29/2022	07/12/2022 12:13	Simonne.V. Calhoun	07/13/2022 12:08	Alexandra J Mattheus	2337879
EPA 353.2 Rev. 2.0	06/29/2022			07/11/2022 12:54	Judith K. Clark	2337879
EPA 365.1 Rev. 2.0	06/29/2022	07/06/2022 16:30	Adam P Silver	07/07/2022 15:20	James L Waggerby	2337879
SM 2320 B-2011	06/29/2022			07/06/2022 21:55	Dale L. Simmons	2337878
SM 2340 B-2011	06/29/2022			07/06/2022 19:46	McKinley C Carter	2337882
SM 2540 C-2011	06/29/2022			07/01/2022 14:10	Ping Hua	2337878
SM 2540 D-2011	06/29/2022			07/01/2022 14:10	Ping Hua	2337878
SM 4500-F- C-2011	06/29/2022			07/06/2022 21:55	Dale L. Simmons	2337878
SM 5310 B-2011	06/29/2022			06/30/2022 20:16	Khloe J Berg	2337879