Chemical Analysis Report

NW-DIST-2023-03-01-01

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Milton South Run**
Request ID: **RQ-2023-02-27-14**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government Street
Suite 208
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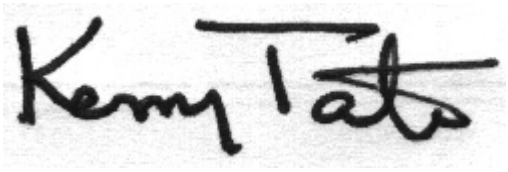
Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 20-MAR-2023 13:57



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 group are included in this report: Metals.

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: Sandy Point Creek below Sandy Point Street **Collection Date/Time: 02/28/2023 11:35**

Field ID: G4NW0080 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2390725	EPA 200.7 Rev. 4.4	Calcium	4.89		mg/L	P426646	
		Iron	2.63E+03		ug/L	P426646	
		Magnesium	1.28		mg/L	P426646	
		Potassium	1.5		mg/L	P426646	
		Sodium	8.6		mg/L	P426646	
		Strontium	12.1		ug/L	P426646	
		Tin	3.0	U	ug/L	P426646	
		Titanium	2.8	I	ug/L	P426646	
		Vanadium	2.0	U	ug/L	P426646	
		Zinc	5.0	U	ug/L	P426646	
	EPA 200.8 Rev. 5.4	Aluminum	572		ug/L	P426646	
		Antimony	0.051	I	ug/L	P426646	
		Arsenic	1.19		ug/L	P426646	
		Barium	8.41		ug/L	P426646	
		Beryllium	0.022	I	ug/L	P426646	
		Boron	48.1		ug/L	P426646	
		Cadmium	0.020	U	ug/L	P426646	
		Chromium	0.79	I	ug/L	P426646	
		Cobalt	0.452		ug/L	P426646	
		Copper	0.49	I	ug/L	P426646	
		Lead	0.90		ug/L	P426646	
		Manganese	35.5		ug/L	P426646	
		Molybdenum	0.15	U	ug/L	P426646	
		Nickel	0.72	I	ug/L	P426646	
		Selenium	0.20	U	ug/L	P426646	
		Silver	0.011	I	ug/L	P426646	
		Thallium	0.10	U	ug/L	P426646	
	SM 2340 B-2011	Hardness	17.5		mg/L	P426646	

Ref. Method and Comment:
EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 03/07/2023.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P426646

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: P426646

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P426646

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	110		P	85 - 115
Iron	109		P	85 - 115
Magnesium	110		P	85 - 115
Potassium	105		P	85 - 115
Sodium	106		P	85 - 115
Strontium	102		P	85 - 115
Tin	104		P	85 - 115
Titanium	106		P	85 - 115
Vanadium	102		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P426646

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.9		P	85 - 115
Antimony	102		P	85 - 115
Arsenic	102		P	85 - 115
Barium	103		P	85 - 115
Beryllium	99.6		P	85 - 115
Boron	101		P	85 - 115
Cadmium	104		P	85 - 115
Chromium	100		P	85 - 115
Cobalt	100		P	85 - 115
Copper	100		P	85 - 115
Lead	99.2		P	85 - 115
Manganese	102		P	85 - 115
Molybdenum	101		P	85 - 115
Nickel	102		P	85 - 115
Selenium	105		P	85 - 115
Silver	100		P	85 - 115
Thallium	102		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P426646

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2390788	Calcium	109		P	80 - 120
2390788	Iron	105	112	P/P	80 - 120
2390788	Magnesium	110		P	80 - 120
2390788	Potassium	98.2	104	P/P	80 - 120
2390788	Sodium	99.9	110	P/P	80 - 120
2390788	Strontium	98.7	105	P/P	80 - 120
2390788	Tin	101	105	P/P	80 - 120
2390788	Titanium	105	110	P/P	80 - 120
2390788	Vanadium	101	106	P/P	80 - 120
2390788	Zinc	97.3	102	P/P	80 - 120
2391077	Calcium	112		P	80 - 120
2391077	Iron	113		P	80 - 120
2391077	Magnesium	118		P	80 - 120
2391077	Potassium	108		P	80 - 120
2391077	Sodium	107		P	80 - 120
2391077	Strontium	107		P	80 - 120
2391077	Tin	106		P	80 - 120
2391077	Titanium	106		P	80 - 120
2391077	Vanadium	105		P	80 - 120
2391077	Zinc	101		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P426646

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2390788	Aluminum	101	100	P/P	80 - 120
2390788	Antimony	104	105	P/P	80 - 120
2390788	Arsenic	105	105	P/P	80 - 120
2390788	Barium	104	105	P/P	80 - 120
2390788	Beryllium	99.2	99.2	P/P	80 - 120
2390788	Boron	102	102	P/P	80 - 120
2390788	Cadmium	105	105	P/P	80 - 120
2390788	Chromium	102	102	P/P	80 - 120
2390788	Cobalt	100	99.3	P/P	80 - 120
2390788	Copper	98.7	99.2	P/P	80 - 120
2390788	Lead	99.7	100	P/P	80 - 120
2390788	Manganese	104	103	P/P	80 - 120
2390788	Molybdenum	102	103	P/P	80 - 120
2390788	Nickel	101	101	P/P	80 - 120
2390788	Selenium	105	105	P/P	80 - 120
2390788	Silver	101	102	P/P	80 - 120
2390788	Thallium	102	105	P/P	80 - 120
2391077	Aluminum	99.7		P	80 - 120
2391077	Antimony	102		P	80 - 120
2391077	Arsenic	103		P	80 - 120
2391077	Barium	104		P	80 - 120
2391077	Beryllium	96.8		P	80 - 120
2391077	Boron	101		P	80 - 120
2391077	Cadmium	105		P	80 - 120
2391077	Chromium	102		P	80 - 120
2391077	Cobalt	99.9		P	80 - 120
2391077	Copper	101		P	80 - 120

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P426646

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2391077	Lead	101		P	80 - 120
2391077	Manganese	104		P	80 - 120
2391077	Molybdenum	99.6		P	80 - 120
2391077	Nickel	101		P	80 - 120
2391077	Selenium	106		P	80 - 120
2391077	Silver	99.9		P	80 - 120
2391077	Thallium	103		P	80 - 120

Quality Assurance Report
Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P426646

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2390788	Calcium	5.70	Spike	P	0 - 20
2390788	Iron	5.97	Spike	P	0 - 20
2390788	Magnesium	5.95	Spike	P	0 - 20
2390788	Potassium	5.53	Spike	P	0 - 20
2390788	Sodium	5.29	Spike	P	0 - 20
2390788	Strontium	6.01	Spike	P	0 - 20
2390788	Tin	4.55	Spike	P	0 - 20
2390788	Titanium	4.07	Spike	P	0 - 20
2390788	Vanadium	4.69	Spike	P	0 - 20
2390788	Zinc	3.80	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P426646

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2390788	Aluminum	0.178	Spike	P	0 - 20
2390788	Antimony	1.54	Spike	P	0 - 20
2390788	Arsenic	0.490	Spike	P	0 - 20
2390788	Barium	1.16	Spike	P	0 - 20
2390788	Beryllium	0.0194	Spike	P	0 - 20
2390788	Boron	0.0690	Spike	P	0 - 20
2390788	Cadmium	0.0892	Spike	P	0 - 20
2390788	Chromium	0.0778	Spike	P	0 - 20
2390788	Cobalt	0.991	Spike	P	0 - 20
2390788	Copper	0.496	Spike	P	0 - 20
2390788	Lead	0.738	Spike	P	0 - 20
2390788	Manganese	0.603	Spike	P	0 - 20
2390788	Molybdenum	0.700	Spike	P	0 - 20
2390788	Nickel	0.0782	Spike	P	0 - 20
2390788	Selenium	0.299	Spike	P	0 - 20
2390788	Silver	0.928	Spike	P	0 - 20
2390788	Thallium	2.25	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A117841
Included Lab Sample IDs: 2390725

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	100	100	P/P	90 - 110
Antimony	103	102	P/P	90 - 110
Arsenic	103	103	P/P	90 - 110
Barium	102	102	P/P	90 - 110
Beryllium	102	103	P/P	90 - 110
Boron	97.1	97.6	P/P	90 - 110
Cadmium	103	103	P/P	90 - 110
Chromium	100	101	P/P	90 - 110
Cobalt	100	99.4	P/P	90 - 110
Copper	99.7	99.2	P/P	90 - 110
Lead	98.5	97.8	P/P	90 - 110
Manganese	102	104	P/P	90 - 110
Molybdenum	99.3	99.4	P/P	90 - 110
Nickel	102	100	P/P	90 - 110
Selenium	106	107	P/P	90 - 110
Silver	99.7	100	P/P	90 - 110
Thallium	100	99.8	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A118045
Included Lab Sample IDs: 2390725

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	100	P/P	95 - 105
Iron	100	99.7	P/P	95 - 105
Magnesium	101	100	P/P	95 - 105
Potassium	99.8	98.6	P/P	95 - 105
Sodium	99.4	98.3	P/P	95 - 105
Strontium	100	103	P/P	95 - 105
Tin	103	103	P/P	95 - 105
Titanium	103	104	P/P	95 - 105
Vanadium	103	103	P/P	95 - 105
Zinc	102	100	P/P	95 - 105

* 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		
						LCS	SMP	MS
EPA 200.7 Rev. 4.4	Calcium	110	109	112				5.70
	Iron	109	105	112	113			5.97
	Magnesium	110	110	118				5.95
	Potassium	105	98.2	104	108			5.53
	Sodium	106	99.9	110	107			5.29
	Strontium	102	98.7	105	107			6.01
	Tin	104	101	105	106			4.55
	Titanium	106	105	110	106			4.07
	Vanadium	102	101	106	105			4.69
	Zinc	102	97.3	102	101			3.80
EPA 200.8 Rev. 5.4	Aluminum	99.9	101	100	99.7			0.178
	Antimony	102	104	105	102			1.54
	Arsenic	102	105	105	103			0.490
	Barium	103	104	105	104			1.16
	Beryllium	99.6	99.2	99.2	96.8			0.0194
	Boron	101	102	102	101			0.0690
	Cadmium	104	105	105	105			0.0892
	Chromium	100	102	102	102			0.0778
	Cobalt	100	100	99.3	99.9			0.991
	Copper	100	98.7	99.2	101			0.496
	Lead	99.2	99.7	100	101			0.738
	Manganese	102	104	103	104			0.603
	Molybdenum	101	102	103	99.6			0.700
	Nickel	102	101	101	101			0.0782
	Selenium	105	105	105	106			0.299
	Silver	100	101	102	99.9			0.928
	Thallium	102	102	105	103			2.25

Reference Method Descriptions

Method	Description	Associated Samples
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2390725
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2390725
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2390725

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 200.7 Rev. 4.4	03/01/2023	03/03/2023 13:20	George D Taylor	03/16/2023 14:27	Chase Roberts	2390725
EPA 200.8 Rev. 5.4	03/01/2023	03/03/2023 13:20	George D Taylor	03/06/2023 17:27	Emily M Philpot	2390725
SM 2340 B-2011	03/01/2023			03/16/2023 14:27	Chase Roberts	2390725