

Chemical Analysis Report

NW-DIST-2023-07-11-01

Florida DEP Laboratory
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Tallahassee, FL 32399-2400
DOH Accreditation E31780

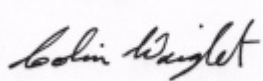
Event Description: **Milton South Run**
Request ID: **RQ-2023-07-10-55**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Colin Wright, Program Administrator

Date Certified: 24-JUL-2023 09:51



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: 07/10/2023 10:30**

Field ID: G4NW0080

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2422587	EPA 200.7 Rev. 4.4	Calcium	3.67		mg/L	P432361	
		Iron	3.00E+03		ug/L	P432361	
		Magnesium	1.02		mg/L	P432361	
		Potassium	1.7		mg/L	P432361	
		Sodium	6.8		mg/L	P432361	
		Strontium	10.5		ug/L	P432361	
		Tin	3.0	U	ug/L	P432361	
		Titanium	2.6	I	ug/L	P432361	
		Vanadium	2.0	U	ug/L	P432361	
		Zinc	5.0	U	ug/L	P432361	
	EPA 200.8 Rev. 5.4	Aluminum	611		ug/L	P432700	
		Antimony	0.051	I	ug/L	P432361	
		Arsenic	1.51		ug/L	P432361	
		Barium	7.64		ug/L	P432361	
		Beryllium	0.024	I	ug/L	P432361	
		Boron	66.6		ug/L	P432361	
		Cadmium	0.020	U	ug/L	P432361	
		Chromium	0.75	I	ug/L	P432361	
		Cobalt	0.421		ug/L	P432361	
		Copper	0.40	U	ug/L	P432361	
	SM 2340 B-2011	Lead	0.81		ug/L	P432361	
		Manganese	25.9		ug/L	P432361	
		Molybdenum	0.15	U	ug/L	P432361	
		Nickel	0.71	I	ug/L	P432361	
		Selenium	0.27	I	ug/L	P432361	
		Silver	0.010	U	ug/L	P432512	
		Thallium	0.10	U	ug/L	P432361	
		Hardness	13.4		mg/L	P432361	

Ref. Method and Comment:
EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 07/14/2023.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P432361

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: P432361

Component	Result	Code	Units
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
Thallium	0.10	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P432512

Component	Result	Code	Units
Silver	0.010	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P432700

Component	Result	Code	Units
Aluminum	5.0	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P432361

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	99.0		P	85 - 115
Iron	101		P	85 - 115
Magnesium	101		P	85 - 115
Potassium	101		P	85 - 115
Sodium	100		P	85 - 115
Strontium	97.7		P	85 - 115
Tin	98.7		P	85 - 115
Titanium	97.3		P	85 - 115
Vanadium	96.6		P	85 - 115
Zinc	97.6		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P432361

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Antimony	101		P	85 - 115
Arsenic	100		P	85 - 115
Barium	103		P	85 - 115
Beryllium	100		P	85 - 115
Boron	102		P	85 - 115
Cadmium	99.3		P	85 - 115
Chromium	95.0		P	85 - 115
Cobalt	98.4		P	85 - 115
Copper	98.2		P	85 - 115
Lead	92.6		P	85 - 115
Manganese	97.1		P	85 - 115
Molybdenum	99.1		P	85 - 115
Nickel	98.6		P	85 - 115
Selenium	102		P	85 - 115
Thallium	100		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P432512

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Silver	98.3		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P432700

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	98.4		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P432361

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2422210	Calcium	100		P	80 - 120
2422210	Iron	101	99.7	P/P	80 - 120
2422210	Magnesium	102	101	P/P	80 - 120
2422210	Potassium	99.8	99.9	P/P	80 - 120
2422210	Sodium	100		P	80 - 120
2422210	Strontium	99.1	98.9	P/P	80 - 120
2422210	Tin	101	99.1	P/P	80 - 120
2422210	Titanium	98.0	97.5	P/P	80 - 120
2422210	Vanadium	98.8	98.7	P/P	80 - 120
2422210	Zinc	101	99.9	P/P	80 - 120
2422211	Calcium	101		P	80 - 120
2422211	Iron	98.9		P	80 - 120
2422211	Magnesium	102		P	80 - 120
2422211	Potassium	98.5		P	80 - 120
2422211	Sodium	101		P	80 - 120
2422211	Strontium	97.6		P	80 - 120
2422211	Tin	97.5		P	80 - 120
2422211	Titanium	90.5		P	80 - 120
2422211	Vanadium	97.4		P	80 - 120
2422211	Zinc	99.1		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P432361

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2422210	Antimony	101	111	P/P	80 - 120
2422210	Arsenic	100	110	P/P	80 - 120
2422210	Barium	103	113	P/P	80 - 120
2422210	Beryllium	97.2	105	P/P	80 - 120
2422210	Boron	103	114	P/P	80 - 120
2422210	Cadmium	100	109	P/P	80 - 120
2422210	Chromium	97.3	107	P/P	80 - 120
2422210	Cobalt	97.1	107	P/P	80 - 120
2422210	Copper	99.5	110	P/P	80 - 120
2422210	Lead	93.4	102	P/P	80 - 120
2422210	Manganese	96.1	106	P/P	80 - 120
2422210	Molybdenum	99.2	108	P/P	80 - 120
2422210	Nickel	99.2	109	P/P	80 - 120
2422210	Selenium	102	109	P/P	80 - 120
2422210	Thallium	104	113	P/P	80 - 120
2422211	Antimony	98.8		P	80 - 120
2422211	Arsenic	97.4		P	80 - 120
2422211	Barium	102		P	80 - 120
2422211	Beryllium	94.8		P	80 - 120
2422211	Boron	104		P	80 - 120
2422211	Cadmium	98.7		P	80 - 120
2422211	Chromium	94.7		P	80 - 120
2422211	Cobalt	94.9		P	80 - 120
2422211	Copper	95.8		P	80 - 120
2422211	Lead	91.8		P	80 - 120
2422211	Manganese	93.1		P	80 - 120
2422211	Molybdenum	95.7		P	80 - 120

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P432361

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2422211	Nickel	97.9		P	80 - 120
2422211	Selenium	96.0		P	80 - 120
2422211	Thallium	101		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P432512

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2421707	Silver	99.3	106	P/P	80 - 120
2423336	Silver	103		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P432700

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2424324	Aluminum	95.9	96.0	P/P	80 - 120
2424542	Aluminum	99.3		P	80 - 120

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P432361

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2422210	Calcium	0.621	Spike	P	0 - 20
2422210	Iron	0.639	Spike	P	0 - 20
2422210	Magnesium	0.568	Spike	P	0 - 20
2422210	Potassium	0.0469	Spike	P	0 - 20
2422210	Sodium	0.00131	Spike	P	0 - 20
2422210	Strontium	0.224	Spike	P	0 - 20
2422210	Tin	1.97	Spike	P	0 - 20
2422210	Titanium	0.545	Spike	P	0 - 20
2422210	Vanadium	0.140	Spike	P	0 - 20
2422210	Zinc	0.867	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P432361

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2422210	Antimony	8.95	Spike	P	0 - 20
2422210	Arsenic	9.09	Spike	P	0 - 20
2422210	Barium	6.79	Spike	P	0 - 20
2422210	Beryllium	7.12	Spike	P	0 - 20
2422210	Boron	8.13	Spike	P	0 - 20
2422210	Cadmium	8.34	Spike	P	0 - 20
2422210	Chromium	9.60	Spike	P	0 - 20
2422210	Cobalt	9.47	Spike	P	0 - 20
2422210	Copper	10.4	Spike	P	0 - 20
2422210	Lead	8.87	Spike	P	0 - 20
2422210	Manganese	4.11	Spike	P	0 - 20
2422210	Molybdenum	8.84	Spike	P	0 - 20
2422210	Nickel	9.48	Spike	P	0 - 20
2422210	Selenium	6.13	Spike	P	0 - 20
2422210	Thallium	8.21	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P432512

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2421707	Silver	6.34	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P432700

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2424324	Aluminum	0.139	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A120358

Included Lab Sample IDs: 2422587

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	99.0	99.0	P/P	90 - 110
Iron	99.3	101	P/P	90 - 110
Magnesium	98.4	100	P/P	90 - 110
Potassium	98.6	100	P/P	90 - 110
Sodium	100	100	P/P	90 - 110
Strontium	101	102	P/P	90 - 110
Tin	97.3	100	P/P	90 - 110
Titanium	97.7	99.6	P/P	90 - 110
Vanadium	96.8	98.8	P/P	90 - 110
Zinc	98.0	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A120363

Included Lab Sample IDs: 2422587

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	100	101	P/P	90 - 110
Arsenic	99.8	97.6	P/P	90 - 110
Barium	99.9	101	P/P	90 - 110
Beryllium	98.0	97.4	P/P	90 - 110
Boron	98.1	99.9	P/P	90 - 110
Cadmium	100	101	P/P	90 - 110
Chromium	97.3	98.2	P/P	90 - 110
Cobalt	96.6	94.7	P/P	90 - 110
Copper	97.0	95.1	P/P	90 - 110
Lead	91.7	91.9	P/P	90 - 110
Manganese	97.6	98.6	P/P	90 - 110
Molybdenum	98.9	98.1	P/P	90 - 110
Nickel	97.0	95.2	P/P	90 - 110
Selenium	99.7	101	P/P	90 - 110
Thallium	100	99.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A120441

Included Lab Sample IDs: 2422587

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	99.0	99.4	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A120540

Included Lab Sample IDs: 2422587

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.4	97.0	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	
			LCS	SMP	MS		
EPA 200.7 Rev. 4.4	Calcium	99.0	100	101		0.621	
	Iron	101	101	99.7	98.9	0.639	
	Magnesium	101	102	101	102	0.568	
	Potassium	101	99.8	99.9	98.5	0.0469	
	Sodium	100	100	101		0.0013	
	Strontium	97.7	99.1	98.9	97.6	0.224	
	Tin	98.7	101	99.1	97.5	1.97	
	Titanium	97.3	98.0	97.5	90.5	0.545	
	Vanadium	96.6	98.8	98.7	97.4	0.140	
	Zinc	97.6	101	99.9	99.1	0.867	
EPA 200.8 Rev. 5.4	Aluminum	98.4	95.9	96.0	99.3	0.139	
	Antimony	101	101	111	98.8	8.95	
	Arsenic	100	100	110	97.4	9.09	
	Barium	103	103	113	102	6.79	
	Beryllium	100	97.2	105	94.8	7.12	
	Boron	102	103	114	104	8.13	
	Cadmium	99.3	100	109	98.7	8.34	
	Chromium	95.0	97.3	107	94.7	9.60	
	Cobalt	98.4	97.1	107	94.9	9.47	
	Copper	98.2	99.5	110	95.8	10.4	
	Lead	92.6	93.4	102	91.8	8.87	
	Manganese	97.1	96.1	106	93.1	4.11	
	Molybdenum	99.1	99.2	108	95.7	8.84	
	Nickel	98.6	99.2	109	97.9	9.48	
	Selenium	102	102	109	96.0	6.13	
	Silver	98.3	99.3	106	103	6.34	
	Thallium	100	104	113	101	8.21	

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	2422587
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2422587
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2422587

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	07/11/2023	07/12/2023 13:10	George D Taylor	07/13/2023 20:09	McKinley C Carter	2422587
EPA 200.8 Rev. 5.4	07/11/2023	07/12/2023 13:10	George D Taylor	07/13/2023 15:45	Emily M Philpot	2422587
	07/11/2023	07/14/2023 12:55	George D Taylor	07/17/2023 15:36	Conrad Hartmann	2422587
	07/11/2023	07/19/2023 13:40	George D Taylor	07/20/2023 18:18	Conrad Hartmann	2422587
SM 2340 B-2011	07/11/2023			07/13/2023 20:09	McKinley C Carter	2422587