

Chemical Analysis Report

CEN-DIST-2023-03-22-01

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

Event Description: **Run 7**
Request ID: **RQ-2023-03-06-23**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
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Date Certified: 06-APR-2023 10:25



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: Alligator Lake @ Center of south Lobe

Collection Date/Time: 03/21/2023 11:05

Field ID: G4CE0170

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2395673	EPA 200.7 Rev. 4.4	Calcium	5.00		mg/L	P427550	
		Iron	700		ug/L	P427550	
		Magnesium	2.64		mg/L	P427550	
		Potassium	3.1		mg/L	P427550	
		Sodium	13.7		mg/L	P427550	
		Strontium	32.8		ug/L	P427550	
		Tin	3.0	U	ug/L	P427550	
		Titanium	1.3	I	ug/L	P427550	
		Vanadium	2.0	U	ug/L	P427550	
		Zinc	7.6	I	ug/L	P427550	
	EPA 200.8 Rev. 5.4	Aluminum	334		ug/L	P427550	
		Antimony	0.073	I	ug/L	P427550	
		Arsenic	0.73		ug/L	P427550	
		Barium	15.8		ug/L	P427550	
		Beryllium	0.026	I	ug/L	P427550	
		Boron	32.4		ug/L	P427550	
		Cadmium	0.046	I	ug/L	P427550	
		Chromium	0.60	I	ug/L	P427550	
		Cobalt	0.079	I	ug/L	P427550	
		Copper	1.96		ug/L	P427550	
	SM 2340 B-2011	Lead	0.92		ug/L	P427550	
		Manganese	8.58		ug/L	P427550	
		Molybdenum	0.15	U	ug/L	P427550	
		Nickel	0.77	I	ug/L	P427550	
		Selenium	0.20	U	ug/L	P427550	
		Silver	0.010	U	ug/L	P427550	
		Thallium	0.10	U	ug/L	P427550	
		Hardness	23.3		mg/L	P427550	

Ref. Method and Comment:

EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 03/27/2023.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P427550

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: P427550

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: P427550

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	100		P	85 - 115
Iron	104		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	102		P	85 - 115
Sodium	93.7		P	85 - 115
Strontium	96.7		P	85 - 115
Tin	99.8		P	85 - 115
Titanium	99.7		P	85 - 115
Vanadium	97.7		P	85 - 115
Zinc	93.8		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P427550

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.1		P	85 - 115
Antimony	102		P	85 - 115
Arsenic	98.2		P	85 - 115
Barium	101		P	85 - 115
Beryllium	95.1		P	85 - 115
Boron	98.7		P	85 - 115
Cadmium	99.5		P	85 - 115
Chromium	99.9		P	85 - 115
Cobalt	96.6		P	85 - 115
Copper	101		P	85 - 115
Lead	102		P	85 - 115
Manganese	97.9		P	85 - 115
Molybdenum	99.0		P	85 - 115
Nickel	100		P	85 - 115
Selenium	97.6		P	85 - 115
Silver	102		P	85 - 115
Thallium	98.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P427550

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2394995	Calcium	99.0		P	80 - 120
2394995	Iron	103		P	80 - 120
2394995	Magnesium	98.2		P	80 - 120
2394995	Potassium	100		P	80 - 120
2394995	Sodium	97.4		P	80 - 120
2394995	Strontium	96.9		P	80 - 120
2394995	Tin	99.5		P	80 - 120
2394995	Titanium	100		P	80 - 120
2394995	Vanadium	97.7		P	80 - 120
2394995	Zinc	93.0		P	80 - 120
2395368	Calcium	99.7		P	80 - 120
2395368	Iron	100	102	P/P	80 - 120
2395368	Magnesium	98.3	101	P/P	80 - 120
2395368	Potassium	97.0	98.8	P/P	80 - 120
2395368	Sodium	94.3		P	80 - 120
2395368	Strontium	95.5	96.2	P/P	80 - 120
2395368	Tin	97.5	98.9	P/P	80 - 120
2395368	Titanium	98.8	99.9	P/P	80 - 120
2395368	Vanadium	96.5	97.3	P/P	80 - 120
2395368	Zinc	91.7	93.5	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P427550

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2394995	Aluminum	98.7		P	80 - 120
2394995	Antimony	101		P	80 - 120
2394995	Arsenic	97.4		P	80 - 120
2394995	Barium	100		P	80 - 120
2394995	Beryllium	95.8		P	80 - 120
2394995	Boron	103		P	80 - 120
2394995	Cadmium	99.9		P	80 - 120
2394995	Chromium	97.4		P	80 - 120
2394995	Cobalt	97.5		P	80 - 120
2394995	Copper	95.9		P	80 - 120
2394995	Lead	99.3		P	80 - 120
2394995	Manganese	99.6		P	80 - 120
2394995	Molybdenum	100		P	80 - 120
2394995	Nickel	95.7		P	80 - 120
2394995	Selenium	94.2		P	80 - 120
2394995	Silver	104		P	80 - 120
2394995	Thallium	97.0		P	80 - 120
2395368	Aluminum	99.4	97.2	P/P	80 - 120
2395368	Antimony	103	101	P/P	80 - 120
2395368	Arsenic	99.1	97.8	P/P	80 - 120
2395368	Barium	101	98.7	P/P	80 - 120
2395368	Beryllium	95.2	92.1	P/P	80 - 120
2395368	Boron	100	94.8	P/P	80 - 120
2395368	Cadmium	102	98.5	P/P	80 - 120
2395368	Chromium	100	98.0	P/P	80 - 120
2395368	Cobalt	97.3	96.3	P/P	80 - 120
2395368	Copper	99.3	97.7	P/P	80 - 120

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P427550

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2395368	Lead	102	101	P/P	80 - 120
2395368	Manganese	99.8	96.7	P/P	80 - 120
2395368	Molybdenum	101	99.0	P/P	80 - 120
2395368	Nickel	101	98.1	P/P	80 - 120
2395368	Selenium	98.5	97.1	P/P	80 - 120
2395368	Silver	103	101	P/P	80 - 120
2395368	Thallium	100	101	P/P	80 - 120

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P427550

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2395368	Calcium	1.27	Spike	P	0 - 20
2395368	Iron	1.77	Spike	P	0 - 20
2395368	Magnesium	1.76	Spike	P	0 - 20
2395368	Potassium	0.937	Spike	P	0 - 20
2395368	Sodium	1.03	Spike	P	0 - 20
2395368	Strontium	0.684	Spike	P	0 - 20
2395368	Tin	1.48	Spike	P	0 - 20
2395368	Titanium	1.11	Spike	P	0 - 20
2395368	Vanadium	0.915	Spike	P	0 - 20
2395368	Zinc	1.94	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P427550

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2395368	Aluminum	2.21	Spike	P	0 - 20
2395368	Antimony	2.26	Spike	P	0 - 20
2395368	Arsenic	1.37	Spike	P	0 - 20
2395368	Barium	2.25	Spike	P	0 - 20
2395368	Beryllium	3.29	Spike	P	0 - 20
2395368	Boron	2.81	Spike	P	0 - 20
2395368	Cadmium	3.54	Spike	P	0 - 20
2395368	Chromium	2.22	Spike	P	0 - 20
2395368	Cobalt	1.08	Spike	P	0 - 20
2395368	Copper	1.66	Spike	P	0 - 20
2395368	Lead	1.01	Spike	P	0 - 20
2395368	Manganese	1.59	Spike	P	0 - 20
2395368	Molybdenum	2.13	Spike	P	0 - 20
2395368	Nickel	2.58	Spike	P	0 - 20
2395368	Selenium	1.38	Spike	P	0 - 20
2395368	Silver	2.35	Spike	P	0 - 20
2395368	Thallium	0.599	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: A118193

Included Lab Sample IDs: 2395673

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.0	98.4	P/P	90 - 110
Antimony	101	100	P/P	90 - 110
Arsenic	97.4	96.4	P/P	90 - 110
Barium	98.7	97.8	P/P	90 - 110
Beryllium	98.3	96.4	P/P	90 - 110
Boron	96.1	104	P/P	90 - 110
Cadmium	97.7	98.8	P/P	90 - 110
Chromium	97.3	96.0	P/P	90 - 110
Copper	96.6	94.9	P/P	90 - 110
Lead	101	99.6	P/P	90 - 110
Manganese	99.7	99.0	P/P	90 - 110
Molybdenum	97.5	97.0	P/P	90 - 110
Nickel	97.6	95.1	P/P	90 - 110
Selenium	98.4	98.3	P/P	90 - 110
Silver	101	101	P/P	90 - 110
Thallium	103	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A118222

Included Lab Sample IDs: 2395673

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cobalt	96.7	97.8	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A118291

Included Lab Sample IDs: 2395673

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	98.9	98.5	P/P	90 - 110
Iron	100	102	P/P	90 - 110
Magnesium	99.0	101	P/P	90 - 110
Potassium	98.7	101	P/P	90 - 110
Sodium	93.7	94.7	P/P	90 - 110
Strontium	97.6	98.7	P/P	90 - 110
Tin	97.9	98.9	P/P	90 - 110
Titanium	99.3	99.5	P/P	90 - 110
Vanadium	98.1	98.1	P/P	90 - 110
Zinc	95.1	95.6	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				
EPA 200.7 Rev. 4.4	Calcium	100	99.0	99.7			1.27
	Iron	104	103	100	102		1.77
	Magnesium	104	98.2	98.3	101		1.76
	Potassium	102	100	97.0	98.8		0.937
	Sodium	93.7	97.4	94.3			1.03
	Strontium	96.7	96.9	95.5	96.2		0.684
	Tin	99.8	99.5	97.5	98.9		1.48
	Titanium	99.7	100	98.8	99.9		1.11
	Vanadium	97.7	97.7	96.5	97.3		0.915
	Zinc	93.8	93.0	91.7	93.5		1.94
EPA 200.8 Rev. 5.4	Aluminum	99.1	99.4	97.2	98.7		2.21
	Antimony	102	103	101	101		2.26
	Arsenic	98.2	99.1	97.8	97.4		1.37
	Barium	101	101	98.7	100		2.25
	Beryllium	95.1	95.2	92.1	95.8		3.29
	Boron	98.7	100	94.8	103		2.81
	Cadmium	99.5	102	98.5	99.9		3.54
	Chromium	99.9	100	98.0	97.4		2.22
	Cobalt	96.6	97.3	96.3	97.5		1.08
	Copper	101	99.3	97.7	95.9		1.66
	Lead	102	102	101	99.3		1.01
	Manganese	97.9	99.8	96.7	99.6		1.59
	Molybdenum	99.0	101	99.0	100		2.13
	Nickel	100	101	98.1	95.7		2.58
	Selenium	97.6	98.5	97.1	94.2		1.38
	Silver	102	103	101	104		2.35
	Thallium	98.8	100	101	97.0		0.599

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	2395673
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2395673
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2395673

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	03/22/2023	03/23/2023 11:10	Vijayalakshmi Reddy	03/30/2023 02:27	McKinley C Carter	2395673
EPA 200.8 Rev. 5.4	03/22/2023	03/23/2023 11:10	Vijayalakshmi Reddy	03/24/2023 18:57	Conrad Hartmann	2395673
	03/22/2023	03/23/2023 11:10	Vijayalakshmi Reddy	03/27/2023 19:42	Conrad Hartmann	2395673
SM 2340 B-2011	03/22/2023			03/30/2023 02:27	McKinley C Carter	2395673