

Chemical Analysis Report

CEN-DIST-2023-03-10-02

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

Event Description: **SJR Above Winder**
Request ID: **RQ-2023-03-06-24**
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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Certified by: Colin Wright, Program Administrator

Date Certified: 20-MAR-2023 15:16



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: SJR ~ 700m upstream of Lake Winder

Collection Date/Time: 03/09/2023 12:40

Field ID: G3CE0030

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2393409	EPA 200.7 Rev. 4.4	Calcium	53.4		mg/L	P427075	
		Iron	200		ug/L	P427075	
		Magnesium	13.2		mg/L	P427075	
		Potassium	4.2		mg/L	P427075	
		Sodium	68.5		mg/L	P427075	
		Strontium	1.59E+03		ug/L	P427075	
		Tin	3.0	U	ug/L	P427075	
		Titanium	2.3	I	ug/L	P427075	
		Vanadium	2.0	U	ug/L	P427075	
		Zinc	5.0	U	ug/L	P427075	
	EPA 200.8 Rev. 5.4	Aluminum	79		ug/L	P427075	
		Antimony	0.050	U	ug/L	P427075	
		Arsenic	0.67		ug/L	P427075	
		Barium	33.8		ug/L	P427075	
		Beryllium	0.012	I	ug/L	P427075	
		Boron	36.6		ug/L	P427075	
		Cadmium	0.020	U	ug/L	P427075	
		Chromium	0.40	U	ug/L	P427075	
		Cobalt	0.107		ug/L	P427075	
		Copper	0.40	U	ug/L	P427075	
		Lead	0.20	U	ug/L	P427075	
		Manganese	6.92		ug/L	P427075	
		Molybdenum	0.55	I	ug/L	P427075	
		Nickel	0.50	U	ug/L	P427075	
		Selenium	0.20	U	ug/L	P427075	
		Silver	0.011	I	ug/L	P427075	
		Thallium	0.10	U	ug/L	P427075	
	SM 2340 B-2011	Hardness	188		mg/L	P427075	

Ref. Method and Comment:

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P427075

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: P427075

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: P427075

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	103		P	85 - 115
Iron	108		P	85 - 115
Magnesium	113		P	85 - 115
Potassium	103		P	85 - 115
Sodium	101		P	85 - 115
Strontium	101		P	85 - 115
Tin	102		P	85 - 115
Titanium	104		P	85 - 115
Vanadium	101		P	85 - 115
Zinc	97.5		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P427075

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.2		P	85 - 115
Antimony	95.7		P	85 - 115
Arsenic	97.2		P	85 - 115
Barium	99.5		P	85 - 115
Beryllium	93.8		P	85 - 115
Boron	99.7		P	85 - 115
Cadmium	97.5		P	85 - 115
Chromium	95.2		P	85 - 115
Cobalt	95.7		P	85 - 115
Copper	96.5		P	85 - 115
Lead	94.3		P	85 - 115
Manganese	98.5		P	85 - 115
Molybdenum	95.7		P	85 - 115
Nickel	98.3		P	85 - 115
Selenium	97.8		P	85 - 115
Silver	96.8		P	85 - 115
Thallium	95.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P427075

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2393019	Iron	107	105	P/P	80 - 120
2393019	Magnesium	107	104	P/P	80 - 120
2393019	Potassium	100	99.0	P/P	80 - 120
2393019	Sodium	101		P	80 - 120
2393019	Strontium	100	97.8	P/P	80 - 120
2393019	Tin	98.5	98.2	P/P	80 - 120
2393019	Titanium	105	104	P/P	80 - 120
2393019	Vanadium	102	102	P/P	80 - 120
2393019	Zinc	93.7	92.9	P/P	80 - 120
2393342	Calcium	99.8		P	80 - 120
2393342	Iron	111		P	80 - 120
2393342	Magnesium	114		P	80 - 120
2393342	Potassium	102		P	80 - 120
2393342	Sodium	107		P	80 - 120
2393342	Strontium	103		P	80 - 120
2393342	Tin	106		P	80 - 120
2393342	Titanium	110		P	80 - 120
2393342	Vanadium	106		P	80 - 120
2393342	Zinc	100		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P427075

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2393019	Aluminum	98.1	98.7	P/P	80 - 120
2393019	Antimony	99.5	99.9	P/P	80 - 120
2393019	Arsenic	100	100	P/P	80 - 120
2393019	Barium	102	102	P/P	80 - 120
2393019	Beryllium	96.4	94.2	P/P	80 - 120
2393019	Boron	102	104	P/P	80 - 120
2393019	Cadmium	102	103	P/P	80 - 120
2393019	Chromium	98.7	98.0	P/P	80 - 120
2393019	Cobalt	96.0	96.3	P/P	80 - 120
2393019	Copper	95.5	96.2	P/P	80 - 120
2393019	Lead	96.1	96.3	P/P	80 - 120
2393019	Manganese	101	103	P/P	80 - 120
2393019	Molybdenum	101	102	P/P	80 - 120
2393019	Nickel	97.5	98.0	P/P	80 - 120
2393019	Selenium	97.8	99.3	P/P	80 - 120
2393019	Silver	97.2	97.0	P/P	80 - 120
2393019	Thallium	99.7	101	P/P	80 - 120
2393342	Aluminum	99.4		P	80 - 120
2393342	Antimony	99.5		P	80 - 120
2393342	Arsenic	97.8		P	80 - 120
2393342	Barium	102		P	80 - 120
2393342	Beryllium	94.7		P	80 - 120
2393342	Boron	99.9		P	80 - 120
2393342	Cadmium	101		P	80 - 120
2393342	Chromium	96.8		P	80 - 120
2393342	Cobalt	96.0		P	80 - 120
2393342	Copper	95.8		P	80 - 120
2393342	Lead	96.1		P	80 - 120

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P427075

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2393342	Manganese	98.2		P	80 - 120
2393342	Molybdenum	98.8		P	80 - 120
2393342	Nickel	99.6		P	80 - 120
2393342	Selenium	95.9		P	80 - 120
2393342	Silver	97.7		P	80 - 120
2393342	Thallium	98.6		P	80 - 120

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P427075

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2393019	Calcium	2.07	Spike	P	0 - 20
2393019	Iron	1.27	Spike	P	0 - 20
2393019	Magnesium	1.38	Spike	P	0 - 20
2393019	Potassium	1.10	Spike	P	0 - 20
2393019	Sodium	1.87	Spike	P	0 - 20
2393019	Strontium	1.87	Spike	P	0 - 20
2393019	Tin	0.336	Spike	P	0 - 20
2393019	Titanium	0.822	Spike	P	0 - 20
2393019	Vanadium	0.784	Spike	P	0 - 20
2393019	Zinc	0.832	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P427075

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2393019	Aluminum	0.676	Spike	P	0 - 20
2393019	Antimony	0.329	Spike	P	0 - 20
2393019	Arsenic	0.330	Spike	P	0 - 20
2393019	Barium	0.356	Spike	P	0 - 20
2393019	Beryllium	2.30	Spike	P	0 - 20
2393019	Boron	0.942	Spike	P	0 - 20
2393019	Cadmium	0.643	Spike	P	0 - 20
2393019	Chromium	0.673	Spike	P	0 - 20
2393019	Cobalt	0.329	Spike	P	0 - 20
2393019	Copper	0.650	Spike	P	0 - 20
2393019	Lead	0.245	Spike	P	0 - 20
2393019	Manganese	0.867	Spike	P	0 - 20
2393019	Molybdenum	0.676	Spike	P	0 - 20
2393019	Nickel	0.515	Spike	P	0 - 20
2393019	Selenium	1.51	Spike	P	0 - 20
2393019	Silver	0.115	Spike	P	0 - 20
2393019	Thallium	1.08	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: A117985

Included Lab Sample IDs: 2393409

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.2	98.9	P/P	90 - 110
Antimony	97.3	96.8	P/P	90 - 110
Arsenic	97.3	97.9	P/P	90 - 110
Barium	98.8	98.7	P/P	90 - 110
Beryllium	96.0	96.9	P/P	90 - 110
Boron	94.9	98.9	P/P	90 - 110
Cadmium	98.4	98.7	P/P	90 - 110
Chromium	93.9	94.9	P/P	90 - 110
Cobalt	93.7	93.3	P/P	90 - 110
Copper	95.4	94.9	P/P	90 - 110
Lead	95.3	95.2	P/P	90 - 110
Manganese	96.9	99.1	P/P	90 - 110
Molybdenum	96.0	96.8	P/P	90 - 110
Nickel	96.8	96.2	P/P	90 - 110
Selenium	99.6	99.7	P/P	90 - 110
Silver	95.5	96.2	P/P	90 - 110
Thallium	98.1	98.5	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A118045

Included Lab Sample IDs: 2393409

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	104	107	P/P	90 - 110
Iron	104	108	P/P	90 - 110
Magnesium	104	108	P/P	90 - 110
Potassium	103	105	P/P	90 - 110
Sodium	102	105	P/P	90 - 110
Strontium	101	101	P/P	90 - 110
Tin	101	103	P/P	90 - 110
Titanium	101	103	P/P	90 - 110
Vanadium	100	101	P/P	90 - 110
Zinc	95.7	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 SMP	MS
			LCS				
EPA 200.7 Rev. 4.4	Calcium	103					2.07
	Iron	108		107	105	111	1.27
	Magnesium	113		107	104	114	1.38
	Potassium	103		100	99.0	102	1.10
	Sodium	101		101	107		1.87
	Strontium	101		100	97.8	103	1.87
	Tin	102		98.5	98.2	106	0.336
	Titanium	104		105	104	110	0.822
	Vanadium	101		102	102	106	0.784
	Zinc	97.5		100	93.7	92.9	0.832
EPA 200.8 Rev. 5.4	Aluminum	99.2		99.4	98.1	98.7	0.676
	Antimony	95.7		99.5	99.5	99.9	0.329
	Arsenic	97.2		97.8	100	100	0.330
	Barium	99.5		102	102	102	0.356
	Beryllium	93.8		94.7	96.4	94.2	2.30
	Boron	99.7		99.9	102	104	0.942
	Cadmium	97.5		101	102	103	0.643
	Chromium	95.2		96.8	98.7	98.0	0.673
	Cobalt	95.7		96.0	96.0	96.3	0.329
	Copper	96.5		95.8	95.5	96.2	0.650
	Lead	94.3		96.1	96.1	96.3	0.245
	Manganese	98.5		98.2	101	103	0.867
	Molybdenum	95.7		98.8	101	102	0.676
	Nickel	98.3		99.6	97.5	98.0	0.515
	Selenium	97.8		95.9	97.8	99.3	1.51
	Silver	96.8		97.7	97.2	97.0	0.115
	Thallium	95.0		98.6	99.7	101	1.08

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	2393409
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2393409
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2393409

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	03/10/2023	03/13/2023 11:15	George D Taylor	03/16/2023 20:50	Chase Roberts	2393409
EPA 200.8 Rev. 5.4	03/10/2023	03/13/2023 11:15	George D Taylor	03/14/2023 16:08	Conrad Hartmann	2393409
SM 2340 B-2011	03/10/2023			03/16/2023 20:50	Chase Roberts	2393409