

Chemical Analysis Report

NE-DIST-2022-10-20-02

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

Event Description: **LSJR South West 2022**
Request ID: **RQ-2022-09-26-22**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Suite 100
Jacksonville, FL 32256
Attn: Jeremy Parrish

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Colin Wright, Program Administrator

Date Certified: 03-NOV-2022 11:36

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light pink rectangular background.

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: Swimming Pen Creek at Eagles Creek Dr.

Collection Date/Time: 10/19/2022 11:05

Field ID: G2NE1188

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2364023	EPA 200.7 Rev. 4.4	Calcium	15.8		mg/L	P421233	
		Iron	280		ug/L	P421233	
		Magnesium	2.98		mg/L	P421233	
		Potassium	2.8		mg/L	P421233	
		Sodium	17.3		mg/L	P421233	
		Strontium	112		ug/L	P421233	
		Tin	3.0	U	ug/L	P421233	
		Titanium	1.1	I	ug/L	P421233	
		Vanadium	2.0	U	ug/L	P421233	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P421233	
		Aluminum	56		ug/L	P421233	
		Antimony	0.12	I	ug/L	P421233	
		Arsenic	0.76		ug/L	P421233	
		Barium	16.9		ug/L	P421233	
		Beryllium	0.010	U	ug/L	P421233	
		Boron	39.2		ug/L	P421233	
		Cadmium	0.020	U	ug/L	P421233	
		Chromium	0.40	U	ug/L	P421233	
		Cobalt	0.045	I	ug/L	P421233	
		Copper	1.74		ug/L	P421233	
		Lead	0.20	U	ug/L	P421233	
		Manganese	5.09		ug/L	P421233	
		Molybdenum	0.71		ug/L	P421233	
		Nickel	0.50	U	ug/L	P421233	
		Selenium	0.20	U	ug/L	P421233	
		Silver	0.010	U	ug/L	P421233	
		Thallium	0.10	U	ug/L	P421233	
	SM 2340 B-2011	Hardness	51.7		mg/L	P421233	

Quality Assurance Report

Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P421233

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: P421233

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: P421233

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	104		P	80 - 120
Iron	105		P	80 - 120
Magnesium	105		P	80 - 120
Potassium	104		P	80 - 120
Sodium	96.9		P	80 - 120
Strontium	106		P	80 - 120
Tin	104		P	80 - 120
Titanium	100		P	80 - 120
Vanadium	99.9		P	80 - 120
Zinc	99.8		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P421233

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	93.7		P	85 - 115
Antimony	98.4		P	85 - 115
Arsenic	101		P	85 - 115
Barium	101		P	85 - 115
Beryllium	91.7		P	85 - 115
Boron	99.6		P	85 - 115
Cadmium	96.7		P	85 - 115
Chromium	95.6		P	85 - 115
Cobalt	94.1		P	85 - 115
Copper	95.5		P	85 - 115
Lead	93.0		P	85 - 115
Manganese	95.4		P	85 - 115
Molybdenum	95.2		P	85 - 115
Nickel	95.5		P	85 - 115
Selenium	97.0		P	85 - 115
Silver	100		P	85 - 115
Thallium	97.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P421233

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362992	Calcium	101	102	P/P	80 - 120
2362992	Iron	103	104	P/P	80 - 120
2362992	Magnesium	104	105	P/P	80 - 120
2362992	Potassium	100	101	P/P	80 - 120
2362992	Sodium	94.6		P	80 - 120
2362992	Strontium	104	104	P/P	80 - 120
2362992	Tin	102	105	P/P	80 - 120
2362992	Titanium	99.5	103	P/P	80 - 120
2362992	Vanadium	99.7	103	P/P	80 - 120
2362992	Zinc	98.9	102	P/P	80 - 120
2363965	Calcium	107		P	80 - 120
2363965	Iron	108		P	80 - 120
2363965	Magnesium	111		P	80 - 120
2363965	Potassium	107		P	80 - 120
2363965	Sodium	107		P	80 - 120
2363965	Strontium	101		P	80 - 120
2363965	Tin	103		P	80 - 120
2363965	Titanium	98.4		P	80 - 120
2363965	Vanadium	97.6		P	80 - 120
2363965	Zinc	98.5		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P421233

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362992	Aluminum	93.7	92.8	P/P	80 - 120
2362992	Antimony	99.1	99.1	P/P	80 - 120
2362992	Arsenic	100	101	P/P	80 - 120
2362992	Barium	100	101	P/P	80 - 120
2362992	Beryllium	88.4	93.3	P/P	80 - 120
2362992	Boron	102	101	P/P	80 - 120
2362992	Cadmium	96.6	97.6	P/P	80 - 120
2362992	Chromium	94.9	95.3	P/P	80 - 120
2362992	Cobalt	94.9	94.7	P/P	80 - 120
2362992	Copper	96.5	96.5	P/P	80 - 120
2362992	Lead	93.3	93.1	P/P	80 - 120
2362992	Manganese	95.7	95.2	P/P	80 - 120
2362992	Molybdenum	97.0	96.3	P/P	80 - 120
2362992	Nickel	96.1	97.0	P/P	80 - 120
2362992	Selenium	92.2	95.3	P/P	80 - 120
2362992	Silver	100	99.4	P/P	80 - 120
2362992	Thallium	97.8	98.5	P/P	80 - 120
2363965	Aluminum	94.9		P	80 - 120
2363965	Antimony	99.4		P	80 - 120
2363965	Arsenic	100		P	80 - 120
2363965	Barium	102		P	80 - 120
2363965	Beryllium	89.7		P	80 - 120
2363965	Boron	102		P	80 - 120
2363965	Cadmium	98.2		P	80 - 120
2363965	Chromium	96.7		P	80 - 120
2363965	Cobalt	93.9		P	80 - 120
2363965	Copper	95.3		P	80 - 120

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P421233

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2363965	Lead	94.1		P	80 - 120
2363965	Manganese	95.0		P	80 - 120
2363965	Molybdenum	96.0		P	80 - 120
2363965	Nickel	96.8		P	80 - 120
2363965	Selenium	93.0		P	80 - 120
2363965	Silver	100		P	80 - 120
2363965	Thallium	98.8		P	80 - 120

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P421233

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362992	Calcium	1.13	Spike	P	0 - 20
2362992	Iron	1.07	Spike	P	0 - 20
2362992	Magnesium	1.34	Spike	P	0 - 20
2362992	Potassium	0.267	Spike	P	0 - 20
2362992	Sodium	0.436	Spike	P	0 - 20
2362992	Strontium	0.0787	Spike	P	0 - 20
2362992	Tin	3.03	Spike	P	0 - 20
2362992	Titanium	3.48	Spike	P	0 - 20
2362992	Vanadium	3.49	Spike	P	0 - 20
2362992	Zinc	3.18	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P421233

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362992	Aluminum	0.980	Spike	P	0 - 20
2362992	Antimony	0.0265	Spike	P	0 - 20
2362992	Arsenic	0.316	Spike	P	0 - 20
2362992	Barium	0.689	Spike	P	0 - 20
2362992	Beryllium	4.53	Spike	P	0 - 20
2362992	Boron	0.707	Spike	P	0 - 20
2362992	Cadmium	1.03	Spike	P	0 - 20
2362992	Chromium	0.422	Spike	P	0 - 20
2362992	Cobalt	0.208	Spike	P	0 - 20
2362992	Copper	0.0488	Spike	P	0 - 20
2362992	Lead	0.201	Spike	P	0 - 20
2362992	Manganese	0.424	Spike	P	0 - 20
2362992	Molybdenum	0.723	Spike	P	0 - 20
2362992	Nickel	0.874	Spike	P	0 - 20
2362992	Selenium	3.33	Spike	P	0 - 20
2362992	Silver	0.871	Spike	P	0 - 20
2362992	Thallium	0.793	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: A115490

Included Lab Sample IDs: 2364023

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	94.1	94.3	P/P	90 - 110
Antimony	94.6	95.5	P/P	90 - 110
Arsenic	97.4	96.7	P/P	90 - 110
Barium	96.1	95.7	P/P	90 - 110
Beryllium	95.0	95.3	P/P	90 - 110
Boron	94.4	98.8	P/P	90 - 110
Cadmium	96.1	96.5	P/P	90 - 110
Chromium	92.0	91.9	P/P	90 - 110
Cobalt	90.9	91.0	P/P	90 - 110
Copper	92.1	92.9	P/P	90 - 110
Lead	91.0	90.7	P/P	90 - 110
Manganese	92.1	92.1	P/P	90 - 110
Molybdenum	95.5	96.1	P/P	90 - 110
Nickel	92.3	92.5	P/P	90 - 110
Selenium	93.6	95.6	P/P	90 - 110
Silver	97.1	97.2	P/P	90 - 110
Thallium	95.7	95.1	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A115496

Included Lab Sample IDs: 2364023

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	93.2	96.2	P/P	90 - 110
Iron	93.7	96.3	P/P	90 - 110
Magnesium	93.9	96.6	P/P	90 - 110
Potassium	93.6	96.9	P/P	90 - 110
Sodium	92.7	95.4	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A115528

Included Lab Sample IDs: 2364023

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Strontium	94.6	91.7	P/P	90 - 110
Tin	94.5	94.3	P/P	90 - 110
Titanium	93.5	92.1	P/P	90 - 110
Vanadium	93.5	91.8	P/P	90 - 110
Zinc	93.3	92.4	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	104	101	102	107		1.13
	Iron	105	103	104	108		1.07
	Magnesium	105	104	105	111		1.34
	Potassium	104	100	101	107		0.267
	Sodium	96.9	94.6	107			0.436
	Strontium	106	104	104	101		0.0787
	Tin	104	102	105	103		3.03
	Titanium	100	99.5	103	98.4		3.48
	Vanadium	99.9	99.7	103	97.6		3.49
	Zinc	99.8	98.9	102	98.5		3.18
EPA 200.8 Rev. 5.4	Aluminum	93.7	93.7	92.8	94.9		0.980
	Antimony	98.4	99.1	99.1	99.4		0.0265
	Arsenic	101	100	101	100		0.316
	Barium	101	100	101	102		0.689
	Beryllium	91.7	88.4	93.3	89.7		4.53
	Boron	99.6	102	101	102		0.707
	Cadmium	96.7	96.6	97.6	98.2		1.03
	Chromium	95.6	94.9	95.3	96.7		0.422
	Cobalt	94.1	94.9	94.7	93.9		0.208
	Copper	95.5	96.5	96.5	95.3		0.0488
	Lead	93.0	93.3	93.1	94.1		0.201
	Manganese	95.4	95.7	95.2	95.0		0.424
	Molybdenum	95.2	97.0	96.3	96.0		0.723
	Nickel	95.5	96.1	97.0	96.8		0.874
	Selenium	97.0	92.2	95.3	93.0		3.33
	Silver	100	100	99.4	100		0.871
	Thallium	97.8	97.8	98.5	98.8		0.793

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	2364023
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2364023
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2364023

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	10/20/2022	10/21/2022 11:20	George D Taylor	10/25/2022 01:58	McKinley C Carter	2364023
	10/20/2022	10/21/2022 11:20	George D Taylor	10/25/2022 20:23	McKinley C Carter	2364023
EPA 200.8 Rev. 5.4	10/20/2022	10/21/2022 11:20	George D Taylor	10/24/2022 22:25	Emily M Philpot	2364023
SM 2340 B-2011	10/20/2022			10/25/2022 01:58	McKinley C Carter	2364023