

Chemical Analysis Report

NE-DIST-2021-07-15-03

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **LSJR West Boat 2021**
Request ID: **RQ-2021-07-05-33**
Customer: **NE-DIST**
Project ID: **SMP**

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8800 Baymeadows Way West
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Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant

Date Certified: 04-AUG-2021 10:56



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: Yellow Water CR AT SR 228

Collection Date/Time: 07/14/2021 11:35

Field ID: 20030549

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2262517	EPA 200.7 Rev. 4.4	Barium	16.0		ug/L	P401304	
		Calcium	6.02		mg/L	P401304	
		Iron	2.57E+03		ug/L	P401304	
		Magnesium	1.16		mg/L	P401304	
		Manganese	28.0		ug/L	P401304	
		Potassium	0.30	U	mg/L	P401304	
		Sodium	5.2		mg/L	P401304	
	EPA 200.8 Rev. 5.4	Zinc	16	I	ug/L	P401304	
		Aluminum	595		ug/L	P401304	
		Antimony	0.10	I	ug/L	P401304	
		Arsenic	0.69		ug/L	P401304	
		Beryllium	0.050		ug/L	P401304	
		Boron**	17.5		ug/L	P401304	
		Cadmium	0.024	I	ug/L	P401304	
		Chromium	1.1	I	ug/L	P401304	
		Copper	3.08		ug/L	P401304	
		Lead	2.21		ug/L	P401304	
		Nickel	1.4	I	ug/L	P401304	
		Selenium	0.20	U	ug/L	P401304	
		Silver	0.010	U	ug/L	P401304	
		Thallium	0.10	U	ug/L	P401304	
	SM 2340B	Hardness	19.8		mg/L	P401304	

Ref. Method and Comment:

EPA 200.8 Rev. 5.4: The lead and copper results were confirmed on 07/29/2021.

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P401304

Component	Result	Code	Units
Barium	1.0	U	ug/L
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Manganese	1.0	U	ug/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P401304

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	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
Copper	0.40	U	ug/L
Lead	0.20	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: P401304

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	92.0		P	85 - 115
Calcium	97.1		P	85 - 115
Iron	96.2		P	85 - 115
Magnesium	98.5		P	85 - 115
Manganese	91.4		P	85 - 115
Potassium	95.2		P	85 - 115
Sodium	99.0		P	85 - 115
Zinc	87.2		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P401304

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	97.0		P	85 - 115
Antimony	94.3		P	85 - 115
Arsenic	96.0		P	85 - 115
Beryllium	102		P	85 - 115
Boron	97.9		P	85 - 115
Cadmium	91.5		P	85 - 115
Chromium	90.7		P	85 - 115
Copper	93.8		P	85 - 115
Lead	93.5		P	85 - 115
Nickel	94.3		P	85 - 115
Selenium	93.7		P	85 - 115
Silver	113		P	85 - 115
Thallium	97.3		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P401304

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2262527	Barium	96.7	96.3	P/P	80 - 120
2262527	Calcium	100	102	P/P	80 - 120
2262527	Iron	101	103	P/P	80 - 120
2262527	Magnesium	103	105	P/P	80 - 120
2262527	Manganese	95.8	95.2	P/P	80 - 120
2262527	Potassium	99.0	102	P/P	80 - 120
2262527	Sodium	102	105	P/P	80 - 120
2262527	Zinc	91.3	92.2	P/P	80 - 120
2263350	Barium	108		P	80 - 120
2263350	Calcium	114		P	80 - 120
2263350	Iron	112		P	80 - 120
2263350	Magnesium	116		P	80 - 120
2263350	Manganese	106		P	80 - 120
2263350	Potassium	107		P	80 - 120
2263350	Sodium	113		P	80 - 120
2263350	Zinc	102		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P401304

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2262527	Aluminum	91.1	93.4	P/P	80 - 120
2262527	Antimony	91.2	92.0	P/P	80 - 120
2262527	Arsenic	89.3	89.5	P/P	80 - 120
2262527	Beryllium	102	102	P/P	80 - 120
2262527	Boron	92.3	93.8	P/P	80 - 120
2262527	Cadmium	88.7	89.6	P/P	80 - 120
2262527	Chromium	85.1	86.1	P/P	80 - 120
2262527	Copper	88.7	89.9	P/P	80 - 120
2262527	Lead	91.3	91.3	P/P	80 - 120
2262527	Nickel	87.6	88.6	P/P	80 - 120
2262527	Selenium	87.0	86.9	P/P	80 - 120
2262527	Silver	111	110	P/P	80 - 120
2262527	Thallium	94.1	95.4	P/P	80 - 120
2263350	Aluminum	92.1		P	80 - 120
2263350	Antimony	92.4		P	80 - 120
2263350	Arsenic	90.3		P	80 - 120
2263350	Beryllium	101		P	80 - 120
2263350	Boron	90.3		P	80 - 120
2263350	Cadmium	87.9		P	80 - 120
2263350	Chromium	88.6		P	80 - 120
2263350	Copper	90.1		P	80 - 120
2263350	Lead	90.3		P	80 - 120
2263350	Nickel	92.0		P	80 - 120
2263350	Selenium	89.6		P	80 - 120
2263350	Silver	111		P	80 - 120
2263350	Thallium	94.6		P	80 - 120

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P401304

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2262527	Barium	0.482	Spike	P	0 - 20
2262527	Calcium	1.38	Spike	P	0 - 20
2262527	Iron	1.79	Spike	P	0 - 20
2262527	Magnesium	1.75	Spike	P	0 - 20
2262527	Manganese	0.578	Spike	P	0 - 20
2262527	Potassium	2.59	Spike	P	0 - 20
2262527	Sodium	2.04	Spike	P	0 - 20
2262527	Zinc	1.01	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P401304

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2262527	Aluminum	2.47	Spike	P	0 - 20
2262527	Antimony	0.859	Spike	P	0 - 20
2262527	Arsenic	0.317	Spike	P	0 - 20
2262527	Beryllium	0.421	Spike	P	0 - 20
2262527	Boron	1.34	Spike	P	0 - 20
2262527	Cadmium	1.02	Spike	P	0 - 20
2262527	Chromium	1.08	Spike	P	0 - 20
2262527	Copper	1.32	Spike	P	0 - 20
2262527	Lead	0.0351	Spike	P	0 - 20
2262527	Nickel	1.10	Spike	P	0 - 20
2262527	Selenium	0.178	Spike	P	0 - 20
2262527	Silver	0.431	Spike	P	0 - 20
2262527	Thallium	1.38	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: A106833

Included Lab Sample IDs: 2262517

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.6	93.2	P/P	90 - 110
Antimony	97.7	96.1	P/P	90 - 110
Arsenic	98.4	94.3	P/P	90 - 110
Boron	97.6	95.9	P/P	90 - 110
Cadmium	95.1	93.2	P/P	90 - 110
Chromium	94.0	90.5	P/P	90 - 110
Copper	96.8	92.3	P/P	90 - 110
Lead	95.9	93.1	P/P	90 - 110
Nickel	97.7	92.6	P/P	90 - 110
Selenium	95.2	92.2	P/P	90 - 110
Thallium	95.3	91.9	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A106941

Included Lab Sample IDs: 2262517

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Beryllium	101	101	P/P	90 - 110
Silver	99.4	100	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A106958

Included Lab Sample IDs: 2262517

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	104	105	P/P	90 - 110
Calcium	104	106	P/P	90 - 110
Iron	103	105	P/P	90 - 110
Magnesium	103	105	P/P	90 - 110
Manganese	105	103	P/P	90 - 110
Potassium	104	105	P/P	90 - 110
Sodium	106	107	P/P	90 - 110
Zinc	106	105	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	Barium	92.0	96.7	96.3	108		0.482
	Calcium	97.1	100	102	114		1.38
	Iron	96.2	101	103	112		1.79
	Magnesium	98.5	103	105	116		1.75
	Manganese	91.4	95.8	95.2	106		0.578
	Potassium	95.2	99.0	102	107		2.59
	Sodium	99.0	102	105	113		2.04
	Zinc	87.2	91.3	92.2	102		1.01
EPA 200.8 Rev. 5.4	Aluminum	97.0	91.1	93.4	92.1		2.47
	Antimony	94.3	91.2	92.0	92.4		0.859
	Arsenic	96.0	89.3	89.5	90.3		0.317
	Beryllium	102	102	102	101		0.421
	Boron	97.9	92.3	93.8	90.3		1.34
	Cadmium	91.5	88.7	89.6	87.9		1.02
	Chromium	90.7	88.6	85.1	86.1		1.08
	Copper	93.8	88.7	89.9	90.1		1.32
	Lead	93.5	91.3	91.3	90.3		0.0351
	Nickel	94.3	87.6	88.6	92.0		1.10
	Selenium	93.7	87.0	86.9	89.6		0.178
	Silver	113	111	110	111		0.431
	Thallium	97.3	94.1	95.4	94.6		1.38

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2262517
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2262517
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2262517

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	07/15/2021	07/21/2021 14:50	Elliott D. Healy	07/30/2021 19:56	Betina Topolski	2262517
EPA 200.8 Rev. 5.4	07/15/2021	07/21/2021 14:50	Elliott D. Healy	07/26/2021 19:31	Alexander Thompson	2262517
	07/15/2021	07/21/2021 14:50	Elliott D. Healy	07/29/2021 14:41	McKinley C Carter	2262517
SM 2340B	07/15/2021			07/30/2021 19:56	Betina Topolski	2262517