

Chemical Analysis Report

SE-DIST-2021-07-16-02

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

Event Description: **SMP - IRC Boat**
Request ID: **RQ-2021-03-22-19**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
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2199 South Rock Road
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Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant

Date Certified: 09-AUG-2021 11:54



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: South IRL Outside Vero Beach Yacht Club

Collection Date/Time: 07/15/2021 10:15

Field ID: G5SE0089

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2262850	EPA 200.7 Rev. 4.4	Calcium	401		mg/L	P401419	
		Iron	150	I	ug/L	P401419	
		Magnesium	1.20E+03		mg/L	P401419	
		Manganese	10	I	ug/L	P401419	
	EPA 200.8 Rev. 5.4	Zinc	15	U	ug/L	P401419	
		Aluminum	210		ug/L	P401419	
		Antimony	0.50	U	ug/L	P401419	
		Arsenic	2.7		ug/L	P401419	
		Beryllium	0.040	U	ug/L	P401419	
		Cadmium	0.20	U	ug/L	P401419	
		Chromium	4.0	U	ug/L	P401419	
		Copper	1.9	I	ug/L	P401948	
		Lead	2.0	U	ug/L	P401419	
		Nickel	5.0	U	ug/L	P401419	
		Selenium	2.0	U	ug/L	P401419	
		Silver	0.040	U	ug/L	P401948	
		Thallium	1.0	U	ug/L	P401419	

Ref. Method and Comment:

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium and magnesium are unavailable because of high analyte concentration in the QC sample.

Sample Location: South IRL Outside Bob Summers Park

Collection Date/Time: 07/15/2021 11:00

Field ID: G5SE0088

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2262851	EPA 200.7 Rev. 4.4	Calcium	389		mg/L	P401419	
		Iron	120	U	ug/L	P401419	
		Magnesium	1.20E+03		mg/L	P401419	
		Manganese	9.7	I	ug/L	P401419	
		Zinc	20	U	ug/L	P401419	
	EPA 200.8 Rev. 5.4	Aluminum	170	I	ug/L	P401419	
		Antimony	0.32	I	ug/L	P401419	
		Arsenic	2.55		ug/L	P401419	
		Beryllium	0.040	U	ug/L	P401419	
		Cadmium	0.080	U	ug/L	P401419	
		Chromium	1.6	U	ug/L	P401419	
		Copper	1.6	U	ug/L	P401948	
		Lead	0.80	U	ug/L	P401419	
		Nickel	2.3	I	ug/L	P401419	
		Selenium	0.80	U	ug/L	P401419	
		Silver	0.040	U	ug/L	P401948	
		Thallium	0.40	U	ug/L	P401419	

Ref. Method and Comment:

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium and magnesium are unavailable 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: P401419

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Manganese	1.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P401419

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
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Lead	0.20	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: P401948

Component	Result	Code	Units
Copper	0.40	U	ug/L
Silver	0.010	U	ug/L

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P401419

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	98.8		P	85 - 115
Iron	101		P	85 - 115
Magnesium	99.0		P	85 - 115
Manganese	98.5		P	85 - 115
Zinc	97.6		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P401419

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	110		P	70 - 130
Antimony	110		P	85 - 115
Arsenic	99.8		P	85 - 115
Beryllium	98.9		P	85 - 115
Cadmium	105		P	85 - 115
Chromium	96.5		P	85 - 115
Lead	104		P	85 - 115
Nickel	94.0		P	85 - 115
Selenium	99.6		P	85 - 115
Thallium	107		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P401948

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Copper	101		P	85 - 115
Silver	101		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P401419

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2264015	Iron	94.7	100	P/P	70 - 130
2264015	Manganese	96.5	98.6	P/P	70 - 130
2264015	Zinc	95.5	97.3	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P401419

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2264015	Aluminum	99.1	105	P/P	70 - 130
2264015	Antimony	104	106	P/P	70 - 130
2264015	Arsenic	107	109	P/P	70 - 130
2264015	Beryllium	101	99.9	P/P	70 - 130
2264015	Cadmium	94.8	95.8	P/P	70 - 130
2264015	Chromium	100	102	P/P	70 - 130
2264015	Lead	110	113	P/P	70 - 130
2264015	Nickel	113	110	P/P	70 - 130
2264015	Selenium	93.6	95.2	P/P	70 - 130
2264015	Thallium	112	115	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P401948

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2262822	Copper	107	110	P/P	70 - 130
2262822	Silver	95.5	96.5	P/P	70 - 130

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P401419

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2264015	Calcium	1.34	Spike	P	0 - 20
2264015	Iron	4.74	Spike	P	0 - 20
2264015	Magnesium	2.68	Spike	P	0 - 20
2264015	Manganese	1.71	Spike	P	0 - 20
2264015	Zinc	1.84	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P401419

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2264015	Aluminum	4.42	Spike	P	0 - 20
2264015	Antimony	1.70	Spike	P	0 - 20
2264015	Arsenic	1.86	Spike	P	0 - 20
2264015	Beryllium	0.755	Spike	P	0 - 20
2264015	Cadmium	1.08	Spike	P	0 - 20
2264015	Chromium	1.84	Spike	P	0 - 20
2264015	Lead	1.97	Spike	P	0 - 20
2264015	Nickel	2.67	Spike	P	0 - 20
2264015	Selenium	1.70	Spike	P	0 - 20
2264015	Thallium	2.37	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P401948

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2262822	Copper	2.60	Spike	P	0 - 20
2262822	Silver	1.12	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: A106890

Included Lab Sample IDs: 2262850, 2262851

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	106	106	P/P	90 - 110
Antimony	107	106	P/P	90 - 110
Arsenic	97.6	97.1	P/P	90 - 110
Arsenic	98.6	97.6	P/P	90 - 110
Beryllium	97.4	97.0	P/P	90 - 110
Cadmium	102	102	P/P	90 - 110
Cadmium	103	102	P/P	90 - 110
Chromium	93.5	91.1	P/P	90 - 110
Chromium	97.0	93.5	P/P	90 - 110
Lead	101	101	P/P	90 - 110
Lead	101	101	P/P	90 - 110
Nickel	95.1	94.9	P/P	90 - 110
Nickel	97.0	95.1	P/P	90 - 110
Selenium	97.4	97.5	P/P	90 - 110
Selenium	97.9	97.4	P/P	90 - 110
Thallium	100	99.8	P/P	90 - 110
Thallium	99.8	99.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A106989

Included Lab Sample IDs: 2262850, 2262851

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	102	106	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A107030

Included Lab Sample IDs: 2262850, 2262851

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	99.8	100	P/P	90 - 110
Iron	99.8	98.4	P/P	90 - 110
Magnesium	99.4	98.5	P/P	90 - 110
Manganese	103	102	P/P	90 - 110
Zinc	102	99.3	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A107062

Included Lab Sample IDs: 2262850

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Manganese	99.3	95.6	P/P	95 - 105
Zinc	99.6	102	P/P	95 - 105

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A107070

Included Lab Sample IDs: 2262850, 2262851

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	104	101	P/P	90 - 110
Silver	95.5	92.5	P/P	90 - 110

Quality Assurance Report

Calibration Verification

* 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	98.8				1.34
	Iron	101	94.7	100		4.74
	Magnesium	99.0				2.68
	Manganese	98.5	96.5	98.6		1.71
	Zinc	97.6	95.5	97.3		1.84
EPA 200.8 Rev. 5.4	Aluminum	110	99.1	105		4.42
	Antimony	110	104	106		1.70
	Arsenic	99.8	107	109		1.86
	Beryllium	98.9	101	99.9		0.755
	Cadmium	105	94.8	95.8		1.08
	Chromium	96.5	100	102		1.84
	Copper	101	107	110		2.60
	Lead	104	110	113		1.97
	Nickel	94.0	113	110		2.67
	Selenium	99.6	93.6	95.2		1.70
	Silver	101	95.5	96.5		1.12
	Thallium	107	112	115		2.37

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	2262850, 2262851
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2262850, 2262851

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	07/16/2021	07/22/2021 15:25	Elliott D. Healy	08/04/2021 19:16	Betina Topolski	2262850
	07/16/2021	07/22/2021 15:25	Elliott D. Healy	08/04/2021 19:28	Betina Topolski	2262850
	07/16/2021	07/22/2021 15:25	Elliott D. Healy	08/04/2021 19:36	Betina Topolski	2262851
	07/16/2021	07/22/2021 15:25	Elliott D. Healy	08/04/2021 19:48	Betina Topolski	2262851
	07/16/2021	07/22/2021 15:25	Elliott D. Healy	08/05/2021 13:07	Betina Topolski	2262850
EPA 200.8 Rev. 5.4	07/16/2021	07/22/2021 15:25	Elliott D. Healy	07/28/2021 14:56	Alexander Thompson	2262850
	07/16/2021	07/22/2021 15:25	Elliott D. Healy	07/28/2021 17:02	Alexander Thompson	2262850
	07/16/2021	07/22/2021 15:25	Elliott D. Healy	07/28/2021 17:11	Alexander Thompson	2262851
	07/16/2021	07/22/2021 15:25	Elliott D. Healy	08/02/2021 23:03	McKinley C Carter	2262850
	07/16/2021	07/22/2021 15:25	Elliott D. Healy	08/02/2021 23:10	McKinley C Carter	2262851
	07/16/2021	08/04/2021 13:20	Elliott D. Healy	08/05/2021 12:50	Alexander Thompson	2262850
	07/16/2021	08/04/2021 13:20	Elliott D. Healy	08/05/2021 12:57	Alexander Thompson	2262851