

Chemical Analysis Report

SE-DIST-2024-06-06-03

Florida DEP Laboratory
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Tallahassee, FL 32399-2400
DOH Accreditation E31780

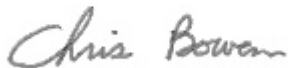
Event Description: **SMP - MAY or JUNE TREND METALS**
Request ID: **RQ-2024-04-22-57**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
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FL Dept. of Environmental Protection
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Certified by: Chris Bowen, Environmental Administrator

Date Certified: 14-JUN-2024 10:47



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: MOWREY CANAL NEAR 152ND AVE

Collection Date/Time: 06/05/2024 12:05

Field ID: G4SE0066

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2492216	EPA 200.7 Rev. 4.4	Calcium	89.4		mg/L	P446213	
		Iron	30	U	ug/L	P446213	
		Magnesium	5.36		mg/L	P446213	
		Potassium	10.7		mg/L	P446213	
		Sodium	21.0		mg/L	P446213	
		Strontium	836		ug/L	P446213	
		Tin	3.0	U	ug/L	P446213	
		Titanium	0.75	U	ug/L	P446213	
		Vanadium	2.0	U	ug/L	P446213	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P446213	
		Aluminum	7.1	I	ug/L	P446213	
		Antimony	0.23		ug/L	P446213	
		Arsenic	1.31		ug/L	P446213	
		Barium	15.7		ug/L	P446213	
		Beryllium	0.010	U	ug/L	P446213	
		Boron	56.4		ug/L	P446213	
		Cadmium	0.020	U	ug/L	P446213	
		Chromium	0.40	U	ug/L	P446213	
		Cobalt	0.107		ug/L	P446213	
		Copper	1.01		ug/L	P446213	
		Lead	0.20	U	ug/L	P446213	
		Manganese	2.65		ug/L	P446213	
		Molybdenum	1.15		ug/L	P446213	
		Nickel	1.4	I	ug/L	P446213	
		Selenium	0.33	I	ug/L	P446213	
		Silver	0.010	U	ug/L	P446213	
		Thallium	0.10	U	ug/L	P446213	
	SM 2340 B-2011	Hardness	245		mg/L	P446213	

Ref. Method and Comment:
EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for manganese are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Sample Location: MOWREY CANAL N NEAR BISCAYNE DR

Collection Date/Time: 06/05/2024 12:20

Field ID: G4SE0194

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2492217	EPA 200.7 Rev. 4.4	Calcium	63.7		mg/L	P446213	
		Iron	30	U	ug/L	P446213	
		Magnesium	4.84		mg/L	P446213	
		Potassium	10.2		mg/L	P446213	
		Sodium	20.9		mg/L	P446213	
		Strontium	798		ug/L	P446213	
		Tin	3.0	U	ug/L	P446213	
		Titanium	0.75	U	ug/L	P446213	
		Vanadium	2.0	U	ug/L	P446213	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P446213	
		Aluminum	5.0	U	ug/L	P446213	
		Antimony	0.16	I	ug/L	P446213	
		Arsenic	0.92		ug/L	P446213	
		Barium	12.7		ug/L	P446213	
		Beryllium	0.010	U	ug/L	P446213	
		Boron	56.8		ug/L	P446213	
		Cadmium	0.020	U	ug/L	P446213	
		Chromium	0.40	U	ug/L	P446213	
		Cobalt	0.065	I	ug/L	P446213	
		Copper	1.09		ug/L	P446213	
		Lead	0.20	U	ug/L	P446213	
		Manganese	0.11	I	ug/L	P446213	
		Molybdenum	1.23		ug/L	P446213	
		Nickel	1.6	I	ug/L	P446213	
		Selenium	0.20	U	ug/L	P446213	
		Silver	0.010	U	ug/L	P446213	
		Thallium	0.10	U	ug/L	P446213	
	SM 2340 B-2011	Hardness	179		mg/L	P446213	

Ref. Method and Comment:
EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for manganese 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: P446213

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: P446213

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: P446213

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	99.7		P	85 - 115
Iron	103		P	85 - 115
Magnesium	105		P	85 - 115
Potassium	96.6		P	85 - 115
Sodium	103		P	85 - 115
Strontium	98.8		P	85 - 115
Tin	97.9		P	85 - 115
Titanium	101		P	85 - 115
Vanadium	105		P	85 - 115
Zinc	99.7		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P446213

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	102		P	85 - 115
Antimony	107		P	85 - 115
Arsenic	103		P	85 - 115
Barium	104		P	85 - 115
Beryllium	104		P	85 - 115
Boron	109		P	85 - 115
Cadmium	100		P	85 - 115
Chromium	103		P	85 - 115
Cobalt	102		P	85 - 115
Copper	102		P	85 - 115
Lead	102		P	85 - 115
Manganese	103		P	85 - 115
Molybdenum	102		P	85 - 115
Nickel	102		P	85 - 115
Selenium	103		P	85 - 115
Silver	114		P	85 - 115
Thallium	94.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P446213

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2489983	Calcium	100		P	80 - 120
2489983	Iron	105	104	P/P	80 - 120
2489983	Magnesium	106	104	P/P	80 - 120
2489983	Potassium	106	104	P/P	80 - 120
2489983	Sodium	104	102	P/P	80 - 120
2489983	Strontium	99.8	97.6	P/P	80 - 120
2489983	Tin	98.3	99.2	P/P	80 - 120
2489983	Titanium	99.8	102	P/P	80 - 120
2489983	Vanadium	107	109	P/P	80 - 120
2489983	Zinc	98.8	99.5	P/P	80 - 120
2492062	Calcium	98.5		P	80 - 120
2492062	Iron	103		P	80 - 120
2492062	Magnesium	104		P	80 - 120
2492062	Potassium	97.1		P	80 - 120
2492062	Sodium	99.3		P	80 - 120
2492062	Strontium	99.7		P	80 - 120
2492062	Tin	97.9		P	80 - 120
2492062	Titanium	102		P	80 - 120
2492062	Vanadium	109		P	80 - 120
2492062	Zinc	99.9		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P446213

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2489983	Aluminum	102	102	P/P	80 - 120
2489983	Antimony	107	109	P/P	80 - 120
2489983	Arsenic	103	103	P/P	80 - 120
2489983	Barium	103	103	P/P	80 - 120
2489983	Beryllium	108	109	P/P	80 - 120
2489983	Boron	108	107	P/P	80 - 120
2489983	Cadmium	99.0	102	P/P	80 - 120
2489983	Chromium	105	104	P/P	80 - 120
2489983	Cobalt	102	101	P/P	80 - 120
2489983	Copper	101	100	P/P	80 - 120
2489983	Lead	102	102	P/P	80 - 120
2489983	Manganese	104	103	P/P	80 - 120
2489983	Molybdenum	103	103	P/P	80 - 120
2489983	Nickel	102	100	P/P	80 - 120
2489983	Selenium	101	102	P/P	80 - 120
2489983	Silver	114	118	P/P	80 - 120
2489983	Thallium	96.1	98.0	P/P	80 - 120
2492062	Aluminum	102		P	80 - 120
2492062	Antimony	107		P	80 - 120
2492062	Arsenic	103		P	80 - 120
2492062	Barium	103		P	80 - 120
2492062	Beryllium	106		P	80 - 120
2492062	Boron	109		P	80 - 120
2492062	Cadmium	101		P	80 - 120
2492062	Chromium	104		P	80 - 120
2492062	Cobalt	103		P	80 - 120
2492062	Copper	99.6		P	80 - 120

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P446213

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2492062	Lead	103		P	80 - 120
2492062	Molybdenum	103		P	80 - 120
2492062	Nickel	104		P	80 - 120
2492062	Selenium	101		P	80 - 120
2492062	Silver	113		P	80 - 120
2492062	Thallium	101		P	80 - 120

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P446213

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2489983	Calcium	0.899	Spike	P	0 - 20
2489983	Iron	0.920	Spike	P	0 - 20
2489983	Magnesium	1.55	Spike	P	0 - 20
2489983	Potassium	1.71	Spike	P	0 - 20
2489983	Sodium	1.10	Spike	P	0 - 20
2489983	Strontium	2.18	Spike	P	0 - 20
2489983	Tin	0.839	Spike	P	0 - 20
2489983	Titanium	2.08	Spike	P	0 - 20
2489983	Vanadium	1.16	Spike	P	0 - 20
2489983	Zinc	0.705	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P446213

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2489983	Aluminum	0.257	Spike	P	0 - 20
2489983	Antimony	1.63	Spike	P	0 - 20
2489983	Arsenic	0.656	Spike	P	0 - 20
2489983	Barium	0.378	Spike	P	0 - 20
2489983	Beryllium	0.367	Spike	P	0 - 20
2489983	Boron	0.304	Spike	P	0 - 20
2489983	Cadmium	3.35	Spike	P	0 - 20
2489983	Chromium	0.756	Spike	P	0 - 20
2489983	Cobalt	1.51	Spike	P	0 - 20
2489983	Copper	0.779	Spike	P	0 - 20
2489983	Lead	0.157	Spike	P	0 - 20
2489983	Manganese	1.21	Spike	P	0 - 20
2489983	Molybdenum	0.755	Spike	P	0 - 20
2489983	Nickel	1.42	Spike	P	0 - 20
2489983	Selenium	0.756	Spike	P	0 - 20
2489983	Silver	3.21	Spike	P	0 - 20
2489983	Thallium	1.93	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A126078

Included Lab Sample IDs: 2492216, 2492217

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	99.6	102	P/P	90 - 110
Iron	99.9	102	P/P	90 - 110
Magnesium	101	103	P/P	90 - 110
Potassium	99.1	101	P/P	90 - 110
Sodium	99.8	101	P/P	90 - 110
Strontium	102	101	P/P	90 - 110
Tin	103	103	P/P	90 - 110
Titanium	101	101	P/P	90 - 110
Vanadium	107	108	P/P	90 - 110
Zinc	104	104	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A126130

Included Lab Sample IDs: 2492216, 2492217

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	100	101	P/P	90 - 110
Antimony	99.4	100	P/P	90 - 110
Arsenic	100	100	P/P	90 - 110
Barium	101	99.8	P/P	90 - 110
Beryllium	102	102	P/P	90 - 110
Boron	103	104	P/P	90 - 110
Cadmium	99.1	99.9	P/P	90 - 110
Chromium	100	99.1	P/P	90 - 110
Cobalt	98.9	99.3	P/P	90 - 110
Copper	99.6	101	P/P	90 - 110
Lead	99.3	99.6	P/P	90 - 110
Manganese	100	100	P/P	90 - 110
Molybdenum	99.4	101	P/P	90 - 110
Nickel	99.1	99.3	P/P	90 - 110
Selenium	99.3	99.8	P/P	90 - 110
Silver	98.3	99.1	P/P	90 - 110
Thallium	92.4	90.9	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	MS
			LCS	SMP	MS		
EPA 200.7 Rev. 4.4	Calcium	99.7	98.5	100			0.899
	Iron	103	105	104	103		0.920
	Magnesium	105	106	104	104		1.55
	Potassium	96.6	106	104	97.1		1.71
	Sodium	103	104	102	99.3		1.10
	Strontium	98.8	99.8	97.6	99.7		2.18
	Tin	97.9	98.3	99.2	97.9		0.839
	Titanium	101	99.8	102	102		2.08
	Vanadium	105	107	109	109		1.16
	Zinc	99.7	98.8	99.5	99.9		0.705
EPA 200.8 Rev. 5.4	Aluminum	102	102	102	102		0.257
	Antimony	107	107	107	109		1.63
	Arsenic	103	103	103	103		0.656
	Barium	104	103	103	103		0.378
	Beryllium	104	106	108	109		0.367
	Boron	109	109	108	107		0.304
	Cadmium	100	101	99.0	102		3.35
	Chromium	103	104	105	104		0.756
	Cobalt	102	103	102	101		1.51
	Copper	102	99.6	101	100		0.779
	Lead	102	103	102	102		0.157
	Manganese	103	104	103			1.21
	Molybdenum	102	103	103	103		0.755
	Nickel	102	104	102	100		1.42
	Selenium	103	101	101	102		0.756
	Silver	114	113	114	118		3.21
	Thallium	94.4	101	96.1	98.0		1.93

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	2492216, 2492217
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2492216, 2492217
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2492216, 2492217

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	06/06/2024	06/07/2024 13:30	George D Taylor	06/10/2024 17:37	Conrad Hartmann	2492216
	06/06/2024	06/07/2024 13:30	George D Taylor	06/10/2024 17:44	Conrad Hartmann	2492217
EPA 200.8 Rev. 5.4	06/06/2024	06/07/2024 13:30	George D Taylor	06/12/2024 21:03	Emily M Philpot	2492216
	06/06/2024	06/07/2024 13:30	George D Taylor	06/12/2024 21:12	Emily M Philpot	2492217
SM 2340 B-2011	06/06/2024			06/10/2024 17:37	Conrad Hartmann	2492216
	06/06/2024			06/10/2024 17:44	Conrad Hartmann	2492217