Chemical Analysis Report

SO-DIST-2024-07-26-02

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

Event Description: **2024 SMP : Caloosa Creeks (Bee Branch)**
Request ID: **RQ-2024-07-22-55**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 314
Fort Myers, FL 33901-3381
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Certified by: Colin Wright, Program Administrator

Date Certified: 02-AUG-2024 10:13

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: BEE BRANCH AT LOBLOLLY BAY RD **Collection Date/Time: 07/25/2024 11:35**

Field ID: G3SD0085 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2505146	EPA 200.7 Rev. 4.4	Calcium	6.82		mg/L	P448584	
		Iron	1.0E+03		ug/L	P448584	
		Magnesium	1.77		mg/L	P448584	
		Potassium	0.93	I	mg/L	P448584	
		Sodium	9.0		mg/L	P448584	
		Strontium	99.1		ug/L	P448584	
		Tin	3.0	U	ug/L	P448584	
		Titanium	2.3	I	ug/L	P448584	
		Vanadium	2.1	I	ug/L	P448584	
		Zinc	6.8	I	ug/L	P448584	
	EPA 200.8 Rev. 5.4	Aluminum	608		ug/L	P448584	
		Antimony	0.068	I	ug/L	P448584	
		Arsenic	1.57		ug/L	P448584	
		Barium	17.0		ug/L	P448584	
		Beryllium	0.082		ug/L	P448584	
		Boron	27.9		ug/L	P448584	
		Cadmium	0.020	U	ug/L	P448584	
		Chromium	1.2	I	ug/L	P448584	
		Cobalt	0.310		ug/L	P448584	
		Copper	1.14		ug/L	P448584	
		Lead	0.64		ug/L	P448584	
		Manganese	19.1		ug/L	P448584	
		Molybdenum	0.15	U	ug/L	P448584	
		Nickel	0.72	I	ug/L	P448584	
		Selenium	0.20	U	ug/L	P448584	
		Silver	0.010	U	ug/L	P448584	
		Thallium	0.10	U	ug/L	P448584	
	SM 2340 B-2011	Hardness	24.3		mg/L	P448584	

Ref. Method and Comment:
EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 07/31/2024.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P448584

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: P448584

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: P448584

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	100		P	85 - 115
Iron	102		P	85 - 115
Magnesium	102		P	85 - 115
Potassium	104		P	85 - 115
Sodium	102		P	85 - 115
Strontium	101		P	85 - 115
Tin	96.0		P	85 - 115
Titanium	97.0		P	85 - 115
Vanadium	99.1		P	85 - 115
Zinc	93.6		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P448584

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	101		P	85 - 115
Antimony	108		P	85 - 115
Arsenic	103		P	85 - 115
Barium	102		P	85 - 115
Beryllium	98.9		P	85 - 115
Boron	110		P	85 - 115
Cadmium	104		P	85 - 115
Chromium	105		P	85 - 115
Cobalt	103		P	85 - 115
Copper	101		P	85 - 115
Lead	104		P	85 - 115
Manganese	104		P	85 - 115
Molybdenum	98.2		P	85 - 115
Nickel	102		P	85 - 115
Selenium	106		P	85 - 115
Silver	105		P	85 - 115
Thallium	102		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P448584

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2504501	Calcium	98.3		P	80 - 120
2504501	Iron	100	101	P/P	80 - 120
2504501	Magnesium	99.0	100	P/P	80 - 120
2504501	Potassium	98.3	102	P/P	80 - 120
2504501	Sodium	101		P	80 - 120
2504501	Strontium	97.0	97.1	P/P	80 - 120
2504501	Tin	94.4	93.6	P/P	80 - 120
2504501	Titanium	97.2	95.9	P/P	80 - 120
2504501	Vanadium	104	101	P/P	80 - 120
2504501	Zinc	94.8	93.2	P/P	80 - 120
2504896	Calcium	96.4		P	80 - 120
2504896	Iron	99.4		P	80 - 120
2504896	Magnesium	98.8		P	80 - 120
2504896	Potassium	99.7		P	80 - 120
2504896	Sodium	100		P	80 - 120
2504896	Strontium	97.4		P	80 - 120
2504896	Tin	93.8		P	80 - 120
2504896	Titanium	92.3		P	80 - 120
2504896	Vanadium	99.6		P	80 - 120
2504896	Zinc	93.4		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P448584

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2504501	Aluminum	95.7	98.5	P/P	80 - 120
2504501	Antimony	107	108	P/P	80 - 120
2504501	Arsenic	103	105	P/P	80 - 120
2504501	Barium	101	101	P/P	80 - 120
2504501	Beryllium	99.5	103	P/P	80 - 120
2504501	Boron	106	110	P/P	80 - 120
2504501	Cadmium	107	106	P/P	80 - 120
2504501	Chromium	100	103	P/P	80 - 120
2504501	Cobalt	99.9	101	P/P	80 - 120
2504501	Copper	96.2	98.1	P/P	80 - 120
2504501	Lead	104	105	P/P	80 - 120
2504501	Manganese	98.8	102	P/P	80 - 120
2504501	Molybdenum	104	104	P/P	80 - 120
2504501	Nickel	96.7	97.9	P/P	80 - 120
2504501	Selenium	107	106	P/P	80 - 120
2504501	Silver	103	103	P/P	80 - 120
2504501	Thallium	106	106	P/P	80 - 120
2504896	Aluminum	95.1		P	80 - 120
2504896	Antimony	106		P	80 - 120
2504896	Arsenic	103		P	80 - 120
2504896	Barium	101		P	80 - 120
2504896	Beryllium	102		P	80 - 120
2504896	Boron	110		P	80 - 120
2504896	Cadmium	104		P	80 - 120
2504896	Chromium	105		P	80 - 120
2504896	Cobalt	103		P	80 - 120
2504896	Copper	103		P	80 - 120

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P448584

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2504896	Lead	105		P	80 - 120
2504896	Manganese	104		P	80 - 120
2504896	Molybdenum	103		P	80 - 120
2504896	Nickel	101		P	80 - 120
2504896	Selenium	105		P	80 - 120
2504896	Silver	106		P	80 - 120
2504896	Thallium	105		P	80 - 120

Quality Assurance Report
Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P448584

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2504501	Calcium	1.25	Spike	P	0 - 20
2504501	Iron	1.02	Spike	P	0 - 20
2504501	Magnesium	0.865	Spike	P	0 - 20
2504501	Potassium	2.07	Spike	P	0 - 20
2504501	Sodium	1.15	Spike	P	0 - 20
2504501	Strontium	0.0976	Spike	P	0 - 20
2504501	Tin	0.877	Spike	P	0 - 20
2504501	Titanium	1.28	Spike	P	0 - 20
2504501	Vanadium	2.80	Spike	P	0 - 20
2504501	Zinc	1.64	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P448584

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2504501	Aluminum	1.90	Spike	P	0 - 20
2504501	Antimony	0.459	Spike	P	0 - 20
2504501	Arsenic	2.18	Spike	P	0 - 20
2504501	Barium	0.352	Spike	P	0 - 20
2504501	Beryllium	3.53	Spike	P	0 - 20
2504501	Boron	2.06	Spike	P	0 - 20
2504501	Cadmium	1.22	Spike	P	0 - 20
2504501	Chromium	2.67	Spike	P	0 - 20
2504501	Cobalt	1.59	Spike	P	0 - 20
2504501	Copper	1.43	Spike	P	0 - 20
2504501	Lead	0.680	Spike	P	0 - 20
2504501	Manganese	2.04	Spike	P	0 - 20
2504501	Molybdenum	0.275	Spike	P	0 - 20
2504501	Nickel	1.22	Spike	P	0 - 20
2504501	Selenium	0.781	Spike	P	0 - 20
2504501	Silver	0.189	Spike	P	0 - 20
2504501	Thallium	0.235	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: A126984
Included Lab Sample IDs: 2505146

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	96.2	99.4	P/P	90 - 110
Iron	96.8	98.5	P/P	90 - 110
Magnesium	98.0	100	P/P	90 - 110
Potassium	104	108	P/P	90 - 110
Sodium	102	106	P/P	90 - 110
Strontium	106	106	P/P	90 - 110
Tin	100	99.7	P/P	90 - 110
Titanium	96.2	97.0	P/P	90 - 110
Vanadium	104	104	P/P	90 - 110
Zinc	98.0	99.1	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A126990
Included Lab Sample IDs: 2505146

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	97.1	95.6	P/P	90 - 110
Antimony	98.6	96.8	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Barium	97.8	96.8	P/P	90 - 110
Beryllium	96.5	95.8	P/P	90 - 110
Boron	98.8	98.6	P/P	90 - 110
Cadmium	103	100	P/P	90 - 110
Chromium	99.3	100	P/P	90 - 110
Cobalt	99.1	98.3	P/P	90 - 110
Copper	99.0	98.4	P/P	90 - 110
Lead	99.4	98.8	P/P	90 - 110
Manganese	99.3	99.4	P/P	90 - 110
Molybdenum	99.0	96.6	P/P	90 - 110
Nickel	98.2	96.8	P/P	90 - 110
Selenium	105	103	P/P	90 - 110
Thallium	98.5	97.1	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A127013
Included Lab Sample IDs: 2505146

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	95.6	95.5	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		
						LCS	SMP	MS
EPA 200.7 Rev. 4.4	Calcium	100	98.3	96.4				1.25
	Iron	102	100	101	99.4			1.02
	Magnesium	102	99.0	100	98.8			0.865
	Potassium	104	98.3	102	99.7			2.07
	Sodium	102	101	100				1.15
	Strontium	101	97.0	97.1	97.4			0.0976
	Tin	96.0	94.4	93.6	93.8			0.877
	Titanium	97.0	97.2	95.9	92.3			1.28
	Vanadium	99.1	104	101	99.6			2.80
	Zinc	93.6	94.8	93.2	93.4			1.64
EPA 200.8 Rev. 5.4	Aluminum	101	95.7	98.5	95.1			1.90
	Antimony	108	107	108	106			0.459
	Arsenic	103	103	105	103			2.18
	Barium	102	101	101	101			0.352
	Beryllium	98.9	99.5	103	102			3.53
	Boron	110	106	110	110			2.06
	Cadmium	104	107	106	104			1.22
	Chromium	105	100	103	105			2.67
	Cobalt	103	99.9	101	103			1.59
	Copper	101	96.2	98.1	103			1.43
	Lead	104	104	105	105			0.680
	Manganese	104	98.8	102	104			2.04
	Molybdenum	98.2	104	104	103			0.275
	Nickel	102	96.7	97.9	101			1.22
	Selenium	106	107	106	105			0.781
	Silver	105	103	103	106			0.189
	Thallium	102	106	106	105			0.235

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	2505146
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2505146
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2505146

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	07/26/2024	07/29/2024 12:00	George D Taylor	07/30/2024 19:16	Chase Roberts	2505146
EPA 200.8 Rev. 5.4	07/26/2024	07/29/2024 12:00	George D Taylor	07/31/2024 02:31	Emily M Philpot	2505146
	07/26/2024	07/29/2024 12:00	George D Taylor	07/31/2024 21:06	Emily M Philpot	2505146
SM 2340 B-2011	07/26/2024			07/30/2024 19:16	Chase Roberts	2505146