Chemical Analysis Report

NE-DIST-2019-06-28-01

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

Event Description: **Alachua County March SMP**
Request ID: **RQ-2019-06-24-11**
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
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Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
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Phone (850) 245-8085

Certified by: Colin Wright, Program Administrator

Date Certified: 18-JUL-2019 13:49

NON-CONFORMANCE REPORT INCLUDED

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: POSSUM CREEK - S OF NW 16TH AVE **Collection Date/Time: 06/27/2019 14:30**

Field ID: G1NE0900 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2099392	EPA 200.7 Rev. 4.4	Barium	8.3		ug/L	P366628	
		Calcium	31.6		mg/L	P366628	
		Iron	400		ug/L	P366628	
		Magnesium	6.43		mg/L	P366628	
		Potassium	0.96	I	mg/L	P366628	
		Sodium	8.6		mg/L	P366628	
		Zinc	5.0	U	ug/L	P366628	
	EPA 200.8 Rev. 5.4	Aluminum	369		ug/L	P366628	
		Antimony	0.14	I	ug/L	P366628	
		Arsenic	1.13		ug/L	P366628	
		Boron**	25.0		ug/L	P366628	
		Cadmium	0.025	I	ug/L	P366628	
		Chromium	1.1	I	ug/L	P366628	
		Copper	0.58	I	ug/L	P366628	
		Lead	0.52		ug/L	P366893	
		Nickel	0.70	I	ug/L	P366893	
		Selenium	0.28	I	ug/L	P366628	
		Silver	0.010	U	ug/L	P366628	
		Thallium	0.10	U	ug/L	P366628	

Sample Location: HOGTOWN CREEK - RING PARK, N OF NW 16TH AVE (BETWEEN NW 18TH)

Collection Date/Time: 06/27/2019 15:00

Field ID: G1NE0912

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2099393	EPA 200.7 Rev. 4.4	Barium	11.1		ug/L	P366628	
		Calcium	36.1		mg/L	P366628	
		Iron	440		ug/L	P366628	
		Magnesium	7.06		mg/L	P366628	
		Potassium	1.1	I	mg/L	P366628	
		Sodium	7.9		mg/L	P366628	
		Zinc	5.0	U	ug/L	P366628	
	EPA 200.8 Rev. 5.4	Aluminum	108		ug/L	P366628	
		Antimony	0.14	I	ug/L	P366628	
		Arsenic	1.82		ug/L	P366628	
		Boron**	28.7		ug/L	P366628	
		Cadmium	0.023	I	ug/L	P366628	
		Chromium	0.69	I	ug/L	P366628	
		Copper	0.73	I	ug/L	P366628	
		Lead	0.68		ug/L	P366893	
		Nickel	0.66	I	ug/L	P366893	
		Selenium	0.50	I	ug/L	P366628	
		Silver	0.010	U	ug/L	P366628	
		Thallium	0.10	U	ug/L	P366628	

Non-Conformance Report

NCR ID: 7757

Event(s)	Job(s)	Sample(s)	Test(s)
NE-DIST-2019-06-28-01	TLH-2019-06-28-50	2099392	

NCR Type: SHIPPING/RECEIVING **NCR Category: Preservation Not Intact**

Observation: Sample not preserved to pH < 2.

Resolution: Sample preserved in the laboratory with nitric acid 06/28/2019 at 11:45.
HNO3 Lot# NA9099030 | Expiration Date: 04/09/2020
Data will be qualified as appropriate.

Authorized by/Date: Joshua Ayres 7/2/2019

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P366628

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
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	36		ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P366628

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	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
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P366893

Component	Result	Code	Units
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P366628

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	98.9		P	85 - 115
Calcium	102		P	85 - 115
Iron	103		P	85 - 115
Magnesium	102		P	85 - 115
Potassium	101		P	85 - 115
Sodium	101		P	85 - 115
Zinc	94.9		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P366628

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	102		P	85 - 115
Antimony	100		P	85 - 115
Arsenic	104		P	85 - 115
Boron	105		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	105		P	85 - 115
Copper	99.5		P	85 - 115
Selenium	104		P	85 - 115
Silver	98.9		P	85 - 115
Thallium	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P366893

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Lead	103		P	85 - 115
Nickel	104		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P366628

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099614	Barium	98.8		P	80 - 120
2099614	Calcium	102		P	80 - 120
2099614	Iron	101		P	80 - 120
2099614	Magnesium	102		P	80 - 120
2099614	Potassium	100		P	80 - 120
2099614	Sodium	101		P	80 - 120
2099614	Zinc	96.3		P	80 - 120
2100039	Barium	99.1	99.3	P/P	80 - 120
2100039	Calcium	102		P	80 - 120
2100039	Iron	105	104	P/P	80 - 120
2100039	Magnesium	102		P	80 - 120
2100039	Potassium	101	100	P/P	80 - 120
2100039	Sodium	103		P	80 - 120
2100039	Zinc	94.0	94.4	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P366628

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099614	Aluminum	99.9		P	80 - 120
2099614	Antimony	98.0		P	80 - 120
2099614	Arsenic	102		P	80 - 120
2099614	Boron	102		P	80 - 120
2099614	Cadmium	99.9		P	80 - 120
2099614	Chromium	104		P	80 - 120
2099614	Copper	99.4		P	80 - 120
2099614	Selenium	101		P	80 - 120
2099614	Silver	97.0		P	80 - 120
2099614	Thallium	102		P	80 - 120
2100039	Aluminum	98.4	100	P/P	80 - 120
2100039	Antimony	101	102	P/P	80 - 120
2100039	Arsenic	104	106	P/P	80 - 120
2100039	Boron	102	101	P/P	80 - 120
2100039	Cadmium	103	105	P/P	80 - 120
2100039	Chromium	107	107	P/P	80 - 120
2100039	Copper	99.4	101	P/P	80 - 120
2100039	Selenium	105	106	P/P	80 - 120
2100039	Silver	97.4	97.0	P/P	80 - 120
2100039	Thallium	101	104	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P366893

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099538	Lead	107		P	80 - 120
2099538	Nickel	99.6		P	80 - 120
2100834	Lead	96.6	96.3	P/P	80 - 120
2100834	Nickel	101	102	P/P	80 - 120

Quality Assurance Report
Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P366628

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100039	Barium	0.230	Spike	P	0 - 20
2100039	Calcium	0.134	Spike	P	0 - 20
2100039	Iron	0.945	Spike	P	0 - 20
2100039	Magnesium	0.196	Spike	P	0 - 20
2100039	Potassium	0.482	Spike	P	0 - 20
2100039	Sodium	0.540	Spike	P	0 - 20
2100039	Zinc	0.470	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P366628

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100039	Aluminum	1.81	Spike	P	0 - 20
2100039	Antimony	1.06	Spike	P	0 - 20
2100039	Arsenic	1.64	Spike	P	0 - 20
2100039	Boron	0.595	Spike	P	0 - 20
2100039	Cadmium	1.61	Spike	P	0 - 20
2100039	Chromium	0.0356	Spike	P	0 - 20
2100039	Copper	1.42	Spike	P	0 - 20
2100039	Selenium	0.928	Spike	P	0 - 20
2100039	Silver	0.446	Spike	P	0 - 20
2100039	Thallium	3.35	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P366893

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100834	Lead	0.331	Spike	P	0 - 20
2100834	Nickel	0.609	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A92583
Included Lab Sample IDs: 2099392, 2099393

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	98.3	99.7	P/P	95 - 105
Calcium	103	102	P/P	95 - 105
Iron	103	102	P/P	95 - 105
Magnesium	102	101	P/P	95 - 105
Potassium	102	102	P/P	95 - 105
Sodium	100	101	P/P	95 - 105
Zinc	98.2	98.9	P/P	95 - 105

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A92586
Included Lab Sample IDs: 2099392, 2099393

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.7	102	P/P	90 - 110
Antimony	97.6	98.1	P/P	90 - 110
Arsenic	99.8	101	P/P	90 - 110
Boron	101	102	P/P	90 - 110
Cadmium	99.3	98.6	P/P	90 - 110
Chromium	102	101	P/P	90 - 110
Copper	98.5	99.2	P/P	90 - 110
Selenium	102	102	P/P	90 - 110
Silver	94.4	94.5	P/P	90 - 110
Thallium	93.6	94.4	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A92719
Included Lab Sample IDs: 2099392, 2099393

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	96.6	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A92748
Included Lab Sample IDs: 2099392, 2099393

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Nickel	100	98.8	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	Barium	98.9	98.8	99.1	99.3			0.230
	Calcium	102	102	102				0.134
	Iron	103	101	105	104			0.945
	Magnesium	102	102	102				0.196
	Potassium	101	100	101	100			0.482
	Sodium	101	101	103				0.540
	Zinc	94.9	96.3	94.0	94.4			0.470
EPA 200.8 Rev. 5.4	Aluminum	102	99.9	98.4	100			1.81
	Antimony	100	98.0	101	102			1.06
	Arsenic	104	102	104	106			1.64
	Boron	105	102	102	101			0.595
	Cadmium	101	99.9	103	105			1.61
	Chromium	105	104	107	107			0.0356
	Copper	99.5	99.4	99.4	101			1.42
	Lead	103	107	96.6	96.3			0.331
	Nickel	104	99.6	101	102			0.609
	Selenium	104	101	105	106			0.928
	Silver	98.9	97.0	97.4	97.0			0.446
	Thallium	103	102	101	104			3.35

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2099392, 2099393
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2099392, 2099393

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	06/28/2019	07/02/2019 16:55	Elliott D. Healy	07/05/2019 12:23	Betina Topolski	2099392
	06/28/2019	07/02/2019 16:55	Elliott D. Healy	07/05/2019 12:30	Betina Topolski	2099393
EPA 200.8 Rev. 5.4	06/28/2019	07/02/2019 16:55	Elliott D. Healy	07/03/2019 22:46	Robert K Palmer	2099392
	06/28/2019	07/02/2019 16:55	Elliott D. Healy	07/03/2019 22:56	Robert K Palmer	2099393
	06/28/2019	07/09/2019 15:00	Elliott D. Healy	07/11/2019 18:38	Robert K Palmer	2099392
	06/28/2019	07/09/2019 15:00	Elliott D. Healy	07/11/2019 18:45	Robert K Palmer	2099393
	06/28/2019	07/09/2019 15:00	Elliott D. Healy	07/12/2019 14:49	Robert K Palmer	2099392
	06/28/2019	07/09/2019 15:00	Elliott D. Healy	07/12/2019 14:56	Robert K Palmer	2099393