Chemical Analysis Report

CEN-DIST-2018-05-01-02

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

Event Description: **Long Branch - BMAP**
Request ID: **RQ-2018-04-23-51**
Customer: **CEN-DIST**
Project ID: **BMAP**

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Certified by: Colin Wright, Program Administrator

Date Certified: 17-MAY-2018 12:55

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 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: LONG BRANCH @ 0.7mi DS OF CR 13 (3030) **Collection Date/Time: 04/30/2018 11:27**

Field ID: G2CE0036 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1988939	EPA 200.7 Rev. 4.4	Calcium	41.7		mg/L	P344563	
		Iron	400		ug/L	P344563	
		Magnesium	2.85		mg/L	P344563	
		Potassium	3.2		mg/L	P344563	
		Sodium	22.1		mg/L	P344563	
		Zinc	5.0	U	ug/L	P344563	
	EPA 200.8 Rev. 5.4	Arsenic	0.87		ug/L	P344563	
		Cadmium	0.020	U	ug/L	P344563	
		Chromium	0.58	I	ug/L	P344563	
		Copper	0.59	I	ug/L	P344563	
		Lead	0.20		ug/L	P344563	
		Nickel	0.32	I	ug/L	P344563	
		Silver	0.010	U	ug/L	P344563	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P344563

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
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P344563

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	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: P344563

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	101		P	85 - 115
Iron	107		P	85 - 115
Magnesium	103		P	85 - 115

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P344563

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Potassium	102		P	85 - 115
Sodium	97.7		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P344563

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	104		P	85 - 115
Cadmium	105		P	85 - 115
Chromium	101		P	85 - 115
Copper	99.4		P	85 - 115
Lead	101		P	85 - 115
Nickel	103		P	85 - 115
Silver	105		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P344563

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1988828	Calcium	103		P	80 - 120
1988828	Iron	105		P	80 - 120
1988828	Magnesium	105		P	80 - 120
1988828	Potassium	98.1		P	80 - 120
1988828	Sodium	99.0		P	80 - 120
1988828	Zinc	100		P	80 - 120
1989433	Calcium	99.0		P	80 - 120
1989433	Iron	103	104	P/P	80 - 120
1989433	Magnesium	101		P	80 - 120
1989433	Potassium	95.9	97.3	P/P	80 - 120
1989433	Sodium	95.0		P	80 - 120
1989433	Zinc	98.0	98.9	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P344563

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1988828	Arsenic	106		P	80 - 120
1988828	Cadmium	104		P	80 - 120
1988828	Chromium	102		P	80 - 120
1988828	Copper	99.0		P	80 - 120
1988828	Lead	102		P	80 - 120
1988828	Nickel	103		P	80 - 120
1988828	Silver	104		P	80 - 120
1989433	Arsenic	103	104	P/P	80 - 120
1989433	Cadmium	104	104	P/P	80 - 120
1989433	Chromium	99.2	99.7	P/P	80 - 120
1989433	Copper	95.3	95.9	P/P	80 - 120

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P344563

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1989433	Lead	99.7	100	P/P	80 - 120
1989433	Nickel	98.3	99.6	P/P	80 - 120
1989433	Silver	105	105	P/P	80 - 120

Quality Assurance Report
Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P344563

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989433	Calcium	1.06	Spike	P	0 - 20
1989433	Iron	0.840	Spike	P	0 - 20
1989433	Magnesium	1.09	Spike	P	0 - 20
1989433	Potassium	0.992	Spike	P	0 - 20
1989433	Sodium	0.855	Spike	P	0 - 20
1989433	Zinc	0.883	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P344563

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989433	Arsenic	0.720	Spike	P	0 - 20
1989433	Cadmium	0.157	Spike	P	0 - 20
1989433	Chromium	0.551	Spike	P	0 - 20
1989433	Copper	0.629	Spike	P	0 - 20
1989433	Lead	0.519	Spike	P	0 - 20
1989433	Nickel	1.32	Spike	P	0 - 20
1989433	Silver	0.386	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 200.8 Rev. 5.4
Run ID: A83681
Included Lab Sample IDs: 1988939

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	103	103	P/P	90 - 110
Cadmium	104	104	P/P	90 - 110
Chromium	103	102	P/P	90 - 110
Copper	101	100	P/P	90 - 110
Lead	102	101	P/P	90 - 110
Nickel	101	101	P/P	90 - 110
Silver	103	103	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A83715
Included Lab Sample IDs: 1988939

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	100	99.4	P/P	90 - 110
Iron	102	101	P/P	90 - 110
Magnesium	104	102	P/P	90 - 110
Potassium	99.6	98.5	P/P	90 - 110
Sodium	98.5	97.1	P/P	90 - 110
Zinc	99.9	99.7	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	101	103	99.0				1.06
	Iron	107	105	103	104			0.840
	Magnesium	103	105	101				1.09
	Potassium	102	98.1	95.9	97.3			0.992
	Sodium	97.7	99.0	95.0				0.855
	Zinc	102	100	98.0	98.9			0.883
EPA 200.8 Rev. 5.4	Arsenic	104	106	103	104			0.720
	Cadmium	105	104	104	104			0.157
	Chromium	101	102	99.2	99.7			0.551
	Copper	99.4	99.0	95.3	95.9			0.629
	Lead	101	102	99.7	100			0.519
	Nickel	103	103	98.3	99.6			1.32
	Silver	105	104	105	105			0.386

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	1988939
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1988939

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	05/01/2018	05/03/2018 14:30	Elliott D. Healy	05/07/2018 13:33	Betina Topolski	1988939
EPA 200.8 Rev. 5.4	05/01/2018	05/03/2018 14:30	Elliott D. Healy	05/04/2018 19:28	Nadine Brooks	1988939