EBERLINE SERVICES

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EBS-OR-42722

September 27, 2017

Smita Sumbaly
Weston Solutions, Inc.
1090 King Georges Post Road, Suite 201
Edison, NJ 08837

CASE NARRATIVE
Work Order # 17-08055-OR

SAMPLE RECEIPT

This work order contains five solid samples received 08/11/2017. These samples were analyzed for Isotopic Uranium, Isotopic Thorium and by Gamma Spectroscopy.

CLIENT ID	LAB ID
NFB-SLAG-01-170809	17-08055-04
NFB-SLAG-02-170809	17-08055-05
NFB-SLAG-03-170809	17-08055-06
NFB-SLAG-04-170809	17-08055-07
NFB-SLAG-05-170809	17-08055-08

ANALYTICAL METHODS

Isotopic Uranium was analyzed using EPA Method 908.0 Modified. Isotopic Thorium was analyzed using EPA Method 907.0 Modified. Gamma Spectroscopy was performed using EPA Method 901.1 Modified.

ANALYTICAL RESULTS

Combined Standard Uncertainty is reported at 2-sigma value.

Minimum Detectable Activity (MDA) values for data represented in this report are sample-specific. MDA measurements are determined based on factors and conditions including instrument settings, aliquot size and matrix type.

SPECIAL CIRCUMSTANCES

Results are reported on a "dry weight" basis.

ANALYTICAL RESULTS CONTINUED

ISOTOPIC URANIUM

Samples were prepared by removing representative aliquots followed by mixed acid digestions and dilutions as appropriate. Aliquots were taken from dilutions and Uranium was selectively extracted by ion exchange. Uranium was eluted, micro-precipitated and mounted on micro-porous filter media. Sample activities were then determined by alpha spectroscopy using energy specific regions of interest for Uranium-234, Uranium-235 and Uranium-238. Chemical recovery was determined by the use of a Uranium-232 tracer. Activity of the Uranium-232 tracer was determined by alpha spectroscopy using an energy specific region of interest.

Samples demonstrated acceptable results for all Uranium analyses. Chemical recovery was acceptable for all samples. The Uranium-233/234, Uranium-235/236 and Uranium-238 method blank demonstrated acceptable results. Results for the Uranium-233/234, Uranium-235/236 and Uranium-238 duplicate demonstrated an acceptable relative percent difference and normalized difference. Results for the Uranium-234 and Uranium-238 laboratory control sample demonstrated an acceptable percent recovery.

ISOTOPIC THORIUM

Samples were prepared by removing representative aliquots followed by mixed acid digestions and dilutions as appropriate. Aliquots were taken from dilutions and Thorium was selectively extracted by ion exchange. Thorium was eluted, micro-precipitated and mounted on micro-porous filter media. Sample activities were then determined by alpha spectroscopy using energy specific regions of interest for Thorium-228, Thorium-230 and Thorium-232. Chemical recovery was determined by the use of a Thorium-229 tracer. Activity of the Thorium-229 tracer was determined by alpha spectroscopy using an energy specific region of interest.

Samples demonstrated acceptable results for all Thorium analyses. Chemical recovery was acceptable for all samples. The Thorium-228, Thorium-230 and Thorium-232 method blank demonstrated acceptable results. Results for the Thorium-228 and Thorium-232 duplicate demonstrated a high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Thorium-230 duplicate demonstrated an acceptable relative percent difference and normalized difference. Results for the Thorium-228, Thorium-230 and Thorium-232 laboratory control sample demonstrated an acceptable percent recovery.

GAMMA SPECTROSCOPY

Samples were dried, homogenized and placed into appropriate gamma spectroscopy geometry containers. Samples were then sealed for 21 days to allow for ingrowth of Radon-222 and progeny. Samples were counted on High Purity Germanium (HPGe) gamma ray detectors. Energy lines from Lead-214 and Bismuth-214 were analyzed for determinations of Radium-226 activity.

Samples demonstrated acceptable results for all gamma emitting radionuclides as reported. Cesium-137 results for laboratory fractions -03 and -04 (Client ID: NFB-SLAG-01-170809 DUP & DO) demonstrated slightly high method detection limits. The method blank demonstrated acceptable results for all gamma emitting radionuclides as reported. Results for the Potassium-40, Lead-212 and Radium-228 replicate demonstrated an acceptable relative percent difference and normalized difference. Results for the Cobalt-60 and Cesium-137 laboratory control sample demonstrated an acceptable percent recovery.

CERTIFICATION OF ACCURACY

I certify that this data report is in compliance with the terms and conditions of the Purchase Order, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the cognizant project manager or his/her designee to be accurate as verified by the following signature.

M.R. McDougall
Laboratory Manager

Date: 9/27/2017

Eberline Analytical wants and encourages your feedback regarding our performance providing radioanalytical services. Please visit http://www.eberlineservices.com/client.htm to provide us with feedback on our services.

Eberline Analytical
Final Report of Analysis

Report To:

Smita Sumbaly
Weston Solutions, Inc.
1090 King Georges Post Rd Suite 201
Edison, NJ 08837

Work Order Details:

SDG:	**17-08055**
Purchase Order:	0095021
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
		21-day INGROWTH											
17-08055-01	LCS	KNOWN	08/11/17 00:00	8/11/2017	9/1/2017	17-08055	Cobalt-60	EPA 901.1 Modified	1.35E+02	5.27E+00			pCi/g
17-08055-01	LCS	KNOWN	08/11/17 00:00	8/11/2017	9/1/2017	17-08055	Cesium-137	EPA 901.1 Modified	8.44E+01	3.38E+00			pCi/g
17-08055-01	LCS	SPIKE	08/11/17 00:00	8/11/2017	9/1/2017	17-08055	Cobalt-60	EPA 901.1 Modified	1.26E+02	7.54E+00	9.93E+00	1.02E+00	pCi/g
17-08055-01	LCS	SPIKE	08/11/17 00:00	8/11/2017	9/1/2017	17-08055	Cesium-137	EPA 901.1 Modified	8.24E+01	7.47E+00	8.59E+00	1.30E+00	pCi/g
17-08055-02	MBL	BLANK	08/11/17 00:00	8/11/2017	9/1/2017	17-08055	Actinium-228	EPA 901.1 Modified	-5.62E-02	1.54E-01	1.54E-01	1.80E-01	pCi/g
17-08055-02	MBL	BLANK	08/11/17 00:00	8/11/2017	9/1/2017	17-08055	Bismuth-212	EPA 901.1 Modified	1.83E-01	2.43E-01	2.43E-01	4.38E-01	pCi/g
17-08055-02	MBL	BLANK	08/11/17 00:00	8/11/2017	9/1/2017	17-08055	Cesium-137	EPA 901.1 Modified	-4.52E-02	4.34E-02	4.34E-02	4.65E-02	pCi/g
17-08055-02	MBL	BLANK	08/11/17 00:00	8/11/2017	9/1/2017	17-08055	Potassium-40	EPA 901.1 Modified	1.06E-01	3.28E-01	3.28E-01	6.28E-01	pCi/g
17-08055-02	MBL	BLANK	08/11/17 00:00	8/11/2017	9/1/2017	17-08055	Protactinium-234m	EPA 901.1 Modified	-2.32E+00	4.88E+00	4.88E+00	6.10E+00	pCi/g
17-08055-02	MBL	BLANK	08/11/17 00:00	8/11/2017	9/1/2017	17-08055	Lead-212	EPA 901.1 Modified	1.99E-02	3.73E-02	3.73E-02	6.08E-02	pCi/g
17-08055-02	MBL	BLANK	08/11/17 00:00	8/11/2017	9/1/2017	17-08055	Radium-224	EPA 901.1 Modified	3.72E-01	4.13E-01	4.13E-01	7.09E-01	pCi/g
17-08055-02	MBL	BLANK	08/11/17 00:00	8/11/2017	9/1/2017	17-08055	Radium-226	EPA 901.1 Modified	2.06E-02	6.39E-02	6.39E-02	1.06E-01	pCi/g
17-08055-02	MBL	BLANK	08/11/17 00:00	8/11/2017	9/1/2017	17-08055	Radium-228	EPA 901.1 Modified	-5.62E-02	1.54E-01	1.54E-01	1.80E-01	pCi/g
17-08055-02	MBL	BLANK	08/11/17 00:00	8/11/2017	9/1/2017	17-08055	Thorium-234	EPA 901.1 Modified	4.68E-01	3.93E-01	3.94E-01	6.55E-01	pCi/g
17-08055-02	MBL	BLANK	08/11/17 00:00	8/11/2017	9/1/2017	17-08055	Thallium-208	EPA 901.1 Modified	4.90E-02	8.62E-02	8.63E-02	1.52E-01	pCi/g
17-08055-03	DUP	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Actinium-228	EPA 901.1 Modified	7.98E+02	3.82E+01	5.60E+01	7.98E+00	pCi/g
17-08055-03	DUP	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Bismuth-212	EPA 901.1 Modified	4.80E+02	3.29E+01	4.11E+01	1.18E+01	pCi/g
17-08055-03	DUP	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Cesium-137	EPA 901.1 Modified	-4.72E-01	5.03E-01	5.04E-01	1.11E+00	pCi/g
17-08055-03	DUP	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Potassium-40	EPA 901.1 Modified	5.66E+01	6.96E+00	7.54E+00	8.09E+00	pCi/g
17-08055-03	DUP	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Protactinium-234m	EPA 901.1 Modified	3.24E+02	5.45E+01	5.70E+01	1.27E+02	pCi/g
17-08055-03	DUP	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Lead-212	EPA 901.1 Modified	5.90E+02	4.85E+01	5.72E+01	5.17E+00	pCi/g
17-08055-03	DUP	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Radium-224	EPA 901.1 Modified	1.30E+03	1.07E+02	1.27E+02	5.91E+01	pCi/g
17-08055-03	DUP	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Radium-226	EPA 901.1 Modified	1.85E+02	9.10E+00	1.31E+01	3.99E+00	pCi/g
17-08055-03	DUP	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Radium-228	EPA 901.1 Modified	7.98E+02	3.82E+01	5.60E+01	7.98E+00	pCi/g
17-08055-03	DUP	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Thorium-234	EPA 901.1 Modified	1.81E+02	2.16E+01	2.35E+01	2.60E+01	pCi/g
17-08055-03	DUP	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Thallium-208	EPA 901.1 Modified	7.52E+02	4.18E+01	5.69E+01	4.14E+00	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (2-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

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Eberline Analytical
Final Report of Analysis

Report To:

Smita Sumbaly
Weston Solutions, Inc.
1090 King Georges Post Rd Suite 201
Edison, NJ 08837

Work Order Details:

SDG: **17-08055**
Purchase Order: 0095021
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
17-08055-04	DO	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Actinium-228	EPA 901.1 Modified	7.94E+02	3.79E+01	5.57E+01	8.66E+00	pCi/g
17-08055-04	DO	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Bismuth-212	EPA 901.1 Modified	4.94E+02	3.37E+01	4.22E+01	1.96E+01	pCi/g
17-08055-04	DO	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Cesium-137	EPA 901.1 Modified	-1.07E-01	3.13E-01	3.14E-01	1.11E+00	pCi/g
17-08055-04	DO	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Potassium-40	EPA 901.1 Modified	5.64E+01	6.91E+00	7.50E+00	8.03E+00	pCi/g
17-08055-04	DO	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Protactinium-234m	EPA 901.1 Modified	2.80E+02	5.83E+01	6.00E+01	1.30E+02	pCi/g
17-08055-04	DO	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Lead-212	EPA 901.1 Modified	5.59E+02	4.97E+01	5.74E+01	5.19E+00	pCi/g
17-08055-04	DO	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Radium-224	EPA 901.1 Modified	1.34E+03	1.11E+02	1.30E+02	5.94E+01	pCi/g
17-08055-04	DO	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Radium-226	EPA 901.1 Modified	1.87E+02	9.06E+00	1.32E+01	4.00E+00	pCi/g
17-08055-04	DO	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Radium-228	EPA 901.1 Modified	7.94E+02	3.79E+01	5.57E+01	8.66E+00	pCi/g
17-08055-04	DO	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Thorium-234	EPA 901.1 Modified	1.46E+02	1.85E+01	1.99E+01	2.34E+01	pCi/g
17-08055-04	DO	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Thallium-208	EPA 901.1 Modified	7.54E+02	4.19E+01	5.70E+01	4.15E+00	pCi/g
17-08055-05	TRG	NFB-SLAG-02-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Actinium-228	EPA 901.1 Modified	8.33E+01	3.99E+00	5.85E+00	2.48E+00	pCi/g
17-08055-05	TRG	NFB-SLAG-02-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Bismuth-212	EPA 901.1 Modified	5.03E+01	4.80E+00	5.45E+00	4.41E+00	pCi/g
17-08055-05	TRG	NFB-SLAG-02-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Cesium-137	EPA 901.1 Modified	-4.89E-02	1.93E-01	1.93E-01	4.28E-01	pCi/g
17-08055-05	TRG	NFB-SLAG-02-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Potassium-40	EPA 901.1 Modified	7.32E+00	2.55E+00	2.57E+00	3.75E+00	pCi/g
17-08055-05	TRG	NFB-SLAG-02-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Protactinium-234m	EPA 901.1 Modified	9.99E+01	3.14E+01	3.18E+01	4.88E+01	pCi/g
17-08055-05	TRG	NFB-SLAG-02-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Lead-212	EPA 901.1 Modified	7.69E+01	6.16E+00	7.31E+00	1.29E+00	pCi/g
17-08055-05	TRG	NFB-SLAG-02-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Radium-224	EPA 901.1 Modified	5.47E+02	4.43E+01	5.25E+01	2.03E+01	pCi/g
17-08055-05	TRG	NFB-SLAG-02-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Radium-226	EPA 901.1 Modified	4.68E+01	2.47E+00	3.44E+00	1.16E+00	pCi/g
17-08055-05	TRG	NFB-SLAG-02-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Radium-228	EPA 901.1 Modified	8.33E+01	3.99E+00	5.85E+00	2.48E+00	pCi/g
17-08055-05	TRG	NFB-SLAG-02-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Thorium-234	EPA 901.1 Modified	5.21E+01	8.43E+00	8.84E+00	1.23E+01	pCi/g
17-08055-05	TRG	NFB-SLAG-02-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Thallium-208	EPA 901.1 Modified	7.01E+01	4.01E+00	5.39E+00	1.42E+00	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (2-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:

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Work Order Details:

SDG:	**17-08055**
Purchase Order:	0095021
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
17-08055-06	TRG	NFB-SLAG-03-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Actinium-228	EPA 901.1 Modified	2.93E+02	1.38E+01	2.04E+01	6.91E+00	pCi/g
17-08055-06	TRG	NFB-SLAG-03-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Bismuth-212	EPA 901.1 Modified	1.79E+02	1.40E+01	1.67E+01	1.03E+01	pCi/g
17-08055-06	TRG	NFB-SLAG-03-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Cesium-137	EPA 901.1 Modified	3.96E-02	4.06E-01	4.06E-01	9.04E-01	pCi/g
17-08055-06	TRG	NFB-SLAG-03-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Potassium-40	EPA 901.1 Modified	2.29E+01	5.60E+00	5.72E+00	7.68E+00	pCi/g
17-08055-06	TRG	NFB-SLAG-03-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Protactinium-234m	EPA 901.1 Modified	1.42E+02	5.11E+01	5.16E+01	8.18E+01	pCi/g
17-08055-06	TRG	NFB-SLAG-03-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Lead-212	EPA 901.1 Modified	2.01E+02	1.93E+01	2.19E+01	3.69E+00	pCi/g
17-08055-06	TRG	NFB-SLAG-03-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Radium-224	EPA 901.1 Modified	7.02E+02	6.12E+01	7.10E+01	4.26E+01	pCi/g
17-08055-06	TRG	NFB-SLAG-03-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Radium-226	EPA 901.1 Modified	1.21E+02	6.13E+00	8.74E+00	2.32E+00	pCi/g
17-08055-06	TRG	NFB-SLAG-03-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Radium-228	EPA 901.1 Modified	2.93E+02	1.38E+01	2.04E+01	6.91E+00	pCi/g
17-08055-06	TRG	NFB-SLAG-03-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Thorium-234	EPA 901.1 Modified	8.71E+01	1.27E+01	1.35E+01	1.44E+01	pCi/g
17-08055-06	TRG	NFB-SLAG-03-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Thallium-208	EPA 901.1 Modified	2.72E+02	1.50E+01	2.05E+01	2.66E+00	pCi/g
17-08055-07	TRG	NFB-SLAG-04-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Actinium-228	EPA 901.1 Modified	1.76E+00	5.31E-01	5.39E-01	1.15E+00	pCi/g
17-08055-07	TRG	NFB-SLAG-04-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Bismuth-212	EPA 901.1 Modified	1.77E+00	1.13E+00	1.13E+00	1.80E+00	pCi/g
17-08055-07	TRG	NFB-SLAG-04-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Cesium-137	EPA 901.1 Modified	-1.50E-02	6.63E-02	6.63E-02	2.33E-01	pCi/g
17-08055-07	TRG	NFB-SLAG-04-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Potassium-40	EPA 901.1 Modified	1.13E+01	2.40E+00	2.47E+00	2.96E+00	pCi/g
17-08055-07	TRG	NFB-SLAG-04-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Protactinium-234m	EPA 901.1 Modified	3.60E+01	2.13E+01	2.14E+01	3.43E+01	pCi/g
17-08055-07	TRG	NFB-SLAG-04-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Lead-212	EPA 901.1 Modified	1.76E+00	3.30E-01	3.42E-01	7.77E-01	pCi/g
17-08055-07	TRG	NFB-SLAG-04-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Radium-224	EPA 901.1 Modified	4.42E+01	4.90E+00	5.40E+00	5.95E+00	pCi/g
17-08055-07	TRG	NFB-SLAG-04-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Radium-226	EPA 901.1 Modified	1.53E+01	1.12E+00	1.37E+00	6.93E-01	pCi/g
17-08055-07	TRG	NFB-SLAG-04-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Radium-228	EPA 901.1 Modified	1.76E+00	5.31E-01	5.39E-01	1.15E+00	pCi/g
17-08055-07	TRG	NFB-SLAG-04-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Thorium-234	EPA 901.1 Modified	9.07E+00	2.92E+00	2.96E+00	4.66E+00	pCi/g
17-08055-07	TRG	NFB-SLAG-04-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Thallium-208	EPA 901.1 Modified	1.60E+00	3.50E-01	3.60E-01	6.58E-02	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (2-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:

Smita Sumbaly
Weston Solutions, Inc.
1090 King Georges Post Rd Suite 201
Edison, NJ 08837

Work Order Details:

SDG:	**17-08055**
Purchase Order:	0095021
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
17-08055-08	TRG	NFB-SLAG-05-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Actinium-228	EPA 901.1 Modified	2.14E+02	9.86E+00	1.47E+01	4.04E+00	pCi/g
17-08055-08	TRG	NFB-SLAG-05-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Bismuth-212	EPA 901.1 Modified	1.32E+02	1.04E+01	1.24E+01	7.15E+00	pCi/g
17-08055-08	TRG	NFB-SLAG-05-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Cesium-137	EPA 901.1 Modified	5.98E-02	3.04E-01	3.04E-01	6.81E-01	pCi/g
17-08055-08	TRG	NFB-SLAG-05-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Potassium-40	EPA 901.1 Modified	1.71E+01	4.84E+00	4.92E+00	7.44E+00	pCi/g
17-08055-08	TRG	NFB-SLAG-05-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Protactinium-234m	EPA 901.1 Modified	2.06E+02	5.05E+01	5.15E+01	7.74E+01	pCi/g
17-08055-08	TRG	NFB-SLAG-05-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Lead-212	EPA 901.1 Modified	1.76E+02	1.41E+01	1.67E+01	2.20E+00	pCi/g
17-08055-08	TRG	NFB-SLAG-05-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Radium-224	EPA 901.1 Modified	1.11E+03	8.61E+01	1.03E+02	2.99E+01	pCi/g
17-08055-08	TRG	NFB-SLAG-05-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Radium-226	EPA 901.1 Modified	1.44E+02	6.64E+00	9.92E+00	1.72E+00	pCi/g
17-08055-08	TRG	NFB-SLAG-05-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Radium-228	EPA 901.1 Modified	2.14E+02	9.86E+00	1.47E+01	4.04E+00	pCi/g
17-08055-08	TRG	NFB-SLAG-05-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Thorium-234	EPA 901.1 Modified	1.40E+02	1.65E+01	1.80E+01	2.13E+01	pCi/g
17-08055-08	TRG	NFB-SLAG-05-170809	08/09/17 12:00	8/11/2017	9/5/2017	17-08055	Thallium-208	EPA 901.1 Modified	1.90E+02	1.01E+01	1.40E+01	2.12E+00	pCi/g
17-08055-01	LCS	KNOWN	08/11/17 00:00	8/11/2017	9/12/2017	17-08055	Thorium-228	EPA 907.0 Modified	4.88E+00	1.76E-01			pCi/g
17-08055-01	LCS	SPIKE	08/11/17 00:00	8/11/2017	9/12/2017	17-08055	Thorium-228	EPA 907.0 Modified	5.99E+00	9.22E-01	1.08E+00	8.66E-02	pCi/g
17-08055-02	MBL	BLANK	08/11/17 00:00	8/11/2017	9/12/2017	17-08055	Thorium-228	EPA 907.0 Modified	-1.70E-02	3.44E-02	3.44E-02	1.02E-01	pCi/g
17-08055-03	DUP	NFB-SLAG-04-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Thorium-228	EPA 907.0 Modified	4.39E-01	2.21E-01	2.25E-01	1.71E-01	pCi/g
17-08055-04	TRG	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Thorium-228	EPA 907.0 Modified	2.70E+02	4.63E+01	5.29E+01	1.88E+00	pCi/g
17-08055-05	TRG	NFB-SLAG-02-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Thorium-228	EPA 907.0 Modified	1.65E+01	3.47E+00	3.80E+00	3.10E-01	pCi/g
17-08055-06	TRG	NFB-SLAG-03-170809	08/09/17 12:00	8/11/2017	9/13/2017	17-08055	Thorium-228	EPA 907.0 Modified	8.18E+00	1.35E+00	1.55E+00	8.04E-02	pCi/g
17-08055-07	DO	NFB-SLAG-04-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Thorium-228	EPA 907.0 Modified	3.15E-01	1.52E-01	1.55E-01	8.49E-02	pCi/g
17-08055-08	TRG	NFB-SLAG-05-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Thorium-228	EPA 907.0 Modified	6.53E+01	1.08E+01	1.24E+01	5.87E-01	pCi/g
17-08055-01	LCS	KNOWN	08/11/17 00:00	8/11/2017	9/12/2017	17-08055	Thorium-230	EPA 907.0 Modified	5.43E+00	1.47E-01			pCi/g
17-08055-01	LCS	SPIKE	08/11/17 00:00	8/11/2017	9/12/2017	17-08055	Thorium-230	EPA 907.0 Modified	6.44E+00	9.79E-01	1.26E+00	8.24E-02	pCi/g
17-08055-02	MBL	BLANK	08/11/17 00:00	8/11/2017	9/12/2017	17-08055	Thorium-230	EPA 907.0 Modified	5.77E-02	5.32E-02	5.37E-02	6.11E-02	pCi/g
17-08055-03	DUP	NFB-SLAG-04-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Thorium-230	EPA 907.0 Modified	2.68E+00	7.02E-01	7.76E-01	1.02E-01	pCi/g
17-08055-04	TRG	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Thorium-230	EPA 907.0 Modified	8.87E+01	1.74E+01	2.06E+01	1.93E+00	pCi/g
17-08055-05	TRG	NFB-SLAG-02-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Thorium-230	EPA 907.0 Modified	1.12E+01	2.47E+00	2.83E+00	2.18E-01	pCi/g
17-08055-06	TRG	NFB-SLAG-03-170809	08/09/17 12:00	8/11/2017	9/13/2017	17-08055	Thorium-230	EPA 907.0 Modified	3.25E+00	6.03E-01	7.25E-01	8.21E-02	pCi/g
17-08055-07	DO	NFB-SLAG-04-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Thorium-230	EPA 907.0 Modified	2.59E+00	5.92E-01	6.73E-01	8.83E-02	pCi/g
17-08055-08	TRG	NFB-SLAG-05-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Thorium-230	EPA 907.0 Modified	5.28E+01	8.86E+00	1.10E+01	4.36E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (2-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

EBERLINE SERVICES

EBERLINE ANALYTICAL CORPORATION
601 SCARBORO ROAD OAK RIDGE, TN 37830 865/481-0683 FAX 865/483-4621

Eberline Analytical
Final Report of Analysis

Report To:

Smita Sumbaly
Weston Solutions, Inc.
1090 King Georges Post Rd Suite 201
Edison, NJ 08837

Work Order Details:

SDG:	**17-08055**
Purchase Order:	0095021
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
17-08055-01	LCS	KNOWN	08/11/17 00:00	8/11/2017	9/12/2017	17-08055	Thorium-232	EPA 907.0 Modified	4.88E+00	1.76E-01			pCi/g
17-08055-01	LCS	SPIKE	08/11/17 00:00	8/11/2017	9/12/2017	17-08055	Thorium-232	EPA 907.0 Modified	6.01E+00	9.24E-01	1.07E+00	7.21E-02	pCi/g
17-08055-02	MBL	BLANK	08/11/17 00:00	8/11/2017	9/12/2017	17-08055	Thorium-232	EPA 907.0 Modified	3.20E-02	4.92E-02	4.93E-02	8.43E-02	pCi/g
17-08055-03	DUP	NFB-SLAG-04-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Thorium-232	EPA 907.0 Modified	4.78E-01	2.21E-01	2.25E-01	1.12E-01	pCi/g
17-08055-04	TRG	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Thorium-232	EPA 907.0 Modified	2.53E+02	4.34E+01	4.88E+01	1.69E+00	pCi/g
17-08055-05	TRG	NFB-SLAG-02-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Thorium-232	EPA 907.0 Modified	1.65E+01	3.46E+00	3.75E+00	2.73E-01	pCi/g
17-08055-06	TRG	NFB-SLAG-03-170809	08/09/17 12:00	8/11/2017	9/13/2017	17-08055	Thorium-232	EPA 907.0 Modified	8.16E+00	1.34E+00	1.52E+00	6.75E-02	pCi/g
17-08055-07	DO	NFB-SLAG-04-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Thorium-232	EPA 907.0 Modified	3.41E-01	1.55E-01	1.58E-01	6.52E-02	pCi/g
17-08055-08	TRG	NFB-SLAG-05-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Thorium-232	EPA 907.0 Modified	5.88E+01	9.77E+00	1.11E+01	3.69E-01	pCi/g
17-08055-01	LCS	KNOWN	08/11/17 00:00	8/11/2017	9/12/2017	17-08055	Uranium-233/234	EPA 908.0 Modified	7.30E+00	2.63E-01			pCi/g
17-08055-01	LCS	SPIKE	08/11/17 00:00	8/11/2017	9/12/2017	17-08055	Uranium-233/234	EPA 908.0 Modified	5.96E+00	8.08E-01	9.14E-01	6.89E-02	pCi/g
17-08055-02	MBL	BLANK	08/11/17 00:00	8/11/2017	9/12/2017	17-08055	Uranium-233/234	EPA 908.0 Modified	8.44E-02	6.85E-02	6.88E-02	6.83E-02	pCi/g
17-08055-03	DUP	NFB-SLAG-04-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Uranium-233/234	EPA 908.0 Modified	9.49E+00	1.27E+00	1.44E+00	7.53E-02	pCi/g
17-08055-04	TRG	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Uranium-233/234	EPA 908.0 Modified	9.31E+01	1.31E+01	1.47E+01	9.82E-01	pCi/g
17-08055-05	TRG	NFB-SLAG-02-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Uranium-233/234	EPA 908.0 Modified	1.53E+01	2.62E+00	2.84E+00	4.74E-01	pCi/g
17-08055-06	TRG	NFB-SLAG-03-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Uranium-233/234	EPA 908.0 Modified	5.24E+01	6.86E+00	7.82E+00	4.52E-01	pCi/g
17-08055-07	DO	NFB-SLAG-04-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Uranium-233/234	EPA 908.0 Modified	8.57E+00	1.13E+00	1.29E+00	6.01E-02	pCi/g
17-08055-08	TRG	NFB-SLAG-05-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Uranium-233/234	EPA 908.0 Modified	6.83E+01	9.38E+00	1.06E+01	7.89E-01	pCi/g
17-08055-01	LCS	SPIKE	08/11/17 00:00	8/11/2017	9/12/2017	17-08055	Uranium-235/236	EPA 908.0 Modified	4.82E-01	1.73E-01	1.76E-01	8.94E-02	pCi/g
17-08055-02	MBL	BLANK	08/11/17 00:00	8/11/2017	9/12/2017	17-08055	Uranium-235/236	EPA 908.0 Modified	2.12E-02	4.58E-02	4.58E-02	9.05E-02	pCi/g
17-08055-03	DUP	NFB-SLAG-04-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Uranium-235/236	EPA 908.0 Modified	6.47E-01	2.17E-01	2.22E-01	9.28E-02	pCi/g
17-08055-04	TRG	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Uranium-235/236	EPA 908.0 Modified	7.48E+00	2.47E+00	2.53E+00	8.79E-01	pCi/g
17-08055-05	TRG	NFB-SLAG-02-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Uranium-235/236	EPA 908.0 Modified	2.12E+00	8.73E-01	8.86E-01	5.41E-01	pCi/g
17-08055-06	TRG	NFB-SLAG-03-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Uranium-235/236	EPA 908.0 Modified	3.14E+00	1.06E+00	1.08E+00	3.89E-01	pCi/g
17-08055-07	DO	NFB-SLAG-04-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Uranium-235/236	EPA 908.0 Modified	7.57E-01	2.28E-01	2.35E-01	6.47E-02	pCi/g
17-08055-08	TRG	NFB-SLAG-05-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Uranium-235/236	EPA 908.0 Modified	6.25E+00	2.06E+00	2.10E+00	8.10E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (2-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:	
Smita Sumbaly	
Weston Solutions, Inc.	
1090 King Georges Post Rd Suite 201	
Edison, NJ 08837	

Work Order Details:	
SDG:	17-08055
Purchase Order:	0095021
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
17-08055-01	LCS	KNOWN	08/11/17 00:00	8/11/2017	9/12/2017	17-08055	Uranium-238	EPA 908.0 Modified	7.07E+00	2.55E-01			pCi/g
17-08055-01	LCS	SPIKE	08/11/17 00:00	8/11/2017	9/12/2017	17-08055	Uranium-238	EPA 908.0 Modified	5.96E+00	8.07E-01	9.13E-01	6.86E-02	pCi/g
17-08055-02	MBL	BLANK	08/11/17 00:00	8/11/2017	9/12/2017	17-08055	Uranium-238	EPA 908.0 Modified	4.96E-02	5.13E-02	5.14E-02	5.41E-02	pCi/g
17-08055-03	DUP	NFB-SLAG-04-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Uranium-238	EPA 908.0 Modified	8.98E+00	1.21E+00	1.37E+00	5.54E-02	pCi/g
17-08055-04	TRG	NFB-SLAG-01-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Uranium-238	EPA 908.0 Modified	9.19E+01	1.29E+01	1.45E+01	8.88E-01	pCi/g
17-08055-05	TRG	NFB-SLAG-02-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Uranium-238	EPA 908.0 Modified	1.78E+01	2.92E+00	3.19E+00	4.37E-01	pCi/g
17-08055-06	TRG	NFB-SLAG-03-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Uranium-238	EPA 908.0 Modified	5.37E+01	7.00E+00	7.99E+00	2.74E-01	pCi/g
17-08055-07	DO	NFB-SLAG-04-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Uranium-238	EPA 908.0 Modified	8.84E+00	1.16E+00	1.32E+00	7.06E-02	pCi/g
17-08055-08	TRG	NFB-SLAG-05-170809	08/09/17 12:00	8/11/2017	9/12/2017	17-08055	Uranium-238	EPA 908.0 Modified	7.76E+01	1.04E+01	1.18E+01	6.54E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (2-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

EBERLINE SERVICES

EBERLINE ANALYTICAL CORPORATION
601 SCARBORO ROAD OAK RIDGE, TN 37830 865/481-0683 FAX 865/483-4621

USEPA

DateShipped: 8/10/2017

CarrierName: FedEx

AirbillNo: 8094 1226 6698

CHAIN OF CUSTODY RECORD

Case #: 452

Contact Name: Smita Sumbaly

Contact Phone: 732-585-4410

17-08055

REC'D AUG 11 2017

No: 2-080917-182045-0012

Lab: Eberline Analytical

Lab Contact: Mike McDougall

Lab Phone: 865-481-0683

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Lab QC	Numb Cont	Container
4	NFB-SLAG-01-170809	8/9/2017	12:00	Gamma Spec, Iso Th and U, Nb, TAL Metals	Soil/Rock/Slag	N	1	Ziploc Bag
5	NFB-SLAG-02-170809	8/9/2017	12:00	Gamma Spec, Iso Th and U, Nb, TAL Metals	Soil/Rock/Slag	N	1	Ziploc Bag
6	NFB-SLAG-03-170809	8/9/2017	12:00	Gamma Spec, Iso Th and U, Nb, TAL Metals	Soil/Rock/Slag	N	1	Ziploc Bag
7	NFB-SLAG-04-170809	8/9/2017	12:00	Gamma Spec, Iso Th and U, Nb, TAL Metals	Soil/Rock/Slag	N	1	Ziploc Bag
8	NFB-SLAG-05-170809	8/9/2017	12:00	Gamma Spec, Iso Th and U, Nb, TAL Metals	Soil/Rock/Slag	N	1	Ziploc Bag

Special Instructions: Gamma Spec(EPA 901.0). For Gamma Spec (homogenized) after 21 day ingrowth: Ra-226 using Bi-214 and/or Pb-214. From U decay chain: Th-234, Pa-234 or Pa-234m. From Th decay chain: Ra-228 and/or Ac-228, Ra-224, Pb-212, Bi-212, Tl-208. Other radionuclides: Cs-137, K-40. Alpha Spec: Iso U (EPA 908.0 Modified): U-233/234, U-235/236, U-238. Iso Th (EPA 907.0 Modified): Th-230, 232, 228. TAL metals plus Nb. All samples to be pulverized.

SAMPLES TRANSFERRED FROM

CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
5/Samples	WESTON	8/10/17 1200		8-11-17 1100	