

Appendix G –
BGRD 1 – COA

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : MJW Corporation
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Report Date: January 21, 2016

Client Sample ID: BGA1.1.1
Sample ID: 388119001
Matrix: Soil
Collect Date: 21-DEC-15
Receive Date: 24-DEC-15
Collector: Client
Moisture: 22.9%

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Gravimetric Solids														
<i>ASTM D 2216 % Moisture "As Received"</i>														
Moisture		22.9						percent		LYT1	12/28/15	1151	1533706	1
Rad Alpha Spec Analysis														
<i>ASP Plutonium Isotopic, Solid "Dry Weight Corrected"</i>														
Plutonium-238	U	0.0173	+/-0.0668	0.129	0.0407	+/-0.0668	1.00	pCi/g		MXS2	01/12/16	1021	1534070	2
Plutonium-239/240	U	0.0288	+/-0.0655	0.112	0.0321	+/-0.0656	1.00	pCi/g						
<i>ASP Uranium Isotopic, Solid "Dry Weight Corrected"</i>														
Uranium-232	U	-0.00902	+/-0.0623	0.152	0.045	+/-0.0624	1.00	pCi/g		MXS2	01/12/16	1015	1534063	3
Uranium-233/234		0.855	+/-0.246	0.123	0.0351	+/-0.289	1.00	pCi/g						
Uranium-235/236		0.136	+/-0.104	0.0842	0.0158	+/-0.107	1.00	pCi/g						
Uranium-238		0.863	+/-0.246	0.107	0.0272	+/-0.290	1.00	pCi/g						
<i>Alphaspec Np237, Solid "Dry Weight Corrected"</i>														
Neptunium-237	U	0.0614	+/-0.230	0.388	0.0725	+/-0.231	1.00	pCi/g		MXS2	01/12/16	1032	1534069	4
<i>Alphaspec Th229 + 228,230,232 Solid "Dry Weight Corrected"</i>														
Thorium-228		1.01	+/-0.607	0.483	0.118	+/-0.646	1.00	pCi/g		MXS2	01/12/16	1031	1534062	5
Thorium-229		0.143	+/-0.280	0.389	0.0727	+/-0.282	1.00	pCi/g						
Thorium-230		1.36	+/-0.675	0.388	0.0726	+/-0.732	1.00	pCi/g						
Thorium-232		0.887	+/-0.549	0.242	0.00	+/-0.579	1.00	pCi/g						
<i>Am241, Cm Solid "Dry Weight Corrected"</i>														
Americium-241	U	-0.00264	+/-0.0397	0.0927	0.0265	+/-0.0397	1.00	pCi/g		MXS2	01/12/16	1103	1534067	6
Curium-242		0.00	+/-0.0289	0.043	0.00	+/-0.0289	1.00	pCi/g						
Curium-243/244		0.0298	+/-0.0526	0.0797	0.0203	+/-0.0527	1.00	pCi/g						
Curium-245/246		0.0569	+/-0.067	0.0725	0.0136	+/-0.0674	1.00	pCi/g						
<i>Liquid Scint Pu241, Solid "Dry Weight Corrected"</i>														
Plutonium-241	U	-5.07	+/-6.92	12.2	5.94	+/-6.92	15.0	pCi/g		MXS2	01/14/16	2114	1534073	7
Rad Gamma Spec Analysis														
<i>Gamma 1129, Solid "Dry Weight Corrected"</i>														
Iodine-129	UI	0.00	+/-0.921	0.525	0.232	+/-0.923	1.00	pCi/g		MJH1	01/20/16	0936	1536082	8
<i>Gamma with Ingrowth "Dry Weight Corrected"</i>														
Actinium-227	U	-0.15	+/-0.247	0.450	0.209	+/-0.257		pCi/g		RXF2	01/20/16	0614	1534967	9
Antimony-125	U	-0.00342	+/-0.0904	0.170	0.0775	+/-0.0904		pCi/g						
Bismuth-212	UI	0.00	+/-0.782	1.46	0.683	+/-1.20		pCi/g						
Bismuth-214		0.956	+/-0.166	0.129	0.0586	+/-0.185		pCi/g						
Cesium-137		0.120	+/-0.0534	0.0683	0.0307	+/-0.0544	0.100	pCi/g						
Cobalt-60	U	0.012	+/-0.040	0.0814	0.0354	+/-0.0403		pCi/g						
Europium-154	U	0.00899	+/-0.117	0.227	0.099	+/-0.117		pCi/g						
Lead-212		1.28	+/-0.141	0.120	0.0567	+/-0.187		pCi/g						

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Project: Soil Radioisotopes
Client Sample ID: BGA1.1.1
Sample ID: 388119001

Report Date: January 21, 2016

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RI	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
<i>Gamma with Ingrowth "Dry Weight Corrected"</i>														
Lead-214		1.36	+/-0.208	0.368	0.179	+/-0.241		pCi/g						
Potassium-40		14.2	+/-1.51	0.743	0.318	+/-1.95		pCi/g						
Protactinium-231	UI	0.00	+/-0.695	0.927	0.432	+/-0.708		pCi/g						
Radium-226		0.956	+/-0.166	0.129	0.0586	+/-0.185		pCi/g						
Radium-228		1.23	+/-0.287	0.261	0.116	+/-0.342		pCi/g						
Thallium-208		0.374	+/-0.0803	0.0698	0.0317	+/-0.0866		pCi/g						
Tin-126	UI	0.00	+/-0.116	0.174	0.0836	+/-0.119		pCi/g						
<i>Gamma spec, Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	UI	0.00	+/-0.173	0.339	0.162	+/-0.193		pCi/g		MJH1	01/04/16	1548	1534344	10
Antimony-125	U	0.0231	+/-0.0671	0.125	0.0586	+/-0.0679		pCi/g						
Bismuth-212		0.860	+/-0.631	0.659	0.305	+/-0.637		pCi/g						
Bismuth-214		0.784	+/-0.134	0.0993	0.0465	+/-0.149		pCi/g						
Cesium-137		0.167	+/-0.0417	0.0456	0.021	+/-0.0438	0.100	pCi/g						
Cobalt-60	U	-0.0105	+/-0.0323	0.0489	0.0217	+/-0.0326		pCi/g						
Europium-154	U	0.0356	+/-0.111	0.185	0.0847	+/-0.112		pCi/g						
Lead-212		1.40	+/-0.0952	0.0765	0.0366	+/-0.213		pCi/g						
Lead-214		1.10	+/-0.128	0.235	0.115	+/-0.166		pCi/g						
Potassium-40		14.9	+/-1.08	0.437	0.191	+/-1.70		pCi/g						
Protactinium-231	UI	0.00	+/-0.532	0.596	0.282	+/-0.572		pCi/g						
Radium-226		0.784	+/-0.134	0.0993	0.0465	+/-0.149		pCi/g						
Radium-228		1.00	+/-0.218	0.218	0.101	+/-0.268		pCi/g						
Thallium-208		0.392	+/-0.0606	0.0466	0.0217	+/-0.0692		pCi/g						
Tin-126	UI	0.00	+/-0.0645	0.0681	0.0329	+/-0.0676		pCi/g						
Rad Gas Flow Proportional Counting														
<i>GFPC, Gross A:B, solid "Dry Weight Corrected"</i>														
Alpha		23.8	+/-4.96	3.49	1.39	+/-6.67	4.00	pCi/g		JXB7	01/11/16	1629	1534817	11
Beta		24.9	+/-3.46	3.81	1.79	+/-4.74	10.0	pCi/g						
<i>GFPC, Sr90, solid "Dry Weight Corrected"</i>														
Strontium-90	U	-0.842	+/-0.757	1.66	0.738	+/-0.757	2.00	pCi/g		KSD1	01/07/16	1130	1534788	12
Rad Liquid Scintillation Analysis														
<i>LSC, Tritium Dist, Solid "Dry Weight Corrected"</i>														
Tritium	U	0.104	+/-2.36	4.09	1.98	+/-2.36	6.00	pCi/g		TXJ1	01/11/16	1940	1534965	13
<i>Liquid Scint C14, Solid "Dry Weight Corrected"</i>														
Carbon-14	U	-0.335	+/-0.796	1.37	0.673	+/-0.796	2.00	pCi/g		TXJ1	01/19/16	1640	1534966	14
<i>Liquid Scint Tc99, Solid "Dry Weight Corrected"</i>														
Technetium-99	U	-0.214	+/-1.64	2.88	1.38	+/-1.64	5.00	pCi/g		MYM	01/19/16	0748	1534638	15

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	12/28/15	1151	1533706

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Report Date: January 21, 2016

Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: BGA1.1.1
Sample ID: 388119001

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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The following Analytical Methods were performed

Method	Description
1	ASTM D 2216 (Modified)
2	DOE EML HASL-300, Pu-11-RC Modified
3	DOE EML HASL-300, U-02-RC Modified
4	ASTM C 1476-00 Modified
5	DOE EML HASL-300, Th-01-RC Modified
6	DOE EML HASL-300, Am-05-RC Modified
7	DOE EML HASL-300, Pu-11-RC Modified
8	DOE EML HASL-300, I-01 Modified
9	DOE HASL 300, 4 5 2 3/Ga-01-R
10	DOE HASL 300, 4 5 2 3/Ga-01-R
11	EPA 900.0/SW846 9310/SM 7110B Modified
12	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
13	EPA 906.0 Modified
14	EPA EERF C-01 Modified
15	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Plutonium-242 Tracer	ASP Plutonium Isotopic, Solid "Dry Weight Corrected"	1534070	73.6	(15%-125%)
Uranium-232 Tracer	ASP Uranium Isotopic, Solid "Dry Weight Corrected"	1534063	62	(15%-125%)
Uranium-235/236 Tracer	ASP Uranium Isotopic, Solid "Dry Weight Corrected"	1534063	73.6	(15%-125%)
Americium-243 Tracer	Alphaspec Np237, Solid "Dry Weight Corrected"	1534069	87	(15%-125%)
Actinium-227 Tracer	Alphaspec Th229 + 228,230,232 Solid "Dry Weight Corrected"	1534062	87.2	(15%-125%)
Americium-243 Tracer	Am241, Cm Solid "Dry Weight Corrected"	1534067	82	(15%-125%)
Plutonium-242 Tracer	Liquid Scint Pu241, Solid "Dry Weight Corrected"	1534073	73.6	(15%-125%)
Strontium Carrier	GFPC, Sr90, solid "Dry Weight Corrected"	1534788	71.7	(25%-125%)
Technetium-99m Tracer	Liquid Scint Tc99, Solid "Dry Weight Corrected"	1534638	94.5	(15%-125%)

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Report Date: January 21, 2016

Client Sample ID: BGA1.1.1
Sample ID: 388119001

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Le	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.	
Surrogate/Tracer Recovery	Test												Batch ID	Recovery%	Acceptable Limits

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

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Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: BGA1.1.2
Sample ID: 388119002
Matrix: Soil
Collect Date: 21-DEC-15
Receive Date: 24-DEC-15
Collector: Client
Moisture: 22.6%

Report Date: January 21, 2016.

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPC	RI	Units	DF	Analyst	Date	Time	Batch	Mtd.
Gravimetric Solids														
<i>ASTM D 2216 % Moisture "As Received"</i>														
Moisture		22.6						percent		LYT1	12/28/15	1151	1533706	1
Rad Gamma Spec Analysis														
<i>Gamma with Ingrowth "Dry Weight Corrected"</i>														
Actinium-227	U	0.104	+/-0.253	0.495	0.232	+/-0.258		pCi/g		RXF2	01/20/16	0638	1534967	2
Antimony-125	U	0.0805	+/-0.0929	0.188	0.0867	+/-0.100		pCi/g						
Bismuth-212	UI	0.00	+/-0.765	1.39	0.645	+/-1.11		pCi/g						
Bismuth-214		1.06	+/-0.200	0.136	0.0617	+/-0.219		pCi/g						
Cesium-137	UI	0.00	+/-0.0435	0.0915	0.0423	+/-0.0497	0.100	pCi/g						
Cobalt-60	U	0.0278	+/-0.0434	0.0918	0.0405	+/-0.0452		pCi/g						
Europium-154	U	0.073	+/-0.131	0.271	0.121	+/-0.136		pCi/g						
Lead-212		1.39	+/-0.136	0.104	0.0486	+/-0.232		pCi/g						
Lead-214		1.36	+/-0.175	0.162	0.0757	+/-0.219		pCi/g						
Potassium-40		13.4	+/-1.45	0.575	0.233	+/-1.88		pCi/g						
Protactinium-231	UI	0.00	+/-0.614	0.769	0.355	+/-0.630		pCi/g						
Radium-226		1.06	+/-0.200	0.136	0.0617	+/-0.219		pCi/g						
Radium-228		1.25	+/-0.390	0.278	0.124	+/-0.436		pCi/g						
Thallium-208		0.380	+/-0.0818	0.0811	0.0374	+/-0.088		pCi/g						
Tin-126	UI	0.00	+/-0.156	0.110	0.0526	+/-0.159		pCi/g						
<i>GammaSpec, Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	U	-0.0853	+/-0.176	0.309	0.148	+/-0.181		pCi/g		MJH1	01/04/16	1548	1534344	3
Antimony-125	U	0.0408	+/-0.059	0.112	0.053	+/-0.0619		pCi/g						
Bismuth-212		1.25	+/-0.490	0.641	0.304	+/-0.506		pCi/g						
Bismuth-214		0.769	+/-0.117	0.083	0.0393	+/-0.134		pCi/g						
Cesium-137	UI	0.00	+/-0.0378	0.0434	0.0205	+/-0.0379	0.100	pCi/g						
Cobalt-60	U	-0.0108	+/-0.0262	0.0462	0.0213	+/-0.0267		pCi/g						
Europium-154	U	-0.0256	+/-0.0807	0.143	0.0667	+/-0.0815		pCi/g						
Lead-212		1.40	+/-0.0923	0.0697	0.0335	+/-0.145		pCi/g						
Lead-214		1.15	+/-0.120	0.089	0.0425	+/-0.152		pCi/g						
Potassium-40		14.6	+/-0.965	0.415	0.189	+/-1.59		pCi/g						
Protactinium-231	UI	0.00	+/-0.425	0.589	0.282	+/-0.496		pCi/g						
Radium-226		0.769	+/-0.117	0.083	0.0393	+/-0.134		pCi/g						
Radium-228		1.23	+/-0.204	0.164	0.0769	+/-0.283		pCi/g						
Thallium-208		0.372	+/-0.0487	0.045	0.0213	+/-0.0577		pCi/g						
Tin-126	UI	0.00	+/-0.093	0.0983	0.0475	+/-0.0955		pCi/g						
Rad Gas Flow Proportional Counting														
<i>GFPC, Gross A-B, solid "Dry Weight Corrected"</i>														
Alpha		15.8	+/-3.99	3.93	1.67	+/-5.05	4.00	pCi/g		JXB7	01/11/16	1629	1534817	4
Beta		23.0	+/-3.30	3.77	1.78	+/-4.69	10.0	pCi/g						

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Project: Soil Radioisotopes

Report Date: January 21, 2016

Client Sample ID: BGA1.1.2
Sample ID: 388119002

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	12/28/15	1151	1533706

The following Analytical Methods were performed

Method	Description
1	ASTM D 2216 (Modified)
2	DOE HASL 300, 4.5 2.3/Ga-01-R
3	DOE HASL 300, 4.5 2.3/Ga-01-R
4	EPA 900 0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

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Report Date: January 21, 2016

Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: BGA1.1.3
Sample ID: 388119003
Matrix: Soil
Collect Date: 21-DEC-15
Receive Date: 24-DEC-15
Collector: Client
Moisture: 22.6%

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Gravimetric Solids														
<i>ASTM D 2216 % Moisture "As Received"</i>														
Moisture		22.6						percent		LYT1	12/28/15	1151	1533706	1
Rad Gamma Spec Analysis														
<i>Gamma with Ingrowth "Dry Weight Corrected"</i>														
Actinium-227	U	0.151	+/-0.320	0.624	0.294	+/-0.328		pCi/g		RXF2	01/20/16	0639	1534967	2
Antimony-125	U	-0.0191	+/-0.106	0.194	0.0883	+/-0.106		pCi/g						
Bismuth-212	UI	0.00	+/-0.877	1.42	0.652	+/-0.944		pCi/g						
Bismuth-214		1.18	+/-0.196	0.129	0.0573	+/-0.222		pCi/g						
Cesium-137	U	0.017	+/-0.0446	0.0808	0.0363	+/-0.0452	0.100	pCi/g						
Cobalt-60	U	-0.0234	+/-0.0491	0.0913	0.0391	+/-0.0502		pCi/g						
Europium-154	U	-0.0454	+/-0.155	0.290	0.127	+/-0.157		pCi/g						
Lead-212		1.46	+/-0.153	0.128	0.0604	+/-0.194		pCi/g						
Lead-214		1.44	+/-0.223	0.400	0.194	+/-0.254		pCi/g						
Potassium-40		14.7	+/-1.64	0.638	0.253	+/-2.05		pCi/g						
Protactinium-231	UI	0.00	+/-0.659	1.32	0.621	+/-0.745		pCi/g						
Radium-226		1.18	+/-0.196	0.129	0.0573	+/-0.222		pCi/g						
Radium-228		1.36	+/-0.404	0.267	0.116	+/-0.451		pCi/g						
Thallium-208		0.427	+/-0.0988	0.0815	0.037	+/-0.106		pCi/g						
Tin-126	UI	0.00	+/-0.154	0.181	0.0863	+/-0.155		pCi/g						
<i>Gammascpec, Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	U	0.0748	+/-0.235	0.426	0.204	+/-0.238		pCi/g		MJH1	01/04/16	1549	1534344	3
Antimony-125	U	0.0429	+/-0.0809	0.154	0.073	+/-0.0833		pCi/g						
Bismuth-212		1.84	+/-0.712	0.852	0.399	+/-0.734		pCi/g						
Bismuth-214		0.844	+/-0.140	0.128	0.0604	+/-0.156		pCi/g						
Cesium-137	U	0.0159	+/-0.0356	0.0661	0.0311	+/-0.0364	0.100	pCi/g						
Cobalt-60	UI	0.00	+/-0.0384	0.0636	0.0289	+/-0.0448		pCi/g						
Europium-154	U	0.0175	+/-0.0999	0.187	0.0852	+/-0.100		pCi/g						
Lead-212		1.63	+/-0.112	0.0948	0.0456	+/-0.175		pCi/g						
Lead-214		1.15	+/-0.155	0.124	0.059	+/-0.181		pCi/g						
Potassium-40		13.6	+/-1.19	0.547	0.244	+/-1.66		pCi/g						
Protactinium-231	UI	0.00	+/-0.701	0.763	0.364	+/-0.723		pCi/g						
Radium-226		0.844	+/-0.140	0.128	0.0604	+/-0.156		pCi/g						
Radium-228		1.42	+/-0.261	0.237	0.110	+/-0.324		pCi/g						
Thallium-208		0.479	+/-0.0749	0.0617	0.0291	+/-0.0846		pCi/g						
Tin-126	UI	0.00	+/-0.109	0.141	0.0688	+/-0.111		pCi/g						
Rad Gas Flow Proportional Counting														
<i>GFPC, Gross A/B, solid "Dry Weight Corrected"</i>														
Alpha		16.5	+/-3.71	3.41	1.45	+/-4.93	4.00	pCi/g		JXB7	01/11/16	1635	1534817	4
Beta		28.9	+/-3.25	3.42	1.62	+/-5.19	10.0	pCi/g						

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Certificate of Analysis

Company : MJW Corporation
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Report Date: January 21, 2016

Client Sample ID: BGA1.1.3
Sample ID: 388119003

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	12/28/15	1151	1533706

The following Analytical Methods were performed

Method	Description
1	ASTM D 2216 (Modified)
2	DOE HASL 300, 4 5 2.3/Ga-01-R
3	DOE HASL 300, 4 5 2.3/Ga-01-R
4	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

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Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Report Date: January 21, 2016

Client Sample ID: BGA1.1.4
Sample ID: 388119004
Matrix: Soil
Collect Date: 21-DEC-15
Receive Date: 24-DEC-15
Collector: Client
Moisture: 20.3%

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Gravimetric Solids														
<i>ASTM D 2216 % Moisture "As Received"</i>														
Moisture		20.3						percent		LYT1	12/28/15	1151	1533706	1
Rad Alpha Spec Analysis														
<i>ASP Plutonium Isotopic, Solid "Dry Weight Corrected"</i>														
Plutonium-238		0.0447	+/-0.0611	0.0833	0.0212	+/-0.0614	1.00	pCi/g		MXS2	01/12/16	1021	1534070	2
Plutonium-239/240	U	-0.00927	+/-0.0419	0.106	0.0324	+/-0.042	1.00	pCi/g						
<i>ASP Uranium Isotopic, Solid "Dry Weight Corrected"</i>														
Uranium-232		0.0496	+/-0.0715	0.0863	0.0161	+/-0.072	1.00	pCi/g		MXS2	01/12/16	1015	1534063	3
Uranium-233/234		0.847	+/-0.220	0.105	0.0313	+/-0.261	1.00	pCi/g						
Uranium-235/236		0.0502	+/-0.0636	0.079	0.0181	+/-0.0642	1.00	pCi/g						
Uranium-238		0.730	+/-0.203	0.0869	0.0221	+/-0.237	1.00	pCi/g						
<i>Alphaspec Np237, Solid "Dry Weight Corrected"</i>														
Neptunium-237	U	0.0027	+/-0.200	0.445	0.121	+/-0.200	1.00	pCi/g		MXS2	01/12/16	1032	1534069	4
<i>Alphaspec Th229 - 228,230,232 Solid "Dry Weight Corrected"</i>														
Thorium-228		1.28	+/-0.653	0.517	0.144	+/-0.710	1.00	pCi/g		MXS2	01/12/16	1031	1534062	5
Thorium-229		0.227	+/-0.336	0.492	0.134	+/-0.340	1.00	pCi/g						
Thorium-230		1.21	+/-0.623	0.455	0.116	+/-0.674	1.00	pCi/g						
Thorium-232		0.929	+/-0.548	0.411	0.0942	+/-0.582	1.00	pCi/g						
<i>Am241, Cm Solid "Dry Weight Corrected"</i>														
Americium-241	U	0.0135	+/-0.0507	0.0854	0.016	+/-0.0508	1.00	pCi/g		MXS2	01/12/16	1031	1534067	6
Curium-242		0.00	+/-0.0389	0.0579	0.00	+/-0.039	1.00	pCi/g						
Curium-243/244	U	-0.00844	+/-0.0373	0.0974	0.0223	+/-0.0374	1.00	pCi/g						
Curium-245/246	U	0.0106	+/-0.0589	0.113	0.0259	+/-0.0589	1.00	pCi/g						
<i>Liquid Scint Pu241, Solid "Dry Weight Corrected"</i>														
Plutonium-241	U	-6.99	+/-5.82	10.4	5.08	+/-5.82	15.0	pCi/g		MXS2	01/14/16	2205	1534073	7
Rad Gamma Spec Analysis														
<i>Gamma 1129, Solid "Dry Weight Corrected"</i>														
Iodine-129	U	0.0342	+/-0.644	1.17	0.524	+/-0.645	1.00	pCi/g		MJH1	01/20/16	1112	1536082	8
<i>Gamma with Ingrowth "Dry Weight Corrected"</i>														
Actinium-227	U	0.0889	+/-0.295	0.499	0.235	+/-0.298		pCi/g		RXF2	01/20/16	0639	1534967	9
Antimony-125	U	-0.0245	+/-0.103	0.182	0.0843	+/-0.103		pCi/g						
Bismuth-212		1.33	+/-0.849	0.903	0.407	+/-0.859		pCi/g						
Bismuth-214		1.07	+/-0.162	0.132	0.0601	+/-0.184		pCi/g						
Cesium-137		0.175	+/-0.0599	0.0849	0.0392	+/-0.0615	0.100	pCi/g						
Cobalt-60	U	0.021	+/-0.0391	0.0817	0.0359	+/-0.0402		pCi/g						
Europium-154	U	0.0778	+/-0.132	0.268	0.120	+/-0.136		pCi/g						
Lead-212		1.41	+/-0.136	0.106	0.0501	+/-0.188		pCi/g						
Lead-214		1.29	+/-0.194	0.354	0.172	+/-0.222		pCi/g						

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Certificate of Analysis

Company : MJW Corporation
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Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes
Client Sample ID: BGA1.1.4
Sample ID: 388119004

Report Date: January 21, 2016

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	LC	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
<i>Gamma with Ingrowth "Dry Weight Corrected"</i>														
Potassium-40		13.1	+/-1.43	0.619	0.260	+/-1.83		pCi/g						
Protactinium-231	UI	0.00	+/-0.655	0.880	0.411	+/-0.699		pCi/g						
Radium-226		1.07	+/-0.162	0.132	0.0601	+/-0.184		pCi/g						
Radium-228		1.35	+/-0.340	0.293	0.133	+/-0.391		pCi/g						
Thallium-208		0.348	+/-0.0917	0.0701	0.0321	+/-0.0961		pCi/g						
Tin-126	UI	0.00	+/-0.135	0.124	0.0592	+/-0.138		pCi/g						
<i>Gamma spec, Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	U	-0.0553	+/-0.191	0.341	0.163	+/-0.192		pCi/g		MJH1	01/04/16	1549	1534344	10
Antimony-125	U	-0.0116	+/-0.0691	0.121	0.0572	+/-0.0693		pCi/g						
Bismuth-212		1.04	+/-0.545	0.632	0.293	+/-0.556		pCi/g						
Bismuth-214		0.911	+/-0.122	0.0868	0.0404	+/-0.144		pCi/g						
Cesium-137		0.134	+/-0.0444	0.0488	0.0227	+/-0.0458	0.100	pCi/g						
Cobalt-60	U	-0.00101	+/-0.0251	0.0477	0.0212	+/-0.0251		pCi/g						
Europium-154	U	0.0224	+/-0.0896	0.171	0.0784	+/-0.0902		pCi/g						
Lead-212		1.32	+/-0.0983	0.0807	0.0387	+/-0.161		pCi/g						
Lead-214		1.17	+/-0.128	0.0984	0.0467	+/-0.165		pCi/g						
Potassium-40		14.7	+/-1.06	0.356	0.151	+/-1.68		pCi/g						
Protactinium-231	UI	0.09	+/-0.413	0.732	0.351	+/-0.541		pCi/g						
Radium-226		0.911	+/-0.122	0.0868	0.0404	+/-0.144		pCi/g						
Radium-228		1.41	+/-0.222	0.165	0.075	+/-0.305		pCi/g						
Thallium-208		0.349	+/-0.0564	0.0425	0.0197	+/-0.0635		pCi/g						
Tin-126	UI	0.00	+/-0.0793	0.0803	0.0388	+/-0.0834		pCi/g						
Rad Gas Flow Proportional Counting														
<i>GFPC, Gross A/B, solid "Dry Weight Corrected"</i>														
Alpha		10.7	+/-3.19	3.95	1.76	+/-3.83	4.00	pCi/g		JXB7	01/11/16	1626	1534817	11
Beta		22.5	+/-2.85	3.21	1.52	+/-4.28	10.0	pCi/g						
<i>GFPC, Sr90, solid "Dry Weight Corrected"</i>														
Strontium-90	U	-0.228	+/-0.549	1.14	0.493	+/-0.549	2.00	pCi/g		KSD1	01/07/16	1130	1534788	12
Rad Liquid Scintillation Analysis														
<i>LSC, Tritium Dist, Solid "Dry Weight Corrected"</i>														
Tritium	U	0.101	+/-2.30	3.98	1.93	+/-2.30	6.00	pCi/g		TXJ1	01/11/16	2143	1534965	13
<i>Liquid Scint C14, Solid "Dry Weight Corrected"</i>														
Carbon-14	U	-0.0544	+/-0.757	1.29	0.637	+/-0.757	2.00	pCi/g		TXJ1	01/19/16	1813	1534966	14
<i>Liquid Scint Tc99, Solid "Dry Weight Corrected"</i>														
Technetium-99	U	-0.814	+/-1.80	3.21	1.54	+/-1.80	5.00	pCi/g		MYM	01/19/16	0805	1534638	15

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYTT	12/28/15	1151	1533706

The following Analytical Methods were performed

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Company : MJW Corporation
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Report Date: January 21, 2016

Client Sample ID: BGA1.1.4
Sample ID: 388119004

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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The following Analytical Methods were performed

Method	Description
1	ASTM D 2216 (Modified)
2	DOE EML HASL-300, Pu-11-RC Modified
3	DOE EML HASL-300, U-02-RC Modified
4	ASTM C 1476-00 Modified
5	DOE EML HASL-300, Th-01-RC Modified
6	DOE EML HASL-300, Am-05-RC Modified
7	DOE EML HASL-300, Pu-11-RC Modified
8	DOE EML HASL-300, I-01 Modified
9	DOE HASL 300, 4.5 2 3/Ga-01-R
10	DOE HASL 300, 4.5 2 3/Ga-01-R
11	EPA 900 0/SW846 9310/SM 7110B Modified
12	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
13	EPA 906.0 Modified
14	EPA EERF C-01 Modified
15	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Plutonium-242 Tracer	ASP Plutonium Isotopic, Solid "Dry Weight Corrected"	1534070	88.1	(15%-125%)
Uranium-232 Tracer	ASP Uranium Isotopic, Solid "Dry Weight Corrected"	1534063	80.5	(15%-125%)
Uranium-235/236 Tracer	ASP Uranium Isotopic, Solid "Dry Weight Corrected"	1534063	82.8	(15%-125%)
Americium-243 Tracer	Alphaspec Np237, Solid "Dry Weight Corrected"	1534069	89.1	(15%-125%)
Actinium-227 Tracer	Alphaspec Th229 + 228,230,232 Solid "Dry Weight Corrected"	1534062	83.8	(15%-125%)
Americium-243 Tracer	Am241, Cm Solid "Dry Weight Corrected"	1534067	84.3	(15%-125%)
Plutonium-242 Tracer	Liquid Scint Pu241, Solid "Dry Weight Corrected"	1534073	88.1	(15%-125%)
Strontium Carrier	GFPC, Sr90, solid "Dry Weight Corrected"	1534788	78.2	(25%-125%)
Technetium-99m Tracer	Liquid Scint Tc99, Solid "Dry Weight Corrected"	1534638	91.1	(15%-125%)

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Report Date: January 21, 2016

Client Sample ID: BGA1.1.4
Sample ID: 388119004

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer Recovery	Test													
								Batch ID	Recovery%	Acceptable Limits				

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

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Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Report Date: January 21, 2016

Client Sample ID: BGA1.1.5
Sample ID: 388119005
Matrix: Soil
Collect Date: 21-DEC-15
Receive Date: 24-DEC-15
Collector: Client
Moisture: 23.8%

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date Time	Batch	Mid.
Gravimetric Solids													
<i>ASTM D 2216 % Moisture "As Received"</i>													
Moisture		23.8						percent		LYT1	12/28/15 1151	1533706	1
Rad Alpha Spec Analysis													
<i>ASP Plutonium Isotopic, Solid "Dry Weight Corrected"</i>													
Plutonium-238		0.0457	+/-0.0678	0.0991	0.027	+/-0.0681	1.00	pCi/g		MXS2	01/12/16 1103	1534070	2
Plutonium-239/240	U	0.0012	+/-0.0553	0.121	0.0382	+/-0.0553	1.00	pCi/g					
<i>ASP Uranium Isotopic, Solid "Dry Weight Corrected"</i>													
Uranium-232	U	0.013	+/-0.0487	0.0818	0.0153	+/-0.0488	1.00	pCi/g		MXS2	01/12/16 1024	1534063	3
Uranium-233/234		0.644	+/-0.235	0.117	0.0268	+/-0.263	1.00	pCi/g					
Uranium-235/236		0.0212	+/-0.0595	0.0635	0.00	+/-0.0596	1.00	pCi/g					
Uranium-238		0.670	+/-0.238	0.101	0.0189	+/-0.268	1.00	pCi/g					
<i>Alphaspec Np237, Solid "Dry Weight Corrected"</i>													
Neptunium-237		0.00	+/-0.147	0.218	0.00	+/-0.147	1.00	pCi/g		MXS2	01/12/16 1032	1534069	4
<i>Alphaspec Th229 + 228,230,232 Solid "Dry Weight Corrected"</i>													
Thorium-228		0.998	+/-0.610	0.524	0.138	+/-0.649	1.00	pCi/g		MXS2	01/12/16 1031	1534062	5
Thorium-229		0.143	+/-0.281	0.389	0.0728	+/-0.282	1.00	pCi/g					
Thorium-230		0.632	+/-0.511	0.568	0.163	+/-0.528	1.00	pCi/g					
Thorium-232		1.45	+/-0.691	0.242	0.00	+/-0.758	1.00	pCi/g					
<i>Am241, Cm Solid "Dry Weight Corrected"</i>													
Americium-241	U	0.00962	+/-0.0535	0.102	0.0235	+/-0.0535	1.00	pCi/g		MXS2	01/12/16 1031	1534067	6
Curium-242		0.00	+/-0.0404	0.0602	0.00	+/-0.0405	1.00	pCi/g					
Curium-243/244		0.0365	+/-0.0626	0.0548	0.00	+/-0.0628	1.00	pCi/g					
Curium-245/246		0.00	+/-0.0427	0.0635	0.00	+/-0.0428	1.00	pCi/g					
<i>Liquid Scint Pu241, Solid "Dry Weight Corrected"</i>													
Plutonium-241	U	-4.61	+/-6.11	10.8	5.25	+/-6.11	15.0	pCi/g		MXS2	01/14/16 2256	1534073	7
Rad Gamma Spec Analysis													
<i>Gamma I129, Solid "Dry Weight Corrected"</i>													
Iodine-129	U	0.0755	+/-0.352	0.767	0.324	+/-0.354	1.00	pCi/g		MJH1	01/20/16 1112	1536082	8
<i>Gamma with Ingrowth "Dry Weight Corrected"</i>													
Actinium-227	U	0.139	+/-0.339	0.659	0.310	+/-0.345		pCi/g		RXF2	01/20/16 0644	1534967	9
Antimony-125	U	0.0346	+/-0.122	0.232	0.107	+/-0.123		pCi/g					
Bismuth-212	UI	0.00	+/-1.03	1.57	0.725	+/-1.21		pCi/g					
Bismuth-214		1.02	+/-0.224	0.141	0.0628	+/-0.242		pCi/g					
Cesium-137		0.147	+/-0.0731	0.0901	0.0407	+/-0.0743	0.100	pCi/g					
Cobalt-60	U	-0.0204	+/-0.0402	0.0738	0.030	+/-0.0413		pCi/g					
Europium-154	U	-0.0712	+/-0.147	0.268	0.115	+/-0.151		pCi/g					
Lead-212		1.33	+/-0.158	0.140	0.0658	+/-0.198		pCi/g					
Lead-214		1.29	+/-0.201	0.187	0.0868	+/-0.230		pCi/g					

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Company : MIW Corporation
 Address : 15 Hazelwood Drive
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 Buffalo, New York 14228

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: BGA11.1.5
 Sample ID: 388119005

Report Date: January 21, 2016

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RI	Units	DF	Analyst	Date	Time	Batch	Mtd.
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Rad Gamma Spec Analysis*Gamma with Ingrowth "Dry Weight Corrected"*

Potassium-40		12.6	+/-1.60	0.754	0.308	+/-1.92		pCi/g						
Protactinium-231	UI	0.00	+/-0.695	1.34	0.629	+/-0.811		pCi/g						
Radium-226		1.02	+/-0.224	0.141	0.0628	+/-0.242		pCi/g						
Radium-228		1.47	+/-0.344	0.289	0.126	+/-0.402		pCi/g						
Thallium-208		0.348	+/-0.0995	0.0845	0.0383	+/-0.104		pCi/g						
Tin-126	UI	0.00	+/-0.157	0.146	0.0684	+/-0.158		pCi/g						

Gamma spec, Gamma, Solid "Dry Weight Corrected"

Actinium-227	U	0.0103	+/-0.190	0.355	0.168	+/-0.190		pCi/g		MJH1	01/04/16	1550	1534344	10
Antimony-125	U	-0.0414	+/-0.0774	0.141	0.0655	+/-0.0797		pCi/g						
Bismuth-212	UI	0.00	+/-0.634	1.24	0.584	+/-0.727		pCi/g						
Bismuth-214		0.974	+/-0.142	0.130	0.0603	+/-0.164		pCi/g						
Cesium-137		0.138	+/-0.0683	0.0821	0.0384	+/-0.0692	0.100	pCi/g						
Cobalt-60	U	0.00687	+/-0.045	0.0864	0.0388	+/-0.0451		pCi/g						
Europium-154	U	0.120	+/-0.156	0.271	0.123	+/-0.166		pCi/g						
Lead-210		2.26	+/-0.726	0.596	0.285	+/-0.751	4.00	pCi/g						
Lead-212		1.33	+/-0.0985	0.0763	0.0363	+/-0.178		pCi/g						
Lead-214		0.987	+/-0.144	0.108	0.0507	+/-0.168		pCi/g						
Potassium-40		14.8	+/-1.39	0.659	0.284	+/-1.93		pCi/g						
Protactinium-231	UI	0.00	+/-0.585	0.691	0.326	+/-0.609		pCi/g						
Radium-226		0.974	+/-0.142	0.130	0.0603	+/-0.164		pCi/g						
Radium-228		1.10	+/-0.362	0.301	0.139	+/-0.388		pCi/g						
Thallium-208		0.376	+/-0.0762	0.0638	0.0296	+/-0.0826		pCi/g						
Tin-126	UI	0.00	+/-0.065	0.0656	0.0316	+/-0.0698		pCi/g						

Rad Gas Flow Proportional Counting*GFPC, Gross A/B, solid "Dry Weight Corrected"*

Alpha		15.9	+/-3.56	3.41	1.47	+/-4.71	4.00	pCi/g		JXB7	01/11/16	1627	1534817	11
Beta		27.1	+/-3.05	3.11	1.47	+/-4.91	10.0	pCi/g						

GFPC, Sr-90, solid "Dry Weight Corrected"

Strontium-90	U	-0.319	+/-0.841	1.72	0.750	+/-0.841	2.00	pCi/g		KSD1	01/06/16	1657	1534788	12
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Rad Liquid Scintillation Analysis*LSC, Tritium Dist, Solid "Dry Weight Corrected"*

Tritium	U	1.29	+/-2.38	4.05	1.96	+/-2.38	6.00	pCi/g		TXJ1	01/11/16	2347	1534965	13
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Liquid Scint C14, Solid "Dry Weight Corrected"

Carbon-14	U	-0.512	+/-0.792	1.37	0.672	+/-0.792	2.00	pCi/g		TXJ1	01/19/16	1946	1534966	14
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Liquid Scint Tc-99, Solid "Dry Weight Corrected"

Technetium-99	U	-0.48	+/-2.20	3.87	1.86	+/-2.20	5.00	pCi/g		MYM	01/19/16	0821	1534638	15
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The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	12/28/15	1151	1533706

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2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : MJW Corporation
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Report Date: January 21, 2016

Client Sample ID: BGA1.1.5
Sample ID: 388119005

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Le	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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The following Analytical Methods were performed

Method	Description
1	ASTM D 2216 (Modified)
2	DOE EML HASL-300, Pu-11-RC Modified
3	DOE EML HASL-300, U-02-RC Modified
4	ASTM C 1476-00 Modified
5	DOE EML HASL-300, Th-01-RC Modified
6	DOE EML HASL-300, Am-05-RC Modified
7	DOE EML HASL-300, Pu-11-RC Modified
8	DOE EML HASL-300, I-01 Modified
9	DOE HASL 300, 4.5.2.3/Ga-01-R
10	DOE HASL 300, 4.5.2.3/Ga-01-R
11	EPA 900.0/SW846 9310/SM 7110B Modified
12	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
13	EPA 906.0 Modified
14	EPA EERF C-01 Modified
15	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Plutonium-242 Tracer	ASP Plutonium Isotopic, Solid "Dry Weight Corrected"	1534070	83.3	(15%-125%)
Uranium-232 Tracer	ASP Uranium Isotopic, Solid "Dry Weight Corrected"	1534063	70.9	(15%-125%)
Uranium-235/236 Tracer	ASP Uranium Isotopic, Solid "Dry Weight Corrected"	1534063	86.7	(15%-125%)
Americium-243 Tracer	Alphaspec Np237, Solid "Dry Weight Corrected"	1534069	85.5	(15%-125%)
Actinium-227 Tracer	Alphaspec Th229 + 228,230,232 Solid "Dry Weight Corrected"	1534062	81.6	(15%-125%)
Americium-243 Tracer	Am241, Cm Solid "Dry Weight Corrected"	1534067	79.3	(15%-125%)
Plutonium-242 Tracer	Liquid Scint Pu241, Solid "Dry Weight Corrected"	1534073	83.3	(15%-125%)
Strontium Carrier	GFPC, Sr90, solid "Dry Weight Corrected"	1534788	71.7	(25%-125%)
Technetium-99m Tracer	Liquid Scint Tc99, Solid "Dry Weight Corrected"	1534638	85.6	(15%-125%)

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Company : MJW Corporation
Address : 15 Hazelwood Drive
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Report Date: January 21, 2016

Contact: Ms. Laurie Loscy
Project: Soil Radioisotopes

Client Sample ID: BGA1.1.5
Sample ID: 388119005

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer Recovery	Test													

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Company : MJW Corporation
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228

Report Date: January 21, 2016

Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: BGA1.2.1
Sample ID: 388119006
Matrix: Soil
Collect Date: 21-DEC-15
Receive Date: 24-DEC-15
Collector: Client
Moisture: 25.3%

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPI	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Gravimetric Solids														
<i>ASTM D 2216 % Moisture "As Received"</i>														
Moisture		25.3						percent		LYT1	12/28/15	1151	1533706	1
Rad Gamma Spec Analysis														
<i>Gamma with Ingrowth "Dry Weight Corrected"</i>														
Actinium-227	U	0.137	+/-0.289	0.514	0.239	+/-0.297		pCi/g		RXF2	01/20/16	0645	1534967	2
Antimony-125	U	0.0241	+/-0.114	0.211	0.0971	+/-0.115		pCi/g						
Bismuth-212	UI	0.00	+/-1.06	0.968	0.429	+/-1.07		pCi/g						
Bismuth-214		0.987	+/-0.171	0.129	0.0576	+/-0.189		pCi/g						
Cesium-137		0.206	+/-0.0839	0.0956	0.0438	+/-0.0856	0.100	pCi/g						
Cobalt-60	U	0.00495	+/-0.0479	0.0939	0.0409	+/-0.048		pCi/g						
Europium-154	U	-0.0883	+/-0.125	0.213	0.0897	+/-0.131		pCi/g						
Lead-212		-0.892	+/-0.128	0.121	0.0565	+/-0.145		pCi/g						
Lead-214		0.901	+/-0.214	0.141	0.0646	+/-0.225		pCi/g						
Potassium-40		12.7	+/-1.53	0.550	0.214	+/-1.91		pCi/g						
Protactinium-231	U	0.0225	+/-0.647	1.14	0.534	+/-0.647		pCi/g						
Radium-226		0.987	+/-0.171	0.129	0.0576	+/-0.189		pCi/g						
Radium-228		0.722	+/-0.376	0.360	0.163	+/-0.389		pCi/g						
Thallium-208		0.265	+/-0.0727	0.0728	0.0328	+/-0.0759		pCi/g						
Tin-126	UI	0.00	+/-0.140	0.177	0.0844	+/-0.142		pCi/g						
<i>Gamma spec, Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	U	0.0242	+/-0.188	0.338	0.162	+/-0.188		pCi/g		MJH1	01/04/16	1550	1534344	3
Antimony-125	U	0.0359	+/-0.0799	0.128	0.0612	+/-0.0816		pCi/g						
Bismuth-212		0.726	+/-0.653	0.631	0.297	+/-0.656		pCi/g						
Bismuth-214		0.758	+/-0.102	0.0887	0.042	+/-0.121		pCi/g						
Cesium-137		0.228	+/-0.071	0.0449	0.0211	+/-0.0737	0.100	pCi/g						
Cobalt-60	U	0.00185	+/-0.0276	0.0513	0.0236	+/-0.0276		pCi/g						
Europium-154	UI	0.00	+/-0.0963	0.163	0.0761	+/-0.104		pCi/g						
Lead-212		1.01	+/-0.0906	0.077	0.0371	+/-0.120		pCi/g						
Lead-214		1.02	+/-0.127	0.210	0.103	+/-0.150		pCi/g						
Potassium-40		13.8	+/-1.16	0.470	0.215	+/-1.65		pCi/g						
Protactinium-231	UI	0.00	+/-0.407	0.681	0.328	+/-0.496		pCi/g						
Radium-226		0.758	+/-0.102	0.0887	0.042	+/-0.121		pCi/g						
Radium-228		0.891	+/-0.201	0.160	0.0742	+/-0.222		pCi/g						
Thallium-208		0.287	+/-0.0617	0.0438	0.0207	+/-0.0664		pCi/g						
Tin-126	UI	0.00	+/-0.0911	0.110	0.0535	+/-0.092		pCi/g						
Rad Gas Flow Proportional Counting														
<i>GFPC, Gross A:B, solid "Dry Weight Corrected"</i>														
Alpha		19.7	+/-4.53	3.23	1.25	+/-5.91	4.00	pCi/g		JXB7	01/11/16	1629	1534817	4
Beta		23.8	+/-3.42	3.91	1.84	+/-4.86	10.0	pCi/g						

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Certificate of Analysis

Company : MJW Corporation
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes
Client Sample ID: BGA1.2.1
Sample ID: 388119006

Report Date: January 21, 2016

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	12/28/15	1151	1533706

The following Analytical Methods were performed

Method	Description
1	ASTM D 2216 (Modified)
2	DOE HASL 300, 4 5.2.3/Ga-01-R
3	DOE HASL 300, 4 5.2.3/Ga-01-R
4	EPA 900 0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Company : MJW Corporation
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Report Date: January 21, 2016

Client Sample ID: BGA1.2.2
Sample ID: 388119007
Matrix: Soil
Collect Date: 21-DEC-15
Receive Date: 24-DEC-15
Collector: Client
Moisture: 18.8%

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Gravimetric Solids														
<i>ASTM D 2216 % Moisture "As Received"</i>														
Moisture		18.8						percent		LYT1	12/28/15	1151	1533706	1
Rad Gamma Spec Analysis														
<i>Gamma with Ingrowth "Dry Weight Corrected"</i>														
Actinium-227	U	0.199	+/-0.317	0.619	0.290	+/-0.331		pCi/g		RXF2	01/20/16	0651	1534967	2
Antimony-125	U	-0.0697	+/-0.120	0.207	0.0944	+/-0.124		pCi/g						
Bismuth-212	UI	0.00	+/-0.897	1.50	0.690	+/-1.00		pCi/g						
Bismuth-214		0.934	+/-0.202	0.178	0.0809	+/-0.216		pCi/g						
Cesium-137		0.178	+/-0.092	0.0999	0.0455	+/-0.0931	0.100	pCi/g						
Cobalt-60	U	-0.0237	+/-0.0465	0.0861	0.0361	+/-0.0478		pCi/g						
Europium-154	U	-0.0872	+/-0.152	0.274	0.118	+/-0.157		pCi/g						
Lead-212		1.32	+/-0.153	0.134	0.0631	+/-0.185		pCi/g						
Lead-214		1.24	+/-0.205	0.168	0.0774	+/-0.226		pCi/g						
Potassium-40		12.8	+/-1.71	0.841	0.351	+/-2.14		pCi/g						
Protactinium-231	UI	0.00	+/-0.677	1.38	0.653	+/-0.862		pCi/g						
Radium-226		0.934	+/-0.202	0.178	0.0809	+/-0.216		pCi/g						
Radium-228		1.10	+/-0.344	0.289	0.125	+/-0.369		pCi/g						
Thallium-208		0.360	+/-0.095	0.0783	0.0351	+/-0.0996		pCi/g						
Tin-126	UI	0.00	+/-0.169	0.196	0.0933	+/-0.171		pCi/g						
<i>Gammascpec, Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	U	0.041	+/-0.209	0.398	0.189	+/-0.210		pCi/g		MJH1	01/04/16	1552	1534344	3
Antimony-125	U	-0.0116	+/-0.080	0.144	0.0674	+/-0.0802		pCi/g						
Bismuth-212		1.51	+/-0.591	0.731	0.334	+/-0.610		pCi/g						
Bismuth-214		0.915	+/-0.136	0.108	0.0502	+/-0.157		pCi/g						
Cesium-137		0.185	+/-0.0502	0.0548	0.0252	+/-0.0525	0.100	pCi/g						
Cobalt-60	U	0.0141	+/-0.0331	0.0657	0.0293	+/-0.0337		pCi/g						
Europium-154	U	0.0841	+/-0.119	0.235	0.108	+/-0.125		pCi/g						
Lead-212		1.12	+/-0.0982	0.083	0.0395	+/-0.135		pCi/g						
Lead-214		1.21	+/-0.148	0.269	0.132	+/-0.181		pCi/g						
Potassium-40		12.7	+/-1.19	0.423	0.176	+/-1.61		pCi/g						
Protactinium-231	UI	0.00	+/-0.498	0.624	0.293	+/-0.507		pCi/g						
Radium-226		0.915	+/-0.136	0.108	0.0502	+/-0.157		pCi/g						
Radium-228		1.15	+/-0.270	0.231	0.106	+/-0.312		pCi/g						
Thallium-208		0.302	+/-0.066	0.0547	0.0253	+/-0.0711		pCi/g						
Tin-126	UI	0.00	+/-0.112	0.105	0.0504	+/-0.115		pCi/g						
Rad Gas Flow Proportional Counting														
<i>GFPC, Gross A/B, solid "Dry Weight Corrected"</i>														
Alpha		17.1	+/-3.52	3.36	1.47	+/-4.82	4.00	pCi/g		JXB7	01/11/16	1627	1534817	4
Beta		21.5	+/-2.70	2.80	1.31	+/-4.04	10.0	pCi/g						

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Certificate of Analysis

Company : MJW Corporation
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Report Date: January 21, 2016

Client Sample ID: BGA1.2.2
Sample ID: 388119007

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	12/28/15	1151	1533706

The following Analytical Methods were performed

Method	Description
1	ASTM D 2216 (Modified)
2	DOE HASL 300, 4.5 2.3/Ga-01-R
3	DOE HASL 300, 4.5 2.3/Ga-01-R
4	EPA 900 0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Company : MJW Corporation
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Report Date: January 21, 2016

Client Sample ID: BGAI.3.1
Sample ID: 388119008
Matrix: Soil
Collect Date: 21-DEC-15
Receive Date: 24-DEC-15
Collector: Client
Moisture: 42.6%

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mid.
Gravimetric Solids														
<i>ASTM D 2216 % Moisture "As Received"</i>														
Moisture		42.6						percent		LYT1	12/28/15	1151	1533706	1
Rad Gamma Spec Analysis														
<i>Gamma with Ingrowth "Dry Weight Corrected"</i>														
Actinium-227	U	-0.205	+/-0.293	0.518	0.242	+/-0.309		pCi/g		RXF2	01/20/16	0722	1534967	2
Antimony-125	U	-0.0316	+/-0.110	0.196	0.0896	+/-0.111		pCi/g						
Bismuth-212	UI	0.00	+/-0.819	1.51	0.703	+/-1.13		pCi/g						
Bismuth-214		1.02	+/-0.177	0.144	0.0651	+/-0.195		pCi/g						
Cesium-137		0.354	+/-0.0766	0.0703	0.0312	+/-0.0816	0.100	pCi/g						
Cobalt-60	U	-0.0406	+/-0.0557	0.095	0.0414	+/-0.0587		pCi/g						
Europium-154	U	0.0171	+/-0.114	0.233	0.0998	+/-0.115		pCi/g						
Lead-212		0.964	+/-0.126	0.115	0.054	+/-0.150		pCi/g						
Lead-214		1.10	+/-0.190	0.162	0.0752	+/-0.211		pCi/g						
Potassium-40		13.2	+/-1.62	0.683	0.280	+/-1.98		pCi/g						
Protactinium-231	U	0.352	+/-0.882	1.02	0.473	+/-0.885		pCi/g						
Radium-226		1.02	+/-0.177	0.144	0.0651	+/-0.195		pCi/g						
Radium-228		0.953	+/-0.287	0.272	0.119	+/-0.319		pCi/g						
Thallium-208		0.258	+/-0.0895	0.0752	0.034	+/-0.0919		pCi/g						
Tin-126	UI	0.00	+/-0.102	0.130	0.0617	+/-0.104		pCi/g						
<i>Gamma spec. Gamma. Solid "Dry Weight Corrected"</i>														
Actinium-227	U	0.104	+/-0.193	0.360	0.172	+/-0.199		pCi/g		MJH1	01/04/16	1552	1534344	3
Antimony-125	U	0.0505	+/-0.0785	0.144	0.0683	+/-0.0818		pCi/g						
Bismuth-212		1.32	+/-0.565	0.663	0.307	+/-0.579		pCi/g						
Bismuth-214		0.791	+/-0.115	0.0959	0.0449	+/-0.132		pCi/g						
Cesium-137		0.328	+/-0.0532	0.0538	0.0251	+/-0.0592	0.100	pCi/g						
Cobalt-60	U	0.000158	+/-0.0319	0.0588	0.0267	+/-0.0319		pCi/g						
Europium-154	U	-0.0688	+/-0.090	0.152	0.0686	+/-0.0954		pCi/g						
Lead-212		1.03	+/-0.0913	0.0813	0.039	+/-0.133		pCi/g						
Lead-214		1.04	+/-0.128	0.236	0.116	+/-0.155		pCi/g						
Potassium-40		12.3	+/-1.01	0.422	0.184	+/-1.48		pCi/g						
Protactinium-231	UI	0.00	+/-0.557	0.615	0.292	+/-0.577		pCi/g						
Radium-226		0.791	+/-0.115	0.0959	0.0449	+/-0.132		pCi/g						
Radium-228		1.04	+/-0.209	0.177	0.0808	+/-0.256		pCi/g						
Thallium-208		0.265	+/-0.0647	0.0506	0.0237	+/-0.0683		pCi/g						
Tin-126	UI	0.00	+/-0.0852	0.077	0.037	+/-0.0873		pCi/g						
Rad Gas Flow Proportional Counting														
<i>GFPC, Gross A-B, solid "Dry Weight Corrected"</i>														
Alpha		11.8	+/-3.23	3.61	1.58	+/-3.94	4.00	pCi/g		JXB7	01/11/16	1626	1534817	4
Beta		21.8	+/-2.94	3.45	1.64	+/-4.23	10.0	pCi/g						

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Certificate of Analysis

Company : MJW Corporation
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Loscy
Project: Soil Radioisotopes

Report Date: January 21, 2016

Client Sample ID: BGA1.3.1
Sample ID: 388119008

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Le	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	12/28/15	1151	1533706

The following Analytical Methods were performed

Method	Description
1	ASTM D 2216 (Modified)
2	DOE HASL 300.4 5 2.3/Ga-01-R
3	DOE HASL 300.4 5 2 3/Ga-01-R
4	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Company : MJW Corporation
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Report Date: January 21, 2016

Client Sample ID: BGA1.3.2
Sample ID: 388119009
Matrix: Soil
Collect Date: 21-DEC-15
Receive Date: 24-DEC-15
Collector: Client
Moisture: 22.8%

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Gravimetric Solids														
<i>ASTM D 2216 % Moisture "As Received"</i>														
Moisture		22.8						percent		LYT1	12/28/15	1151	1533706	1
Rad Gamma Spec Analysis														
<i>Gamma with Ingrowth "Dry Weight Corrected"</i>														
Actinium-227	U	0.0671	+/-0.372	0.683	0.316	+/-0.374		pCi/g		RXF2	01/20/16	0723	1534967	2
Antimony-125	U	-0.0362	+/-0.148	0.274	0.124	+/-0.149		pCi/g						
Bismuth-212	U	0.810	+/-0.901	1.93	0.870	+/-0.975		pCi/g						
Bismuth-214		1.01	+/-0.252	0.229	0.103	+/-0.266		pCi/g						
Cesium-137		0.299	+/-0.137	0.136	0.0612	+/-0.139	0.100	pCi/g						
Cobalt-60	U	-0.00414	+/-0.0597	0.122	0.0501	+/-0.0597		pCi/g						
Europium-154	UI	0.00	+/-0.132	0.387	0.164	+/-0.165		pCi/g						
Lead-212		1.27	+/-0.172	0.165	0.0774	+/-0.202		pCi/g						
Lead-214		1.15	+/-0.302	0.202	0.0922	+/-0.317		pCi/g						
Potassium-40		14.6	+/-2.22	1.15	0.462	+/-2.55		pCi/g						
Protactinium-231	UI	0.00	+/-0.953	1.19	0.544	+/-0.974		pCi/g						
Radium-226		1.01	+/-0.252	0.229	0.103	+/-0.266		pCi/g						
Radium-228		1.29	+/-0.421	0.396	0.168	+/-0.449		pCi/g						
Thallium-208		0.425	+/-0.119	0.0976	0.0429	+/-0.124		pCi/g						
Tin-126	UI	0.00	+/-0.145	0.173	0.0818	+/-0.147		pCi/g						
<i>Gamma spec, Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	U	-0.0251	+/-0.216	0.389	0.186	+/-0.216		pCi/g		MJH1	01/04/16	1552	1534344	3
Antimony-125	U	0.00835	+/-0.0791	0.141	0.0665	+/-0.0792		pCi/g						
Bismuth-212		1.22	+/-0.706	0.739	0.343	+/-0.715		pCi/g						
Bismuth-214		0.837	+/-0.137	0.115	0.054	+/-0.154		pCi/g						
Cesium-137		0.284	+/-0.0735	0.0611	0.0287	+/-0.0769	0.100	pCi/g						
Cobalt-60	U	-0.0051	+/-0.0285	0.0522	0.0232	+/-0.0286		pCi/g						
Europium-154	U	0.0753	+/-0.107	0.170	0.0771	+/-0.113		pCi/g						
Lead-212		1.19	+/-0.0991	0.0829	0.0397	+/-0.136		pCi/g						
Lead-214		1.12	+/-0.160	0.259	0.127	+/-0.183		pCi/g						
Potassium-40		14.6	+/-1.29	0.537	0.240	+/-1.85		pCi/g						
Protactinium-231	UI	0.00	+/-0.478	0.696	0.331	+/-0.506		pCi/g						
Radium-226		0.837	+/-0.137	0.115	0.054	+/-0.154		pCi/g						
Radium-228		1.12	+/-0.269	0.229	0.106	+/-0.310		pCi/g						
Thallium-208		0.322	+/-0.0541	0.0545	0.0255	+/-0.0604		pCi/g						
Tin-126	UI	0.00	+/-0.106	0.110	0.0533	+/-0.108		pCi/g						
Rad Gas Flow Proportional Counting														
<i>GFPC, Gross A-B, solid "Dry Weight Corrected"</i>														
Alpha		16.5	+/-3.79	3.43	1.44	+/-4.97	4.00	pCi/g		JXB7	01/11/16	1635	1534817	4
Beta		21.8	+/-2.81	3.15	1.49	+/-4.13	10.0	pCi/g						

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Certificate of Analysis

Company : MJW Corporation
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Report Date: January 21, 2016

Client Sample ID: BGA13.2
Sample ID: 388119009

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYTI	12/28/15	1151	1533706

The following Analytical Methods were performed

Method	Description
1	ASTM D 2216 (Modified)
2	DOE HASL 300.4.5.2.3/Ga-01-R
3	DOE HASL 300.4.5.2.3/Ga-01-R
4	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Company : MJW Corporation
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Report Date: January 21, 2016

Client Sample ID: BGA1.4.1
Sample ID: 388119010
Matrix: Soil
Collect Date: 21-DEC-15
Receive Date: 24-DEC-15
Collector: Client
Moisture: 33.2%

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Gravimetric Solids														
ASTM D 2216 % Moisture "As Received"														
Moisture		33.2						percent		LYT1	12/28/15	1151	1533706	1
Rad Gamma Spec Analysis														
Gamma with Ingrowth "Dry Weight Corrected"														
Actinium-227	U	0.0553	+/-0.311	0.591	0.276	+/-0.312		pCi/g		RXF2	01/20/16	0728	1534967	2
Antimony-125	U	-0.0409	+/-0.122	0.220	0.101	+/-0.124		pCi/g						
Bismuth-212	UI	0.00	+/-0.992	1.54	0.707	+/-1.25		pCi/g						
Bismuth-214		0.965	+/-0.191	0.164	0.0742	+/-0.207		pCi/g						
Cesium-137		0.232	+/-0.0868	0.0891	0.040	+/-0.0888	0.100	pCi/g						
Cobalt-60	U	0.0271	+/-0.0479	0.103	0.0446	+/-0.0495		pCi/g						
Europium-154	U	-0.0468	+/-0.154	0.283	0.123	+/-0.155		pCi/g						
Lead-212		0.986	+/-0.154	0.128	0.0601	+/-0.172		pCi/g						
Lead-214		1.05	+/-0.206	0.382	0.184	+/-0.222		pCi/g						
Potassium-40		12.8	+/-1.60	0.834	0.349	+/-1.96		pCi/g						
Protactinium-231	U	0.191	+/-0.683	1.19	0.554	+/-0.690		pCi/g						
Radium-226		0.965	+/-0.191	0.164	0.0742	+/-0.207		pCi/g						
Radium-228		1.15	+/-0.297	0.316	0.139	+/-0.332		pCi/g						
Thallium-208		0.301	+/-0.0957	0.0847	0.0383	+/-0.099		pCi/g						
Tin-126	U	0.0994	+/-0.141	0.263	0.126	+/-0.142		pCi/g						
Gamma spec, Gamma. Solid "Dry Weight Corrected"														
Actinium-227	U	-0.0795	+/-0.184	0.334	0.159	+/-0.188		pCi/g		MJH1	01/04/16	1553	1534344	3
Antimony-125	U	0.00677	+/-0.0659	0.122	0.057	+/-0.066		pCi/g						
Bismuth-212		0.562	+/-0.471	0.700	0.325	+/-0.475		pCi/g						
Bismuth-214		0.749	+/-0.132	0.0953	0.0445	+/-0.147		pCi/g						
Cesium-137		0.260	+/-0.0542	0.0569	0.0266	+/-0.0586	0.100	pCi/g						
Cobalt-60	U	0.00557	+/-0.0266	0.051	0.0227	+/-0.0267		pCi/g						
Europium-154	U	-0.0608	+/-0.0935	0.158	0.0714	+/-0.0975		pCi/g						
Lead-212		1.03	+/-0.0865	0.0754	0.036	+/-0.131		pCi/g						
Lead-214		0.986	+/-0.124	0.0995	0.047	+/-0.152		pCi/g						
Potassium-40		11.4	+/-1.01	0.467	0.206	+/-1.41		pCi/g						
Protactinium-231	UI	0.00	+/-0.524	0.616	0.291	+/-0.555		pCi/g						
Radium-226		0.749	+/-0.132	0.0953	0.0445	+/-0.147		pCi/g						
Radium-228		0.729	+/-0.190	0.175	0.0796	+/-0.221		pCi/g						
Thallium-208		0.226	+/-0.0523	0.0517	0.0242	+/-0.0559		pCi/g						
Tin-126	UI	0.00	+/-0.0881	0.0983	0.0475	+/-0.0895		pCi/g						
Rad Gas Flow Proportional Counting														
GFPC, Gross A/B, solid "Dry Weight Corrected"														
Alpha		10.8	+/-3.17	3.92	1.75	+/-3.84	4.00	pCi/g		JXB7	01/11/16	1625	1534817	4
Beta		20.0	+/-2.79	3.35	1.59	+/-3.97	10.0	pCi/g						

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Certificate of Analysis

Company : MJW Corporation
Address : 15 Hazelwood Drive
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Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Report Date: January 21, 2016

Client Sample ID: BGA1.4.1
Sample ID: 388119010

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Le	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	12/28/15	1151	1533706

The following Analytical Methods were performed

Method	Description
1	ASTM D 2216 (Modified)
2	DOE HASL 300, 4.5 2.3/Ga-01-R
3	DOE HASL 300, 4 5.2.3/Ga-01-R
4	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Company : MJW Corporation
Address : 15 Hazelwood Drive
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Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Report Date: January 21, 2016

Client Sample ID: BGA14.2
Sample ID: 388119011
Matrix: Soil
Collect Date: 21-DEC-15
Receive Date: 24-DEC-15
Collector: Client
Moisture: 22%

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Gravimetric Solids														
<i>ASTM D 2216 % Moisture "As Received"</i>														
Moisture		22.0						percent		LYT1	12/28/15	1151	1533706	1
Rad Gamma Spec Analysis														
<i>Gamma with Ingrowth "Dry Weight Corrected"</i>														
Actinium-227	U	0.042	+/-0.260	0.490	0.230	+/-0.261		pCi/g		RXF2	01/20/16	0729	1534967	2
Antimony-125	U	-0.00353	+/-0.0985	0.179	0.0825	+/-0.0985		pCi/g						
Bismuth-212	UI	0.00	+/-0.598	1.16	0.533	+/-0.692		pCi/g						
Bismuth-214		0.889	+/-0.169	0.137	0.0629	+/-0.185		pCi/g						
Cesium-137		0.215	+/-0.0782	0.0609	0.0271	+/-0.0802	0.100	pCi/g						
Cobalt-60	U	-0.0209	+/-0.0343	0.0482	0.0189	+/-0.0357		pCi/g						
Europium-154	U	-0.00916	+/-0.091	0.180	0.076	+/-0.0911		pCi/g						
Lead-212		1.18	+/-0.123	0.100	0.0469	+/-0.168		pCi/g						
Lead-214		0.950	+/-0.175	0.143	0.0665	+/-0.194		pCi/g						
Potassium-40		11.7	+/-1.37	0.571	0.234	+/-1.72		pCi/g						
Protactinium-231	UI	0.00	+/-0.646	0.803	0.371	+/-0.694		pCi/g						
Radium-226		0.889	+/-0.169	0.137	0.0629	+/-0.185		pCi/g						
Radium-228		0.945	+/-0.227	0.212	0.0919	+/-0.267		pCi/g						
Thallium-208		0.313	+/-0.0725	0.0624	0.0282	+/-0.0771		pCi/g						
Tin-126	UI	0.00	+/-0.122	0.124	0.0593	+/-0.123		pCi/g						
<i>Gammascpec, Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	U	-0.0875	+/-0.181	0.289	0.137	+/-0.186		pCi/g		MJH1	01/04/16	1553	1534344	3
Antimony-125	U	-0.0107	+/-0.0647	0.117	0.0549	+/-0.0649		pCi/g						
Bismuth-212	UI	0.00	+/-0.634	0.850	0.401	+/-0.783		pCi/g						
Bismuth-214		0.654	+/-0.130	0.0828	0.0384	+/-0.141		pCi/g						
Cesium-137		0.188	+/-0.0539	0.0457	0.0211	+/-0.0559	0.100	pCi/g						
Cobalt-60	U	0.00729	+/-0.0276	0.0525	0.0237	+/-0.0278		pCi/g						
Europium-154	UI	0.00	+/-0.0769	0.162	0.0738	+/-0.0879		pCi/g						
Lead-212		1.02	+/-0.088	0.0697	0.0333	+/-0.122		pCi/g						
Lead-214		0.968	+/-0.123	0.0908	0.0429	+/-0.145		pCi/g						
Potassium-40		11.9	+/-0.981	0.367	0.157	+/-1.46		pCi/g						
Protactinium-231	UI	0.00	+/-0.472	0.584	0.277	+/-0.480		pCi/g						
Radium-226		0.654	+/-0.130	0.0828	0.0384	+/-0.141		pCi/g						
Radium-228		0.784	+/-0.199	0.167	0.076	+/-0.226		pCi/g						
Thallium-208		0.274	+/-0.0594	0.0434	0.0202	+/-0.0635		pCi/g						
Tin-126	UI	0.00	+/-0.0816	0.0809	0.0388	+/-0.0834		pCi/g						
Rad Gas Flow Proportional Counting														
<i>GFPC, Gross A/B, solid "Dry Weight Corrected"</i>														
Alpha		13.6	+/-3.55	3.94	1.73	+/-4.48	4.00	pCi/g		JXB7	01/11/16	1628	1534817	4
Beta		20.0	+/-2.67	3.04	1.44	+/-3.87	10.0	pCi/g						

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Certificate of Analysis

Company : MJW Corporation
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Report Date: January 21, 2016

Client Sample ID: BGA1.4.2
Sample ID: 388119011

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	12/28/15	1151	1533706

The following Analytical Methods were performed

Method	Description
1	ASTM D 2216 (Modified)
2	DOE HASL 300, 4 5.2.3/Ga-01-R
3	DOE HASL 300, 4 5.2.3/Ga-01-R
4	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Company : MJW Corporation
Address : 15 Hazelwood Drive
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Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Report Date: January 21, 2016

Client Sample ID: BGA15.1
Sample ID: 388119012
Matrix: Soil
Collect Date: 21-DEC-15
Receive Date: 24-DEC-15
Collector: Client
Moisture: 27.6%

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Gravimetric Solids														
ASTM D 2216 % Moisture "As Received"														
Moisture		27.6						percent		LYT1	12/28/15	1151	1533706	1
Rad Gamma Spec Analysis														
Gamma with Ingrowth "Dry Weight Corrected"														
Actinium-227	U	-0.25	+/-0.269	0.456	0.212	+/-0.294		pCi/g		RXF2	01/20/16	0740	1534967	2
Antimony-125	UI	0.00	+/-0.289	0.192	0.0885	+/-0.316		pCi/g						
Bismuth-212	UI	0.00	+/-0.847	1.43	0.661	+/-1.10		pCi/g						
Bismuth-214		1.10	+/-0.198	0.146	0.0665	+/-0.219		pCi/g						
Cesium-137		0.391	+/-0.0852	0.0851	0.0387	+/-0.0913	0.100	pCi/g						
Cobalt-60	U	-0.0127	+/-0.0439	0.0823	0.035	+/-0.0443		pCi/g						
Europium-154	U	-0.134	+/-0.184	0.254	0.110	+/-0.194		pCi/g						
Lead-212		1.09	+/-0.121	0.126	0.0596	+/-0.180		pCi/g						
Lead-214		1.18	+/-0.175	0.152	0.0706	+/-0.202		pCi/g						
Potassium-40		12.5	+/-1.46	0.692	0.284	+/-1.90		pCi/g						
Protactinium-231	UI	0.00	+/-0.828	0.916	0.427	+/-0.845		pCi/g						
Radium-226		1.10	+/-0.198	0.146	0.0665	+/-0.219		pCi/g						
Radium-228		1.01	+/-0.299	0.300	0.133	+/-0.327		pCi/g						
Thallium-208		0.267	+/-0.0959	0.0704	0.0318	+/-0.0985		pCi/g						
Tin-126	UI	0.00	+/-0.0914	0.128	0.0617	+/-0.0942		pCi/g						
Gamma spec, Gamma, Solid "Dry Weight Corrected"														
Actinium-227	U	0.0237	+/-0.279	0.517	0.245	+/-0.279		pCi/g		MJH1	01/04/16	1554	1534344	3
Antimony-125	U	0.0439	+/-0.113	0.209	0.0981	+/-0.115		pCi/g						
Bismuth-212	UI	0.00	+/-0.914	1.33	0.617	+/-0.969		pCi/g						
Bismuth-214		0.959	+/-0.160	0.141	0.065	+/-0.179		pCi/g						
Cesium-137		0.337	+/-0.0867	0.0828	0.0381	+/-0.091	0.100	pCi/g						
Cobalt-60	U	0.00312	+/-0.0437	0.084	0.037	+/-0.0437		pCi/g						
Europium-154	UI	0.00	+/-0.138	0.295	0.134	+/-0.156		pCi/g						
Lead-212		1.16	+/-0.127	0.116	0.055	+/-0.170		pCi/g						
Lead-214		1.04	+/-0.180	0.318	0.154	+/-0.200		pCi/g						
Potassium-40		11.7	+/-1.43	0.676	0.287	+/-1.74		pCi/g						
Protactinium-231	U	0.413	+/-0.587	1.08	0.515	+/-0.623		pCi/g						
Radium-226		0.959	+/-0.160	0.141	0.065	+/-0.179		pCi/g						
Radium-228		0.801	+/-0.349	0.274	0.123	+/-0.359		pCi/g						
Thallium-208		0.314	+/-0.0879	0.0738	0.0339	+/-0.0917		pCi/g						
Tin-126	UI	0.00	+/-0.0903	0.0929	0.0445	+/-0.0923		pCi/g						
Rad Gas Flow Proportional Counting														
GFPC, Gross A:B, solid "Dry Weight Corrected"														
Alpha		13.2	+/-3.60	3.89	1.68	+/-4.49	4.00	pCi/g		JXB7	01/11/16	1635	1534817	4
Beta		30.3	+/-3.31	3.56	1.69	+/-5.38	10.0	pCi/g						

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Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Report Date: January 21, 2016

Client Sample ID: BGA1.5.1
Sample ID: 388119012

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	12/28/15	1151	1533706

The following Analytical Methods were performed

Method	Description
1	ASTM D 2216 (Modified)
2	DOE HASL 300, 4.5 2.3/Ga-01-R
3	DOE HASL 300, 4.5 2.3/Ga-01-R
4	EPA 900 0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

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Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Report Date: January 21, 2016

Client Sample ID: BGA15.2
Sample ID: 388119013
Matrix: Soil
Collect Date: 21-DEC-15
Receive Date: 24-DEC-15
Collector: Client
Moisture: 21.2%

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Gravimetric Solids														
<i>ASTM D 2216 % Moisture "As Received"</i>														
Moisture		21.2						percent		LYT1	12/28/15	1151	1533706	1
Rad Gamma Spec Analysis														
<i>Gamma with Ingrowth "Dry Weight Corrected"</i>														
Actinium-227	U	0.179	+/-0.275	0.518	0.245	+/-0.288		pCi/g		RXF2	01/20/16	0740	1534967	2
Antimony-125	U	-0.00353	+/-0.102	0.186	0.087	+/-0.102		pCi/g						
Bismuth-212	UI	0.00	+/-0.924	0.913	0.420	+/-0.934		pCi/g						
Bismuth-214		0.895	+/-0.179	0.127	0.0585	+/-0.194		pCi/g						
Cesium-137		0.241	+/-0.079	0.078	0.0363	+/-0.0813	0.100	pCi/g						
Cobalt-60	U	-0.0111	+/-0.0361	0.0657	0.0289	+/-0.0364		pCi/g						
Europium-154	U	-0.0451	+/-0.111	0.199	0.0888	+/-0.113		pCi/g						
Lead-212		1.12	+/-0.121	0.109	0.0515	+/-0.151		pCi/g						
Lead-214		1.12	+/-0.156	0.136	0.0637	+/-0.181		pCi/g						
Potassium-40		12.8	+/-1.21	0.659	0.290	+/-1.64		pCi/g						
Protactinium-231	UI	0.00	+/-0.650	0.907	0.427	+/-0.695		pCi/g						
Radium-226		0.895	+/-0.179	0.127	0.0585	+/-0.194		pCi/g						
Radium-228		1.01	+/-0.257	0.273	0.125	+/-0.303		pCi/g						
Thallium-208		0.309	+/-0.085	0.0664	0.0307	+/-0.0889		pCi/g						
Tin-126	UI	0.00	+/-0.117	0.164	0.0782	+/-0.120		pCi/g						
<i>Gammiaspec, Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	U	0.018	+/-0.229	0.413	0.197	+/-0.229		pCi/g		MJH1	01/04/16	1554	1534344	3
Antimony-125	UI	0.00	+/-0.0897	0.149	0.0698	+/-0.111		pCi/g						
Bismuth-212	UI	0.00	+/-0.533	1.02	0.481	+/-0.701		pCi/g						
Bismuth-214		0.740	+/-0.150	0.109	0.0506	+/-0.164		pCi/g						
Cesium-137		0.220	+/-0.0693	0.0563	0.026	+/-0.0722	0.100	pCi/g						
Cobalt-60	U	0.0138	+/-0.030	0.061	0.0271	+/-0.0306		pCi/g						
Europium-154	U	0.00543	+/-0.107	0.201	0.0914	+/-0.107		pCi/g						
Lead-212		1.00	+/-0.102	0.0894	0.0427	+/-0.138		pCi/g						
Lead-214		1.04	+/-0.164	0.268	0.131	+/-0.189		pCi/g						
Potassium-40		12.7	+/-1.11	0.572	0.252	+/-1.56		pCi/g						
Protactinium-231	U	0.317	+/-0.551	0.762	0.362	+/-0.556		pCi/g						
Radium-226		0.740	+/-0.150	0.109	0.0506	+/-0.164		pCi/g						
Radium-228	UI	0.00	+/-0.218	0.425	0.204	+/-0.488		pCi/g						
Thallium-208		0.358	+/-0.0662	0.0556	0.0259	+/-0.0735		pCi/g						
Tin-126	UI	0.00	+/-0.0913	0.125	0.0601	+/-0.0929		pCi/g						
Rad Gas Flow Proportional Counting														
<i>GFPC, Gross A/B, solid "Dry Weight Corrected"</i>														
Alpha		11.4	+/-3.40	4.05	1.78	+/-4.04	4.00	pCi/g		JXB7	01/11/16	1626	1534817	4
Beta		20.7	+/-2.90	3.22	1.52	+/-4.10	10.0	pCi/g						

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : MJW Corporation
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Report Date: January 21, 2016

Client Sample ID: BGA1.5.2
Sample ID: 388119013

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	12/28/15	1151	1533706

The following Analytical Methods were performed

Method	Description
1	ASTM D 2216 (Modified)
2	DOE HASL 300, 4 5.2 3/Ga-01-R
3	DOE HASL 300, 4 5.2 3/Ga-01-R
4	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).