

# 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

Report Date: January 5, 2016

Contact: Ms. Laurie Losey  
 Project: Soil Radioisotopes

Client Sample ID: 4.4D.R.1.1  
 Sample ID: 387022007  
 Matrix: Soil  
 Collect Date: 30-NOV-15  
 Receive Date: 08-DEC-15  
 Collector: Client  
 Moisture: 25.8%

Project: MJWC00115  
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Gravimetric Solids</b>														
<i>ASTM D 2216 % Moisture "As Received"</i>														
Moisture		25.8						percent		DRS1	12/09/15	1328	1529597	1
<b>Rad Gamma Spec Analysis</b>														
<i>Gammascpec, Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	U	-0.0379	+/-0.284	0.535	0.249	+/-0.284		pCi/g		RXF2	01/04/16	0922	1529718	2
Antimony-125	U	0.0525	+/-0.118	0.238	0.110	+/-0.120		pCi/g						
Bismuth-212	UI	0.00	+/-0.893	1.77	0.814	+/-1.19		pCi/g						
Bismuth-214		1.14	+/-0.218	0.150	0.066	+/-0.238		pCi/g						
Cesium-137		0.392	+/-0.137	0.108	0.049	+/-0.141	0.100	pCi/g						
Cobalt-60	U	0.0381	+/-0.062	0.124	0.0533	+/-0.0644		pCi/g						
Europium-154	U	0.0227	+/-0.179	0.359	0.156	+/-0.180		pCi/g						
Lead-212		1.08	+/-0.126	0.110	0.0511	+/-0.174		pCi/g						
Lead-214		1.07	+/-0.207	0.364	0.176	+/-0.227		pCi/g						
Potassium-40		13.4	+/-1.78	1.09	0.456	+/-2.15		pCi/g						
Protactinium-231	UI	0.00	+/-0.962	0.889	0.407	+/-0.969		pCi/g						
Radium-226		1.14	+/-0.218	0.150	0.066	+/-0.238		pCi/g						
Radium-228		1.45	+/-0.339	0.222	0.0883	+/-0.385		pCi/g						
Thallium-208		0.351	+/-0.121	0.0826	0.0368	+/-0.125		pCi/g						
Tin-126	UI	0.00	+/-0.0914	0.114	0.0548	+/-0.0927		pCi/g						
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Gross A/B, solid "Dry Weight Corrected"</i>														
Alpha		15.6	+/-4.20	3.88	1.59	+/-5.16	4.00	pCi/g		JXB7	01/02/16	1420	1532750	3
Beta		20.2	+/-3.00	2.78	1.26	+/-4.16	10.0	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	DRS1	12/09/15	1328	1529597

**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	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Contact: Ms. Laurie Losey  
Project: Soil Radioisotopes

Client Sample ID: 4.4D.R.1.1  
Sample ID: 387022007

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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## Certificate of Analysis

Company : MJW Technical Services  
 Address : 15 Hazelwood Drive  
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 Buffalo, New York 14228

Report Date: March 8, 2016

Contact: Ms. Laurie Losey  
 Project: Soil Radioisotopes

Project: MJWC00115  
 Client ID: MJWC001

Client Sample ID: 4.4.D.R.1.2  
 Sample ID: 392031019  
 Matrix: Soil  
 Collect Date: 30-NOV-15  
 Receive Date: 25-FEB-16  
 Collector: Client  
 Moisture: 19.8%

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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### Rad Gamma Spec Analysis

*Gamma with Ingrowth "Dry Weight Corrected"*

Actinium-227	U	-0.126	+/-0.335	0.606	0.285	+/-0.340		pCi/g		MXR1	03/07/16	0803	1547790	1
Antimony-125	U	-0.0725	+/-0.129	0.235	0.109	+/-0.133		pCi/g						
Bismuth-212	U	0.430	+/-0.679	1.35	0.618	+/-0.708		pCi/g						
Bismuth-214		0.692	+/-0.207	0.150	0.0679	+/-0.216		pCi/g						
Cesium-137		1.83	+/-0.155	0.0776	0.0348	+/-0.221	0.100	pCi/g						
Cobalt-60	U	-0.00133	+/-0.0431	0.0857	0.0364	+/-0.0431		pCi/g						
Europium-154	U	0.131	+/-0.150	0.322	0.144	+/-0.162		pCi/g						
Lead-212		0.954	+/-0.151	0.147	0.0699	+/-0.176		pCi/g						
Lead-214		1.12	+/-0.191	0.360	0.174	+/-0.217		pCi/g						
Potassium-40		13.0	+/-1.58	0.550	0.211	+/-1.93		pCi/g						
Protactinium-231	U	0.603	+/-0.682	1.33	0.628	+/-0.748		pCi/g						
Radium-226		0.692	+/-0.207	0.150	0.0679	+/-0.216		pCi/g						
Radium-228		1.08	+/-0.349	0.324	0.145	+/-0.382		pCi/g						
Thallium-208		0.317	+/-0.098	0.0786	0.0357	+/-0.102		pCi/g						
Tin-126	UI	0.00	+/-0.133	0.184	0.0882	+/-0.135		pCi/g						

### Rad Gas Flow Proportional Counting

*GFPC, Gross A/B, solid "Dry Weight Corrected"*

Alpha		12.0	+/-3.72	3.95	1.66	+/-4.39	4.00	pCi/g		JXB7	03/03/16	1138	1547849	2
Beta		17.1	+/-2.75	2.98	1.38	+/-3.68	10.0	pCi/g						

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	CXC1	02/25/16	1518	1547782

### The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2.3/Ga-01-R
2	EPA 900 0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Report Date: March 8, 2016

Contact: Ms. Laurie Losey  
Project: Soil Radioisotopes

Client Sample ID: 4.4.D.R.1.2  
Sample ID: 392031019

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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Report Date: January 5, 2016

Contact: Ms. Laurie Losey  
 Project: Soil Radioisotopes

Client Sample ID: 4.4D.R.2.1  
 Sample ID: 387022008  
 Matrix: Soil  
 Collect Date: 30-NOV-15  
 Receive Date: 08-DEC-15  
 Collector: Client  
 Moisture: 28.4%

Project: MJWC00115  
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Gravimetric Solids</b>														
<i>ASTM D 2216 % Moisture "As Received"</i>														
Moisture		28.4						percent		DRS1	12/09/15	1328	1529597	1
<b>Rad Gamma Spec Analysis</b>														
<i>Gammascpec, Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	U	-0.17	+/-0.254	0.465	0.217	+/-0.266		pCi/g		RXF2	01/04/16	0922	1529718	2
Antimony-125	U	0.0519	+/-0.303	0.182	0.0842	+/-0.106		pCi/g						
Bismuth-212		1.84	+/-0.903	0.843	0.378	+/-0.924		pCi/g						
Bismuth-214		0.666	+/-0.145	0.134	0.0613	+/-0.156		pCi/g						
Cesium-137		0.570	+/-0.103	0.0701	0.0318	+/-0.114	0.100	pCi/g						
Cobalt-60	U	0.0223	+/-0.0346	0.075	0.0325	+/-0.036		pCi/g						
Europium-154	U	-0.0467	+/-0.123	0.221	0.0968	+/-0.125		pCi/g						
Lead-212		1.01	+/-0.121	0.113	0.0532	+/-0.156		pCi/g						
Lead-214		0.931	+/-0.174	0.309	0.150	+/-0.192		pCi/g						
Potassium-40		13.9	+/-1.45	0.631	0.266	+/-1.88		pCi/g						
Protactinium-231	U	0.109	+/-0.588	1.00	0.471	+/-0.590		pCi/g						
Radium-226		0.666	+/-0.145	0.134	0.0613	+/-0.156		pCi/g						
Radium-228	UI	0.00	+/-0.282	0.572	0.272	+/-0.594		pCi/g						
Thallium-208		0.286	+/-0.0795	0.0657	0.0299	+/-0.0833		pCi/g						
Tin-126	UI	0.00	+/-0.133	0.125	0.0597	+/-0.134		pCi/g						
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Gross A/B, solid "Dry Weight Corrected"</i>														
Alpha		11.2	+/-3.23	3.89	1.74	+/-3.91	4.00	pCi/g		JXB7	01/02/16	1420	1532750	3
Beta		19.1	+/-2.38	2.27	1.06	+/-3.60	10.0	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	DRS1	12/09/15	1328	1529597

**The following Analytical Methods were performed**

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

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

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Contact: Ms. Laurie Losey  
Project: Soil Radioisotopes  
Client Sample ID: 4.4D.R.2.1  
Sample ID: 387022008

Report Date: January 5, 2016

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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Report Date: January 5, 2016

Contact: Ms. Laurie Losey  
 Project: Soil Radioisotopes

Client Sample ID: 4.4D.R.2.2  
 Sample ID: 387022009  
 Matrix: Soil  
 Collect Date: 30-NOV-15  
 Receive Date: 08-DEC-15  
 Collector: Client  
 Moisture: 22.4%

Project: MJWC00115  
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Gravimetric Solids</b>														
<i>ASTM D 2216 % Moisture "As Received"</i>														
Moisture		22.4						percent		DRS1	12/09/15	1328	1529597	1
<b>Rad Alpha Spec Analysis</b>														
<i>ASP Plutonium Isotopic, Solid "Dry Weight Corrected"</i>														
Plutonium-238	U	0.00712	+/-0.0396	0.0758	0.0174	+/-0.0396	1.00	pCi/g		MXS2	12/28/15	1656	1529806	2
Plutonium-239/240	U	-0.0263	+/-0.033	0.111	0.0347	+/-0.0331	1.00	pCi/g						
<i>ASP Uranium Isotopic, Solid "Dry Weight Corrected"</i>														
Uranium-232	U	-0.0055	+/-0.0768	0.162	0.0624	+/-0.0769	1.00	pCi/g		MXS2	12/28/15	1552	1529801	3
Uranium-233/234		0.771	+/-0.247	0.0953	0.0178	+/-0.281	1.00	pCi/g						
Uranium-235/236	U	0.0152	+/-0.0568	0.0956	0.0179	+/-0.0569	1.00	pCi/g						
Uranium-238		1.03	+/-0.284	0.0596	0.00	+/-0.337	1.00	pCi/g						
<i>Alphaspec Np237, Solid "Dry Weight Corrected"</i>														
Neptunium-237	U	-0.0113	+/-0.261	0.590	0.190	+/-0.261	1.00	pCi/g		MXS2	12/28/15	1649	1529805	4
<i>Alphaspec Th229 + 228,230,232 Solid "Dry Weight Corrected"</i>														
Thorium-228		0.816	+/-0.594	0.671	0.210	+/-0.614	1.00	pCi/g		MXS2	12/29/15	1108	1529799	5
Thorium-229	U	0.0169	+/-0.237	0.506	0.131	+/-0.237	1.00	pCi/g						
Thorium-230		0.928	+/-0.604	0.613	0.184	+/-0.623	1.00	pCi/g						
Thorium-232		1.52	+/-0.712	0.373	0.065	+/-0.755	1.00	pCi/g						
<i>Am241, Cm Solid "Dry Weight Corrected"</i>														
Americium-241		0.0546	+/-0.0625	0.078	0.0198	+/-0.0628	1.00	pCi/g		MXS2	12/28/15	1656	1529802	6
Curium-242	U	-0.00341	+/-0.0294	0.0682	0.0128	+/-0.0295	1.00	pCi/g						
Curium-243/244	U	-0.0116	+/-0.0392	0.102	0.032	+/-0.0393	1.00	pCi/g						
Curium-245/246		0.0403	+/-0.0581	0.070	0.0131	+/-0.0583	1.00	pCi/g						
<i>Liquid Scint Pu241, Solid "Dry Weight Corrected"</i>														
Plutonium-241	U	-2.49	+/-6.59	11.5	5.60	+/-6.59	15.0	pCi/g		MXS2	12/30/15	1944	1529807	7
<b>Rad Gamma Spec Analysis</b>														
<i>Gamma I129, Solid "Dry Weight Corrected"</i>														
Iodine-129	UI	0.00	+/-0.268	0.373	0.169	+/-0.270	1.00	pCi/g		MJH1	12/30/15	1639	1533084	8
<i>Gammaspac, Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	U	0.111	+/-0.266	0.522	0.247	+/-0.271		pCi/g		RXF2	01/04/16	0923	1529718	9
Antimony-125	U	-0.0492	+/-0.107	0.192	0.0893	+/-0.109		pCi/g						
Bismuth-212	UI	0.00	+/-0.736	1.35	0.630	+/-1.01		pCi/g						
Bismuth-214		0.786	+/-0.169	0.119	0.054	+/-0.181		pCi/g						
Cesium-137		2.40	+/-0.176	0.060	0.0268	+/-0.259	0.100	pCi/g						
Cobalt-60	U	-0.00256	+/-0.0354	0.0673	0.0289	+/-0.0354		pCi/g						
Europium-154	U	0.0296	+/-0.106	0.212	0.0931	+/-0.107		pCi/g						
Lead-212		1.13	+/-0.129	0.112	0.0531	+/-0.159		pCi/g						
Lead-214		0.921	+/-0.179	0.153	0.0717	+/-0.193		pCi/g						

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 Contact: Ms. Laurie Losey  
 Project: Soil Radioisotopes  
 Client Sample ID: 4.4D.R.2.2  
 Sample ID: 387022009

Report Date: January 5, 2016

Project: MJWC00115  
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gamma Spec Analysis</b>														
<i>Gammascpec, Gamma, Solid "Dry Weight Corrected"</i>														
Potassium-40		12.3	+/-1.30	0.412	0.159	+/-1.71		pCi/g						
Protactinium-231	U	0.00	+/-1.13	0.878	0.411	+/-1.15		pCi/g						
Radium-226		0.786	+/-0.169	0.119	0.054	+/-0.181		pCi/g						
Radium-228		1.08	+/-0.289	0.254	0.114	+/-0.325		pCi/g						
Thallium-208		0.327	+/-0.0987	0.0613	0.0278	+/-0.102		pCi/g						
Tin-126	U	0.0369	+/-0.125	0.169	0.0817	+/-0.126		pCi/g						
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Gross A/B, solid "Dry Weight Corrected"</i>														
Alpha		11.5	+/-3.65	3.96	1.66	+/-4.27	4.00	pCi/g		JXB7	01/02/16	1430	1532750	10
Beta		21.5	+/-3.21	3.08	1.41	+/-4.47	10.0	pCi/g						
<i>GFPC, Sr90, solid "Dry Weight Corrected"</i>														
Strontium-90	U	0.256	+/-0.961	1.75	0.778	+/-0.962	2.00	pCi/g		KSD1	12/29/15	1422	1532743	11
<b>Rad Liquid Scintillation Analysis</b>														
<i>LSC, Tritium Dist. Solid "Dry Weight Corrected"</i>														
Tritium	U	0.532	+/-2.39	4.14	1.98	+/-2.39	6.00	pCi/g		TXJ1	12/28/15	0032	1531105	12
<i>Liquid Scint C14, Solid "Dry Weight Corrected"</i>														
Carbon-14	U	-0.381	+/-0.842	1.45	0.713	+/-0.842	2.00	pCi/g		TXJ1	12/24/15	0358	1531115	13
<i>Liquid Scint Tc99, Solid "Dry Weight Corrected"</i>														
Technetium-99	U	0.838	+/-1.39	2.36	1.13	+/-1.39	5.00	pCi/g		MYM	01/02/16	1232	1532556	14

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	DRS1	12/09/15	1328	1529597

**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	EPA 900.0/SW846 9310/SM 7110B Modified
11	EPA 905.0 Modified/DOE RPS01 Rev. 1 Modified
12	EPA 906.0 Modified
13	EPA EERF C-01 Modified



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Project: Soil Radioisotopes

Client Sample ID: 4.4D.R.2.2  
Sample ID: 387022009

Project: MJWC00115  
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
14	DOE EMI, HASL-300, Te-02-RC Modified													
Surrogate/Tracer	Recovery	Test						Batch ID	Recovery%	Acceptable Limits				
Plutonium-242 Tracer		ASP Plutonium Isotopic, Solid "Dry Weight Corrected"						1529806	78.7	(15%-125%)				
Uranium-232 Tracer		ASP Uranium Isotopic, Solid "Dry Weight Corrected"						1529801	75.5	(15%-125%)				
Uranium-235/236 Tracer		ASP Uranium Isotopic, Solid "Dry Weight Corrected"						1529801	92.4	(15%-125%)				
Americium-243 Tracer		Alphaspec Np237, Solid "Dry Weight Corrected"						1529805	93.5	(15%-125%)				
Actinium-227 Tracer		Alphaspec Th229 + 228,230,232 Solid "Dry Weight Corrected"						1529799	82.6	(15%-125%)				
Americium-243 Tracer		Am241, Cm Solid "Dry Weight Corrected"						1529802	85.2	(15%-125%)				
Plutonium-242 Tracer		Liquid Scint Pu241, Solid "Dry Weight Corrected"						1529807	78.7	(15%-125%)				
Strontium Carrier		GFPC, Sr90, solid "Dry Weight Corrected"						1532743	83.5	(25%-125%)				
Technetium-99m Tracer		Liquid Scint Te99, Solid "Dry Weight Corrected"						1532556	91.9	(15%-125%)				

### Notes:

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Company : MJW Corporation  
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Report Date: January 5, 2016

Contact: Ms. Laurie Losey  
 Project: Soil Radioisotopes

Client Sample ID: 4.4D.R.2.5  
 Sample ID: 387022010  
 Matrix: Soil  
 Collect Date: 30-NOV-15  
 Receive Date: 08-DEC-15  
 Collector: Client  
 Moisture: 22.4%

Project: MJWC00115  
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Gravimetric Solids</b>														
<i>ASTM D 2216 % Moisture "As Received"</i>														
Moisture		22.4						percent		DRS1	12/09/15	1328	1529597	1
<b>Rad Alpha Spec Analysis</b>														
<i>ASP Plutonium Isotopic, Solid "Dry Weight Corrected"</i>														
Plutonium-238		0.0296	+/-0.0524	0.0794	0.0202	+/-0.0525	1.00	pCi/g		MXS2	12/28/15	1656	1529806	2
Plutonium-239/240	U	-0.0249	+/-0.0314	0.105	0.033	+/-0.0314	1.00	pCi/g						
<i>ASP Uranium Isotopic, Solid "Dry Weight Corrected"</i>														
Uranium-232		0.0639	+/-0.0897	0.145	0.0505	+/-0.0904	1.00	pCi/g		MXS2	12/28/15	1550	1529801	3
Uranium-233/234		0.961	+/-0.266	0.103	0.0237	+/-0.314	1.00	pCi/g						
Uranium-235/236		0.0748	+/-0.0824	0.0561	0.00	+/-0.0834	1.00	pCi/g						
Uranium-238		0.928	+/-0.261	0.0894	0.0167	+/-0.307	1.00	pCi/g						
<i>Alphaspec Np237, Solid "Dry Weight Corrected"</i>														
Neptunium-237		0.00	+/-0.144	0.214	0.00	+/-0.144	1.00	pCi/g		MXS2	12/28/15	1649	1529805	4
<i>Alphaspec Th229 + 228,230,232 Solid "Dry Weight Corrected"</i>														
Thorium-228		1.54	+/-0.683	0.637	0.223	+/-0.727	1.00	pCi/g		MXS2	12/28/15	1606	1529799	5
Thorium-229		0.158	+/-0.250	0.346	0.0794	+/-0.252	1.00	pCi/g						
Thorium-230		0.859	+/-0.475	0.299	0.056	+/-0.493	1.00	pCi/g						
Thorium-232		1.06	+/-0.518	0.187	0.00	+/-0.542	1.00	pCi/g						
<i>Am241, Cm Solid "Dry Weight Corrected"</i>														
Americium-241	U	-0.0068	+/-0.0301	0.0785	0.018	+/-0.0301	1.00	pCi/g		MXS2	12/28/15	1636	1529802	6
Curium-242		0.00	+/-0.0318	0.0473	0.00	+/-0.0319	1.00	pCi/g						
Curium-243/244	U	-0.0168	+/-0.0318	0.0982	0.0281	+/-0.0319	1.00	pCi/g						
Curium-245/246		0.0324	+/-0.0556	0.0487	0.00	+/-0.0558	1.00	pCi/g						
<i>Liquid Scint Pu241, Solid "Dry Weight Corrected"</i>														
Plutonium-241	U	-2.83	+/-5.93	10.4	5.05	+/-5.93	15.0	pCi/g		MXS2	12/30/15	2036	1529807	7
<b>Rad Gamma Spec Analysis</b>														
<i>Gamma I129, Solid "Dry Weight Corrected"</i>														
Iodine-129	U	0.0644	+/-0.237	0.453	0.204	+/-0.238	1.00	pCi/g		MJH1	12/30/15	1639	1533084	8
<i>Gammasp. Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	U	-0.0575	+/-0.296	0.561	0.264	+/-0.297		pCi/g		RXF2	01/04/16	0923	1529718	9
Antimony-125	UI	0.00	+/-0.125	0.254	0.119	+/-0.142		pCi/g						
Bismuth-212	UI	0.00	+/-0.677	1.21	0.552	+/-0.850		pCi/g						
Bismuth-214		0.945	+/-0.212	0.138	0.0623	+/-0.227		pCi/g						
Cesium-137		2.43	+/-0.180	0.0919	0.0423	+/-0.277	0.100	pCi/g						
Cobalt-60	U	-0.035	+/-0.035	0.0567	0.0225	+/-0.0385		pCi/g						
Europium-154	U	0.0294	+/-0.116	0.242	0.105	+/-0.117		pCi/g						
Lead-212		1.13	+/-0.138	0.119	0.0562	+/-0.166		pCi/g						
Lead-214		1.00	+/-0.238	0.168	0.0782	+/-0.252		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 Loscy  
 Project: Soil Radioisotopes  
 Client Sample ID: 4.4D.R.2.5  
 Sample ID: 387022010

Report Date: January 5, 2016

Project: MJWC00115  
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Le	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gamma Spec Analysis</b>														
<i>Gammaspac. Gamma. Solid "Dry Weight Corrected"</i>														
Potassium-40		11.7	+/-1.54	0.852	0.368	+/-1.84		pCi/g						
Protactinium-231	U	0.00	+/-0.882	1.01	0.473	+/-0.923		pCi/g						
Radium-226		0.945	+/-0.212	0.138	0.0623	+/-0.227		pCi/g						
Radium-228		1.08	+/-0.294	0.266	0.117	+/-0.334		pCi/g						
Thallium-208		0.272	+/-0.133	0.0718	0.0326	+/-0.135		pCi/g						
Tin-126	U	0.0858	+/-0.159	0.198	0.0948	+/-0.160		pCi/g						
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Gross A/B, solid "Dry Weight Corrected"</i>														
Alpha		11.9	+/-3.60	3.95	1.70	+/-4.36	4.00	pCi/g		JXB7	01/02/16	1430	1532750	10
Beta		24.2	+/-3.67	4.35	2.06	+/-5.08	10.0	pCi/g						
<i>GFPC, Sr90, solid "Dry Weight Corrected"</i>														
Strontium-90	U	0.267	+/-1.02	1.82	0.830	+/-1.02	2.00	pCi/g		KSD1	12/29/15	1420	1532743	11
<b>Rad Liquid Scintillation Analysis</b>														
<i>LSC, Tritium Dist, Solid "Dry Weight Corrected"</i>														
Tritium		2.39	+/-2.64	4.43	2.12	+/-2.64	6.00	pCi/g		TXJ1	12/28/15	0316	1531105	12
<i>Liquid Scint C14, Solid "Dry Weight Corrected"</i>														
Carbon-14	U	-0.037	+/-0.816	1.39	0.685	+/-0.816	2.00	pCi/g		TXJ1	12/24/15	0521	1531115	13
<i>Liquid Scint Tc99, Solid "Dry Weight Corrected"</i>														
Technetium-99	U	0.943	+/-1.32	2.23	1.07	+/-1.32	5.00	pCi/g		MYM	01/02/16	1249	1532556	14

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	DRS1	12/09/15	1328	1529597

**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	EPA 900.0/SW846 9310/SM 7110B Modified
11	EPA 905.0 Modified/DOE RP501 Rev 1 Modified
12	EPA 906.0 Modified
13	EPA EERF C-01 Modified

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## Certificate of Analysis

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

Report Date: January 5, 2016

Contact: Ms. Laurie Losey  
Project: Soil Radioisotopes

Client Sample ID: 4.4D.R.2.5  
Sample ID: 387022010

Project: MJWC00115  
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
14	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"							1529806	87.3	(15%-125%)				
Uranium-232 Tracer	ASP Uranium Isotopic, Solid "Dry Weight Corrected"							1529801	80.2	(15%-125%)				
Uranium-235/236 Tracer	ASP Uranium Isotopic, Solid "Dry Weight Corrected"							1529801	74.9	(15%-125%)				
Americium-243 Tracer	Alphaspec Np237, Solid "Dry Weight Corrected"							1529805	96.6	(15%-125%)				
Actinium-227 Tracer	Alphaspec Th229 + 228,230,232 Solid "Dry Weight Corrected"							1529799	87.5	(15%-125%)				
Americium-243 Tracer	Am241, Cm Solid "Dry Weight Corrected"							1529802	105	(15%-125%)				
Plutonium-242 Tracer	Liquid Scint Pu241, Solid "Dry Weight Corrected"							1529807	87.3	(15%-125%)				
Strontium Carrier	GFPC, Sr90, solid "Dry Weight Corrected"							1532743	78.2	(25%-125%)				
Technetium-99m Tracer	Liquid Scint Tc99, Solid "Dry Weight Corrected"							1532556	91.4	(15%-125%)				

### 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 5, 2016

Client Sample ID: 4.4.D.R.3.1  
 Sample ID: 387022011  
 Matrix: Soil  
 Collect Date: 30-NOV-15  
 Receive Date: 08-DEC-15  
 Collector: Client  
 Moisture: 33.6%

Project: MJWC00115  
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Gravimetric Solids</b>														
<i>ASTM D 2216 % Moisture "As Received"</i>														
Moisture		33.6						percent		DRS1	12/09/15	1328	1529597	1
<b>Rad Gamma Spec Analysis</b>														
<i>Gammascpec, Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	U	-0.0733	+/-0.231	0.425	0.202	+/-0.234		pCi/g		RXF2	01/04/16	1458	1529718	2
Antimony-125	U	0.056	+/-0.0769	0.150	0.0699	+/-0.0811		pCi/g						
Bismuth-212		0.827	+/-0.783	0.839	0.387	+/-0.788		pCi/g						
Bismuth-214		0.917	+/-0.145	0.105	0.0481	+/-0.164		pCi/g						
Cesium-137		0.437	+/-0.0731	0.0571	0.0262	+/-0.0815	0.100	pCi/g						
Cobalt-60	U	-0.0118	+/-0.0389	0.0596	0.0261	+/-0.0393		pCi/g						
Europium-154	U	0.0153	+/-0.108	0.206	0.0927	+/-0.108		pCi/g						
Lead-212		1.01	+/-0.101	0.0958	0.0456	+/-0.131		pCi/g						
Lead-214		1.03	+/-0.167	0.116	0.0543	+/-0.188		pCi/g						
Potassium-40		15.9	+/-1.32	0.447	0.186	+/-1.93		pCi/g						
Protactinium-231	UI	0.00	+/-0.612	0.750	0.353	+/-0.638		pCi/g						
Radium-226		0.917	+/-0.145	0.105	0.0481	+/-0.164		pCi/g						
Radium-228		1.11	+/-0.236	0.213	0.0964	+/-0.288		pCi/g						
Thallium-208		0.271	+/-0.0713	0.0593	0.0275	+/-0.075		pCi/g						
Tin-126	UI	0.00	+/-0.0999	0.114	0.0547	+/-0.103		pCi/g						
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Gross A-B, solid "Dry Weight Corrected"</i>														
Alpha		10.1	+/-3.64	3.93	1.59	+/-4.13	4.00	pCi/g		JXB7	01/02/16	1430	1532750	3
Beta		17.5	+/-2.96	2.63	1.16	+/-3.86	10.0	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	DRS1	12/09/15	1328	1529597

**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	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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# GEL LABORATORIES LLC

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## Certificate of Analysis

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

Report Date: January 5, 2016

Contact: Ms. Laurie Losey  
Project: Soil Radioisotopes

Client Sample ID: 4.4.D.R.3.1  
Sample ID: 387022011

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).

# GEL LABORATORIES LLC

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## Certificate of Analysis

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

Report Date: March 8, 2016

Contact: Ms. Laurie Losey  
 Project: Soil Radioisotopes

Client Sample ID: 4.4.D.R.3.2  
 Sample ID: 392031020  
 Matrix: Soil  
 Collect Date: 30-NOV-15  
 Receive Date: 25-FEB-16  
 Collector: Client  
 Moisture: 24.1%

Project: MJWC00115  
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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### Rad Gamma Spec Analysis

*Gamma with Ingrowth "Dry Weight Corrected"*

Actinium-227	U	-0.00653	+/-0.260	0.462	0.216	+/-0.260		pCi/g		MXR1	03/07/16	0804	1547790	1
Antimony-125	U	-0.0144	+/-0.0936	0.173	0.0795	+/-0.0939		pCi/g						
Bismuth-212	UI	0.00	+/-0.946	1.09	0.502	+/-1.01		pCi/g						
Bismuth-214		0.682	+/-0.134	0.109	0.0488	+/-0.146		pCi/g						
Cesium-137		0.589	+/-0.0913	0.0588	0.0261	+/-0.103	0.100	pCi/g						
Cobalt-60	U	0.0235	+/-0.0353	0.0788	0.0341	+/-0.0369		pCi/g						
Europium-154	U	-0.0604	+/-0.129	0.235	0.103	+/-0.132		pCi/g						
Lead-212		1.11	+/-0.118	0.105	0.0492	+/-0.154		pCi/g						
Lead-214		0.927	+/-0.184	0.133	0.0616	+/-0.200		pCi/g						
Potassium-40		14.5	+/-1.47	0.672	0.284	+/-1.95		pCi/g						
Protactinium-231	UI	0.00	+/-0.812	0.839	0.390	+/-0.842		pCi/g						
Radium-226		0.682	+/-0.134	0.109	0.0488	+/-0.146		pCi/g						
Radium-228		0.862	+/-0.260	0.240	0.106	+/-0.291		pCi/g						
Thallium-208		0.316	+/-0.0707	0.0542	0.0241	+/-0.0755		pCi/g						
Tin-126	U	0.0705	+/-0.109	0.150	0.0718	+/-0.110		pCi/g						

### Rad Gas Flow Proportional Counting

*GFPC, Gross A/B, solid "Dry Weight Corrected"*

Alpha		12.7	+/-3.77	3.89	1.62	+/-4.52	4.00	pCi/g		JXB7	03/03/16	1138	1547849	2
Beta		18.9	+/-2.89	3.08	1.43	+/-3.95	10.0	pCi/g						

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	CXC1	02/25/16	1518	1547782

### The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4 5 2 3/Ga-01-R
2	EPA 900 0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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# GEL LABORATORIES LLC

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## Certificate of Analysis

Company : MJW Technical Services  
Address : 15 Hazelwood Drive  
Suite 112  
Buffalo, New York 14228  
Contact: Ms. Laurie Losey  
Project: Soil Radioisotopes  
Client Sample ID: 4.4.D.R.3.2  
Sample ID: 392031020

Report Date: March 8, 2016

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).



# GEL LABORATORIES LLC

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## Certificate of Analysis

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

Report Date: January 5, 2016

Contact: Ms. Laurie Losey  
 Project: Soil Radioisotopes

Client Sample ID: 4.4.D.R.4.1  
 Sample ID: 387022012  
 Matrix: Soil  
 Collect Date: 30-NOV-15  
 Receive Date: 08-DEC-15  
 Collector: Client  
 Moisture: 31%

Project: MJWC00115  
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Gravimetric Solids</b>														
<i>ASTM D 2216 % Moisture "As Received"</i>														
Moisture		31.0						percent		DRS1	12/09/15	1328	1529597	1
<b>Rad Gamma Spec Analysis</b>														
<i>Gammascpec, Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	U	0.202	+/-0.261	0.523	0.245	+/-0.278		pCi/g		RXF2	01/04/16	0959	1529718	2
Antimony-125	U	0.0404	+/-0.0874	0.173	0.0788	+/-0.0894		pCi/g						
Bismuth-212	UI	0.00	+/-1.10	1.37	0.636	+/-1.16		pCi/g						
Bismuth-214		0.886	+/-0.167	0.124	0.0559	+/-0.182		pCi/g						
Cesium-137		0.201	+/-0.0677	0.0778	0.0352	+/-0.0696	0.100	pCi/g						
Cobalt-60	U	0.00241	+/-0.0386	0.0781	0.0333	+/-0.0387		pCi/g						
Europium-154	U	0.0518	+/-0.133	0.273	0.121	+/-0.135		pCi/g						
Lead-212		1.09	+/-0.128	0.106	0.0497	+/-0.160		pCi/g						
Lead-214		0.950	+/-0.184	0.151	0.0702	+/-0.202		pCi/g						
Potassium-40		14.3	+/-1.55	0.376	0.130	+/-1.99		pCi/g						
Protactinium-231	UI	0.00	+/-1.00	0.898	0.417	+/-1.02		pCi/g						
Radium-226		0.886	+/-0.167	0.124	0.0559	+/-0.182		pCi/g						
Radium-228		0.785	+/-0.328	0.284	0.126	+/-0.349		pCi/g						
Thallium-208		0.317	+/-0.0895	0.0752	0.0343	+/-0.0933		pCi/g						
Tin-126	UI	0.00	+/-0.119	0.129	0.0608	+/-0.121		pCi/g						
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Gross A B, solid "Dry Weight Corrected"</i>														
Alpha		11.3	+/-3.59	3.88	1.62	+/-4.21	4.00	pCi/g		JXB7	01/02/16	1431	1532750	3
Beta		23.0	+/-2.98	2.31	1.03	+/-4.44	10.0	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	DRS1	12/09/15	1328	1529597

**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	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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# 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

Report Date: January 5, 2016

Contact: Ms. Laurie Losey  
Project: Soil Radioisotopes

Client Sample ID: 4.4.D.R.4.1  
Sample ID: 387022012

Project: MJWC00115  
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Le	TPU	RI	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).

# 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

Report Date: January 5, 2016

Contact: Ms. Laurie Losey  
 Project: Soil Radioisotopes

Client Sample ID: 4.4.D.R.5.1  
 Sample ID: 387022013  
 Matrix: Soil  
 Collect Date: 30-NOV-15  
 Receive Date: 08-DEC-15  
 Collector: Client  
 Moisture: 26.4%

Project: MJWC00115  
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Gravimetric Solids</b>														
<i>ASTM D 2216 % Moisture "As Received"</i>														
Moisture		26.4						percent		DRS1	12/09/15	1328	1529597	1
<b>Rad Gamma Spec Analysis</b>														
<i>Gammascpec, Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	U	-0.304	+/-0.309	0.545	0.253	+/-0.342		pCi/g		RXF2	01/04/16	0959	1529718	2
Antimony-125	U	-0.106	+/-0.118	0.200	0.091	+/-0.128		pCi/g						
Bismuth-212	UI	0.00	+/-0.846	1.63	0.760	+/-1.31		pCi/g						
Bismuth-214		0.917	+/-0.210	0.164	0.0746	+/-0.226		pCi/g						
Cesium-137		0.228	+/-0.108	0.0862	0.0389	+/-0.110	0.100	pCi/g						
Cobalt-60	U	0.0306	+/-0.0493	0.107	0.0466	+/-0.0513		pCi/g						
Europium-154	U	0.0211	+/-0.136	0.275	0.120	+/-0.136		pCi/g						
Lead-212		1.13	+/-0.139	0.132	0.0618	+/-0.172		pCi/g						
Lead-214		1.08	+/-0.239	0.372	0.180	+/-0.257		pCi/g						
Potassium-40		14.6	+/-1.66	0.916	0.392	+/-2.07		pCi/g						
Protactinium-231	UI	0.00	+/-0.876	1.10	0.513	+/-0.899		pCi/g						
Radium-226		0.917	+/-0.210	0.164	0.0746	+/-0.226		pCi/g						
Radium-228		0.758	+/-0.380	0.301	0.133	+/-0.395		pCi/g						
Thallium-208		0.269	+/-0.0744	0.077	0.0347	+/-0.0781		pCi/g						
Tin-126	UI	0.00	+/-0.151	0.189	0.0896	+/-0.152		pCi/g						
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Gross A/B, solid "Dry Weight Corrected"</i>														
Alpha		12.0	+/-3.70	3.88	1.62	+/-4.37	4.00	pCi/g		JXB7	01/02/16	1431	1532750	3
Beta		21.8	+/-3.08	2.87	1.31	+/-4.35	10.0	pCi/g						

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GI-RAD-A-021	DRS1	12/09/15	1328	1529597

**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	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

# 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

Report Date: January 5, 2016

Contact: Ms. Laurie Losey  
Project: Soil Radioisotopes

Client Sample ID: 4.4.D.R.5.1  
Sample ID: 387022013

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).

# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: January 5, 2016

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

Client Sample ID: 4.4.D.R.5.5 Project: MJWC00115  
Sample ID: 386983003 Client ID: MJWC001  
Matrix: Water  
Collect Date: 30-NOV-15 15:00  
Receive Date: 08-DEC-15  
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Rad Gamma Spec Analysis</b>											
<b>Gammascpec, Gamma, Liquid (Standard List) "As Received"</b>											
Actinium-227	U	14.3	55.7		pCi/L		MJH1	12/18/15	0721	1529228	1
Antimony-125	U	-2.27	20.0		pCi/L						
Bismuth-212	U	19.6	120		pCi/L						
Bismuth-214	U	-5.38	17.9		pCi/L						
Cesium-137	U	-3.46	7.43	10.0	pCi/L						
Cobalt-60	U	2.70	9.06		pCi/L						
Europium-154	UI	0.00	24.3		pCi/L						
Lead-212	U	3.02	16.5		pCi/L						
Lead-214	U	1.16	18.1		pCi/L						
Potassium-40	U	-27.8	107		pCi/L						
Protactinium-231	U	7.09	99.3		pCi/L						
Radium-228	U	2.53	37.0		pCi/L						
Thallium-208	UI	0.00	8.12		pCi/L						
Tin-126	U	-18.6	17.4		pCi/L						

### Rad Gas Flow Proportional Counting

#### GFPC, Gross A/B, liquid "As Received"

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Alpha	U	-1.04	3.67	5.00	pCi/L		JXB7	12/21/15	1330	1531188	2
Beta	U	-0.616	3.68	5.00	pCi/L						

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 901.1	
2	EPA 900.0/SW846 9310	

Notes:

# GEL LABORATORIES LLC

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## Certificate of Analysis

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

Report Date: January 5, 2016

Contact: Ms. Laurie Losey  
 Project: Soil Radioisotopes

Client Sample ID: 4.4D.R.6.1  
 Sample ID: 387022014  
 Matrix: Soil  
 Collect Date: 30-NOV-15  
 Receive Date: 08-DEC-15  
 Collector: Client  
 Moisture: 27.5%

Project: MJWC00115  
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lo	TPU	RI	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Gravimetric Solids</b>														
<i>ASTM D 2216 % Moisture "As Received"</i>														
Moisture		27.5						percent		DRSI	12/09/15	1328	1529597	1
<b>Rad Alpha Spec Analysis</b>														
<i>ASP Plutonium Isotopic, Solid "Dry Weight Corrected"</i>														
Plutonium-238	U	0.0139	+/-0.0692	0.138	0.0444	+/-0.0692	1.00	pCi/g		MXS2	12/28/15	1656	1529806	2
Plutonium-239/240	U	0.0218	+/-0.0683	0.128	0.0391	+/-0.0683	1.00	pCi/g						
<i>ASP Uranium Isotopic, Solid "Dry Weight Corrected"</i>														
Uranium-232	U	0.0425	+/-0.101	0.184	0.0711	+/-0.101	1.00	pCi/g		MXS2	12/28/15	1550	1529801	3
Uranium-233/234		0.783	+/-0.246	0.107	0.0245	+/-0.281	1.00	pCi/g						
Uranium-235/236		0.0775	+/-0.0854	0.0582	0.00	+/-0.0865	1.00	pCi/g						
Uranium-238		0.788	+/-0.246	0.0927	0.0173	+/-0.282	1.00	pCi/g						
<i>Alphaspec Np237, Solid "Dry Weight Corrected"</i>														
Neptunium-237	U	0.00293	+/-0.217	0.483	0.131	+/-0.217	1.00	pCi/g		MXS2	12/28/15	1649	1529805	4
<i>Alphaspec Th229 - 228,230,232 Solid "Dry Weight Corrected"</i>														
Thorium-228		1.28	+/-0.673	0.785	0.297	+/-0.704	1.00	pCi/g		MXS2	12/28/15	1606	1529799	5
Thorium-229	U	-0.0669	+/-0.273	0.644	0.229	+/-0.273	1.00	pCi/g						
Thorium-230		0.920	+/-0.539	0.586	0.200	+/-0.557	1.00	pCi/g						
Thorium-232		1.04	+/-0.531	0.432	0.124	+/-0.553	1.00	pCi/g						
<i>Am241, Cm Solid "Dry Weight Corrected"</i>														
Americium-241		0.0438	+/-0.0779	0.127	0.0376	+/-0.0782	1.00	pCi/g		MXS2	12/28/15	1636	1529802	6
Curium-242		0.00	+/-0.0384	0.0571	0.00	+/-0.0385	1.00	pCi/g						
Curium-243/244	U	-0.00811	+/-0.0359	0.0936	0.0215	+/-0.036	1.00	pCi/g						
Curium-245/246		0.00	+/-0.0395	0.0587	0.00	+/-0.0396	1.00	pCi/g						
<i>Liquid Scint Pu241, Solid "Dry Weight Corrected"</i>														
Plutonium-241	U	-1.81	+/-7.08	12.3	6.00	+/-7.08	15.0	pCi/g		MXS2	12/30/15	2127	1529807	7
<b>Rad Gamma Spec Analysis</b>														
<i>Gamma I129, Solid "Dry Weight Corrected"</i>														
Iodine-129	U	-0.00203	+/-0.167	0.324	0.137	+/-0.167	1.00	pCi/g		MJH1	12/30/15	1640	1533084	8
<i>Gamma spec, Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	U	0.0593	+/-0.368	0.666	0.315	+/-0.369		pCi/g		RXF2	01/04/16	0959	1529718	9
Antimony-125	U	-0.0177	+/-0.141	0.225	0.104	+/-0.141		pCi/g						
Bismuth-212	U	0.578	+/-0.805	1.55	0.720	+/-0.848		pCi/g						
Bismuth-214		0.962	+/-0.180	0.168	0.0768	+/-0.197		pCi/g						
Cesium-137		0.268	+/-0.0818	0.0824	0.0371	+/-0.0846	0.100	pCi/g						
Cobalt-60	U	0.0248	+/-0.0454	0.096	0.0417	+/-0.0467		pCi/g						
Europium-154	U	-0.0271	+/-0.166	0.305	0.135	+/-0.167		pCi/g						
Lead-212		1.28	+/-0.149	0.146	0.069	+/-0.182		pCi/g						
Lead-214		1.43	+/-0.192	0.400	0.194	+/-0.224		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: 4.4D.R.6.1  
 Sample ID: 387022014

Report Date: January 5, 2016

Project: MJWC00115  
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gamma Spec Analysis</b>														
<i>Gammasec. Gamma. Solid "Dry Weight Corrected"</i>														
Potassium-40		16.2	+/-1.79	0.999	0.436	+/-2.26		pCi/g						
Protactinium-231	UI	0.00	+/-0.890	1.12	0.522	+/-0.901		pCi/g						
Radium-226		0.962	+/-0.180	0.168	0.0768	+/-0.197		pCi/g						
Radium-228		1.04	+/-0.329	0.340	0.152	+/-0.358		pCi/g						
Thallium-208		0.351	+/-0.0987	0.0887	0.0407	+/-0.103		pCi/g						
Tin-126	UI	0.00	+/-0.124	0.166	0.0793	+/-0.126		pCi/g						
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Gross A-B, solid "Dry Weight Corrected"</i>														
Alpha		18.4	+/-4.40	3.82	1.58	+/-5.71	4.00	pCi/g		JXB7	01/02/16	1431	1532750	10
Beta		22.8	+/-3.36	3.27	1.50	+/-4.66	10.0	pCi/g						
<i>GFPC, Sr-90, solid "Dry Weight Corrected"</i>														
Strontium-90		0.773	+/-0.834	1.39	0.622	+/-0.845	2.00	pCi/g		KSD1	12/29/15	1703	1532743	11
<b>Rad Liquid Scintillation Analysis</b>														
<i>LSC, Tritium Dist. Solid "Dry Weight Corrected"</i>														
Tritium	U	1.33	+/-2.55	4.36	2.09	+/-2.55	6.00	pCi/g		TXJ1	12/28/15	0447	1531105	12
<i>Liquid Scint C14, Solid "Dry Weight Corrected"</i>														
Carbon-14	U	-0.256	+/-0.915	1.57	0.772	+/-0.915	2.00	pCi/g		TXJ1	12/24/15	0644	1531115	13
<i>Liquid Scint Te99, Solid "Dry Weight Corrected"</i>														
Technetium-99		1.23	+/-1.36	2.29	1.10	+/-1.37	5.00	pCi/g		MYM	01/02/16	1305	1532556	14

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	DRS1	12/09/15	1328	1529597

**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, J-01 Modified
9	DOE HASL 300, 4.5.2.3/Ga-01-R
10	EPA 900.0/SW846 9310/SM 7110B Modified
11	EPA 905.0 Modified/DOE RP501 Rev 1 Modified
12	EPA 906.0 Modified
13	EPA EERF C-01 Modified

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## Certificate of Analysis

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

Report Date: January 5, 2016

Contact: Ms. Laurie Losey  
Project: Soil Radioisotopes

Client Sample ID: 4.4D.R.6.1  
Sample ID: 387022014

Project: MJWC00115  
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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14 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"	1529806	73.4	(15%-125%)
Uranium-232 Tracer	ASP Uranium Isotopic, Solid "Dry Weight Corrected"	1529801	73.4	(15%-125%)
Uranium-235/236 Tracer	ASP Uranium Isotopic, Solid "Dry Weight Corrected"	1529801	89	(15%-125%)
Americium-243 Tracer	Alphaspec Np237, Solid "Dry Weight Corrected"	1529805	92.9	(15%-125%)
Actinium-227 Tracer	Alphaspec Th229 + 228,230,232 Solid "Dry Weight Corrected"	1529799	95.4	(15%-125%)
Americium-243 Tracer	Am241, Cm Solid "Dry Weight Corrected"	1529802	91.3	(15%-125%)
Plutonium-242 Tracer	Liquid Scint Pu241, Solid "Dry Weight Corrected"	1529807	73.4	(15%-125%)
Strontium Carrier	GFPC, Sr90, solid "Dry Weight Corrected"	1532743	80.3	(25%-125%)
Technetium-99m Tracer	Liquid Scint Tc99, Solid "Dry Weight Corrected"	1532556	93	(15%-125%)

### Notes:

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



# GEL LABORATORIES LLC

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## Certificate of Analysis

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

Report Date: March 8, 2016

Contact: Ms. Laurie Losey  
 Project: Soil Radioisotopes

Project: MJWC00115  
 Client ID: MJWC001

Client Sample ID: 4.4.D.R.6.2  
 Sample ID: 392031021  
 Matrix: Soil  
 Collect Date: 30-NOV-15  
 Receive Date: 25-FEB-16  
 Collector: Client  
 Moisture: 23.2%

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gamma Spec Analysis</b>														
<i>Gamma with Ingrowth "Dry Weight Corrected"</i>														
Actinium-227	U	-0.0602	+/-0.378	0.605	0.283	+/-0.379		pCi/g		MXR1	03/07/16	1033	1547792	1
Antimony-125	UI	0.00	+/-0.161	0.254	0.117	+/-0.171		pCi/g						
Bismuth-212	UI	0.00	+/-0.951	1.71	0.793	+/-1.21		pCi/g						
Bismuth-214		0.904	+/-0.228	0.164	0.0737	+/-0.240		pCi/g						
Cesium-137		0.412	+/-0.0922	0.0904	0.0406	+/-0.0981	0.100	pCi/g						
Cobalt-60	U	0.0341	+/-0.0631	0.124	0.0548	+/-0.0651		pCi/g						
Europium-154	U	0.0456	+/-0.146	0.304	0.132	+/-0.148		pCi/g						
Lead-212		1.19	+/-0.149	0.136	0.0639	+/-0.176		pCi/g						
Lead-214		1.05	+/-0.213	0.374	0.180	+/-0.228		pCi/g						
Potassium-40		15.3	+/-1.78	0.877	0.367	+/-2.35		pCi/g						
Protactinium-231	UI	0.00	+/-0.658	1.26	0.589	+/-0.830		pCi/g						
Radium-226		0.904	+/-0.228	0.164	0.0737	+/-0.240		pCi/g						
Radium-228		1.03	+/-0.335	0.362	0.161	+/-0.357		pCi/g						
Thallium-208		0.306	+/-0.0874	0.0903	0.041	+/-0.0911		pCi/g						
Tin-126	UI	0.00	+/-0.147	0.209	0.0999	+/-0.148		pCi/g						

### Rad Gas Flow Proportional Counting

*GFPC, Gross A-B, solid "Dry Weight Corrected"*

Alpha		14.2	+/-3.92	3.90	1.64	+/-4.78	4.00	pCi/g		JXB7	03/03/16	1600	1547853	2
Beta		21.7	+/-3.03	2.85	1.31	+/-4.31	10.0	pCi/g						

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	CXC1	02/25/16	1513	1547785

### The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5 2 3/Ga-01-R
2	EPA 900 0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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# GEL LABORATORIES LLC

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## Certificate of Analysis

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

Report Date: March 8, 2016

Contact: Ms. Laurie Losey  
Project: Soil Radioisotopes

Client Sample ID: 4,4.D.R.6.2  
Sample ID: 392031021

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).

# GEL LABORATORIES LLC

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## Certificate of Analysis

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

Report Date: January 5, 2016

Contact: Ms. Laurie Losey  
 Project: Soil Radioisotopes

Project: MJWC00115  
 Client ID: MJWC001

Client Sample ID: 4.4D.R.6.5  
 Sample ID: 387022015  
 Matrix: Soil  
 Collect Date: 30-NOV-15  
 Receive Date: 08-DEC-15  
 Collector: Client  
 Moisture: 29.5%

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Gravimetric Solids</b>														
<i>ASTM D 2216 % Moisture "As Received"</i>														
Moisture		29.5						percent		DRS1	12/09/15	1328	1529597	1
<b>Rad Alpha Spec Analysis</b>														
<i>ASP Plutonium Isotopic, Solid "Dry Weight Corrected"</i>														
Plutonium-238	U	0.0129	+/-0.0646	0.129	0.0415	+/-0.0647	1.00	pCi/g		MXS2	12/28/15	1656	1529806	2
Plutonium-239/240	U	-0.00246	+/-0.0571	0.129	0.0415	+/-0.0571	1.00	pCi/g						
<i>ASP Uranium Isotopic, Solid "Dry Weight Corrected"</i>														
Uranium-232		0.0816	+/-0.122	0.205	0.0782	+/-0.123	1.00	pCi/g		MXS2	12/28/15	1550	1529801	3
Uranium-233/234		0.863	+/-0.259	0.0945	0.0177	+/-0.301	1.00	pCi/g						
Uranium-235/236	U	0.0103	+/-0.0571	0.109	0.0251	+/-0.0572	1.00	pCi/g						
Uranium-238		1.12	+/-0.294	0.0591	0.00	+/-0.356	1.00	pCi/g						
<i>Alphaspec Np237, Solid "Dry Weight Corrected"</i>														
Neptunium-237	U	0.194	+/-0.377	0.648	0.212	+/-0.378	1.00	pCi/g		MXS2	12/28/15	1649	1529805	4
<i>Alphaspec Th229 + 228,230,232 Solid "Dry Weight Corrected"</i>														
Thorium-228		0.806	+/-0.500	0.539	0.178	+/-0.518	1.00	pCi/g		MXS2	12/28/15	1606	1529799	5
Thorium-229	U	0.0192	+/-0.219	0.464	0.142	+/-0.219	1.00	pCi/g						
Thorium-230		1.06	+/-0.529	0.419	0.120	+/-0.551	1.00	pCi/g						
Thorium-232		0.835	+/-0.453	0.179	0.00	+/-0.469	1.00	pCi/g						
<i>Am241, Cm Solid "Dry Weight Corrected"</i>														
Americium-241		0.0165	+/-0.0463	0.0494	0.00	+/-0.0464	1.00	pCi/g		MXS2	12/28/15	1636	1529802	6
Curium-242		0.00	+/-0.037	0.055	0.00	+/-0.0371	1.00	pCi/g						
Curium-243/244	U	-0.00781	+/-0.0345	0.0901	0.0207	+/-0.0346	1.00	pCi/g						
Curium-245/246		0.0377	+/-0.0646	0.0565	0.00	+/-0.0648	1.00	pCi/g						
<i>Liquid Scint Pu241, Solid "Dry Weight Corrected"</i>														
Plutonium-241	U	-2.43	+/-6.75	11.8	5.73	+/-6.75	15.0	pCi/g		MXS2	12/30/15	2218	1529807	7
<b>Rad Gamma Spec Analysis</b>														
<i>Gamma 1129, Solid "Dry Weight Corrected"</i>														
Iodine-129	U	-0.0886	+/-0.172	0.311	0.108	+/-0.177	1.00	pCi/g		MJH1	12/30/15	1640	1533084	8
<i>Gammastec, Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	U	0.0444	+/-0.316	0.570	0.268	+/-0.317		pCi/g		RXF2	01/04/16	1000	1529718	9
Antimony-125	U	-0.0165	+/-0.108	0.199	0.0912	+/-0.108		pCi/g						
Bismuth-212	UI	0.00	+/-0.723	1.43	0.661	+/-0.789		pCi/g						
Bismuth-214		0.969	+/-0.196	0.133	0.0599	+/-0.211		pCi/g						
Cesium-137		0.250	+/-0.0853	0.0844	0.0383	+/-0.0876	0.100	pCi/g						
Cobalt-60	U	-0.0209	+/-0.0438	0.0778	0.033	+/-0.0448		pCi/g						
Europium-154	U	0.0686	+/-0.129	0.268	0.118	+/-0.132		pCi/g						
Lead-212		1.10	+/-0.137	0.121	0.057	+/-0.168		pCi/g						
Lead-214		0.982	+/-0.180	0.157	0.0726	+/-0.197		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

Report Date: January 5, 2016

Contact: Ms. Laurie Losey  
 Project: Soil Radioisotopes

Client Sample ID: 4.4D.R.6.5  
 Sample ID: 387022015

Project: MJWC00115  
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
<b>Rad Gamma Spec Analysis</b>														
<i>Gammascpec, Gamma, Solid "Dry Weight Corrected"</i>														
Potassium-40		15.7	+/-1.60	0.669	0.275	+/-2.11		pCi/g						
Protactinium-231	U	0.300	+/-0.854	1.01	0.470	+/-0.857		pCi/g						
Radium-226		0.969	+/-0.196	0.133	0.0599	+/-0.211		pCi/g						
Radium-228		1.35	+/-0.365	0.259	0.113	+/-0.411		pCi/g						
Thallium-208		0.331	+/-0.0709	0.0651	0.029	+/-0.076		pCi/g						
Tin-126	UI	0.00	+/-0.116	0.175	0.0842	+/-0.117		pCi/g						
<b>Rad Gas Flow Proportional Counting</b>														
<i>GFPC, Gross A/B, solid "Dry Weight Corrected"</i>														
Alpha		13.2	+/-3.33	3.75	1.67	+/-4.27	4.00	pCi/g		JXB7	01/02/16	1439	1532750	10
Beta		24.0	+/-2.86	3.19	1.52	+/-4.44	10.0	pCi/g						
<i>GFPC, Sr90, solid "Dry Weight Corrected"</i>														
Strontium-90	U	0.546	+/-0.855	1.50	0.634	+/-0.861	2.00	pCi/g		KSD1	12/29/15	1420	1532743	11
<b>Rad Liquid Scintillation Analysis</b>														
<i>LSC, Tritium Dist, Solid "Dry Weight Corrected"</i>														
Tritium	U	1.20	+/-3.01	5.17	2.48	+/-3.01	6.00	pCi/g		TXJ1	12/28/15	0618	1531105	12
<i>Liquid Scint C14, Solid "Dry Weight Corrected"</i>														
Carbon-14	U	-0.142	+/-0.931	1.60	0.784	+/-0.931	2.00	pCi/g		TXJ1	12/24/15	0807	1531115	13
<i>Liquid Scint Tc99, Solid "Dry Weight Corrected"</i>														
Technetium-99	U	0.337	+/-1.51	2.61	1.25	+/-1.51	5.00	pCi/g		MYM	01/02/16	1322	1532556	14

**The following Prep Methods were performed**

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	DRS1	12/09/15	1328	1529597

**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 1476-09 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	EPA 900.0/SW846 9310/SM 7110B Modified
11	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
12	EPA 906.0 Modified
13	EPA EERF C-01 Modified

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## Certificate of Analysis

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

Report Date: January 5, 2016

Contact: Ms. Laurie Losey  
Project: Soil Radioisotopes

Client Sample ID: 4.4D.R.6.5  
Sample ID: 387022015

Project: MJWC00115  
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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14 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"	1529806	77.3	(15%-125%)
Uranium-232 Tracer	ASP Uranium Isotopic, Solid "Dry Weight Corrected"	1529801	73.1	(15%-125%)
Uranium-235/236 Tracer	ASP Uranium Isotopic, Solid "Dry Weight Corrected"	1529801	73.2	(15%-125%)
Americium-243 Tracer	Alphaspec Np237, Solid "Dry Weight Corrected"	1529805	89.8	(15%-125%)
Actinium-227 Tracer	Alphaspec Th229 + 228,230,232 Solid "Dry Weight Corrected"	1529799	97.9	(15%-125%)
Americium-243 Tracer	Am241, Cm Solid "Dry Weight Corrected"	1529802	88.3	(15%-125%)
Plutonium-242 Tracer	Liquid Scint Pu241, Solid "Dry Weight Corrected"	1529807	77.3	(15%-125%)
Strontium Carrier	GFPC, Sr90, solid "Dry Weight Corrected"	1532743	80.3	(25%-125%)
Technetium-99m Tracer	Liquid Scint Tc99, Solid "Dry Weight Corrected"	1532556	96.1	(15%-125%)

### Notes:

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

