

# Attachment D

## Gel Laboratories Stockpile Composite Sample Analytical Results

### 310 Ship Canal Stockpile Sample Data Summary

<b>310 Ship Canal Stockpiled Soil Composite Sample Results<sup>1</sup></b>				
<b>Composite Sample Identification</b>	<b>Principle Radionuclides<sup>2</sup> (pCi/g)</b>			
	<b>U-238</b>	<b>U-234</b>	<b>Ra-228</b>	<b>Ra-226</b>
310-100.5.022823	2.25	3.38	0.534	3.38
310-250.5.030223	3.94	3.41	0.493 <sup>3</sup>	3.41
310-450. S. 031723 (DUP)	3.08 <sup>3</sup>	3.62	0.761	3.62
310-100.Y2. S. 031723	4.38	5.44	0.902	5.44
310-500.5.032223	4.46	6.74	0.791	6.74
310-500.5.032223 DUP	5.87	6.74	0.803	6.51

**Notes:**

- 1) RESRAD assumes ingrowth and equilibrium for progeny unless progeny concentrations at time zero indicated otherwise.
- 2) Results shown are the maximum concentrations reported for Stockpile composite samples.
- 3). Result was not identified above MDA and qualified as either "U" or "UI" by the Laboratory. Concentrations shown are the reported MDAs. For assessment purposes conc. are assumed to be equal to results reported for closest non-qualified positively identified progeny conc. in decay chain i.e., U-234 for U-238 and Ac-238 for Ra-228.

















MB for bat 120534535 GEL	2398234	120534535 MB	TARGET	04/06/23 104/06/23 104/06/23 104/06/23 1	614104	Neodymium RAD	SOIL	DOE HASL Dry Soil Pr-0.126	0.446	0.450	14269-74-4 PCI/G	U	0.818	1.00	0
MB for bat 120534535 GEL	2398234	120534535 MB	TARGET	04/06/23 104/06/23 104/06/23 104/06/23 1	614104	Neptunium RAD	SOIL	DOE HASL Dry Soil Pr-0.0517	0.104	0.107	13968-59-9 PCI/G	U	0.204	1.00	0
MB for bat 120534535 GEL	2398234	120534535 MB	TARGET	04/06/23 104/06/23 104/06/23 104/06/23 1	614104	Niobium-9 RAD	SOIL	DOE HASL Dry Soil Pr-0.00209	0.0230	0.0230	14681-63-3 PCI/G	U	0.0421	1.00	0
MB for bat 120534535 GEL	2398234	120534535 MB	TARGET	04/06/23 104/06/23 104/06/23 104/06/23 1	614104	Niobium-9 RAD	SOIL	DOE HASL Dry Soil Pr-0.00965	0.0278	0.0281	13967-76-1 PCI/G	U	0.0581	1.00	0
MB for bat 120534535 GEL	2398234	120534535 MB	TARGET	04/06/23 104/06/23 104/06/23 104/06/23 1	614104	Potassium RAD	SOIL	DOE HASL Dry Soil Pr-0.143	0.306	0.306	13966-00-1 PCI/G	U	0.412	1.00	0
MB for bat 120534535 GEL	2398234	120534535 MB	TARGET	04/06/23 104/06/23 104/06/23 104/06/23 1	614104	Promethium RAD	SOIL	DOE HASL Dry Soil Pr-0.0106	0.0222	0.0228	14834-73-3 PCI/G	U	0.0380	1.00	0
MB for bat 120534535 GEL	2398234	120534535 MB	TARGET	04/06/23 104/06/23 104/06/23 104/06/23 1	614104	Promethium RAD	SOIL	DOE HASL Dry Soil Pr-0.00743	0.0254	0.0256	14834-74-3 PCI/G	U	0.0414	1.00	0
MB for bat 120534535 GEL	2398234	120534535 MB	TARGET	04/06/23 104/06/23 104/06/23 104/06/23 1	614104	Radium-22 RAD	SOIL	DOE HASL Dry Soil Pr-0.0149	0.0480	0.0485	13982-63-3 PCI/G	U	0.0827	1.00	0
MB for bat 120534535 GEL	2398234	120534535 MB	TARGET	04/06/23 104/06/23 104/06/23 104/06/23 1	614104	Radium-22 RAD	SOIL	DOE HASL Dry Soil Pr-0.0335	0.107	0.108	15262-20-2 PCI/G	U	0.205	1.00	0
MB for bat 120534535 GEL	2398234	120534535 MB	TARGET	04/06/23 104/06/23 104/06/23 104/06/23 1	614104	Ruthenium RAD	SOIL	DOE HASL Dry Soil Pr-0.00933	0.202	0.202	13967-48-8 PCI/G	U	0.380	1.00	0
MB for bat 120534535 GEL	2398234	120534535 MB	TARGET	04/06/23 104/06/23 104/06/23 104/06/23 1	614104	Silver-110r RAD	SOIL	DOE HASL Dry Soil Pr-0.00797	0.0297	0.0299	378784-24 PCI/G	U	0.0574	1.00	0
MB for bat 120534535 GEL	2398234	120534535 MB	TARGET	04/06/23 104/06/23 104/06/23 104/06/23 1	614104	Sodium-22 RAD	SOIL	DOE HASL Dry Soil Pr-0.0139	0.0249	0.0257	13966-32-4 PCI/G	U	0.0434	1.00	0
MB for bat 120534535 GEL	2398234	120534535 MB	TARGET	04/06/23 104/06/23 104/06/23 104/06/23 1	614104	Thallium-2 RAD	SOIL	DOE HASL Dry Soil Pr-0.0323	0.0312	0.0346	14913-50-1 PCI/G	U	0.0472	1.00	0
MB for bat 120534535 GEL	2398234	120534535 MB	TARGET	04/06/23 104/06/23 104/06/23 104/06/23 1	614104	Thorium-2 RAD	SOIL	DOE HASL Dry Soil Pr-0.0149	0.0480	0.0485	14269-63-3 PCI/G	U	0.0826	1.00	0
MB for bat 120534535 GEL	2398234	120534535 MB	TARGET	04/06/23 104/06/23 104/06/23 104/06/23 1	614104	Thorium-2 RAD	SOIL	DOE HASL Dry Soil Pr-0.0335	0.107	0.108	7440-29-1 PCI/G	U	0.205	1.00	0
MB for bat 120534535 GEL	2398234	120534535 MB	TARGET	04/06/23 104/06/23 104/06/23 104/06/23 1	614104	Thorium-2 RAD	SOIL	DOE HASL Dry Soil Pr-0.538	0.634	0.689	15065-10-4 PCI/G	U	0.908	1.00	0
MB for bat 120534535 GEL	2398234	120534535 MB	TARGET	04/06/23 104/06/23 104/06/23 104/06/23 1	614104	Uranium-2 RAD	SOIL	DOE HASL Dry Soil Pr-0.0149	0.0480	0.0485	13966-29-9 PCI/G	U	0.0826	1.00	0
MB for bat 120534535 GEL	2398234	120534535 MB	TARGET	04/06/23 104/06/23 104/06/23 104/06/23 1	614104	Uranium-2 RAD	SOIL	DOE HASL Dry Soil Pr-0.0219	0.0967	0.0973	15117-96-6 PCI/G	U	0.175	1.00	0
MB for bat 120534535 GEL	2398234	120534535 MB	TARGET	04/06/23 104/06/23 104/06/23 104/06/23 1	614104	Uranium-2 RAD	SOIL	DOE HASL Dry Soil Pr-0.538	0.634	0.689	7440-61-1 PCI/G	U	0.908	1.00	0
MB for bat 120534535 GEL	2398234	120534535 MB	TARGET	04/06/23 104/06/23 104/06/23 104/06/23 1	614104	Yttrium-88 RAD	SOIL	DOE HASL Dry Soil Pr-0.00965	0.0354	0.0357	13982-36-4 PCI/G	U	0.0782	1.00	0
MB for bat 120534535 GEL	2398234	120534535 MB	TARGET	04/06/23 104/06/23 104/06/23 104/06/23 1	614104	Zinc-65 RAD	SOIL	DOE HASL Dry Soil Pr-0.0129	0.0534	0.0537	13982-39-9 PCI/G	U	0.101	1.00	0
MB for bat 120534535 GEL	2398234	120534535 MB	TARGET	04/06/23 104/06/23 104/06/23 104/06/23 1	614104	Zirconium- RAD	SOIL	DOE HASL Dry Soil Pr-0.0383	0.0495	0.0526	13967-71-1 PCI/G	U	0.110	1.00	0
310-100.5. 120534535 GEL	2398234	120534535 DUP	TARGET	02/28/23 103/13/23 03/15/23 104/06/23 1	614104	Lead-210 RAD	SOIL	DOE HASL Dry Soil Pr-0.000	0.712	1.28	14255-04-4 PCI/G	UI	1.36	1.00	0
310-250.5. 614104007 GEL	2398234	120534535 SAMPLE	TARGET	03/02/23 103/13/23 03/15/23 104/06/23 1	614104	Actinium-2 RAD	SOIL	DOE HASL Dry Soil Pr-0.000	0.244	0.477	14331-83-4 PCI/G	UI	0.493	1.00	9.42
310-250.5. 614104007 GEL	2398234	120534535 SAMPLE	TARGET	03/02/23 103/13/23 03/15/23 104/06/23 1	614104	Cobalt-60 RAD	SOIL	DOE HASL Dry Soil Pr-0.000	0.0327	0.0339	10198-40-4 PCI/G	UI	0.0649	1.00	9.42
310-250.5. 614104007 GEL	2398234	120534535 SAMPLE	TARGET	03/02/23 103/13/23 03/15/23 104/06/23 1	614104	Radium-22 RAD	SOIL	DOE HASL Dry Soil Pr-0.000	0.244	0.477	15262-20-2 PCI/G	UI	0.493	1.00	9.42
310-250.5. 614104007 GEL	2398234	120534535 SAMPLE	TARGET	03/02/23 103/13/23 03/15/23 104/06/23 1	614104	Thorium-2 RAD	SOIL	DOE HASL Dry Soil Pr-0.000	0.244	0.477	7440-29-1 PCI/G	UI	0.493	1.00	9.42
MB for bat 120534535 GEL	2398234	120534535 MB	TARGET	04/06/23 104/06/23 104/06/23 104/06/23 1	614104	Tin-113 RAD	SOIL	DOE HASL Dry Soil Pr-0.000	0.0686	0.0689	13966-06-4 PCI/G	UI	0.0484	1.00	0

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MB for bat 120535302 GEL	2402155	120535302 MB	TARGET	04/12/23	004/12/23	C 04/12/23	C04/12/23	C	615018	Lead-212	RAD	SOIL	DOE HASL Dry Soil Pn-0.0317	0.0373	0.0400	15092-94-:PCI/G	U	0.0686	1.00	0		
MB for bat 120535302 GEL	2402155	120535302 MB	TARGET	04/12/23	004/12/23	C 04/12/23	C04/12/23	C	615018	Lead-214	RAD	SOIL	DOE HASL Dry Soil Pn-0.0153	0.0507	0.0512	15067-28-:PCI/G	U	0.104	1.00	0		
MB for bat 120535302 GEL	2402155	120535302 MB	TARGET	04/12/23	004/12/23	C 04/12/23	C04/12/23	C	615018	Manganese	RAD	SOIL	DOE HASL Dry Soil Pn-0.00410	0.0188	0.0189	13966-31-:PCI/G	U	0.0390	1.00	0		
MB for bat 120535302 GEL	2402155	120535302 MB	TARGET	04/12/23	004/12/23	C 04/12/23	C04/12/23	C	615018	Mercury-2	RAD	SOIL	DOE HASL Dry Soil Pn-0.0137	0.0267	0.0274	13982-78-:PCI/G	U	0.0559	1.00	0		
MB for bat 120535302 GEL	2402155	120535302 MB	TARGET	04/12/23	004/12/23	C 04/12/23	C04/12/23	C	615018	Neodymium	RAD	SOIL	DOE HASL Dry Soil Pn-0.128	0.464	0.468	14269-74-:PCI/G	U	0.991	1.00	0		
MB for bat 120535302 GEL	2402155	120535302 MB	TARGET	04/12/23	004/12/23	C 04/12/23	C04/12/23	C	615018	Neptunium	RAD	SOIL	DOE HASL Dry Soil Pn-0.0599	0.127	0.130	13968-59-:PCI/G	U	0.202	1.00	0		
MB for bat 120535302 GEL	2402155	120535302 MB	TARGET	04/12/23	004/12/23	C 04/12/23	C04/12/23	C	615018	Niobium-9	RAD	SOIL	DOE HASL Dry Soil Pn-0.00836	0.0216	0.0220	14681-63-:PCI/G	U	0.0456	1.00	0		
MB for bat 120535302 GEL	2402155	120535302 MB	TARGET	04/12/23	004/12/23	C 04/12/23	C04/12/23	C	615018	Niobium-9	RAD	SOIL	DOE HASL Dry Soil Pn-0.00328	0.0216	0.0216	13967-76-:PCI/G	U	0.0462	1.00	0		
MB for bat 120535302 GEL	2402155	120535302 MB	TARGET	04/12/23	004/12/23	C 04/12/23	C04/12/23	C	615018	Potassium	RAD	SOIL	DOE HASL Dry Soil Pn-0.122	0.286	0.291	13966-00-:PCI/G	U	0.642	1.00	0		
MB for bat 120535302 GEL	2402155	120535302 MB	TARGET	04/12/23	004/12/23	C 04/12/23	C04/12/23	C	615018	Promethium	RAD	SOIL	DOE HASL Dry Soil Pn-0.00236	0.0263	0.0263	14834-73-:PCI/G	U	0.0495	1.00	0		
MB for bat 120535302 GEL	2402155	120535302 MB	TARGET	04/12/23	004/12/23	C 04/12/23	C04/12/23	C	615018	Promethium	RAD	SOIL	DOE HASL Dry Soil Pn-0.0207	0.0270	0.0286	14834-74-:PCI/G	U	0.0461	1.00	0		
MB for bat 120535302 GEL	2402155	120535302 MB	TARGET	04/12/23	004/12/23	C 04/12/23	C04/12/23	C	615018	Radium-22	RAD	SOIL	DOE HASL Dry Soil Pn-0.0153	0.0507	0.0512	13982-63-:PCI/G	U	0.104	1.00	0		
MB for bat 120535302 GEL	2402155	120535302 MB	TARGET	04/12/23	004/12/23	C 04/12/23	C04/12/23	C	615018	Radium-22	RAD	SOIL	DOE HASL Dry Soil Pn-0.0244	0.101	0.101	15262-20-:PCI/G	U	0.224	1.00	0		
MB for bat 120535302 GEL	2402155	120535302 MB	TARGET	04/12/23	004/12/23	C 04/12/23	C04/12/23	C	615018	Ruthenium	RAD	SOIL	DOE HASL Dry Soil Pn-0.0146	0.178	0.178	13967-48-:PCI/G	U	0.353	1.00	0		
MB for bat 120535302 GEL	2402155	120535302 MB	TARGET	04/12/23	004/12/23	C 04/12/23	C04/12/23	C	615018	Silver-110r	RAD	SOIL	DOE HASL Dry Soil Pn-0.00952	0.0291	0.0294	378784-24:PCI/G	U	0.0581	1.00	0		
MB for bat 120535302 GEL	2402155	120535302 MB	TARGET	04/12/23	004/12/23	C 04/12/23	C04/12/23	C	615018	Sodium-22	RAD	SOIL	DOE HASL Dry Soil Pn-0.00146	0.0229	0.0229	13966-32-:PCI/G	U	0.0492	1.00	0		
MB for bat 120535302 GEL	2402155	120535302 MB	TARGET	04/12/23	004/12/23	C 04/12/23	C04/12/23	C	615018	Thallium-2	RAD	SOIL	DOE HASL Dry Soil Pn-0.0201	0.0296	0.0297	14913-50-:PCI/G	U	0.0363	1.00	0		
MB for bat 120535302 GEL	2402155	120535302 MB	TARGET	04/12/23	004/12/23	C 04/12/23	C04/12/23	C	615018	Thorium-2	RAD	SOIL	DOE HASL Dry Soil Pn-0.0153	0.0507	0.0512	14269-63-:PCI/G	U	0.104	1.00	0		
MB for bat 120535302 GEL	2402155	120535302 MB	TARGET	04/12/23	004/12/23	C 04/12/23	C04/12/23	C	615018	Thorium-2	RAD	SOIL	DOE HASL Dry Soil Pn-0.0244	0.101	0.101	7440-29-1:PCI/G	U	0.224	1.00	0		
MB for bat 120535302 GEL	2402155	120535302 MB	TARGET	04/12/23	004/12/23	C 04/12/23	C04/12/23	C	615018	Thorium-2	RAD	SOIL	DOE HASL Dry Soil Pn-0.304	1.10	1.11	15065-10-:PCI/G	U	1.14	1.00	0		
MB for bat 120535302 GEL	2402155	120535302 MB	TARGET	04/12/23	004/12/23	C 04/12/23	C04/12/23	C	615018	Tin-113	RAD	SOIL	DOE HASL Dry Soil Pn-0.00270	0.0238	0.0238	13966-06-:PCI/G	U	0.0474	1.00	0		
MB for bat 120535302 GEL	2402155	120535302 MB	TARGET	04/12/23	004/12/23	C 04/12/23	C04/12/23	C	615018	Uranium-2	RAD	SOIL	DOE HASL Dry Soil Pn-0.0153	0.0507	0.0512	13966-29-:PCI/G	U	0.104	1.00	0		
MB for bat 120535302 GEL	2402155	120535302 MB	TARGET	04/12/23	004/12/23	C 04/12/23	C04/12/23	C	615018	Uranium-2	RAD	SOIL	DOE HASL Dry Soil Pn-0.0144	0.112	0.112	15117-96-:PCI/G	U	0.217	1.00	0		
MB for bat 120535302 GEL	2402155	120535302 MB	TARGET	04/12/23	004/12/23	C 04/12/23	C04/12/23	C	615018	Uranium-2	RAD	SOIL	DOE HASL Dry Soil Pn-0.304	1.10	1.11	7440-61-1:PCI/G	U	1.14	1.00	0		
MB for bat 120535302 GEL	2402155	120535302 MB	TARGET	04/12/23	004/12/23	C 04/12/23	C04/12/23	C	615018	Yttrium-88	RAD	SOIL	DOE HASL Dry Soil Pn-0.00144	0.0257	0.0257	13982-36-:PCI/G	U	0.0572	1.00	0		
MB for bat 120535302 GEL	2402155	120535302 MB	TARGET	04/12/23	004/12/23	C 04/12/23	C04/12/23	C	615018	Zinc-65	RAD	SOIL	DOE HASL Dry Soil Pn-0.00644	0.0575	0.0576	13982-39-:PCI/G	U	0.116	1.00	0		
MB for bat 120535302 GEL	2402155	120535302 MB	TARGET	04/12/23	004/12/23	C 04/12/23	C04/12/23	C	615018	Zirconium	RAD	SOIL	DOE HASL Dry Soil Pn-0.00831	0.0398	0.0400	13967-14-:PCI/G	U	0.0861	1.00	0		
310-450.S. 615018001 GEL	2402155	120535302 SAMPLE	TARGET	03/17/23	103/20/23	C 03/21/23	104/12/23	C	615018	Barium-13	RAD	SOIL	DOE HASL Dry Soil Pn-0.000	0.0581	0.0685	13981-41-:PCI/G	UI	0.0791	1.00	13.7		
310-450.S. 615018001 GEL	2402155	120535302 SAMPLE	TARGET	03/17/23	103/20/23	C 03/21/23	104/12/23	C	615018	Cesium-13	RAD	SOIL	DOE HASL Dry Soil Pn-0.000	0.0738	0.0742	10045-97-:PCI/G	UI	0.0637	0.100	0.100	1.00	13.7
310-450.S. 615018001 GEL	2402155	120535302 SAMPLE	TARGET	03/17/23	103/20/23	C 03/21/23	104/12/23	C	615018	Lead-210	RAD	SOIL	DOE HASL Dry Soil Pn-0.000	5.39	5.41	14255-04-:PCI/G	UI	5.04	1.00	13.7		
310-450.S. 120535302 GEL	2402155	120535302 DUP	TARGET	03/17/23	103/20/23	C 03/21/23	104/12/23	C	615018	Bismuth-2	RAD	SOIL	DOE HASL Dry Soil Pn-0.000	0.873	0.877	14913-49-:PCI/G	UI	0.822	1.00	0		



