

**Table RD-16. Activity Concentrations of Radionuclides Measured by Alpha Spectroscopy in Brantley Lake Sediment Samples Collected during 1998 – 2000**

See CEMRC 2000 Report “Radiological and non-radiological constituents in surface water and sediments at selected reservoirs” for descriptions of locations and methods of data collection.

Isotope	Collection Date and Sampling Depth					
	January 30, 1998 (12 m depth)			January 30, 1998 (13 m depth)		
	Activity Concentration (mBq g <sup>-1</sup> )	<sup>a</sup> SD (mBq g <sup>-1</sup> )	<sup>b</sup> MDC (mBq g <sup>-1</sup> )	Activity Concentration (mBq g <sup>-1</sup> )	SD (mBq g <sup>-1</sup> )	MDC (mBq g <sup>-1</sup> )
<sup>241</sup> Am	6.93E-02	9.53E-03	1.40E-02	8.88E-02	1.00E-02	1.41E-02
<sup>238</sup> Pu	<MDC		1.71E-02	<MDC		2.07E-02
<sup>239/240</sup> Pu	2.29E-01	1.80E-02	1.73E-02	2.65E-01	1.65E-02	1.29E-02
<sup>228</sup> Th	3.74E+01	9.72E-01	3.55E-01	<sup>c</sup> NR		
<sup>230</sup> Th	3.51E+01	9.33E-01	3.05E-01	NR		
<sup>232</sup> Th	3.22E+01	8.84E-01	2.06E-01	NR		
<sup>234</sup> U	6.74E+01	1.25E+00	2.07E-01	4.34E+01	9.51E-01	2.54E-01
<sup>235</sup> U	2.97E+00	2.71E-01	2.17E-01	2.45E+00	2.48E-01	2.12E-01
<sup>238</sup> U	4.26E+01	9.08E-01	1.94E-01	3.82E+01	8.74E-01	2.32E-01
Isotope	February 4, 1998 (12 m depth)			February 4, 1998 (13 m depth)		
	Activity Concentration (mBq g <sup>-1</sup> )	SD (mBq g <sup>-1</sup> )	MDC (mBq g <sup>-1</sup> )	Activity Concentration (mBq g <sup>-1</sup> )	SD (mBq g <sup>-1</sup> )	MDC (mBq g <sup>-1</sup> )
<sup>241</sup> Am	7.96E-02	1.25E-02	2.24E-02	9.95E-02	1.05E-02	1.47E-02
<sup>238</sup> Pu	<MDC		2.16E-02	<MDC		3.92E-02
<sup>239/240</sup> Pu	2.52E-01	1.94E-02	1.99E-02	2.76E-01	2.36E-02	2.19E-02
<sup>228</sup> Th	3.38E+01	9.10E-01	3.51E-01	4.44E+01	1.25E+00	5.36E-01
<sup>230</sup> Th	3.48E+01	9.23E-01	3.00E-01	5.70E+01	1.47E+00	6.14E-01
<sup>232</sup> Th	3.01E+01	8.44E-01	2.33E-01	4.20E+01	1.20E+00	4.37E-01
<sup>234</sup> U	5.08E+01	1.04E+00	1.91E-01	4.73E+01	9.38E-01	1.53E-01
<sup>235</sup> U	2.33E+00	2.39E-01	2.67E-01	2.20E+00	2.19E-01	1.89E-01
<sup>238</sup> U	3.64E+01	8.31E-01	1.99E-01	3.85E+01	8.17E-01	1.80E-01
Isotope	October 7, 1998 (11 m depth)			October 7, 1998 (12 m depth)		
	Activity Concentration (mBq g <sup>-1</sup> )	SD (mBq g <sup>-1</sup> )	MDC (mBq g <sup>-1</sup> )	Activity Concentration (mBq g <sup>-1</sup> )	SD (mBq g <sup>-1</sup> )	MDC (mBq g <sup>-1</sup> )
<sup>241</sup> Am	8.02E-02	9.48E-03	1.18E-02	7.95E-02	1.07E-02	1.52E-02
<sup>238</sup> Pu	2.16E-02	6.17E-03	1.69E-02	<MDC		1.83E-02

Isotope	October 7, 1998 (14 m depth)			October 7, 1998 (14 m depth)		
	Activity Concentration (mBq g <sup>-1</sup> )	SD (mBq g <sup>-1</sup> )	MDC (mBq g <sup>-1</sup> )	Activity Concentration (mBq g <sup>-1</sup> )	SD (mBq g <sup>-1</sup> )	MDC (mBq g <sup>-1</sup> )
<sup>241</sup> Am	8.51E-02	9.69E-03	1.27E-02	8.08E-02	9.85E-03	1.40E-02
<sup>238</sup> Pu	<MDC		2.29E-02	<MDC		1.77E-02
<sup>239/240</sup> Pu	2.06E-01	1.34E-02	1.40E-02	2.32E-01	1.56E-02	1.73E-02
<sup>228</sup> Th	3.91E+01	1.19E+00	6.57E-01	4.14E+01	1.33E+00	6.80E-01
<sup>230</sup> Th	4.60E+01	1.32E+00	6.30E-01	3.93E+01	1.30E+00	7.55E-01
<sup>232</sup> Th	3.84E+01	1.17E+00	4.14E-01	3.51E+01	1.20E+00	6.54E-01
<sup>234</sup> U	4.84E+01	1.16E+00	1.81E-01	5.83E+01	1.24E+00	1.75E-01
<sup>235</sup> U	2.95E+00	3.05E-01	2.51E-01	2.25E+00	2.48E-01	2.17E-01
<sup>238</sup> U	4.01E+01	1.02E+00	2.15E-01	4.18E+01	9.88E-01	2.04E-01
Isotope	July 1, 1999 (11 m depth)			July 1, 1999 (9 m depth)		
	Activity Concentration (mBq g <sup>-1</sup> )	SD (mBq g <sup>-1</sup> )	MDC (mBq g <sup>-1</sup> )	Activity Concentration (mBq g <sup>-1</sup> )	SD (mBq g <sup>-1</sup> )	MDC (mBq g <sup>-1</sup> )
<sup>241</sup> Am	9.53E-02	9.48E-03	1.15E-02	1.26E-01	1.21E-02	1.41E-02
<sup>238</sup> Pu	<MDC		2.31E-02	<MDC		2.14E-02
<sup>239/240</sup> Pu	2.38E-01	1.70E-02	1.34E-02	3.23E-01	1.83E-02	9.85E-03
<sup>228</sup> Th	3.45E+01	1.10E+00	4.29E-01	3.40E+01	9.76E-01	3.91E-01
<sup>230</sup> Th	3.46E+01	1.10E+00	3.78E-01	3.47E+01	9.86E-01	3.23E-01
<sup>232</sup> Th	3.03E+01	1.02E+00	3.17E-01	3.23E+01	9.44E-01	2.71E-01
<sup>234</sup> U	6.00E+01	1.08E+00	1.48E-01	6.61E+01	1.24E+00	1.79E-01
<sup>235</sup> U	2.21E+00	2.16E-01	1.82E-01	2.58E+00	2.49E-01	1.78E-01
<sup>238</sup> U	4.12E+01	8.35E-01	1.74E-01	4.27E+01	9.13E-01	1.91E-01
Isotope	July 9, 1999 (14 m depth)			July 9, 1999 (13 m depth)		
	Activity Concentration (mBq g <sup>-1</sup> )	SD (mBq g <sup>-1</sup> )	MDC (mBq g <sup>-1</sup> )	Activity Concentration (mBq g <sup>-1</sup> )	SD (mBq g <sup>-1</sup> )	MDC (mBq g <sup>-1</sup> )
<sup>241</sup> Am	7.49E-02	9.30E-03	1.34E-02	9.98E-02	1.00E-02	1.19E-02
<sup>238</sup> Pu	1.31E-02	3.97E-03	1.07E-02	2.44E-02	6.37E-03	1.69E-02
<sup>239/240</sup> Pu	2.60E-01	1.37E-02	8.79E-03	2.42E-01	1.63E-02	1.59E-02
<sup>228</sup> Th	4.19E+01	1.30E+00	6.37E-01	3.89E+01	1.54E+00	1.10E+00
<sup>230</sup> Th	3.78E+01	1.22E+00	4.07E-01	3.63E+01	1.46E+00	8.36E-01
<sup>232</sup> Th	3.43E+01	1.16E+00	3.25E-01	3.74E+01	1.48E+00	7.70E-01
<sup>234</sup> U	5.18E+01	1.03E+00	1.94E-01	5.98E+01	1.15E+00	1.79E-01
<sup>235</sup> U	2.59E+00	2.48E-01	1.79E-01	2.84E+00	2.65E-01	1.74E-01
<sup>238</sup> U	3.73E+01	8.25E-01	1.62E-01	4.08E+01	8.87E-01	1.81E-01

<sup>232</sup> Th	3.33E+01	8.23E-01	2.08E-01	3.23E+01	1.04E+00	3.73E-01
<sup>234</sup> U	5.38E+01	1.64E+00	2.82E-01	5.02E+01	1.29E+00	2.65E-01
<sup>235</sup> U	2.33E+00	3.37E-01	3.90E-01	2.60E+00	3.04E-01	2.75E-01
<sup>238</sup> U	3.80E+01	1.30E+00	2.92E-01	3.78E+01	1.07E+00	2.39E-01
<b>Isotope</b>	<b>June 8, 2000 (12 m depth)</b>			<b>June 8, 2000 (12 m depth)</b>		
	<b>Activity Concentration (mBq g<sup>-1</sup>)</b>	<b>SD (mBq g<sup>-1</sup>)</b>	<b>MDC (mBq g<sup>-1</sup>)</b>	<b>Activity Concentration (mBq g<sup>-1</sup>)</b>	<b>SD (mBq g<sup>-1</sup>)</b>	<b>MDC (mBq g<sup>-1</sup>)</b>
<sup>241</sup> Am	3.94E-02	1.23E-02	3.12E-02	8.29E-02	1.31E-02	1.99E-02
<sup>238</sup> Pu	<MDC		2.21E-02	<MDC		1.93E-02
<sup>239/240</sup> Pu	1.97E-01	1.47E-02	1.23E-02	2.06E-01	1.50E-02	1.40E-02
<sup>228</sup> Th	3.69E+01	8.37E-01	2.27E-01	4.15E+01	1.20E+00	5.34E-01
<sup>230</sup> Th	3.37E+01	7.93E-01	3.20E-01	3.53E+01	1.09E+00	3.89E-01
<sup>232</sup> Th	3.27E+01	7.71E-01	2.26E-01	3.67E+01	1.11E+00	3.68E-01
<sup>234</sup> U	4.72E+01	1.30E+00	2.65E-01	4.79E+01	1.28E+00	2.63E-01
<sup>235</sup> U	2.00E+00	2.70E-01	2.80E-01	3.25E+00	3.50E-01	2.80E-01
<sup>238</sup> U	3.60E+01	1.08E+00	3.18E-01	3.60E+01	1.05E+00	2.47E-01

<sup>a</sup>SD = One standard deviation of the radioanalytical uncertainty

<sup>b</sup>MDC = Minimum Detectable Concentration

<sup>c</sup>NR = Data not reported