

**Appendix D**

**Uranium Activity Ratio Analysis**

**For**

**RESRAD Dose Assessment**

**Appendix D**  
**Uranium Activity Ratio Determination**  
**For use in**  
**RESRAD Modeling**

Information presented in Table A of the FSS Report ([B.Koh, 2001a](#)) was used to select an appropriate U-235 enrichment for FZBA RESRAD simulations. Table A of the FSS Report presents a summary of the soil sample results used to demonstrate that the residual uranium concentration in the FZBA is less than 30 pCi/gram and is therefore in compliance with the guidelines of the 1981 Branch Technical Position for unrestricted release of the site. All soil samples identified in Table A were analyzed for U-238 by gamma spectroscopy. The total uranium concentration associated with each sample was then calculated using a U-238 to total uranium conversion factor. The conversion factors were derived from results of isotopic uranium analysis performed on a limited number of soil samples that contained measurable concentrations of uranium.

An appropriate U-235 enrichment for use in the FZBA RESRAD simulations was selected by:

1. estimating an average U-238 to total uranium conversion factor from the Table A data,
2. estimating the U-238 activity percentage associated with the average conversion factor, and
3. selecting a U-235 enrichment that corresponds to the average U-238 activity.

The average U-238 to total uranium conversion factor was calculated using a spreadsheet to analyze the Table A data. This spreadsheet is presented as Table D-1. Table D-1 first calculates average conversion factors for each of the 10m x 10m sample grids included in the FSS. Table D-1 then calculates an overall average conversion factor from the 102 average grid values. The overall average U-238 to total uranium conversion factor was estimated to be 4.8 (i.e. a uranium concentration of 1 pCi/g is associated with a U-238 concentration of 0.21 pCi/g). Referencing Table D-2, which presents the activity ratios associated with various U-235 enrichments, it was determined that a 21% U-238 activity is characteristic of a 3% U-235 enrichment. On this basis, 3% U-235 enrichment was assumed for dose modeling.

Table D-1						
Soil Sample Results						
U238, Total U, and Average Total U Per Grid						
Location		Comment	U <sup>238</sup> (Pci/g)	U <sup>238</sup> to U <sup>T</sup> Conversion Factor	U <sup>Total</sup> (Pci/g)	Average U <sup>238</sup> to U <sup>T</sup> Conversion Factor per grid
Grid-Quadrant <sup>(1)</sup>	Depth					
A3-3	0-2'	BDL <sup>(2)</sup>	2.27	3.10	7.00	
A3-3	2-4'		2.42	3.10	7.50	
						3.1
A4-3	0-2'	BDL	1.92	3.10	5.90	
A4-3	2-4'	BDL	2.71	3.10	8.30	
						3.1
A5-3	0-2'	BDL	2.10	3.10	6.50	
A5-3	2-4'	BDL	2.77	3.10	8.50	
						3.1
A6-3	0-2'	BDL	2.76	3.10	8.50	
A6-3	2-4'	BDL	2.97	3.10	9.10	
						3.1
A7-3R	0-2'	BDL	1.94	5.60	10.90	
A7-3R	2-4'	Isotopic	6.32	5.60	35.60	
A7-3R	2-4'		1.89	3.10	5.80	
A7-5R	2-4'		2.51	3.10	7.80	
						4.4
A8-3	0-2'	BDL	2.83	3.10	8.70	
A8-3	2-4'	BDL	2.43	3.10	7.50	
						3.1
B3-1	0-2'	Isotopic	26.60	2.10	55.30	
B3-1	2-4'	BDL	1.00	2.10	2.10	
B3-4	0-2'	BDL	1.01	2.10	2.10	
B3-4	2-4'	BDL	0.94	2.10	2.00	
B3-5	0-2.5'	BDL	1.02	2.10	2.10	
B3-2	0-2.5'	BDL	2.64	2.10	5.50	
						2.1
B4-1	0-2'	Isotopic	1.10	2.30	2.60	
B4-1	2-4'	BDL	2.63	2.30	6.10	
B4-2	0-2'	BDL	2.17	2.00	4.40	
B4-2	2-4'	BDL	2.86	2.00	5.80	
B4-4	0-2'		0.80	2.00	1.60	
B4-4	2-4'	BDL	2.97	2.00	6.00	
B4-5	0-2'	BDL	2.31	2.00	4.70	
B4-5	2-4'	BDL	2.25	2.00	4.50	
						2.1
B5-1	0-2'	BDL	2.53	3.40	8.70	
B5-1	2-4'	BDL	1.82	3.40	6.20	
B5-2	0-2'		3.76	3.40	12.90	
B5-4	0-2'	Isotopic	0.85	3.40	2.90	
B5-4	0-4'	BDL	2.09	3.40	7.10	

Table D-1						
Soil Sample Results						
U238, Total U, and Average Total U Per Grid						
Location		Comment	U <sup>238</sup> (Pci/g)	U <sup>238</sup> to U <sup>T</sup> Conversion Factor	U <sup>Total</sup> (Pci/g)	Average U <sup>238</sup> to U <sup>T</sup> Conversion Factor per grid
B5-5	0-2'	BDL	2.85	3.40	9.70	3.4
B5-5	2-4'	BDL	1.02	3.40	3.50	
B6-1	0-2'	BDL	1.15	2.60	3.00	2.6
B6-1	2-4'	BDL	0.98	2.60	2.60	
B6-2	0-2'	Isotopic	7.90	2.60	20.70	
B6-2	2-4'	BDL	2.63	2.60	6.90	2.7
B6-4	0-2'	BDL	2.95	2.60	7.70	
B6-4	2-4'	BDL	1.02	2.60	2.70	
B6-5	0-2'		2.50	2.60	6.60	2.7
B6-5	2-4'	BDL	1.29	2.60	3.40	
B-1	0-2'	Isotopic	4.74	3	14.00	3.1
B7-1	2-4'	BDL	2.84	3	8.40	
B7-2	0-2'	Isotopic	3.88	2.5	9.70	
B7-2	2-4'	BDL	2.50	2.5	6.30	2.7
B7-4	0-2'		2.54	2.7	6.90	
B7-4	2-4'	BDL	1.94	2.7	5.30	
B7-5	0-2'	BDL	0.99	2.7	2.70	2.7
B7-5	2-4'	BDL	0.93	2.7	2.50	
B8-3	0-2'	BDL	1.60	3.1	4.90	3.1
B8-3	2-4'	BDL	0.72	3.1	2.20	
C3-1	0-2'	BDL	2.09	8.1	16.90	8.1
C3-1	2-4'	BDL	2.92	8.1	23.60	
C3-2	0-2'	BDL	2.04	8.1	16.50	
C3-2	2-4'	BDL	2.52	8.1	20.40	2.4
C3-4	0-2'		2.67	8.1	21.60	
C3-4	2-4'		2.75	8.1	22.20	
C3-5	0-2.5'	BDL	2.93	8.1	23.70	2.4
C4-1	0-2'	BDL	2.53	2.4	6.00	2.4
C4-1	2-4'		1.88	2.4	4.50	
C4-2	0-2'	Isotopic	4.41	2.4	10.50	
C4-2	2-4'	BDL	2.07	2.4	4.90	2.4
C4-4	0-2'	BDL	2.29	2.4	5.40	
C4-4	2-4'	BDL	1.86	2.4	4.40	
						2.4
C5-1	0-2.5'	BDL	2.85	8.1	23.10	
C5-2	0-2'	BDL	1.34	8.1	10.80	
C5-2	2-4'	BDL	0.93	8.1	7.50	

Table D-1						
Soil Sample Results						
U238, Total U, and Average Total U Per Grid						
Location		Comment	U <sup>238</sup> (Pci/g)	U <sup>238</sup> to U <sup>T</sup> Conversion Factor	U <sup>Total</sup> (Pci/g)	Average U <sup>238</sup> to U <sup>T</sup> Conversion Factor per grid
C5-4	0-2.5'	BDL	2.92	8.1	23.60	
C5-5	0-2'	BDL	2.42	8.1	19.60	
C5-5	2-4'	BDL	2.87	8.1	23.20	
						8.1
C6-2	0-2'	BDL	3.00	10	30.00	
C6-2	2-4'	BDL	2.83	10	28.30	
C6-4	0-2.5'	BDL	2.05	10	20.50	
C6-5	0-2.5'	BDL	2.14	10	21.40	
C6-1	0-2'	BDL	2.39	10	23.90	
C6-1	2-4'	BDL	2.93	10	29.30	
						10.0
C7-1	0-2'	BDL	2.35	5.6	13.20	
C7-1	2-4'	BDL	2.72	5.6	15.30	
C7-2	0-2'	BDL	1.16	5.6	6.50	
C7-2	2-4'	BDL	1.03	5.6	5.80	
C7-4B		BDL	1.54	8.1	12.50	
C7-5	0-2'	Isotopic	4.73	5.6	26.60	
C7-5	2-4'	BDL	2.01	5.6	11.30	
						6.0
C8-3	0-2'	BDL	2.42	3.1	7.50	
C8-3	2-4'	BDL	0.47	3.1	1.40	
						3.1
D3-1	0-2'	BDL	2.64	8.1	21.40	
D3-1	2-4'	BDL	2.90	8.1	23.50	
D3-2	0-2'	BDL	2.88	8.1	23.30	
D3-2	2-4'	BDL	2.74	8.1	22.20	
D3-4	0-2'	BDL	2.77	8.1	22.40	
D3-4	2-4'	BDL	2.40	8.1	19.40	
D3-5	0-2'	BDL	2.65	8.1	21.40	
D3-5	2-4'	BDL	1.90	8.1	15.40	
						8.1
D4-1	0-2'	BDL	1.45	8.1	11.70	
D4-1	2-4'	BDL	2.42	8.1	19.60	
D4-2	0-2'	BDL	2.59	8.1	21.30	
D4-2	2-4'	BDL	2.12	8.1	17.20	
D4-4	2-4'	BDL	2.46	8.1	19.90	
D4-5	0-2'	BDL	3.00	8.1	24.30	
D4-5	2-4'	BDL	2.50	8.1	20.20	
						8.1
D5-1	0-2'	Isotopic	1.34	4.5	6.00	
D5-1	2-4'	BDL	2.39	4.5	10.70	
D5-2	0-2'	BDL	2.06	4.5	9.20	

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Soil Sample Results						
U238, Total U, and Average Total U Per Grid						
Location		Comment	U <sup>238</sup> (Pci/g)	U <sup>238</sup> to U <sup>T</sup> Conversion Factor	U <sup>Total</sup> (Pci/g)	Average U <sup>238</sup> to U <sup>T</sup> Conversion Factor per grid
D5-2	2-4'	BDL	2.21	4.5	9.90	
D5-4	0-2'	BDL	2.29	4.5	10.30	
D5-4	2-4'	BDL	2.43	4.5	10.90	
D5-5	0-2'	BDL	1.83	4.5	8.20	
D5-5	2-4'	BDL	0.23	4.5	1.00	
						4.5
D6-1	0-2'	BDL	2.13	10.6	22.60	
D6-1	2-4'	BDL	2.63	10.6	27.90	
D6-2	0-2'	BDL	1.99	10.6	21.10	
D6-2	2-4'	BDL	1.91	10.6	20.30	
D6-4	0-2'	BDL	1.99	10.6	21.10	
D6-4	2-4'	BDL	2.24	10.6	23.80	
D6-5	0-2'	Isotopic	2.55	10.6	27.10	
D6-5	2-4'		2.21	10.6	23.50	
						10.6
D7-1	0-2'	Isotopic	5.46	7.2	39.50	
D7-1	2-4'	BDL	3.00	7.2	21.70	
D7-2	0-2'	BDL	3.00	7.4	22.30	
D7-2	2-4'	BDL	2.60	7.4	19.30	
D7-4	0-2'	Isotopic	6.73	9.5	64.20	
D7-4	2-4'		0.84	9.5	8.00	
D7-5	0-2'	Isotopic	1.78	5.7	10.20	
D7-5	2-4'	BDL	1.66	5.7	9.50	
						7.5
D8-3	0-2'	BDL	2.49	3.1	7.70	
D8-3	2-4'	BDL	1.90	3.1	5.90	
						3.1
D9-3	0-2'	BDL	2.42	3.1	7.50	
D9-3	2-4'	BDL	2.91	3.1	9.00	
						3.1
D12-3	0-2'	BDL	2.37	3.1	7.30	
D12-3	2-4'	BDL	1.96	3.1	6.00	
						3.1
D13-3	0-2'	BDL	2.90	3.1	8.90	
D13-3	2-4'	BDL	2.19	3.1	6.70	
						3.1
D14-3	0-2'	BDL	2.14	3.1	6.60	
D14-3	2-4'	BDL	2.19	3.1	6.70	
						3.1
E3-1	0-2'	BDL	2.60	8.1	21.00	
E3-1	2-4'	BDL	2.48	8.1	20.10	
E3-2	0-2'	BDL	2.37	8.1	19.20	

Table D-1						
Soil Sample Results						
U238, Total U, and Average Total U Per Grid						
Location		Comment	U <sup>238</sup> (Pci/g)	U <sup>238</sup> to U <sup>T</sup> Conversion Factor	U <sup>Total</sup> (Pci/g)	Average U <sup>238</sup> to U <sup>T</sup> Conversion Factor per grid
E3-2	2-4'	BDL	1.86	8.1	15.00	
E3-4	0-2'	BDL	2.15	8.1	17.40	
E3-4	0-2'	BDL	2.49	8.1	20.10	
E3-4	2-4'	BDL	2.88	8.1	23.30	
E3-4	2-4'	BDL	2.54	8.1	20.50	
E3-5	0-2'	BDL	1.58	8.1	12.80	
E3-5	2-4'	BDL	2.90	8.1	23.50	
						8.1
E4-1	0-2.5'	BDL	2.80	4.9	13.70	
E4-2	0-2'	Isotopic	1.36	4.9	6.70	
E4-2	2-4'	BDL	1.95	4.9	9.50	
E4-5	0-2'	BDL	2.45	4.9	12.00	
E4-5	2-4'	BDL	2.59	4.9	12.70	
						4.9
E5-1	0-2'	BDL	2.74	8.1	22.20	
E5-1	2-4'	BDL	2.66	8.1	21.50	
E5-2	0-2'	Isotopic	2.21	16.5	36.40	
E5-2	2-4'	BDL	2.07	16.5	34.10	
E5-4	0-2'	BDL	2.12	8.1	17.20	
E5-5	0-2'	BDL	2.60	8.1	21.00	
						10.9
E6-1B		BDL	2.67	8.1	21.60	
E6-2B		BDL	2.39	8.1	19.40	
E6-4B			1.14	8.1	9.20	
E6-5B			2.19	8.1	17.70	
						8.1
E7-1	0-2.5'	BDL	2.83	5.8	16.40	
E7-2	0-2'	BDL	1.72	5.8	10.00	
E7-2	2-4'	BDL	2.48	5.8	14.40	
E7-4	0-2'	Isotopic	6.00	5.8	34.70	
E7-4	2-4'	BDL	3.00	5.8	17.40	
E7-5	0-2'	BDL	1.86	5.8	10.80	
						5.8
E8-1	0-2'	BDL	2.61	4.6	12.00	
E8-2	0-2'	BDL	2.36	4.6	10.80	
E8-2	2-4'	BDL	2.39	4.6	10.90	
E8-4	0-2'	BDL	2.91	4.6	13.30	
E8-4	2-4'	BDL	2.67	4.6	12.20	
E8-5	0-2'	BDL	2.83	4.6	13.00	
E8-5	2-4'	BDL	2.78	4.6	12.70	
						4.6
E9-1	0-2'		2.83	4.6	13.00	

Table D-1						
Soil Sample Results						
U238, Total U, and Average Total U Per Grid						
Location		Comment	U <sup>238</sup> (Pci/g)	U <sup>238</sup> to U <sup>T</sup> Conversion Factor	U <sup>Total</sup> (Pci/g)	Average U <sup>238</sup> to U <sup>T</sup> Conversion Factor per grid
E9-1	2-4'		1.11	4.6	5.10	
E9-2	0-2'	BDL	2.24	4.6	10.30	
E9-2	2-4'		1.81	4.6	8.30	
E9-4	0-2'	BDL	2.60	4.6	11.90	
E9-4	2-4'	BDL	2.40	4.6	11.00	
E9-5	0-2'	BDL	2.72	4.6	12.50	
E9-5	2-4'		1.97	4.6	9.00	
						4.6
E10-4	0-2.5'	BDL	2.96	4.6	13.60	
E10-5	0-2'	BDL	2.89	4.6	13.20	
E10-5	2-4'	BDL	2.45	4.6	11.20	
						4.6
E11-4	0-2.5'	BDL	2.55	4.6	11.70	
						4.6
E12-1	0-2'	BDL	2.01	2.6	5.20	
E12-1	2-4'		2.52	2.6	6.50	
E12-2	0-2'	BDL	2.94	2.6	7.60	
E12-2	2-4'	BDL	2.75	2.6	7.10	
E12-4	0-2'	BDL	2.75	2.6	7.10	
E12-4	2-4'	BDL	1.82	2.6	4.70	
E12-5	0-2'	BDL	2.78	2.6	7.10	
E12-5	2-4'		0.95	2.6	2.40	
						2.6
E13-1	0-2'	BDL	2.89	2.7	7.80	
E13-1	2-4'	BDL	2.41	2.7	6.50	
E13-2	0-2'	BDL	3.00	2.6	7.80	
E13-2	2-4'	Isotopic	1.10	2.6	2.80	
E13-4	0-2'	BDL	2.91	2.7	7.90	
E13-4	2-4'	BDL	2.05	2.7	5.60	
E13-5	0-2'	BDL	2.66	2.8	7.50	
E13-5	2-4'	Isotopic	3.00	2.8	8.50	
						2.7
E14-3	0-2'	BDL	2.31	2.7	6.30	
E14-3	2-4'	Isotopic	1.29	2.7	3.50	
						2.7
F3-1	0-2'	BDL	2.07	6.2	12.70	
F3-1	2-4'	BDL	2.83	6.2	17.40	
F3-2	0-2'	Isotopic	2.31	6.2	14.20	
F3-5	0-2'	BDL	2.83	6.2	17.40	
F3-5	2-4'	BDL	2.04	6.2	12.50	
						6.2
F4-1	0-2'	Isotopic	7.42	7.7	57.20	



Table D-1						
Soil Sample Results						
U238, Total U, and Average Total U Per Grid						
Location		Comment	U <sup>238</sup> (Pci/g)	U <sup>238</sup> to U <sup>T</sup> Conversion Factor	U <sup>Total</sup> (Pci/g)	Average U <sup>238</sup> to U <sup>T</sup> Conversion Factor per grid
F4-1R	0-2'	BDL	1.79	8.1	14.50	
F4-1	2-4'	BDL	2.09	7.7	16.10	
F4-2	0-2.5'	BDL	2.41	7.7	18.60	
F4-4	0-2'	BDL	2.36	7.7	18.20	
F4-4	2-4'	BDL	2.76	7.7	21.30	
F4-4	2-4'	BDL	2.09	7.7	16.10	
						7.8
F5-1	0-2'	BDL	2.28	8.1	18.40	
F5-1	2-4'	BDL	2.81	8.1	22.70	
F5-2	0-2'	BDL	2.27	8.1	18.40	
F5-4	0-2'	BDL	2.82	8.1	22.80	
F5-4	2-4'	BDL	2.31	8.1	18.70	
F5-5	0-2'		2.45	8.1	19.80	
F5-5	2-4'	BDL	2.83	8.1	22.90	
						8.1
F6-1	0-2.5'		3.59	2.4	8.60	
F6-2B		BDL	2.55	8.1	20.70	
F6-4	0-2'	Isotopic	1.53	2.4	3.70	
F6-4	0-2'	BDL	2.10	2.4	5.00	
F6-4	2-4'	BDL	2.10	2.4	5.00	
F6-5	0-2'	BDL	2.77	2.4	6.60	
F6-5	2-4'	BDL	2.41	2.4	5.80	
						3.2
F7-1	0-2.5'	BDL	2.61	8.1	21.10	
F7-2	0-2'	BDL	2.83	8.1	22.90	
F7-4	0-2'	BDL	2.86	8.1	23.10	
F7-4	2-4'	BDL	1.71	8.1	13.80	
F7-5	0-2'	BDL	2.84	8.1	23.00	
F7-5	2-4'	BDL	2.34	8.1	18.90	
						8.1
F8-1	0-2'	BDL	2.64	4.6	12.10	
F8-1	2-4'	BDL	2.01	4.6	9.20	
F8-2	0-2'	BDL	2.01	4.6	9.20	
F8-2	2-4'	BDL	2.39	4.6	10.90	
F8-4	0-2'	BDL	2.69	4.6	12.30	
F8-4	2-4'	BDL	2.81	4.6	12.90	
F8-5	0-2.5'	BDL	2.40	4.6	11.00	
						4.6
F9-1B		BDL	1.90	4.6	8.70	
F9-2B			2.11	4.6	9.70	
F9-4B		BDL	1.49	4.6	6.80	
F9-5B		BDL	1.51	4.6	6.90	

Table D-1						
Soil Sample Results						
U238, Total U, and Average Total U Per Grid						
Location		Comment	U <sup>238</sup> (Pci/g)	U <sup>238</sup> to U <sup>T</sup> Conversion Factor	U <sup>Total</sup> (Pci/g)	Average U <sup>238</sup> to U <sup>T</sup> Conversion Factor per grid
						4.6
F10-1	0-2'		1.93	3.4	6.50	
F10-1	2-4'	BDL	2.15	4.6	9.90	
F10-2	0-2'	Isotopic	3.17	4.6	14.60	
F10-2	2-4'	BDL	1.99	4.6	9.10	
F10-4	0-2'	BDL	1.69	3.4	5.70	
F10-4	2-4'	BDL	1.43	3.4	4.80	
F10-5	0-2'	BDL	1.86	2.1	3.90	
F10-5	2-4'	Isotopic	3.55	2.1	7.30	
						3.5
F11-1	0-2'	BDL	1.97	4.6	9.00	
F11-1	2-4'	BDL	2.31	4.6	10.60	
F11-2	0-2'	BDL	2.04	4.6	9.30	
F11-2	2-4'	BDL	2.86	4.6	13.10	
F11-4	0-2'	BDL	2.06	4.6	9.40	
F11-4	2-4'	BDL	2.77	4.6	12.70	
F11-5	0-2'	BDL	2.98	4.6	13.60	
F11-5	2-4'	BDL	2.21	4.6	10.10	
						4.6
F12-1	0-2'	BDL	3.00	2.9	8.70	
F12-1	2-4'	BDL	2.75	2.9	7.90	
F12-2	0-2'	BDL	2.92	2.3	6.70	
F12-2	2-4'		1.20	2.3	2.80	
F12-4	0-2'	BDL	2.38	2.9	6.90	
F12-4	2-4'	BDL	2.78	2.9	8.00	
F12-5	0-2'		0.52	3.5	1.80	
F12-5	2-4'	BDL	2.54	3.5	8.90	
						2.9
F13-1	0-2'	BDL	2.18	2.6	5.60	
F13-1	2-4'	BDL	1.99	2.6	5.10	
F13-2	0-2'	BDL	2.53	2.6	6.50	
F13-2	2-4'		2.13	2.6	5.50	
F13-4	0-2'	BDL	4.98	2.6	12.80	
F13-4	2-4'	BDL	2.62	2.6	6.70	
F13-5	0-2'	BDL	2.71	2.6	7.00	
F13-5	2-4'	BDL	2.75	2.6	7.10	
						2.6
F14-3	0-2'	BDL	2.97	3.1	9.10	
F14-3	2-4'	BDL	2.71	3.1	8.30	
						3.1
G3-1	0-2'	BDL	2.44	8.1	19.70	
G3-1	2-4'	BDL	2.14	8.1	17.30	

Table D-1						
Soil Sample Results						
U238, Total U, and Average Total U Per Grid						
Location		Comment	U <sup>238</sup> (Pci/g)	U <sup>238</sup> to U <sup>T</sup> Conversion Factor	U <sup>Total</sup> (Pci/g)	Average U <sup>238</sup> to U <sup>T</sup> Conversion Factor per grid
G3-2	0-2'	BDL	1.89	8.1	15.30	
G3-2	2-4'	BDL	2.63	8.1	21.30	
G3-4	0-2'	BDL	2.52	8.1	20.40	
G3-5	0-2'	BDL	2.70	8.1	21.80	
G3-5	2-4'	BDL	2.68	8.1	21.70	
						8.1
G4-1	0-2'	BDL	1.79	8.1	14.50	
G4-1	2-4'	BDL	2.67	8.1	21.60	
G4-2	0-2'	BDL	2.05	8.1	16.60	
G4-2	2-4'	BDL	2.02	8.1	16.30	
G4-4	0-2'	BDL	1.85	8.1	15.00	
G4-5	0-2.5'	BDL	2.48	8.1	20.10	
						8.1
G5-1	0-2	BDL	2.69	8.1	21.80	
G5-1	2-4'	BDL	1.79	8.1	14.50	
G5-2	0-2	BDL	2.36	8.1	19.10	
G5-2	2-4'	BDL	1.94	8.1	15.70	
G5-4	0-2	BDL	2.04	8.1	16.50	
G5-4	2-4'	BDL	2.97	8.1	24.00	
G5-5	0-2	BDL	2.64	8.1	21.40	
G5-5	2-4'	BDL	2.06	8.1	16.70	
						8.1
G6-1	0-2	Isotopic	6.79	8.1	55.00	
G6-1	2-4'	BDL	1.97	8.1	16.00	
G6-2	0-2	BDL	2.87	8.1	23.20	
G6-2	2-4'		1.98	8.1	16.00	
G6-4	0-2		3.09	8.1	25.00	
G6-4	2-4'	BDL	2.20	8.1	17.80	
G6-5	0-2'	BDL	2.44	8.1	19.80	
						8.1
G7-1B			2.01	8.1	16.30	
G7-1B	2-4'	BDL	2.89	8.1	23.50	
G7-2B			1.32	8.1	10.70	
G7-2BR			5.33	8.1	43.20	
G7-2	2-4'	BDL	3.00	2.8	8.40	
G7-4B			3.54	8.1	28.70	
G7-4	2-4'	BDL	2.91	11.2	32.70	
G7-5B		BDL	2.46	8.1	19.90	
G7-5B	2-4'	BDL	1.92	4.6	8.80	
						7.5
G8-1	0-2'		4.12	3.5	14.50	
G8-1	2-4'		4.00	3.5	14.10	

Table D-1						
Soil Sample Results						
U238, Total U, and Average Total U Per Grid						
Location		Comment	U <sup>238</sup> (Pci/g)	U <sup>238</sup> to U <sup>T</sup> Conversion Factor	U <sup>Total</sup> (Pci/g)	Average U <sup>238</sup> to U <sup>T</sup> Conversion Factor per grid
G8-2	0-2'	Isotopic	9.78	3.7	36.40	
G8-2	2-4'	BDL	1.96	3.7	7.30	
G8-4	0-2'	Isotopic	16.60	3.3	55.40	
G8-4	2-4'	BDL	2.85	3.3	9.50	
G8-5	0-2.5'		2.50	3.5	8.80	
						3.5
G9-1	0-2'	Isotopic	0.64	4.8	3.10	
G9-1	2-4'	BDL	2.19	4.8	10.50	
G9-2	0-2'	BDL	2.74	3.9	10.60	
G9-2	2-4'	BDL	2.11	3.9	8.10	
G9-4	0-2'		2.53	3.9	9.80	
G9-4	2-4'	BDL	2.06	3.9	8.00	
G9-5	0-2'	Isotopic	0.40	2.9	1.20	
G9-5	2-4'	BDL	2.79	2.9	8.00	
						3.9
G10-1	0-2'	Isotopic	0.26	2.8	0.70	
G10-1	2-4'	BDL	1.91	2.8	5.40	
G10-4	0-2'	BDL	2.09	2.8	5.90	
G10-4	2-4'	BDL	2.36	2.8	6.60	
G10-2	0-2.5'	BDL	2.40	2.8	6.70	
G10-5	0.-25'	BDL	1.01	2.8	2.80	
						2.8
G11-1	0-2'	BDL	2.12	4.6	9.70	
G11-2	0-2.5'	BDL	2.82	4.6	12.90	
G11-4	0-2'	BDL	1.87	4.6	8.60	
G11-4	2-4'	BDL	2.44	4.6	11.20	
G11-5	0-2'	BDL	2.57	4.6	11.80	
G11-5	2-4'	BDL	2.83	4.6	13.00	
						4.6
G12-1	0-2'	BDL	2.79	2.6	7.20	
G12-2	0-2'	BDL	2.98	2.6	7.70	
G12-2	2-4'	BDL	2.24	2.6	5.80	
G12-4	0-2'	BDL	2.03	2.6	5.20	
G12-4	2-4'	BDL	2.51	2.6	6.50	
G12-5	0-2'	BDL	2.02	2.6	5.20	
						2.6
G13-1	0-2'	BDL	2.80	2.4	6.70	
G13-1	2-4'	BDL	2.76	2.4	6.60	
G13-2	0-2'	BDL	2.12	2.4	5.00	
G13-2	2-4'	BDL	2.01	2.4	4.80	
G13-4	0-2'	BDL	2.75	2.4	6.50	
G13-4	2-4'	BDL	2.93	2.4	7.00	

Table D-1						
Soil Sample Results						
U238, Total U, and Average Total U Per Grid						
Location		Comment	U <sup>238</sup> (Pci/g)	U <sup>238</sup> to U <sup>T</sup> Conversion Factor	U <sup>Total</sup> (Pci/g)	Average U <sup>238</sup> to U <sup>T</sup> Conversion Factor per grid
G13-5	0-2.5'	Isotopic	1.13	2.4	2.70	
						2.4
G14-3	2-4'	BDL	2.44	3.1	7.50	
G14-3	0-2'	BDL	2.50	3.1	7.70	
						3.1
H3-1	0-2'	BDL	2.73	6.6	18.10	
H3-1	2-4'	BDL	2.35	6.6	15.60	
H3-2	0-2'	BDL	2.51	6.6	16.60	
H3-2	2-4'	BDL	2.63	6.6	17.40	
H3-4	0-2'	Isotopic	4.11	6.6	27.20	
H3-4	2-4'	BDL	2.49	6.6	16.50	
H3-5	0-2'		3.13	6.6	20.70	
H3-5	2-4'	BDL	2.87	6.6	19.00	
						6.6
H4-1	0-2'	BDL	2.91	8.1	23.50	
H4-2	0-2'	BDL	1.88	8.1	15.20	
H4-2	2-4'		2.71	8.1	21.90	
H4-4	0-2.5	BDL	2.65	8.1	21.40	
H4-5	0-2'	BDL	2.49	8.1	20.10	
H4-5	2-4'	BDL	2.40	8.1	19.40	
						8.1
H5-1	0-2.5'		4.27	8.2	34.90	
H5-2	0-2'	Isotopic	3.35	10.6	35.60	
H5-2	2-4'	BDL	1.77	10.6	18.80	
H5-4	0-2'		2.53	8.2	20.70	
H5-4	2-4'	BDL	2.42	8.2	19.80	
H5-5	0-2'	BDL	1.04	5.9	6.10	
H5-5			4.74	5.9	28.00	
H5-5RR			1.68	8.1	13.60	
						8.2
H6-1	0-2'	BDL	2.65	8.3	22.10	
H6-1	2-4'	BDL	1.74	8.3	14.50	
H6-2RR	2-4'		4.31	8.1	35.00	
H6-4	0-2.5'		2.68	8.3	22.30	
H6-5	0-2'		2.15	8.3	17.90	
H6-5	2-4'	BDL	2.09	8.3	17.40	
						8.3
H7-1	0-4'	BDL	1.89	8.1	15.30	
H7-1	4-8'	BDL	1.97	8.1	15.90	
H7-2	0-2'	BDL	2.03	8.1	16.40	
H7-2	2-4'	BDL	1.14	8.1	9.20	
H7-4B		BDL	2.49	8.1	20.20	

Table D-1						
Soil Sample Results						
U238, Total U, and Average Total U Per Grid						
Location		Comment	U <sup>238</sup> (Pci/g)	U <sup>238</sup> to U <sup>T</sup> Conversion Factor	U <sup>Total</sup> (Pci/g)	Average U <sup>238</sup> to U <sup>T</sup> Conversion Factor per grid
H7-4B	2-4'	BDL	1.70	19.6	33.30	9.7
H7-5	0-2.5'	BDL	2.09	8.1	16.90	
H8-1	0.2'		2.62	4.6	12.00	4.6
H8-2	0-2'	BDL	2.42	4.6	11.10	
H8-4	0-2.5'	BDL	2.59	4.6	11.90	
H8-5	0-2'	BDL	2.55	4.6	11.70	2.9
H8-5	2-4'	BDL	1.28	4.6	5.90	
H9-1	0-2'	BDL	2.82	2.9	8.20	5.1
H9-2	0-2'	Isotopic	2.51	2.9	7.30	
H9-2	2-4'	BDL	1.44	2.9	4.20	
H9-4	0-2.5'	BDL	1.56	2.9	4.50	4.6
H9-5	0-2'	BDL	2.92	2.9	8.50	
H9-5	2.4'	BDL	3.62	2.9	10.50	
						5.1
H10-1	0-2'	BDL	2.58	5.1	13.20	
H10-1	2.4'	BDL	2.64	5.1	13.50	
H10-2	0-2'	BDL	1.97	5.1	10.10	4.6
H10-2	2.4'	BDL	2.29	5.1	11.70	
H10-4	0-2'		2.57	5.1	13.20	
H10-4	2.4'	BDL	1.60	5.1	8.20	2.6
H10-5	0-2'	Isotopic	1.22	5.1	6.30	
H10-5	2.4'	BDL	2.87	5.1	14.70	
						4.6
H11-1	0-2'		2.64	4.6	12.10	
H11-1	2.4'	BDL	2.18	4.6	10.00	
H11-2	0-2'	BDL	2.12	4.6	9.70	2.6
H11-2	0-2.5'	BDL	1.60	4.6	7.30	
H11-2	2-4'	BDL	2.08	4.6	9.50	
H11-4	0-2'	BDL	3.17	4.6	14.50	2.6
H11-4	2-4'	BDL	2.71	4.6	12.40	
H12-1	0-3'	BDL	1.99	2.6	5.10	2.6
H12-2	0-2'	BDL	2.28	2.6	5.90	
H12-2	2-4'		2.72	2.6	7.00	
H12-4	0-2'	BDL	2.15	2.6	5.50	2.6
H12-4	2-4'	BDL	2.39	2.6	6.10	
H12-5	0-2'	BDL	1.38	2.6	3.50	
H12-5	2-4'	BDL	1.94	2.6	5.00	2.6
H13-2	0-2'		2.52	2.6	6.50	

Table D-1						
Soil Sample Results						
U238, Total U, and Average Total U Per Grid						
Location		Comment	U <sup>238</sup> (Pci/g)	U <sup>238</sup> to U <sup>T</sup> Conversion Factor	U <sup>Total</sup> (Pci/g)	Average U <sup>238</sup> to U <sup>T</sup> Conversion Factor per grid
H13-2	2-4'	BDL	2.50	2.6	6.40	
H13-4	0-2'	BDL	2.11	2.6	5.40	
H13-4	2-4'	BDL	2.31	2.6	5.90	
H13-5	0-2'	BDL	2.31	2.6	5.90	
H13-5	0-2.5'	BDL	1.36	2.6	3.50	
H13-5	2-5.5'	BDL	2.18	2.6	5.60	
H13-5	2-4'	BDL	2.62	2.6	6.70	
						2.6
H14-3	0-2'	BDL	2.88	3.1	8.90	
H14-3	2-4'	BDL	2.48	3.1	7.60	
						3.1
I3-1	0-2'	BDL	2.36	8.1	19.10	
I3-1	2-4'	BDL	2.43	8.1	19.70	
I3-2	0-2'		3.22	8.1	26.00	
I3-4	0-2'	BDL	2.95	8.1	23.90	
I3-5	0-2'	BDL	3.00	8.1	24.30	
I3-5	2-4'	BDL	1.70	8.1	13.80	
						8.1
I4-1	0-2'	BDL	2.9	7.1	20.50	
I4-2	0-2'	Isotopic	7.44	7.1	52.70	
I4-2	2-4'	BDL	2.09	7.1	14.80	
I4-4	0-2.5'	BDL	3	7.1	21.20	
I4-5	0-2'	BDL	2.12	7.1	15.00	
I4-5	2-4'	BDL	2.33	7.1	16.50	
						7.1
I5-1			17.4	8.1	14.10	
I5-1	2-4'	BDL	2.88	8.1	23.30	
I5-2	0-2'	BDL	2.62	8.1	21.20	
I5-2	2-4'	BDL	2.75	8.1	22.20	
I5-4	0-2'	BDL	2.47	8.1	20.00	
I5-4	2-4'	BDL	3	8.1	24.30	
I5-5	0-2'	BDL	2.35	8.1	19.00	
I5-5	2-4'	BDL	2.8	8.1	22.70	
						8.1
I6-1B			1.1	8.1	8.90	
I6-2	0-2'		3.43	8.1	27.70	
I6-2	2-4'		1.8	8.1	14.60	
I6-4	0-2.5'		2.7	8.1	21.80	
I6-5	0-2'	BDL	1.69	8.1	13.70	
I6-5	2-4'	BDL	1.87	8.1	15.10	
						8.1
I7-1	0-2'	BDL	3.37	8.1	27.30	

Table D-1						
Soil Sample Results						
U238, Total U, and Average Total U Per Grid						
Location		Comment	U <sup>238</sup> (Pci/g)	U <sup>238</sup> to U <sup>T</sup> Conversion Factor	U <sup>Total</sup> (Pci/g)	Average U <sup>238</sup> to U <sup>T</sup> Conversion Factor per grid
I7-1	2-4'	BDL	2.55	8.1	20.60	
I7-2	0-2'	BDL	2.78	8.1	22.50	
I7-2	2-4'	BDL	2.16	8.1	17.50	
I7-4	0-2'	BDL	2.44	8.1	19.70	
I7-4	2-4'	BDL	2.52	8.1	20.40	
I7-5	0-2'		2.04	8.1	16.50	
I7-5	2-4'	BDL	1.99	8.1	16.10	
						8.1
I8-1	0-2'	BDL	1.98	4.6	9.10	
I8-1	2-4'	BDL	2	4.6	9.20	
I8-4	0-2'	BDL	2.8	4.6	12.80	
I8-4	2-4'	BDL	1.71	4.6	7.80	
I8-5	0-2'	BDL	1.98	4.6	9.10	
I8-0	0-2'	BDL	1.5	4.6	6.90	
I8-2	2-4'	BDL	1.07	4.6	4.90	
						4.6
I9-1	0-2'		1.15	4.6	5.30	
I9-2	0-2.5'	BDL	1.06	4.6	4.90	
I9-4	0-2'	BDL	2.82	4.6	12.90	
I9-5	0-2'	BDL	2.94	4.6	13.50	
I9-5	2-4'		2.65	4.6	12.10	
						4.6
I10-1	0-2'	BDL	2.27	2.7	6.10	
I10-1	2-4'	BDL	2.28	2.7	6.10	
I10-2	0-2'	BDL	1.46	2.7	3.90	
I10-4	0-2'	BDL	1.74	2.7	4.70	
I10-4	2-4'	BDL	2.85	2.7	7.70	
I10-5	0-2'	BDL	2.99	2.7	8.00	
I10-5	2-4'	Isotopic	0.35	2.7	0.90	
						2.7
I11-4	0-2'	BDL	2.3	4.6	10.50	
I11-4	2-4'	BDL	1.92	4.6	8.80	
I11-5	0-2'	BDL	2.36	4.6	10.80	
I11-5	2-4'	BDL	1.77	4.6	8.10	
I11-1	0-2'	BDL	2.97	4.6	13.60	
I11-1	2-4'	BDL	2.37	4.6	10.90	
I11-2	0-2'	BDL	1.96	4.6	9.00	
I11-2	2-4'		2.23	4.6	10.20	
						4.6
I12-1	0-2.5'	BDL	2.71	2.6	7.00	
I12-2	0-2'	BDL	2.85	2.6	7.30	
I12-2	2-4'	BDL	3	2.6	7.70	



Table D-1						
Soil Sample Results						
U238, Total U, and Average Total U Per Grid						
Location		Comment	U <sup>238</sup> (Pci/g)	U <sup>238</sup> to U <sup>T</sup> Conversion Factor	U <sup>Total</sup> (Pci/g)	Average U <sup>238</sup> to U <sup>T</sup> Conversion Factor per grid
I12-4	0-2'	BDL	1.9	2.6	4.90	
I12-4	2-4'	BDL	2.45	2.6	6.30	
I12-5	0-2.5'	BDL	2.98	2.6	7.70	
						2.6
I13-1	0-2'	Isotopic	1.86	1.9	3.50	
I13-1	2-4'		2.31	1.9	4.40	
I13-2	0-2'	BDL	1.71	2	3.50	
I13-2	2-4'	BDL	2.22	2	4.50	
I13-4	0-2'	Isotopic	0.99	2.2	2.10	
I13-4	2-4'		4.44	2.2	9.60	
I13-5	0-2'	BDL	2.68	2	5.40	
I13-5	2-4'	BDL	2.08	2	4.20	
						2.0
I14-3	0-2'	BDL	3	3.1	9.20	
I14-3	2-4'	BDL	1.92	3.1	5.90	
						3.1
J1-3	0-2'		1.97	3.1	6.10	
J1-3	2-4'	BDL	2.97	3.1	9.10	
						3.1
J2-3	0-2'	BDL	2.65	3.1	8.20	
J2-3	2-4'	BDL	2.9	3.1	8.90	
						3.1
J3-3	0-2'	Isotopic	1.39	1.7	2.40	
J3-3	2-4'	BDL	2.48	1.7	4.20	
						1.7
J4-3	0-2'	BDL	2.42	3.1	7.50	
J4-3	2-4'	BDL	2.33	3.1	7.20	
						3.1
J5-3	0-2'	BDL	2.5	3.1	7.70	
J5-3	2-4'		2.23	3.1	6.90	
						3.1
J6-3	2-4'	BDL	1.99	3.1	6.10	
J6-3	0-2'	BDL	1.6	3.1	4.90	
						3.1
J7-3	2-4'	BDL	2.62	3.1	8.10	
J7-3	0-2'	BDL	2.47	3.1	7.60	
						3.1
J8-3	0-2'	BDL	1.1	3.1	3.40	
J8-3	2-4'	BDL	2.6	3.1	8.00	
						3.1
J9-3	0-2'		1.68	3.1	5.20	
J9-3	2-4'	BDL	2.58	3.1	7.90	

Table D-1						
Soil Sample Results						
U238, Total U, and Average Total U Per Grid						
Location		Comment	U <sup>238</sup> (Pci/g)	U <sup>238</sup> to U <sup>T</sup> Conversion Factor	U <sup>Total</sup> (Pci/g)	Average U <sup>238</sup> to U <sup>T</sup> Conversion Factor per grid
						3.1
J10-3	0-2'	BDL	2.53	3.1	7.80	
J10-3	2-4'	BDL	2.83	3.1	8.70	
						3.1
J11-3	0-2'	Isotopic	1.25	3.1	2.90	
J11-3	2-4'		4.26	3.1	9.90	
						3.1
J12-3	0-2'	BDL	2.7	2.3	8.30	
J12-3	2-4'	BDL	2.65	2.3	8.20	
						2.3
J13-3	0-2'	BDL	2.1	3.1	6.50	
J13-3	2-4'	BDL	2.2	3.1	6.80	
						3.1
J14-3	0-2'	BDL	2.66	3.1	8.20	
J14-3	2-4'	BDL	2.3	3.1	7.10	
						3.1
Average Values			2.5	5.2	13.0	4.8
Data Source: Draft "Final Status Survey Report", B.Koh & Associates, December 15, 2001						
Notes:						
<sup>(1)</sup> Each 10m x 10m grid was divided into four quadrants for FSS. See FSS Report , Figure 1						
<sup>(2)</sup> BDL = Below Detection Level						

Table D-2  
Radionuclide Activities  
for Various  
U-235 Enrichments

	Percentage of Total Activity (%)		
E (%U-235)	U-234	U-235	U-238
0.2	14.86	1.35	83.75
0.71	48.03	2.28	49.68
1	54.78	2.76	42.46
2	68.26	3.68	28.06
3	75.12	4.13	20.75
5	82.09	4.53	13.38
8	86.82	4.73	8.45
10	88.58	4.76	6.66
15	91.12	4.72	4.16
20	92.51	4.62	2.87
25	93.41	4.49	2.10
30	94.05	4.36	1.58
35	94.54	4.23	1.22
40	94.93	4.11	0.96
45	95.25	3.99	0.76
50	95.53	3.87	0.60
55	95.76	3.76	0.48
60	95.96	3.66	0.38
65	96.14	3.56	0.30
70	96.30	3.46	0.23
75	96.45	3.37	0.17
80	96.58	3.29	0.13
85	96.70	3.21	0.09
90	96.82	3.13	0.05

Source: ENERCON Services, Inc. 2005. "Derivation of Site Specific DCGLs for Building Release, DO-05-003, Presented to Westinghouse Electric Company, Festus, MO"