



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON DC

1 March 2018

MEMORANDUM FOR NRC REGION IV
ATTN: Dr. Robert Evans

FROM: AFMSA/SG3PB

SUBJECT: Review of the Hot Spots After the Final Status Survey at WR111, Hill AFB,

1. The contractor EA Engineering, Science, and Technology, conducted excavation and Final Status Survey (FSS) activities in June-August 2016 to remove radiologically-impacted soil at Site WR111. After reviewing the FSS data, it was found that residual radiological activity in soil above cleanup criteria still remained at the site. Instead of removing the hotspots manually, the EA demonstrated compliance when there are small areas of elevated activity present using area factors and a Sum-Of Ratios (SOR) calculation IAW the section 8.5 of the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM). We have attached the EA Memorandum dated 23 February 2018 for your review. We request an expedited review and approval and request that you provide any comments you may have on or before 6 April 2018.

2. If you have any questions, please contact me at 703-681-6871 or email at ramachandra.k.bhat.civ@mail.mil.

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Ramachandra K. Bhat, Ph.D., CHP
Senior Health Physicist
USAF Radioisotope Committee Secretariat
AF Medical Support Agency
Office of the Surgeon General

Attachment:

1. EA Memorandum dated 23 Feb 18

CC:

NRC Region IV (Ms. Browder)
USAF AFMC AFCEC/CZOM (Mr. Roginske)
USAFSAM/OECC (Mr. Gilbert)
AFIA/SGO (Maj Kice)



MEMORANDUM

TO: Mark Roginske, P.E.; Hill Air Force Base Project Manager, Air Force Civil Engineer Center, Environmental Restoration

FROM: Amy Sponaugle, P.E., Site WR111 Project Manager, EA Engineering, Science, and Technology, Inc., PBC

DATE: 23 February 2018

SUBJECT: Summary of Final Status Survey Data and Evaluation to Achieve Clean-up Goals at Site WR111 (Magnesium-Thorium Disposal Trench), Little Mountain Test Facility, Hill Air Force Base, Utah

1. Introduction

The Air Force Civil Engineer Center (AFCEC) has contracted EA Engineering, Science, and Technology, Inc., PBC (EA) to perform remedial action activities at Site WR111 (Magnesium-Thorium Disposal Trench), at Little Mountain Test Facility, Hill Air Force Base (AFB), Utah, under Performance-Based Remediation (PBR) Contract Number FA8903-09-D-8560, Task Order 0006. This Memorandum provides a summary of the Final Status Survey (FSS) data collected at the site and data evaluation to support site closure and decommissioning. EA conducted excavation and FSS activities in June-August 2016 to remove radiologically-impacted soil at Site WR111. After reviewing the FSS data, it was apparent that residual radiological activity in soil above cleanup criteria still remained at the site. After consulting with AFCEC, Nuclear Regulatory Commission (NRC) and the U.S. Air Force Radioisotope Committee (USAF RIC), additional excavation and FSS activities were performed in May 2017. Work was conducted in accordance with the Revised Final *WR111 Little Mountain Test Annex Magnesium-Thorium Disposal Trench Remedial Design/Remedial Action Work Plan* (RD/RA Work Plan) (EA 2015a), the Final *WR111 Little Mountain Test Annex Magnesium-Thorium Disposal Trench Decommissioning Plan* (EA 2015b), and *Technical Memorandum - Additional Excavation and Final Status Survey Activities to Achieve Clean-up Goals at Site WR111 (Magnesium-Thorium Disposal Trench)* (EA 2017) (Attachment A).

FSS data results, as well as data results from verification sampling (conducted by AF and the NRC), are provided in Exhibit 1. Surface sample locations are provided in Figure 1. The FSS data evaluation provided in this Technical Memorandum was conducted in accordance with the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), which provides guidance on demonstrating compliance with dose and risk-based release criteria when multiple radionuclides are present using a sum-of-ratios calculation. MARSSIM also provides guidance on demonstrating compliance when there are small areas of elevated activity present using area factors and a sum-of-ratios (SOR) calculation. MARSSIM does not provide examples on how to apply this guidance for multiple areas of elevated radioactivity and multiple radionuclides of concern (ROCs). This memorandum explains multiple options for performing these calculations.

2. Area Factors

Derived Concentration Guideline Level (DCGL) values are radionuclide-specific combinations of concentration and area, resulting in a risk or dose equal to the release criterion for the project. The DCGL_w

is a specific DCGL value corresponding to an area equal to the area of a survey unit. DCGL_{EMC} values are generic and describe all other combinations of concentration and area that equal the release criterion. For practical application purposes, DCGL_{EMC} values are only calculated for areas smaller than a survey unit.

The ratio of the DCGL_{EMC} to the DCGL_W is called an area factor. Area factors, along with the corresponding DCGL_{EMC} values, have been calculated for a range of areas applicable for WR111 for each of the radionuclides of concern. The DCGL_W values were calculated for survey unit areas of 5,620 square meters (m²). Area factors are calculated as the ratio of the DCGL_W values for the specific area (e.g, 500 m²) to the DCGL_W values for the 5,620 m² area (exact numbers were used in the calculations, values were then rounded and included in Tables 1 and 2 below).

The methodology utilized to calculate area factors for Site WR111 is detailed in Attachment 1 of this Technical Memorandum, and results are summarized in the tables below.

Table 1. DCGL Values

	DCGL Values						
ROC	5,620 m ²	2,000 m ²	500 m ²	300 m ²	200 m ²	100 m ²	75 m ²
Ra-226+D	1.6	1.6	2.5	3.3	3.9	4.9	5.2
Th-230	4.3	4.4	6.9	9.0	10.6	13.3	14.4
Th-232+D	1.9	2.0	2.6	3.0	3.3	3.8	4.0

Note: +D = includes daughters

Table 2. Area Factors

	Area Factors						
ROC	5,620 m ²	2,000 m ²	500 m ²	300 m ²	200 m ²	100 m ²	75 m ²
Ra-226+D	1.0	1.02	1.60	2.07	2.44	3.06	3.29
Th-230	1.0	1.02	1.60	2.08	2.45	3.09	3.34
Th-232+D	1.0	1.02	1.35	1.56	1.70	1.94	2.05

Note: +D = includes daughters

2.1 Multiple Radionuclides

MARSSIM recommends applying a sum-of-ratios calculation to account for doses or risks from multiple radionuclides. This calculation is simply the sum of the ratios of the concentration (C) of each radionuclide of concern in a given sample to the corresponding DCGL_W for each ROC. The calculation is:

$$\frac{C_{Ra-226}}{DCGL_{Ra-226}} + \frac{C_{Th-230}}{DCGL_{Th-230}} + \frac{C_{Th-232}}{DCGL_{Th-232}} \leq 1$$

For Site WR111, this calculation was performed for each soil sample using the DCGL_W values. Figure 2 shows the location of the FSS samples included in the data evaluation, and Exhibit 1 provides results for these samples. If the SORs for all soil sample results are less than 1.0, the survey unit demonstrates compliance with the release criterion. This was the case for Class 1 survey unit 1 (SU01) and Class 2 survey unit 3 (SU03) (Figure 2). Class 1 survey unit 2 (SU02) includes one soil sample with an SOR greater than 1.0 (SU2-51 at 1.04), and Class 1 survey unit 4 (SU04) includes four soil samples with SORs greater than 1.0 (SU3-87 at 1.17, SU3-88 at 1.11, WR-720 at 1.18, and WR-742 at 1.18).

2.2 Areas of Elevated Activity

MARSSIM Equation 8-2 can be used when an isolated area of elevated activity is identified in a survey unit to demonstrate the dose or risk is less than the release criterion.

$$\frac{\delta}{DCGL_W} + \frac{(\text{average concentration in elevated area} - \delta)}{DCGL_{EMC}} < 1.0$$

Where, δ = estimate of the average residual radioactivity in a survey unit

Because the equation is written in terms of DCGL values, this equation can only be applied to a single radionuclide at a time.

There is no guidance for demonstrating compliance with the release criterion when areas of elevated activity are present for multiple radionuclides of concern. Since multiple radionuclides of concern are present at Site WR111, EA proposes adjusting the parameters in MARSSIM Equation 8-2 to conservatively account for multiple radionuclides and allow comprehensive review of the data, as follows:

- The smallest area factor from Table 2 for an area greater than or equal to the area of elevated activity will be used as the $DCGL_{EMC}$ value, because $\text{Area Factor} = DCGL_{EMC}/DCGL_W$, $DCGL_W$ is an SOR of 1.0, so $DCGL_{EMC} = \text{Area Factor}$ for these calculations based on SOR values;
- Average SOR for all systematic sample results in each survey unit will be used as δ instead of average concentration;
- Average SOR for elevated area sample results will be used instead of average concentration in elevated areas; and
- An SOR of 1.0 (i.e., “unity”) will be used as the $DCGL_W$.

The adjusted MARSSIM Equation 8-2 is the following:

$$\frac{\delta}{1.0} + \frac{(\text{average SOR in elevated area} - \delta)}{\text{Area Factor}} < 1.0$$

Where, δ = estimate of the average SOR in a survey unit

Examples of EA’s application of the adjusted MARSSIM Equation 8-2 using actual FSS data that was collected for Site WR111 are provided below.

A single area of elevated activity was established in SU02 that includes sample SU2-51. The area of elevated activity is approximately 60 m² (Figure 2), which was conservatively rounded up to 75 m². The area factor for Th-232+D is the lowest area factor for the ROCs (see Table 2 above). SU02 SOR values are shown in Table 3. The elevated area sample SOR is shown in Table 4. Results in picocuries per gram (pCi/g) are net concentrations (i.e., result minus the mean reference area background concentration). “DCGL fraction” is the ratio of the net results to the applicable DCGL. The SOR is the sum of the three DCGL fraction results.

Table 3. SU02 SOR Values

Sample ID	Ra-226 Net (pCi/g)	Th-230 Net (pCi/g)	Th-232 Net (pCi/g)	Ra-226 DCGL fraction	Th-230 DCGL fraction	Th-232 DCGL fraction	SOR
SU02-EXB-043-SS-P-00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SU02-EXB-045-SS-P-00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SU02-EXB-048-SS-P-00	0.00	0.25	0.00	0.00	0.06	0.00	0.06
SU02-EXB-049-SS-P-00	0.00	0.29	0.00	0.00	0.07	0.00	0.07
SU02-EXB-050-SS-P-00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SU02-EXB-052-SS-P-00	0.00	2.69	0.03	0.00	0.63	0.01	0.64
SU02-EXB-053-SS-P-00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SU02-EXB-054-SS-P-00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SU02-EXB-056-SS-P-00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SU02-EXB-057-SS-P-00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SU02-EXN-041-SS-P-00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SU02-EXN-044-SS-P-00	0.00	0.32	0.00	0.00	0.07	0.00	0.07
SU02-EXS-055-SS-P-00	0.11	0.00	0.00	0.07	0.00	0.00	0.07
SU02-EXW-040-SS-P-00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SU02-EXW-042-SS-P-00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SU02-EXW-046-SS-P-00	0.20	0.00	0.00	0.13	0.00	0.00	0.13
SU02-EXW-047-SS-P-00	0.22	0.00	0.00	0.14	0.00	0.00	0.14
SU02-EXB-051-SS-P-01	1.05	0.39	0.56	0.66	0.09	0.29	1.04
Average (δ)							0.12

Table 4. SU02 Elevated Area Sample SOR Values

Sample ID	Ra-226 Net (pCi/g)	Th-230 Net (pCi/g)	Th-232 Net (pCi/g)	Ra-226 DCGL fraction	Th-230 DCGL fraction	Th-232 DCGL fraction	SOR
SU02-EXB-051-SS-P-01	1.05	0.39	0.56	0.66	0.09	0.29	1.04

Applying adjusted MARSSIM Equation 8-2 for an area of elevated activity up to 75 m² including SU2-51 produces:

$$\frac{0.12}{1} + \frac{(1.04 - 0.12)}{2.05} = 0.57$$

Where, the area factor of 2.05 was conservatively selected (see Table 2) to represent all ROCs for this area of elevated activity.

The value of 0.57 is less than 1.0, so SU02 demonstrates compliance with the release criterion.

A single area of elevated activity was established in SU04 that includes all four elevated soil sample results, along with sample WR-721. The area of elevated activity is approximately 339 m², which was rounded up to 500 m² for selection of an area factor of 1.35 based on Th-232 (see Table 2 above). SU04 SOR values are shown in Table 5. Elevated area sample SORs are shown in Table 6. Results in pCi/g are net concentrations (i.e., result minus the mean reference area background concentration). “DCGL fraction” is

the ratio of the net results to the applicable DCGL. The SOR is the sum of the three DCGL fraction results.

Table 5. SU04 SOR Values

Sample ID	Ra-226 Net (pCi/g)	Th-230 Net (pCi/g)	Th-232 Net (pCi/g)	Ra-226 DCGL fraction	Th-230 DCGL fraction	Th-232 DCGL fraction	SOR
SU03-S-070-SS-P-00	0.15	0.45	0.77	0.09	0.10	0.40	0.60
SU01-EXB-038-SS-P-00	0.06	0.00	0.26	0.04	0.00	0.14	0.17
SU01-EXB-039-SS-P-00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SU01-EXB-083-SS-P-00	0.17	0.11	0.00	0.11	0.03	0.00	0.13
SU01-EXB-084-SS-P-00	0.08	0.00	0.00	0.05	0.00	0.00	0.05
SU01-EXB-085-SS-P-00	0.09	0.68	0.00	0.06	0.16	0.00	0.22
SU01-EXB-086-SS-P-00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WR-718	0.00	1.77	0.00	0.00	0.41	0.00	0.41
WR-719	0.44	2.30	0.00	0.28	0.54	0.00	0.81
WR-723	0.00	1.04	0.00	0.00	0.24	0.00	0.24
WR-726	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WR-740	0.04	3.13	0.00	0.03	0.73	0.00	0.75
WR-741	0.00	1.32	0.00	0.00	0.31	0.00	0.31
WR-720	0.12	4.18	0.25	0.08	0.97	0.13	1.18
WR-721	0.00	2.38	0.00	0.00	0.55	0.00	0.55
SU03-S-087-SS-P-00	0.21	3.87	0.26	0.13	0.90	0.14	1.17
SU03-S-088-SS-P-00	0.47	3.20	0.13	0.29	0.74	0.07	1.11
WR-742	0.00	2.14	1.29	0.00	0.50	0.68	1.18
Average (δ)							0.49

Table 6. SU04 Elevated Area Sample SOR Values

Sample ID	Ra-226 Net (pCi/g)	Th-230 Net (pCi/g)	Th-232 Net (pCi/g)	Ra-226 DCGL fraction	Th-230 DCGL fraction	Th-232 DCGL fraction	SOR
WR-720	0.12	4.18	0.25	0.08	0.97	0.13	1.18
WR-721	0.00	2.38	0.00	0.00	0.55	0.00	0.55
SU03-S-087-SS-P-00	0.21	3.87	0.26	0.13	0.90	0.14	1.17
SU03-S-088-SS-P-00	0.47	3.20	0.13	0.29	0.74	0.07	1.11
WR-742	0.00	2.14	1.29	0.00	0.50	0.68	1.18
Average Concentration in Elevated Area							1.038

Applying adjusted MARSSIM Equation 8-2 for a single area of elevated activity up to 500 m² including SU3-87, SU3-88, WR-720, WR-721, and WR-742 produces:

$$\frac{0.49}{1} + \frac{(1.038 - 0.49)}{1.35} = 0.90$$

Where, the area factor of 1.35 was conservatively selected (see Table 2) to represent all ROCs for this area of elevated activity.

The value of 0.90 is less than 1.0, so SU04 demonstrates compliance with the release criterion.

3. References

- EA Engineering, Science, and Technology, Inc., PBC (EA). 2017. *Additional Excavation and Final Status Survey Activities to Achieve Clean-up Goals at Site WR111 (Magnesium-Thorium Disposal Trench), Little Mountain Test Facility*, Hill Air Force Base, UT. Revised Final. January.
- EA. 2015a. *WR111 Little Mountain Test Annex Magnesium-Thorium Disposal Trench Remedial Design/Remedial Action Work Plan*, Hill Air Force Base, UT. Revised Final. September.
- EA. 2015b. *WR111 Little Mountain Test Annex Magnesium-Thorium Disposal Trench Decommissioning Plan*, Hill Air Force Base, UT. Final. September.

Figure

- 1 FSS and Verification Survey Sample Locations
- 2 FSS Sample Locations

Exhibit

- 1 Summary of EA/Cabrera FSS Results and Verification Survey Results (USAFSAM, USNRC, and HAFB)

Attachment

- A Determination of Area Factors Based on Various Areas of Contamination

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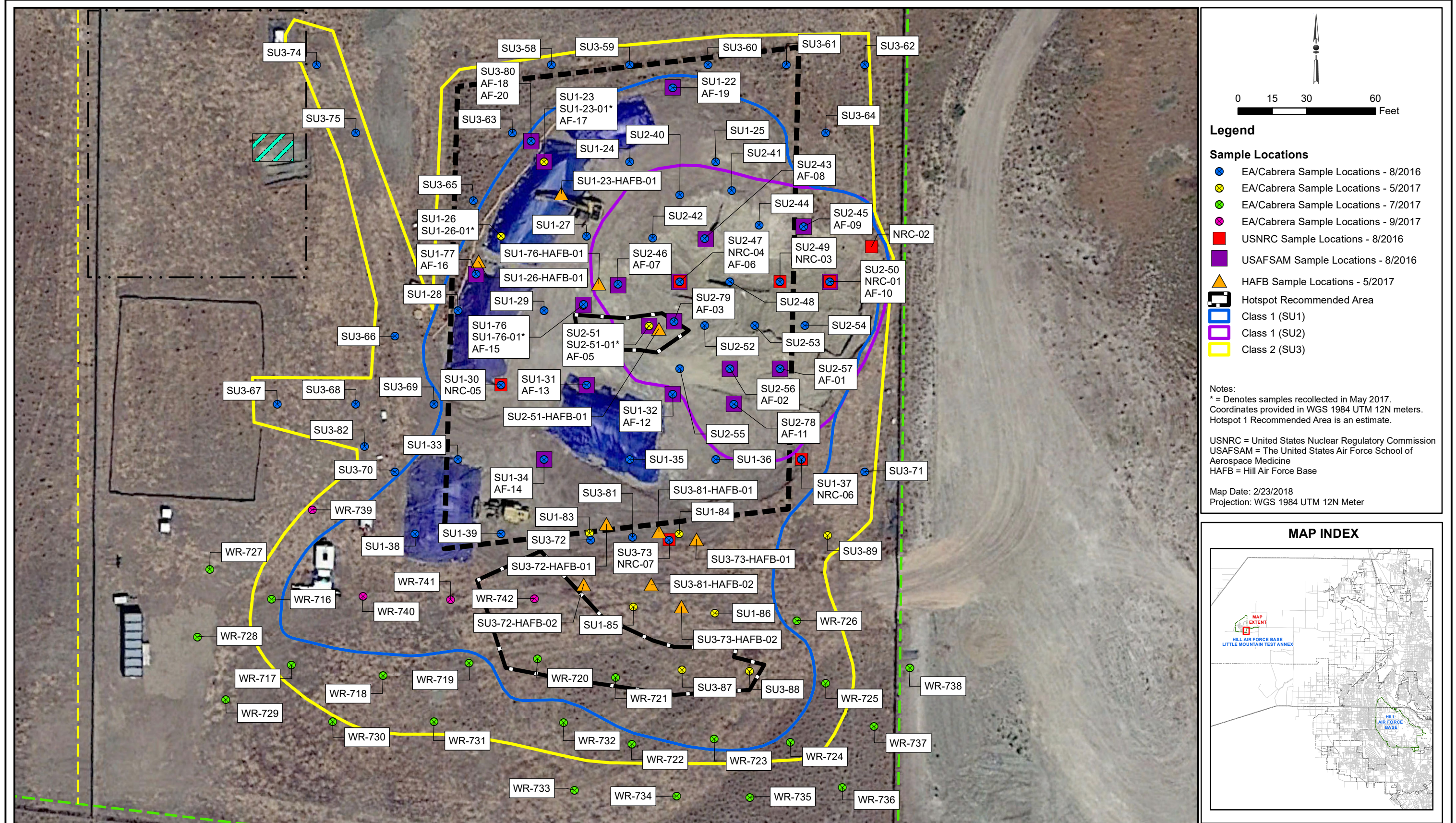


FIGURE 1
FSS AND VERIFICATION SURVEY SAMPLE LOCATIONS
SITE WR111, HILL AIR FORCE BASE, UTAH

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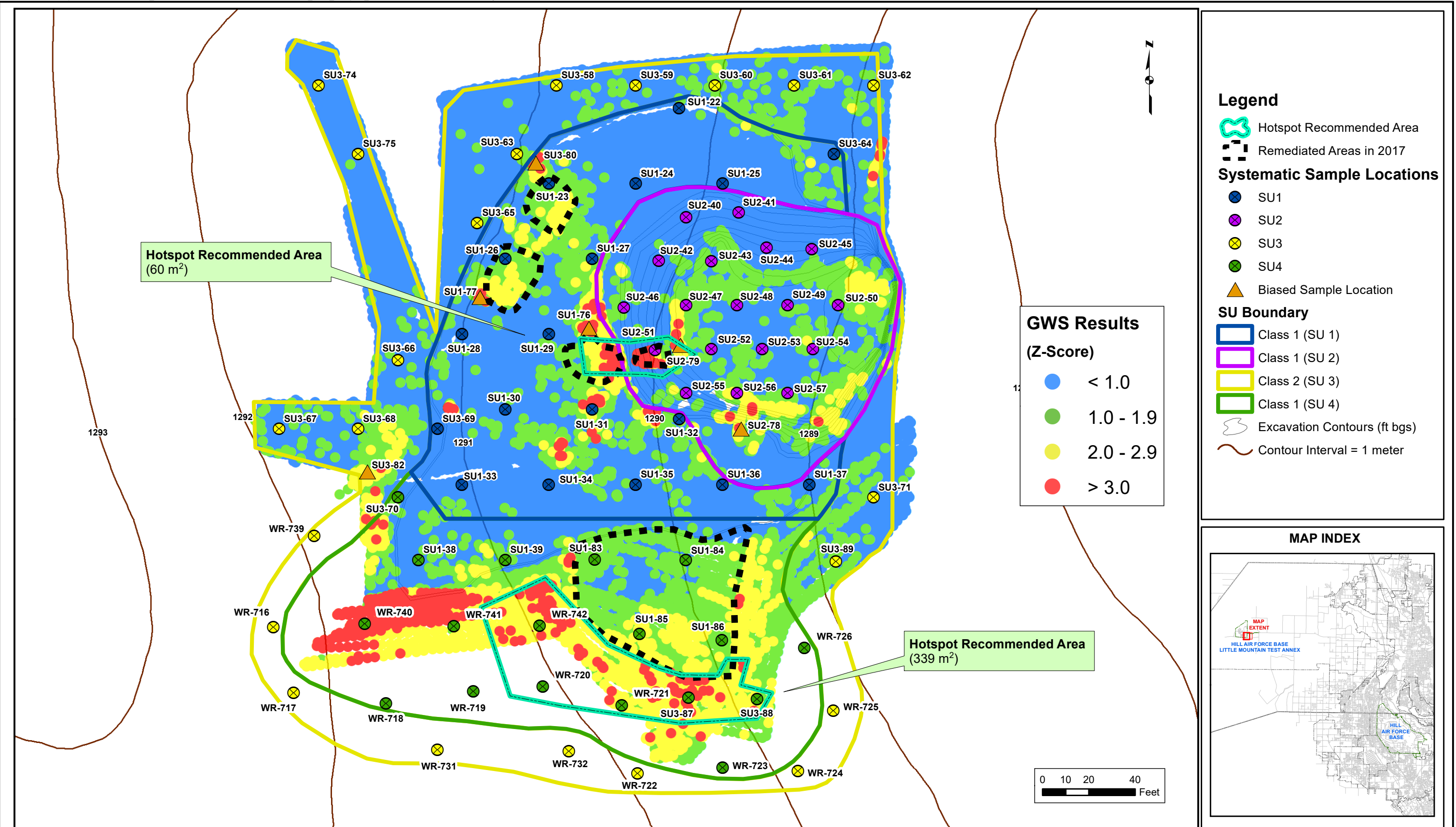


FIGURE 2
FSS SAMPLE LOCATIONS
SITE WR111, HILL AIR FORCE BASE, UTAH

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EA/Cabrera, USAFSAM, USNRC, and HAFB FSS All Sample Results Comparison

								Cabrera Background	1.46				1.75				1.63							
								USAFSAM Background	1.32				1.61				1.79							
								DCGL _w	1.60				4.30				1.90							
								Ra-226 Result (pCi/g)				Th-230 Result (pCi/g)				Th-232 Result (pCi/g)								
Cabrera Samples		USAFSAM Samples		USNRC Samples		HAFB Samples		Sample Information	Cabrera	USAFSAM	USNRC	HAFB	Cabrera	USAFSAM	USNRC	HAFB	Cabrera	USAFSAM	USNRC	HAFB	Cabrera SOR	USAFSAM SOR	USNRC SOR	HAFB SOR
Sample ID	Date Taken	Sample ID	Date Taken	Sample ID	Date Taken	Sample ID	Date Taken																	
SU01-EXB-022-SS-P-00	8/8/2016	19	8/17/2016					Original sample - retained in dataset.	0.98	1.13			0.81	1.04			1.42	1.55			0.00	0.00		
SU01-EXB-023-SS-P-00	8/8/2016	17	8/17/2016					Original sample - REMOVED from dataset due to remediation (replaced by SU01-EXB-023-SS-P-01).	1.28	1.15			1.47	9.78			1.39	3.51			0.00	2.81		
SU01-EXB-023-SS-P-01	5/10/2017							New sample (resample of SU01-EXB-023-SS-P-00).	0.91				0.64				1.47				0.00			
						SU1-23-HAFB-01	May-17	New sample (sample near SU01-EXB-023-SS-P-01)				1.08				1.36				2.67				0.42
SU01-EXB-024-SS-P-00	8/8/2016							Original sample - retained in dataset.	1.15				1.35				1.58				0.00			
SU01-EXB-025-SS-P-00	8/8/2016							Original sample - retained in dataset.	1.08				0.92				1.41				0.00			
SU01-EXB-026-SS-P-00	8/8/2016							Original sample - REMOVED from dataset due to remediation (replaced by SU01-EXB-026-SS-P-01).	1.23				5.35				2.84				1.47			
SU01-EXB-026-SS-P-01	5/10/2017							New sample (resample of SU01-EXB-026-SS-P-00).	1.15				0.73				1.39				0.00			
						SU1-26-HAFB-01	May-17	New sample (sample near SU01-EXB-026-SS-P-01)				1.27				1.45				1.63				0.00
SU01-EXB-027-SS-P-00	8/8/2016							Original sample - retained in dataset.	1.50				2.08				2.12				0.36			
SU01-EXB-028-SS-P-00	8/8/2016							Original sample - retained in dataset.	0.88				0.86				1.38				0.00			
SU01-EXB-029-SS-P-00	8/8/2016							Original sample - retained in dataset.	1.07				1.17				1.71				0.04			
SU01-EXB-030-SS-P-00	8/8/2016			05	8/23/2016			Original sample - retained in dataset.	1.22		0.99		1.33		2.23		1.85		2.34		0.11		0.49	
SU01-EXB-031-SS-P-00	8/8/2016	13	8/17/2016					Original sample - retained in dataset.	1.57	1.57			0.85	1.28			1.30	1.67			0.07	0.16		
SU01-EXB-032-SS-P-00	8/8/2016	12	8/17/2016					Original sample - retained in dataset.	2.16	1.81			1.28	1.63			1.31	2.02			0.44	0.43		
SU01-EXB-033-SS-P-00	8/8/2016							Original sample - retained in dataset.	1.18				2.91				1.93				0.43			
SU01-EXB-034-SS-P-00	8/8/2016	14	8/17/2016					Original sample - retained in dataset.	1.14	1.20			2.18	1.46			1.46	1.47			0.10	0.00		
SU01-EXB-034-SS-DUP-00	8/8/2016							Original sample (duplicate) - retained in dataset.	1.05				1.13				1.78				0.08			
SU01-EXB-035-SS-P-00	8/8/2016							Original sample - retained in dataset.	1.02				0.82				1.80				0.09			
SU01-EXB-036-SS-P-00	8/8/2016							Original sample - retained in dataset.	1.32				1.33				1.20				0.00			
SU01-EXB-037-SS-P-00	8/8/2016			06	8/23/2016			Original sample - retained in dataset.	1.46		1.13		1.03		1.54		1.67		1.95		0.02		0.17	
SU01-EXB-038-SS-P-00	8/8/2016							Original sample - retained in dataset.	1.52				1.13				1.89				0.17			
SU01-EXB-039-SS-P-00	8/8/2016							Original sample - retained in dataset.	1.26				1.22				1.60				0.00			
SU01-EXB-039-SS-DUP-00	8/8/2016							Original sample (duplicate) - retained in dataset.	1.03				0.81				1.52				0.00			
SU02-EXB-043-SS-P-00	8/8/2016	8	8/17/2016					Original sample - retained in dataset.	1.25	1.13			1.11	1.44			0.97	2.45			0.00	0.35		
SU02-EXB-045-SS-P-00	8/8/2016	9	8/17/2016					Original sample - retained in dataset.	1.08	0.858			1.63	1.10			1.34	2.61			0.00	0.43		
SU02-EXB-048-SS-P-00	8/8/2016							Original sample - retained in dataset.	0.79				2.00				1.25				0.06			
SU02-EXB-049-SS-P-00	8/8/2016			03	8/23/2016			Original sample - retained in dataset.	1.06		0.79		2.04		1.42		1.15		3.47		0.07		0.97	
SU02-EXB-049-SS-DUP-P-00	8/8/2016							Original sample (duplicate) - retained in dataset.	1.19				0.67				0.89				0.00			
SU02-EXB-050-SS-P-00	8/8/2016	10	8/17/2016	01	8/23/2016			Original sample - retained in dataset.	1.44	0.941	0.77		1.65	1.10	1.34		1.11	2.59	3.41		0.00	0.42	0.94	
				02	8/23/2016			Original sample - retained in dataset. Collected from East Face of Excavation.			0.69				1.09				2.66				0.54	
SU02-EXB-052-SS-P-00	8/8/2016							Original sample - retained in dataset.	1.42				4.44				1.66				0.64			
SU02-EXB-053-SS-P-00	8/8/2016							Original sample - retained in dataset.	1.07				1.30				1.23				0.00			
SU02-EXB-054-SS-P-00	8/8/2016							Original sample - retained in dataset.	1.06				0.89				1.10				0.00			
SU02-EXB-056-SS-P-00	8/8/2016	2	8/17/2016					Original sample - retained in dataset.	1.26	1.23			0.99	1.56			1.24	2.50			0.00	0.37		
SU02-EXB-057-SS-P-00	8/8/2016	1	8/17/2016					Original sample - retained in dataset.	1.44	1.44			1.20	1.22			1.23	2.41			0.00	0.40		
SU02-EXN-041-SS-P-00	8/8/2016							Original sample - retained in dataset.	1.02				1.31				1.15				0.00			
SU02-EXN-044-SS-P-00	8/8/2016							Original sample - retained in dataset.	0.99				2.07				1.32				0.07			
SU02-EXS-055-SS-P-00	8/8/2016							Original sample - retained in dataset.	1.57				1.15				1.07				0.07			
SU02-EXW-040-SS-P-00	8/8/2016							Original sample - retained in dataset.	1.28				1.15				1.14				0.00			
SU02-EXW-042-SS-P-00	8/8/2016							Original sample - retained in dataset.	1.33				1.14				0.93				0.00			
SU02-EXW-046-SS-P-00	8/8/2016	7	8/17/2016					Original sample - retained in dataset.	1.66	1.99			1.14	2.07			1.24	2.46			0.13	0.88		
SU02-EXW-047-SS-P-00	8/8/2016	6	8/17/2016	04	8/23/2016			Original sample - retained in dataset.	1.68	1.74	1.16		1.30	1.91	2.04		1.16	2.20	2.74		0.14	0.55	0.65	
SU02-EXW-047-SS-DUP-P-00	8/8/2016							Original sample (duplicate) - retained in dataset.	1.61				0.60				0.69				0.09			
SU02-EXW-051-SS-P-00	8/8/2016	5	8/17/2016					Original sample - REMOVED from dataset due to remediation (replaced by SU02-EXB-051-SS-P-01).	2.11	2.64			1.31	2.29			1.12	1.93			0.41	1.06		
SU02-EXB-051-SS-P-01	5/10/2017							New sample (resample of SU02-EXW-051-SS-P-01). Remediation or Area Factor Calculation Required.	2.51				2.14				2.19				1.04			
						SU2-51-HAFB-01	May-17	New sample (sample near SU02-EXB-051-SS-P-01)				2.26				2.84				2.44				0.86
SU03-S-058-SS-P-00	8/9/2016							Original sample - retained in dataset.	1.03				0.62				1.16				0.00			
SU03-S-059-SS-P-00	8/9/2016							Original sample - retained in dataset.	1.23				0.77				1.25				0.00			
SU03-S-060-SS-P-00	8/9/2016							Original sample - retained in dataset.	1.12				1.47				1.80				0.09			
SU03-S-060-SS-DUP-00	8/9/2016							Original sample (duplicate) - retained in dataset.	1.27				1.09				1.23				0.00			
SU03-S-061-SS-P-00	8/9/2016	</																						

EA/Cabrera, USAFSAM, USNRC, and HAFB FSS All Sample Results Comparison

								Cabrera Background				1.46				1.75				1.63						
								USAFSAM Background				1.32				1.61				1.79						
								DCGL _w				1.60				4.30				1.90						
Cabrera Samples		USAFSAM Samples		USNRC Samples		HAFB Samples		Sample Information	Ra-226 Result (pCi/g)				Th-230 Result (pCi/g)				Th-232 Result (pCi/g)									
Sample ID	Date Taken	Sample ID	Date Taken	Sample ID	Date Taken	Sample ID	Date Taken		Cabrera	USAFSAM	USNRC	HAFB	Cabrera	USAFSAM	USNRC	HAFB	Cabrera	USAFSAM	USNRC	HAFB						
SU03-S-069-SS-P-00	8/9/2016							Original sample - retained in dataset.	1.57					1.71				1.63					0.07			
SU03-S-070-SS-P-00	8/9/2016							Original sample - retained in dataset.	1.61					2.20				2.40					0.60			
SU03-S-071-SS-P-00	8/9/2016							Original sample - retained in dataset.	1.78					1.83				1.38					0.22			
SU03-S-072-SS-P-00	8/9/2016							Original sample - REMOVED from dataset due to remediation.	1.68					8.49				2.75					2.29			
						SU3-72-HAFB-01	May-17	New sample (sample near SU03-S-072-SS-P-00).				1.31				1.91				1.54					0.00	
						SU3-72-HAFB-02	May-17	New sample (sample near SU03-S-072-SS-P-00).				1.42				1.74				1.81					0.03	
SU03-S-073-SS-P-00	8/9/2016				07	8/23/2016		Original sample - REMOVED from dataset due to remediation.	1.30		1.40			16.30		13.20		3.86		3.88			4.56		3.85	
						SU3-73-HAFB-01	May-17	New sample (sample near SU03-S-073-SS-P-00).				1.49				1.57				1.69					0.08	
						SU3-73-HAFB-02	May-17	New sample (sample near SU03-S-073-SS-P-00).				1.29				1.75				1.48					0.00	
SU03-S-074-SS-P-00	8/9/2016							Original sample - retained in dataset.	1.16					1.52				1.26					0.00			
SU03-S-074-SS-DUP-00	8/9/2016							Original sample (duplicate) - retained in dataset.	1.39					1.51				1.51					0.00			
SU03-S-075-SS-P-00	8/9/2016							Original sample - retained in dataset.	1.41					1.57				1.28					0.00			
SU01-EXB-076-SS-P-00	8/8/2016	15	8/17/2016					Original sample - REMOVED from dataset due to remediation (replaced by SU01-EXB-076-SS-P-01).	1.52	1.55				4.97	9.66			2.83	4.61				1.42	3.50		
SU01-EXB-076-SS-P-01	5/10/2017							New sample (sample near SU01-EXB-076-SS-P-00).	1.27					0.83				0.82					0.00			
						SU1-76-HAFB-01	May-17	New sample (sample near SU01-EXB-076-SS-P-01)				1.58				2.21				2.20					0.30	
SU01-EXB-077-SS-P-00	8/8/2016	16	8/17/2016					Original sample - retained in dataset.	1.10	1.08				1.11	1.37			1.87	2.04				0.13	0.13		
SU02-EXB-078-SS-P-00	8/8/2016	11	8/17/2016					Original sample - retained in dataset.	1.46	1.35				1.10	1.32			1.11	1.91				0.00	0.08		
SU02-EXB-079-SS-P-00	8/8/2016	3	8/17/2016					Original sample - retained in dataset.	1.22	1.38				1.66	1.34			1.95	2.63				0.17	0.48		
		4 (Bias 079 DUP air force)	8/17/2016							1.30					1.45				2.31					0.27		
SU03-S-080-SS-P-00	8/8/2016	18	8/17/2016					Original sample - retained in dataset.	1.30	1.22				1.62	2.07			1.42	1.86				0.00	0.14		
		20 (Bias 080 DUP air force)	8/17/2016							1.27					1.85				2.11					0.22		
SU03-S-081-SS-P-00	8/8/2016							Original sample - REMOVED from dataset due to remediation.	1.29					9.09				2.74					2.29			
						SU3-81-HAFB-01	May-17	New sample (sample near SU03-S-081-SS-P-00).				1.42				1.53				1.43					0.03	
						SU3-81-HAFB-02	May-17	New sample (sample near SU03-S-081-SS-P-00). Remediation or Area Factor Calculation Required.				1.43				9.08				3.62					2.27	
SU03-S-082-SS-P-00	8/8/2016							Original sample - retained in dataset.	1.55					3.67				1.69					0.53			
SU01-EXB-083-SS-P-00	5/11/2017							New sample (new boundary/extent).	1.63					1.86				1.30					0.13			
SU01-EXB-084-SS-P-00	5/11/2017							New sample (new boundary/extent).	1.54					1.18				1.28					0.05			
SU01-EXB-085-SS-P-00	5/11/2017							New sample (new boundary/extent).	1.55					2.43				1.22					0.22			
SU01-EXB-086-SS-P-00	5/11/2017							New sample (new boundary/extent).	1.18					1.24				0.98					0.00			
SU03-S-087-SS-P-00	5/11/2017							New sample (new boundary/extent). Remediation or Area Factor Calculation Required.	1.67					5.62				1.89					1.17			
SU03-S-088-SS-P-00	5/11/2017							New sample (new boundary/extent). Remediation or Area Factor Calculation Required.	1.93					4.95				1.76					1.11			
SU03-S-089-SS-P-00	5/11/2017							New sample (new boundary/extent).	1.48					1.24				0.92					0.01			
WR-716	7/14/2017							New sample (new boundary/extent).	1.58					2.22				1.20					0.19			
WR-717	7/14/2017							New sample (new boundary/extent).	1.51					5.12				1.62					0.82			
WR-718	7/14/2017							New sample (new boundary/extent).	1.44					3.52				1.12					0.41			
WR-719	7/14/2017							New sample (new boundary/extent).	1.90					4.05				1.35					0.81			
WR-720	7/14/2017							New sample (new boundary/extent). Remediation or Area Factor Calculation Required.	1.58					5.93				1.88					1.18			
WR-721	7/14/2017							New sample (new boundary/extent).	1.36					4.13				1.52					0.55			
WR-722	7/14/2017							New sample (new boundary/extent).	1.40					3.56				1.21					0.42			
WR-723	7/14/2017							New sample (new boundary/extent).	1.38					2.79				1.01					0.24			
WR-724	7/14/2017							New sample (new boundary/extent).	1.34					1.15				0.74					0.00			
WR-725	7/14/2017							New sample (new boundary/extent).	1.49					1.39				0.89					0.02			
WR-726	7/14/2017							New sample (new boundary/extent).	1.25					1.35				0.90					0.00			
WR-727	7/14/2017							New sample (new boundary/extent) - REMOVED from dataset. Collected but not analyzed by the lab.																		
WR-728	7/14/2017							New sample (new boundary/extent) - REMOVED from dataset. Collected but not analyzed by the lab.																		
WR-729	7/14/2017							New sample (new boundary/extent) - REMOVED from dataset. Collected but not analyzed by the lab.																		
WR-730	7/14/2017							New sample (new boundary/extent) - REMOVED from dataset. Collected but not analyzed by the lab.																		
WR-731	7/14/2017							New sample (new boundary/extent).	1.82					3.13				1.26					0.55			
WR-732	7/14/2017							New sample (new boundary/extent).	1.33					3.56				1.13					0.42			
WR-733	7/14/2017							New sample (new boundary/extent) - REMOVED from dataset. Collected but not analyzed by the lab.																		

EA/Cabrera, USAFSAM, USNRC, and HAFB FSS All Sample Results Comparison

								Cabrera Background	1.46				1.75				1.63							
								USAFSAM Background	1.32				1.61				1.79							
								DCGL _w	1.60				4.30				1.90							
									Ra-226 Result (pCi/g)				Th-230 Result (pCi/g)				Th-232 Result (pCi/g)							
Cabrera Samples		USAFSAM Samples		USNRC Samples		HAFB Samples		Sample Information	Cabrera	USAFSAM	USNRC	HAFB	Cabrera	USAFSAM	USNRC	HAFB	Cabrera	USAFSAM	USNRC	HAFB	Cabrera SOR	USAFSAM SOR	USNRC SOR	HAFB SOR
Sample ID	Date Taken	Sample ID	Date Taken	Sample ID	Date Taken	Sample ID	Date Taken																	
WR-734	7/14/2017							New sample (new boundary/extent) - REMOVED from dataset. Collected but not analyzed by the lab.																
WR-735	7/14/2017							New sample (new boundary/extent) - REMOVED from dataset. Collected but not analyzed by the lab.																
WR-736	7/14/2017							New sample (new boundary/extent) - REMOVED from dataset. Collected but not analyzed by the lab.																
WR-737	7/14/2017							New sample (new boundary/extent) - REMOVED from dataset. Collected but not analyzed by the lab.																
WR-738	7/14/2017							New sample (new boundary/extent) - REMOVED from dataset. Collected but not analyzed by the lab.																
WR-739	9/7/2017							New sample (new boundary/extent).	1.29				1.79				1.19				0.01			
WR-740	9/7/2017							New sample (new boundary/extent).	1.50				4.88				1.58				0.75			
WR-741	9/7/2017							New sample (new boundary/extent).	1.26				3.07				1.48				0.31			
WR-742	9/7/2017							New sample (new boundary/extent). Remediation or Area Factor Calculation Required.	1.26				3.89				2.92				1.18			

- Notes:
- 1) USAFSAM Sample 21 was a background sample and these results were used to calculate the SOR in this column. See USAFSAM Background Results.
 - 2) No background samples were collected by the USNRC. Therefore, Cabrera's average reference area background concentration results were used to calculate USNRC SORs.
 - 3) SOR values in red indicated a value greater than 1.0.

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Attachment A
Determination of Area Factors Based on Various
Areas of Contamination

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Determination of Area Factors Based on Various Areas of Contamination

INTRODUCTION

The objective of this paper is to document the methods used to calculate area factors for the hotspot areas in soil at the Little Mountain Test Annex (LMTA) Magnesium-Thorium Disposal Trench Site in Utah under resident farmer scenario. The LMTA Magnesium-Thorium Disposal Trench Site will be referred to as Site WR111. The RESRAD model used during the development of the derived concentration guideline levels (DCGLs) for radioactive contaminants at Site WR111 was utilized during the calculation of area factors.

BACKGROUND INFORMATION

The following section of the report presents some background information for the Site.

- Radionuclides of Concern (ROCs): Radium-226 (^{226}Ra), thorium-230 (^{230}Th), and thorium-232 (^{232}Th) were established as the ROCs for the Site.
- Regulatory Dose Limit - The NRC is the regulatory authority for establishing the primary limit of 25 millirem (mrem) total effective dose equivalent in any one year, in excess of natural background, for releasing a radiologically contaminated site.
- Receptor Scenario - A residential farmer was considered as the critical receptor at Site WR111.
- Exposure Scenario for Residential Farmer - Members of the resident farmer critical group can incur a radiation dose via the following pathways:
 - Direct radiation from radionuclides in the soil
 - Inhalation of re-suspended dust (if the contaminated area is exposed at the ground surface)
 - Ingestion of food from crops grown in contaminated soil
 - Ingestion of milk from livestock raised in the contaminated area
 - Ingestion of meat from livestock raised in the contaminated area
 - Direct ingestion of contaminated soil.
- Model Used During Development of DCGLs for ROCs - *Residual Radioactivity (RESRAD)*, Version 6.5 was used to derive the soil DCGLs for Site WR111 based on NRC's regulatory dose limit of 25 millirem per year (mrem/yr) under residential farmer Scenario.
- Assigned Values for RESRAD Input Parameters - Attachment A of Appendix C, *Site-Specific Derived Concentration Guideline Level Evaluation* presents the assigned values for RESRAD input parameter utilized during the determination of soil DCGL for each ROC.

METHODOLOGY

RESRAD, Version 6.5 and most of the recommended values within Attachment A of Appendix C were utilized during the determination of Area Factors (AFs). The following section defines those parameters that have been varied to calculate the area factors.

Area of Contamination (AREA)

The size of the area of contamination (AOC) was varied to represent the size of the hotspot. The total area of contamination for WR111 Site was 5,620 square meter (m²). During this evaluation, the areas of potential hotspot contamination were assumed to be 2,000, 500, 300, 200, 100, and 75 square meters (m²).

Length Parallel to the Aquifer Flow (LCZPAQ)

Another input parameter that is influenced by changes in the size of the contaminated zone is the length parallel to aquifer flow (LCZPAQ). As the area of the contaminated zone decreases, the value of LCZPAQ will also decrease. For this calculation, the LCZPAQ is taken as the square root of the area.

Table 1 shows the values for LCZPAQ as a function of the size of the contaminated zone.

Contaminated Fractions — Food Pathways

As the size of the contaminated area (A) varies, the fraction of the total food consumed by the receptor grown in the contaminated area will also vary. The fraction of the food supply grown in the contaminated area is referred to as a “contaminated fraction.”

Accordingly, with the decrease in the size of the contaminated area, a decrease in the values for the contaminated fraction of plant food ingested (FPLANT), the contaminated fraction of meat ingested (FMEAT), and contaminated fraction of milk ingested (FMILK) will also result. The variation in the contaminated fraction of plant food ingested, with the variation in the size of the contaminated area, is described by Equation D.5 of the RESRAD User Manual:

$$FPLANT = A/2000, \text{ when } A \leq 1000 \text{ m}^2$$

$$FPLANT = 0.5, \text{ when } A \geq 1000 \text{ m}^2$$

The variation in the contaminated fraction of meat and milk ingested, with the variation in the size of the contaminated area, is also described by Equation D.5 of the RESRAD User Manual:

$$FMEAT = A/20000, \text{ when } A \leq 20000 \text{ m}^2$$

$$FMEAT = 1.0, \text{ when } A \geq 20000 \text{ m}^2$$

$$FMILK = A/20000, \text{ when } A \leq 20000 \text{ m}^2$$

FMILK = 1.0, when $A \geq 20000 \text{ m}^2$

Table 1 shows the values for FPLANT, FMEAT, and FMILK as a function of the size of the contaminated zone.

Year of Maximum Dose

The year in which the maximum dose occurs may vary depending on the nuclide. The concentration delivering the maximum dose is selected for the basis of the AF without regard to year of occurrence.

Initial Concentration

An initial soil concentration of 1 pCi/g is assumed for each nuclide.

Calculation of Area Factors

Area factors are calculated in two steps. Those are summarized below:

1. Determination of DCGLs for three ROCs - As mentioned earlier, RESRAD, Version 6.5, the recommended values in Attachment A, and the modified values in Table 1 were used during the determination of DCGLs for the following areas of contamination – 2,000, 500, 300, 200, 100 and 75 m², respectively.
2. Calculation of Area Factors – The results of DCGLs for each AOC were divided by the original DCGLs to calculate the area factors.

RESULTS

Appendix A presents the RESRAD output summary report for each AOC. Table 2-1 through Table 2-6 present the results of DCGLs for three ROCs based on AOCs of 2,000, 500, 300, 200, 100 and 75 m², respectively. Table 3-1 summarizes the results of DCGLs for each AOC. Table 3-2 presents the results of Area Factor for various AOCs.

TABLES

Table 1: Adjusted Assigned Values for RESRAD Input Parameters

Contaminated Zone Area	Length Parallel to Aquifer	FPLANT	FMEAT	FMILK
m ²	meters	fraction	fraction	fraction
5620	75	0.5	0.28	0.28
2000	45	0.5	0.10	0.10
500	22	0.25	0.03	0.03
300	17	0.15	0.02	0.02
200	14	0.10	0.01	0.01
100	10	0.05	0.005	0.005
75	9	0.04	0.004	0.004

Table 2-1: Determination of DCGLs based on Area of Contamination = 2,000 m²

Output from RESRAD Summary Report							Calculated
Nuclide	Initial	tmin	DSR (i,tmin)	G(i,tmin)	DSR (i,tmax)	G(i,tmax)	DCGL
	(pCi/g)	(years)		(pCi/g)		(pCi/g)	
Ra-226	1.00E+00	109.3 ± 0.2	1.54E+01	1.63E+00	1.47E+01	1.70E+00	1.6
Th-230	1.00E+00	1.00E+03	5.67E+00	4.41E+00	1.61E+00	1.56E+01	4.4
Th-232	1.00E+00	98.9 ± 0.2	1.25E+01	1.99E+00	1.25E+01	1.99E+00	2.0

Table 2-2: Determination of DCGLs based on Area of Contamination = 500 m²

Output from RESRAD Summary Report							Calculated
Nuclide	Initial	tmin	DSR (i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)	DCGL
	(pCi/g)	(years)		(pCi/g)		(pCi/g)	
Ra-226	1.00E+00	101.4 ± 0.2	9.85E+00	2.54E+00	9.42E+00	2.66E+00	2.5
Th-230	1.00E+00	1.00E+03	3.63E+00	6.89E+00	9.95E-01	2.51E+01	6.9
Th-232	1.00E+00	98.7 ± 0.2	9.55E+00	2.62E+00	9.54E+00	2.62E+00	2.6

Table 2-3: Determination of DCGLs based on Area of Contamination = 300 m²

Output from RESRAD Summary Report							Calculated
Nuclide	Initial	tmin	DSR (i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)	DCGL
	(pCi/g)	(years)		(pCi/g)		(pCi/g)	
Ra-226	1.00E+00	93.3 ± 0.2	7.60E+00	3.29E+00	7.26E+00	3.44E+00	3.3
Th-230	1.00E+00	1.00E+03	2.79E+00	8.96E+00	7.43E-01	3.36E+01	9.0
Th-232	1.00E+00	99.7 ± 0.2	8.24E+00	3.03E+00	8.24E+00	3.03E+00	3.0

Table 2-4: Determination of DCGLs based on Area of Contamination = 200 m²

Output from RESRAD Summary Report							Calculated
Nuclide	Initial	tmin	DSR (i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)	DCGL
	(pCi/g)	(years)		(pCi/g)		(pCi/g)	
Ra-226	1.00E+00	85.5 ± 0.2	6.45E+00	3.88E+00	6.17E+00	4.05E+00	3.9
Th-230	1.00E+00	1.00E+03	2.37E+00	1.06E+01	6.04E-01	4.14E+01	10.6
Th-232	1.00E+00	99.6 ± 0.2	7.56E+00	3.31E+00	7.56E+00	3.31E+00	3.3

Table 2-5: Determination of DCGLs based on Area of Contamination = 100 m²

Output from RESRAD Summary Report							Calculated
Nuclide	Initial	tmin	DSR (i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)	DCGL
	(pCi/g)	(years)		(pCi/g)		(pCi/g)	
Ra-226	1.00E+00	70.5 ± 0.1	5.14E+00	4.86E+00	4.92E+00	5.08E+00	4.9
Th-230	1.00E+00	1.00E+03	1.88E+00	1.33E+01	4.51E-01	5.55E+01	13.3
Th-232	1.00E+00	99.1 ± 0.2	6.64E+00	3.77E+00	6.64E+00	3.77E+00	3.8

Table 2-6: Determination of DCGLs based on Area of Contamination = 75 m²

Output from RESRAD Summary Report							Calculated
Nuclide	Initial	tmin	DSR (i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)	DCGL
	(pCi/g)	(years)		(pCi/g)		(pCi/g)	
Ra-226	1.00E+00	65.8 ± 0.1	4.77E+00	5.24E+00	4.57E+00	5.48E+00	5.2
Th-230	1.00E+00	1.00E+03	1.74E+00	1.44E+01	4.07E-01	6.14E+01	14.4
Th-232	1.00E+00	99.6 ± 0.2	6.28E+00	3.98E+00	6.28E+00	3.98E+00	4.0

Table 3-1: Results of DCGLs (pCi/g) for Various Areas of Contamination

AOC (m2)	5620	2000	500	300	200	100	75
Ra-226+D	1.6	1.6	2.5	3.3	3.9	4.9	5.2
Th-230	4.3	4.4	6.9	9.0	10.6	13.3	14.4
Th-232+D	1.9	2.0	2.6	3.0	3.3	3.8	4.0

Table 3-2: Results of Area Factors for each ROC based on Various Areas of Contamination

AOC (m2)	Area Factors						
	5620	2000	500	300	200	100	75
Ra-226+D	1	1.02	1.60	2.07	2.44	3.06	3.29
Th-230	1	1.02	1.60	2.08	2.45	3.09	3.34
Th-232+D	1	1.02	1.35	1.56	1.70	1.94	2.05

REFERENCES

ANL, 2009, *RESRAD*, Version 6.5, Argonne National Laboratory, Environmental Assessment Division, Argonne, Illinois. Updated October 30, 2009.

Yu, C. et al., "User's Manual for RESRAD Version 6," ANL/EAD-4, July 2001.

APPENDIX A

RESRAD OUTPUT SUMMARY REPORTS

**RESRAD OUTPUT SUMMARY REPORT FOR AOC = 2000
m²**

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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: FGR 12 & FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(2)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(3)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(4)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(5)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(6)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(7)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(8)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(9)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(10)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(11)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(12)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(13)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(14)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(15)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(16)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(17)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(18)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(19)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(20)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(21)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(22)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(23)
B-1	Dose conversion factors for inhalation mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(3)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(4)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(5)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(6)
D-1	Dose conversion factors for ingestion mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(3)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(4)

D-1	Th-230		5.480E-04	5.480E-04	DCF3(5)
D-1	Th-232		2.730E-03	2.730E-03	DCF3(6)
D-34	Food transfer factors:				
D-34	Pb-210+D	plant/soil concentration ratio dimensionless	1.000E-02	1.000E-02	RTF(11)
D-34	Pb-210+D	beef/livestock-intake ratio (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(12)
D-34	Pb-210+D	milk/livestock-intake ratio (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(13)
D-34					
D-34	Ra-226+D	plant/soil concentration ratio dimensionless	4.000E-02	4.000E-02	RTF(21)
D-34	Ra-226+D	beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(22)
D-34	Ra-226+D	milk/livestock-intake ratio (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(23)
D-34					

Dose Conversion Factor (and Related) Parameter Summary (continued)
Dose Library: FGR 12 & FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Ra-228+D plant/soil concentration ratio dimensionless	4.000E-02	4.000E-02	RTF(31)
D-34	Ra-228+D beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(32)
D-34	Ra-228+D milk/livestock-intake ratio (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(33)
D-34	Th-228+D plant/soil concentration ratio dimensionless	1.000E-03	1.000E-03	RTF(41)
D-34	Th-228+D beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(42)
D-34	Th-228+D milk/livestock-intake ratio (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(43)
D-34	Th-230 plant/soil concentration ratio dimensionless	1.000E-03	1.000E-03	RTF(51)
D-34	Th-230 beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(52)
D-34	Th-230 milk/livestock-intake ratio (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(53)
D-34	Th-232 plant/soil concentration ratio dimensionless	1.000E-03	1.000E-03	RTF(61)
D-34	Th-232 beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(62)
D-34	Th-232 milk/livestock-intake ratio (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(63)
D-5	Bioaccumulation factors fresh water L/kg:			
D-5	Pb-210+D fish	3.000E+02	3.000E+02	BIOFAC(11)
D-5	Pb-210+D crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(12)
D-5	Ra-226+D fish	5.000E+01	5.000E+01	BIOFAC(21)
D-5	Ra-226+D crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(22)
D-5	Ra-228+D fish	5.000E+01	5.000E+01	BIOFAC(31)
D-5	Ra-228+D crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(32)
D-5	Th-228+D fish	1.000E+02	1.000E+02	BIOFAC(41)
D-5	Th-228+D crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(42)
D-5	Th-230 fish	1.000E+02	1.000E+02	BIOFAC(51)
D-5	Th-230 crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(52)
D-5	Th-232 fish	1.000E+02	1.000E+02	BIOFAC(61)
D-5	Th-232 crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(62)

#For DCF1(xxx) only factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
*Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary					
0	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	2.000E+03	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	3.048E+00	2.000E+00	---	THICK0
R011	Fraction of contamination that is submerged	0.000E+00	0.000E+00	---	SUBMFRACT
R011	Length parallel to aquifer flow (m)	4.500E+01	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-230	1.000E+00	0.000E+00	---	S1(5)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(6)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-230	not used	0.000E+00	---	W1(5)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(6)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.431E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.600E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	1.040E+01	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	2.000E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	4.060E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF

R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.431E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.600E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	1.040E+01	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT

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Site-Specific Parameter Summary (continued)					
0	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1 thickness (m)	4.000E+00	4.000E+00	---	H (1)
R015	Unsat. zone 1 soil density (g/cm**3)	1.431E+00	1.500E+00	---	DENSUZ (1)
R015	Unsat. zone 1 total porosity	4.600E-01	4.000E-01	---	TPUZ (1)
R015	Unsat. zone 1 effective porosity	2.000E-01	2.000E-01	---	EPUZ (1)
R015	Unsat. zone 1 field capacity	2.000E-01	2.000E-01	---	FCUZ (1)
R015	Unsat. zone 1 soil-specific b parameter	1.040E+01	5.300E+00	---	BUZ (1)
R015	Unsat. zone 1 hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ (1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	1.121E+04	7.000E+01	---	DCNUCC (2)
R016	Unsaturated zone 1 (cm**3/g)	1.121E+04	7.000E+01	---	DCNUCU (21)
R016	Saturated zone (cm**3/g)	1.121E+04	7.000E+01	---	DCNUCS (2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.368E-06	ALEACH (2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (2)
R016	Distribution coefficients for Th-230				
R016	Contaminated zone (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCU (51)
R016	Saturated zone (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.903E-07	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCC (6)
R016	Unsaturated zone 1 (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCU (61)
R016	Saturated zone (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCS (6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.903E-07	ALEACH (6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (6)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	1.549E+04	1.000E+02	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	1.549E+04	1.000E+02	---	DCNUCU (11)
R016	Saturated zone (cm**3/g)	1.549E+04	1.000E+02	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.884E-06	ALEACH (1)

R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC (3)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU (31)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS (3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.561E-04	ALEACH (3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (3)

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU (41)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.003E-06	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R017	Inhalation rate (m**3/yr)	6.650E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	4.600E-06	1.000E-04	---	MLINH
R017	Exposure duration	2.600E+01	3.000E+01	---	ED
R017	Shielding factor inhalation	2.448E-01	4.000E-01	---	SHF3
R017	Shielding factor external gamma	5.512E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.571E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.181E-01	2.500E-01	---	FOTD
R017	Shape factor flag external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m) ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m) ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m) ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m) ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m) ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m) ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m) ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m) ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m) ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m) ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m) ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m) ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)

R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits vegetables and grain consumption (kg/yr)	1.660E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	1.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	1.000E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.510E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	not used	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	not used	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.825E+01	3.650E+01	---	SOIL

Site-Specific Parameter Summary (continued)

0	Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
	R018	Drinking water intake (L/yr)	not used	5.100E+02	---	DWI
	R018	Contamination fraction of drinking water	not used	1.000E+00	---	FDW
	R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
	R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
	R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
	R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
	R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
	R018	Contamination fraction of meat	1.000E-01	-1	---	FMEAT
	R018	Contamination fraction of milk	1.000E-01	-1	---	FMILK
	R019	Livestock fodder intake for meat (kg/day)	6.800E+01	6.800E+01	---	LFI5
	R019	Livestock fodder intake for milk (kg/day)	5.500E+01	5.500E+01	---	LFI6
	R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LWI5
	R019	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI6
	R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI
	R019	Mass loading for foliar deposition (g/m**3)	1.000E-04	1.000E-04	---	MLFD
	R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
	R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
	R019	Drinking water fraction from ground water	not used	1.000E+00	---	FGWDW
	R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
	R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
	R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
	R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YV(1)
	R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
	R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
	R19B	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	TE(1)
	R19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE(2)
	R19B	Growing Season for Fodder (years)	8.000E-02	8.000E-02	---	TE(3)
	R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
	R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
	R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
	R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
	R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
	R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
	R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
	R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RWET(2)
	R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
	R19B	Weathering Removal Constant for Vegetation	2.000E+01	2.000E+01	---	WLAM

C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Site-Specific Parameter Summary (continued)

0		User		Used by RESRAD	Parameter
Menu	Parameter	Input	Default	(If different from user input)	Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits non-leafy vegetables and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	32	---	---	NPTS
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	257	---	---	KYMAX

Summary of Pathway Selections

Pathway User Selection

```
-----  
1 -- external gamma           active  
2 -- inhalation (w/o radon)    active  
3 -- plant ingestion           active  
4 -- meat ingestion            active  
5 -- milk ingestion            active  
6 -- aquatic foods             suppressed  
7 -- drinking water            suppressed  
8 -- soil ingestion            active  
9 -- radon                     suppressed  
Find peak pathway doses       suppressed  
-----I-----
```

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Contaminated Zone Dimensions		Initial Soil Concentrations pCi/g	
-----		-----	
Area:	2000.00 square meters	Ra-226	1.000E+00
Thickness:	3.05 meters	Th-230	1.000E+00
Cover Depth:	0.00 meters	Th-232	1.000E+00

0

Total Dose TDOSE(t) mrem/yr
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr
 Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.056E+01	1.174E+01	1.406E+01	2.008E+01	2.594E+01	2.857E+01	2.884E+01	2.876E+01
M(t):	4.222E-01	4.697E-01	5.623E-01	8.030E-01	1.038E+00	1.143E+00	1.154E+00	1.150E+00

0Maximum TDOSE(t): 2.884E+01 mrem/yr at t = 244.0 ñ 0.5 years

0

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.440E+02 years

Water Independent Pathways (Inhalation excludes radon)

0

0

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio- Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Nuclide	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Ra-226	4.379E+00	0.1518	3.528E-05	0.0000	0.000E+00	0.0000	1.008E+01	0.3496	6.603E-02	0.0023	5.305E-02	0.0018	1.105E-01	0.0038
Th-230	4.895E-01	0.0170	4.014E-04	0.0000	0.000E+00	0.0000	1.084E+00	0.0376	6.947E-03	0.0002	5.617E-03	0.0002	1.863E-02	0.0006
Th-232	7.006E+00	0.2429	2.431E-03	0.0001	0.000E+00	0.0000	5.396E+00	0.1871	3.114E-02	0.0011	3.832E-02	0.0013	7.022E-02	0.0024
Total	1.187E+01	0.4117	2.868E-03	0.0001	0.000E+00	0.0000	1.656E+01	0.5743	1.041E-01	0.0036	9.699E-02	0.0034	1.994E-01	0.0069

0

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.440E+02 years

Water Dependent Pathways

0

0

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio- Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Nuclide	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.469E+01	0.5094
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.605E+00	0.0557
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.254E+01	0.4349
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.884E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.870E+00	0.4614	1.095E-05	0.0000	0.000E+00	0.0000	4.793E+00	0.4541	2.878E-02	0.0027	3.614E-02	0.0034	2.027E-02	0.0019
Th-230	1.593E-03	0.0002	3.988E-04	0.0000	0.000E+00	0.0000	4.952E-02	0.0047	2.073E-04	0.0000	2.169E-05	0.0000	7.757E-03	0.0007
Th-232	1.798E-01	0.0170	2.009E-03	0.0002	0.000E+00	0.0000	5.214E-01	0.0494	2.300E-03	0.0002	1.932E-03	0.0002	3.988E-02	0.0038
Total	5.052E+00	0.4786	2.419E-03	0.0002	0.000E+00	0.0000	5.364E+00	0.5081	3.129E-02	0.0030	3.810E-02	0.0036	6.790E-02	0.0064

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.748E+00	0.9236
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.949E-02	0.0056
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.473E-01	0.0708
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.056E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.868E+00	0.4146	1.180E-05	0.0000	0.000E+00	0.0000	4.988E+00	0.4248	3.019E-02	0.0026	3.684E-02	0.0031	2.336E-02	0.0020
Th-230	3.703E-03	0.0003	3.988E-04	0.0000	0.000E+00	0.0000	5.162E-02	0.0044	2.198E-04	0.0000	3.727E-05	0.0000	7.766E-03	0.0007
Th-232	6.058E-01	0.0516	2.024E-03	0.0002	0.000E+00	0.0000	1.070E+00	0.0911	5.502E-03	0.0005	6.030E-03	0.0005	4.244E-02	0.0036
Total	5.478E+00	0.4665	2.435E-03	0.0002	0.000E+00	0.0000	6.110E+00	0.5203	3.591E-02	0.0031	4.291E-02	0.0037	7.356E-02	0.0063

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.947E+00	0.8471
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.375E-02	0.0054
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.732E+00	0.1475
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.174E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.864E+00	0.3461	1.342E-05	0.0000	0.000E+00	0.0000	5.354E+00	0.3809	3.273E-02	0.0023	3.813E-02	0.0027	2.926E-02	0.0021
Th-230	7.919E-03	0.0006	3.988E-04	0.0000	0.000E+00	0.0000	5.610E-02	0.0040	2.471E-04	0.0000	6.975E-05	0.0000	7.789E-03	0.0006
Th-232	1.596E+00	0.1135	2.075E-03	0.0001	0.000E+00	0.0000	1.997E+00	0.1420	1.100E-02	0.0008	1.299E-02	0.0009	4.743E-02	0.0034
Total	6.468E+00	0.4601	2.487E-03	0.0002	0.000E+00	0.0000	7.407E+00	0.5269	4.398E-02	0.0031	5.119E-02	0.0036	8.448E-02	0.0060

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.032E+01	0.7341
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.253E-02	0.0052
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.666E+00	0.2608
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.406E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.850E+00	0.2416	1.835E-05	0.0000	0.000E+00	0.0000	6.465E+00	0.3220	4.046E-02	0.0020	4.202E-02	0.0021	4.719E-02	0.0024
Th-230	2.265E-02	0.0011	3.988E-04	0.0000	0.000E+00	0.0000	7.408E-02	0.0037	3.585E-04	0.0000	1.915E-04	0.0000	7.905E-03	0.0004
Th-232	4.474E+00	0.2229	2.258E-03	0.0001	0.000E+00	0.0000	3.940E+00	0.1962	2.252E-02	0.0011	2.749E-02	0.0014	5.992E-02	0.0030
Total	9.347E+00	0.4656	2.676E-03	0.0001	0.000E+00	0.0000	1.048E+01	0.5220	6.335E-02	0.0032	6.971E-02	0.0035	1.150E-01	0.0057

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.144E+01	0.5701
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.056E-01	0.0053
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.526E+00	0.4247
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.008E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.808E+00	0.1853	2.762E-05	0.0000	0.000E+00	0.0000	8.549E+00	0.3295	5.498E-02	0.0021	4.928E-02	0.0019	8.100E-02	0.0031
Th-230	6.448E-02	0.0025	3.990E-04	0.0000	0.000E+00	0.0000	1.401E-01	0.0054	7.786E-04	0.0000	5.904E-04	0.0000	8.475E-03	0.0003
Th-232	6.779E+00	0.2613	2.416E-03	0.0001	0.000E+00	0.0000	5.268E+00	0.2031	3.039E-02	0.0012	3.737E-02	0.0014	6.932E-02	0.0027
Total	1.165E+01	0.4491	2.843E-03	0.0001	0.000E+00	0.0000	1.396E+01	0.5380	8.614E-02	0.0033	8.724E-02	0.0034	1.588E-01	0.0061

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.354E+01	0.5220
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.148E-01	0.0083
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.219E+01	0.4697
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.594E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.664E+00	0.1633	3.633E-05	0.0000	0.000E+00	0.0000	1.046E+01	0.3661	6.837E-02	0.0024	5.550E-02	0.0019	1.132E-01	0.0040
Th-230	2.080E-01	0.0073	3.997E-04	0.0000	0.000E+00	0.0000	4.395E-01	0.0154	2.727E-03	0.0001	2.219E-03	0.0001	1.160E-02	0.0004
Th-232	7.007E+00	0.2453	2.432E-03	0.0001	0.000E+00	0.0000	5.396E+00	0.1889	3.115E-02	0.0011	3.832E-02	0.0013	7.023E-02	0.0025
Total	1.188E+01	0.4158	2.868E-03	0.0001	0.000E+00	0.0000	1.629E+01	0.5703	1.022E-01	0.0036	9.604E-02	0.0034	1.950E-01	0.0068

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.536E+01	0.5376
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.645E-01	0.0233
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.254E+01	0.4391
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.857E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.272E+00	0.1482	3.444E-05	0.0000	0.000E+00	0.0000	9.842E+00	0.3413	6.445E-02	0.0022	5.177E-02	0.0018	1.079E-01	0.0037
Th-230	5.941E-01	0.0206	4.020E-04	0.0000	0.000E+00	0.0000	1.325E+00	0.0460	8.525E-03	0.0003	6.884E-03	0.0002	2.127E-02	0.0007
Th-232	7.005E+00	0.2429	2.431E-03	0.0001	0.000E+00	0.0000	5.395E+00	0.1871	3.114E-02	0.0011	3.831E-02	0.0013	7.022E-02	0.0024
Total	1.187E+01	0.4117	2.868E-03	0.0001	0.000E+00	0.0000	1.656E+01	0.5743	1.041E-01	0.0036	9.697E-02	0.0034	1.994E-01	0.0069

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.434E+01	0.4972
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.956E+00	0.0678
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.254E+01	0.4349
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.884E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	3.143E+00	0.1093	2.534E-05	0.0000	0.000E+00	0.0000	7.241E+00	0.2518	4.741E-02	0.0016	3.809E-02	0.0013	7.937E-02	0.0028
Th-230	1.702E+00	0.0592	4.082E-04	0.0000	0.000E+00	0.0000	3.877E+00	0.1348	2.523E-02	0.0009	2.031E-02	0.0007	4.919E-02	0.0017
Th-232	7.001E+00	0.2435	2.430E-03	0.0001	0.000E+00	0.0000	5.392E+00	0.1875	3.112E-02	0.0011	3.829E-02	0.0013	7.018E-02	0.0024
Total	1.185E+01	0.4119	2.863E-03	0.0001	0.000E+00	0.0000	1.651E+01	0.5741	1.038E-01	0.0036	9.669E-02	0.0034	1.987E-01	0.0069

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.055E+01	0.3668
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.673E+00	0.1973
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.253E+01	0.4359
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.876E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Dose/Source Ratios Summed Over All Pathways											
Parent and Progeny Principal Radionuclide Contributions Indicated											
0 Parent	Product	Thread	DSR(jt) At Time in Years (mrem/yr)/(pCi/g)								
(i)	(j)	Fraction	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03	
Ra-226+D	Ra-226+D	1.000E+00	9.628E+00	9.623E+00	9.615E+00	9.585E+00	9.502E+00	9.214E+00	8.441E+00	6.209E+00	
Ra-226+D	Pb-210+D	1.000E+00	1.208E-01	3.232E-01	7.032E-01	1.859E+00	4.041E+00	6.145E+00	5.898E+00	4.339E+00	
Ra-226+D	-DSR(j)		9.748E+00	9.947E+00	1.032E+01	1.144E+01	1.354E+01	1.536E+01	1.434E+01	1.055E+01	
0Th-230	Th-230	1.000E+00	5.745E-02	5.745E-02	5.745E-02	5.745E-02	5.744E-02	5.740E-02	5.728E-02	5.689E-02	
Th-230	Ra-226+D	1.000E+00	2.022E-03	6.181E-03	1.451E-02	4.363E-02	1.263E-01	4.099E-01	1.173E+00	3.361E+00	
Th-230	Pb-210+D	1.000E+00	1.907E-05	1.162E-04	5.626E-04	4.512E-03	3.107E-02	1.972E-01	7.263E-01	2.256E+00	
Th-230	-DSR(j)		5.949E-02	6.375E-02	7.253E-02	1.056E-01	2.148E-01	6.645E-01	1.956E+00	5.673E+00	
0Th-232	Th-232	1.000E+00	2.838E-01	2.838E-01	2.838E-01	2.838E-01	2.838E-01	2.838E-01	2.837E-01	2.835E-01	
Th-232	Ra-226+D	1.000E+00	4.322E-01	1.263E+00	2.655E+00	5.555E+00	7.529E+00	7.720E+00	7.719E+00	7.714E+00	
Th-232	Th-228+D	1.000E+00	3.126E-02	1.858E-01	7.272E-01	2.687E+00	4.374E+00	4.541E+00	4.540E+00	4.538E+00	
Th-232	-DSR(j)		7.473E-01	1.732E+00	3.666E+00	8.526E+00	1.219E+01	1.254E+01	1.254E+01	1.253E+01	

The DSR includes contributions from associated (half-life > 180 days) daughters.

Single Radionuclide Soil Guidelines G(it) in pCi/g									
Basic Radiation Dose Limit = 2.500E+01 mrem/yr									
0Nuclide	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
(i)									
Ra-226	2.565E+00	2.513E+00	2.423E+00	2.184E+00	1.846E+00	1.628E+00	1.744E+00	2.370E+00	
Th-230	4.202E+02	3.922E+02	3.447E+02	2.368E+02	1.164E+02	3.762E+01	1.278E+01	4.406E+00	
Th-232	3.346E+01	1.443E+01	6.820E+00	2.932E+00	2.051E+00	1.993E+00	1.993E+00	1.994E+00	

Summed Dose/Source Ratios DSR(it) in (mrem/yr)/(pCi/g)						
and Single Radionuclide Soil Guidelines G(it) in pCi/g						
at tmin = time of minimum single radionuclide soil guideline						
and at tmax = time of maximum total dose = 244.0 ± 0.5 years						
0Nuclide	Initial	tmin	DSR(itmin)	G(itmin)	DSR(itmax)	G(itmax)
(i)	(pCi/g)	(years)		(pCi/g)		(pCi/g)
Ra-226	1.000E+00	109.3 ± 0.2	1.537E+01	1.627E+00	1.469E+01	1.702E+00
Th-230	1.000E+00	1.000E+03	5.673E+00	4.406E+00	1.605E+00	1.557E+01
Th-232	1.000E+00	98.9 ± 0.2	1.254E+01	1.993E+00	1.254E+01	1.993E+00

Individual Nuclide Dose Summed Over All Pathways										
Parent Nuclide and Branch Fraction Indicated										
ONuclide	Parent	THF(i)	DOSE(jt) mrem/yr							
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Ra-226	Ra-226	1.000E+00		9.628E+00	9.623E+00	9.615E+00	9.585E+00	9.502E+00	9.214E+00	8.441E+00 6.209E+00
Ra-226	Th-230	1.000E+00		2.022E-03	6.181E-03	1.451E-02	4.363E-02	1.263E-01	4.099E-01	1.173E+00 3.361E+00
Ra-226	-DOSE(j)			9.630E+00	9.630E+00	9.629E+00	9.629E+00	9.628E+00	9.624E+00	9.613E+00 9.570E+00
OPb-210	Ra-226	1.000E+00		1.208E-01	3.232E-01	7.032E-01	1.859E+00	4.041E+00	6.145E+00	5.898E+00 4.339E+00
Pb-210	Th-230	1.000E+00		1.907E-05	1.162E-04	5.626E-04	4.512E-03	3.107E-02	1.972E-01	7.263E-01 2.256E+00
Pb-210	-DOSE(j)			1.208E-01	3.233E-01	7.038E-01	1.864E+00	4.072E+00	6.342E+00	6.624E+00 6.595E+00
0Th-230	Th-230	1.000E+00		5.745E-02	5.745E-02	5.745E-02	5.745E-02	5.744E-02	5.740E-02	5.728E-02 5.689E-02
0Th-232	Th-232	1.000E+00		2.838E-01	2.838E-01	2.838E-01	2.838E-01	2.838E-01	2.838E-01	2.837E-01 2.835E-01
ORa-228	Th-232	1.000E+00		4.322E-01	1.263E+00	2.655E+00	5.555E+00	7.529E+00	7.720E+00	7.719E+00 7.714E+00
0Th-228	Th-232	1.000E+00		3.126E-02	1.858E-01	7.272E-01	2.687E+00	4.374E+00	4.541E+00	4.540E+00 4.538E+00
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THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration										
Parent Nuclide and Branch Fraction Indicated										
ONuclide	Parent	THF(i)	S(jt) pCi/g							
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Ra-226	Ra-226	1.000E+00		1.000E+00	9.996E-01	9.987E-01	9.956E-01	9.869E-01	9.571E-01	8.767E-01 6.449E-01
Ra-226	Th-230	1.000E+00		0.000E+00	4.331E-04	1.299E-03	4.322E-03	1.291E-02	4.236E-02	1.216E-01 3.489E-01
Ra-226	-S(j):			1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.995E-01	9.983E-01 9.938E-01
OPb-210	Ra-226	1.000E+00		0.000E+00	3.060E-02	8.897E-02	2.665E-01	6.018E-01	9.254E-01	8.891E-01 6.541E-01
Pb-210	Th-230	1.000E+00		0.000E+00	6.663E-06	5.873E-05	6.077E-04	4.523E-03	2.947E-02	1.092E-01 3.398E-01
Pb-210	-S(j):			0.000E+00	3.060E-02	8.903E-02	2.671E-01	6.063E-01	9.548E-01	9.983E-01 9.939E-01
0Th-230	Th-230	1.000E+00		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.990E-01	9.970E-01 9.902E-01
0Th-232	Th-232	1.000E+00		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01 9.991E-01
ORa-228	Th-232	1.000E+00		0.000E+00	1.135E-01	3.031E-01	6.980E-01	9.669E-01	9.929E-01	9.927E-01 9.921E-01
0Th-228	Th-232	1.000E+00		0.000E+00	1.864E-02	1.242E-01	5.628E-01	9.538E-01	9.929E-01	9.927E-01 9.921E-01
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THF(i) is the thread fraction of the parent nuclide.

ORESCALC.EXE execution time = 0.25 seconds

**RESRAD OUTPUT SUMMARY REPORT FOR AOC = 500
m²**

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Time = 1.000E+00	11
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Time = 1.000E+01	13
Time = 3.000E+01	14
Time = 1.000E+02	15
Time = 3.000E+02	16
Time = 1.000E+03	17
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 Summary : Determination of Area Factor
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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: FGR 12 & FGR 11

0	Menu	Parameter	Current Value#	Base Case*	Parameter Name
	A-1	DCF's for external ground radiation (mrem/yr)/(pCi/g)			
	A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
	A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(2)
	A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(3)
	A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(4)
	A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(5)
	A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(6)
	A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(7)
	A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(8)
	A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(9)
	A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(10)
	A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(11)
	A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(12)
	A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(13)
	A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(14)
	A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(15)
	A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(16)
	A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(17)
	A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(18)
	A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(19)
	A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(20)
	A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(21)
	A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(22)
	A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(23)
	B-1	Dose conversion factors for inhalation mrem/pCi:			
	B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
	B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
	B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(3)
	B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(4)
	B-1	Th-230	3.260E-01	3.260E-01	DCF2(5)
	B-1	Th-232	1.640E+00	1.640E+00	DCF2(6)
	D-1	Dose conversion factors for ingestion mrem/pCi:			
	D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
	D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
	D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(3)
	D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(4)

D-1	Th-230		5.480E-04	5.480E-04	DCF3(5)
D-1	Th-232		2.730E-03	2.730E-03	DCF3(6)
D-34	Food transfer factors:				
D-34	Pb-210+D	plant/soil concentration ratio dimensionless	1.000E-02	1.000E-02	RTF(11)
D-34	Pb-210+D	beef/livestock-intake ratio (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(12)
D-34	Pb-210+D	milk/livestock-intake ratio (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(13)
D-34					
D-34	Ra-226+D	plant/soil concentration ratio dimensionless	4.000E-02	4.000E-02	RTF(21)
D-34	Ra-226+D	beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(22)
D-34	Ra-226+D	milk/livestock-intake ratio (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(23)
D-34					

Dose Conversion Factor (and Related) Parameter Summary (continued)
 Dose Library: FGR 12 & FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Ra-228+D plant/soil concentration ratio dimensionless	4.000E-02	4.000E-02	RTF(31)
D-34	Ra-228+D beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(32)
D-34	Ra-228+D milk/livestock-intake ratio (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(33)
D-34	Th-228+D plant/soil concentration ratio dimensionless	1.000E-03	1.000E-03	RTF(41)
D-34	Th-228+D beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(42)
D-34	Th-228+D milk/livestock-intake ratio (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(43)
D-34	Th-230 plant/soil concentration ratio dimensionless	1.000E-03	1.000E-03	RTF(51)
D-34	Th-230 beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(52)
D-34	Th-230 milk/livestock-intake ratio (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(53)
D-34	Th-232 plant/soil concentration ratio dimensionless	1.000E-03	1.000E-03	RTF(61)
D-34	Th-232 beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(62)
D-34	Th-232 milk/livestock-intake ratio (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(63)
D-5	Bioaccumulation factors fresh water L/kg:			
D-5	Pb-210+D fish	3.000E+02	3.000E+02	BIOFAC(11)
D-5	Pb-210+D crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(12)
D-5	Ra-226+D fish	5.000E+01	5.000E+01	BIOFAC(21)
D-5	Ra-226+D crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(22)
D-5	Ra-228+D fish	5.000E+01	5.000E+01	BIOFAC(31)
D-5	Ra-228+D crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(32)
D-5	Th-228+D fish	1.000E+02	1.000E+02	BIOFAC(41)
D-5	Th-228+D crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(42)
D-5	Th-230 fish	1.000E+02	1.000E+02	BIOFAC(51)
D-5	Th-230 crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(52)
D-5	Th-232 fish	1.000E+02	1.000E+02	BIOFAC(61)
D-5	Th-232 crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(62)

#For DCF1(xxx) only factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
 *Base Case means Default.Lib w/o Associate Nuclide contributions.

Site-Specific Parameter Summary					
0	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	5.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	3.048E+00	2.000E+00	---	THICK0
R011	Fraction of contamination that is submerged	0.000E+00	0.000E+00	---	SUBMFRACT
R011	Length parallel to aquifer flow (m)	2.200E+01	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-230	1.000E+00	0.000E+00	---	S1(5)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(6)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-230	not used	0.000E+00	---	W1(5)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(6)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.431E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.600E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	1.040E+01	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	2.000E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	4.060E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF

R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.431E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.600E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	1.040E+01	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT

Site-Specific Parameter Summary (continued)

0	Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
	R014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
	R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
	R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW
	R015	Number of unsaturated zone strata	1	1	---	NS
	R015	Unsat. zone 1 thickness (m)	4.000E+00	4.000E+00	---	H (1)
	R015	Unsat. zone 1 soil density (g/cm**3)	1.431E+00	1.500E+00	---	DENSUZ (1)
	R015	Unsat. zone 1 total porosity	4.600E-01	4.000E-01	---	TPUZ (1)
	R015	Unsat. zone 1 effective porosity	2.000E-01	2.000E-01	---	EPUZ (1)
	R015	Unsat. zone 1 field capacity	2.000E-01	2.000E-01	---	FCUZ (1)
	R015	Unsat. zone 1 soil-specific b parameter	1.040E+01	5.300E+00	---	BUZ (1)
	R015	Unsat. zone 1 hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ (1)
	R016	Distribution coefficients for Ra-226				
	R016	Contaminated zone (cm**3/g)	1.121E+04	7.000E+01	---	DCNUCC (2)
	R016	Unsaturated zone 1 (cm**3/g)	1.121E+04	7.000E+01	---	DCNUCU (21)
	R016	Saturated zone (cm**3/g)	1.121E+04	7.000E+01	---	DCNUCS (2)
	R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.368E-06	ALEACH (2)
	R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (2)
	R016	Distribution coefficients for Th-230				
	R016	Contaminated zone (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCC (5)
	R016	Unsaturated zone 1 (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCU (51)
	R016	Saturated zone (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCS (5)
	R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.903E-07	ALEACH (5)
	R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)
	R016	Distribution coefficients for Th-232				
	R016	Contaminated zone (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCC (6)
	R016	Unsaturated zone 1 (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCU (61)
	R016	Saturated zone (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCS (6)
	R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.903E-07	ALEACH (6)
	R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (6)
	R016	Distribution coefficients for daughter Pb-210				
	R016	Contaminated zone (cm**3/g)	1.549E+04	1.000E+02	---	DCNUCC (1)
	R016	Unsaturated zone 1 (cm**3/g)	1.549E+04	1.000E+02	---	DCNUCU (11)
	R016	Saturated zone (cm**3/g)	1.549E+04	1.000E+02	---	DCNUCS (1)
	R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.884E-06	ALEACH (1)

R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC (3)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU (31)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS (3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.561E-04	ALEACH (3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (3)

Site-Specific Parameter Summary (continued)

0	Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
	R016	Distribution coefficients for daughter Th-228				
	R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC (4)
	R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU (41)
	R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS (4)
	R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.003E-06	ALEACH (4)
	R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
	R017	Inhalation rate (m**3/yr)	6.650E+03	8.400E+03	---	INHALR
	R017	Mass loading for inhalation (g/m**3)	4.600E-06	1.000E-04	---	MLINH
	R017	Exposure duration	2.600E+01	3.000E+01	---	ED
	R017	Shielding factor inhalation	2.448E-01	4.000E-01	---	SHF3
	R017	Shielding factor external gamma	5.512E-01	7.000E-01	---	SHF1
	R017	Fraction of time spent indoors	6.571E-01	5.000E-01	---	FIND
	R017	Fraction of time spent outdoors (on site)	1.181E-01	2.500E-01	---	FOTD
	R017	Shape factor flag external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
	R017	Radii of shape factor array (used if FS = -1):				
	R017	Outer annular radius (m) ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
	R017	Outer annular radius (m) ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
	R017	Outer annular radius (m) ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
	R017	Outer annular radius (m) ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
	R017	Outer annular radius (m) ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
	R017	Outer annular radius (m) ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
	R017	Outer annular radius (m) ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
	R017	Outer annular radius (m) ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
	R017	Outer annular radius (m) ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
	R017	Outer annular radius (m) ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
	R017	Outer annular radius (m) ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
	R017	Outer annular radius (m) ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
	R017	Fractions of annular areas within AREA:				
	R017	Ring 1	not used	1.000E+00	---	FRACA (1)
	R017	Ring 2	not used	2.732E-01	---	FRACA (2)
	R017	Ring 3	not used	0.000E+00	---	FRACA (3)
	R017	Ring 4	not used	0.000E+00	---	FRACA (4)
	R017	Ring 5	not used	0.000E+00	---	FRACA (5)
	R017	Ring 6	not used	0.000E+00	---	FRACA (6)
	R017	Ring 7	not used	0.000E+00	---	FRACA (7)
	R017	Ring 8	not used	0.000E+00	---	FRACA (8)
	R017	Ring 9	not used	0.000E+00	---	FRACA (9)

R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits vegetables and grain consumption (kg/yr)	1.660E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	1.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	1.000E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.510E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	not used	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	not used	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.825E+01	3.650E+01	---	SOIL

Site-Specific Parameter Summary (continued)

0		User		Used by RESRAD	Parameter
Menu	Parameter	Input	Default	(If different from user input)	Name
R018	Drinking water intake (L/yr)	not used	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	not used	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	2.500E-01	-1	---	FPLANT
R018	Contamination fraction of meat	3.000E-02	-1	---	FMEAT
R018	Contamination fraction of milk	3.000E-02	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	6.800E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	5.500E+01	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	1.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	not used	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	8.000E-02	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	2.000E+01	2.000E+01	---	WLAM

C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Site-Specific Parameter Summary (continued)

0		User		Used by RESRAD	Parameter
Menu	Parameter	Input	Default	(If different from user input)	Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits non-leafy vegetables and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	32	---	---	NPTS
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	257	---	---	KYMAX

Summary of Pathway Selections

Pathway User Selection

```
-----  
1 -- external gamma           active  
2 -- inhalation (w/o radon)   active  
3 -- plant ingestion          active  
4 -- meat ingestion           active  
5 -- milk ingestion           active  
6 -- aquatic foods            suppressed  
7 -- drinking water           suppressed  
8 -- soil ingestion           active  
9 -- radon                    suppressed  
Find peak pathway doses      suppressed  
-----I-----
```


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Contaminated Zone Dimensions		Initial Soil Concentrations pCi/g	
-----		-----	
Area:	500.00 square meters	Ra-226	1.000E+00
Thickness:	3.05 meters	Th-230	1.000E+00
Cover Depth:	0.00 meters	Th-232	1.000E+00

0

Total Dose TDOSE(t) mrem/yr
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr
 Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	7.638E+00	8.430E+00	1.005E+01	1.440E+01	1.841E+01	1.982E+01	1.995E+01	1.990E+01
M(t):	3.055E-01	3.372E-01	4.019E-01	5.760E-01	7.363E-01	7.928E-01	7.980E-01	7.959E-01

0Maximum TDOSE(t): 1.995E+01 mrem/yr at t = 235.3 ñ 0.5 years

0

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.353E+02 years

Water Independent Pathways (Inhalation excludes radon)

0

0

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio- Nuclide Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Ra-226	4.263E+00	0.2137	3.062E-05	0.0000	0.000E+00	0.0000	5.061E+00	0.2536	1.988E-02	0.0010	1.598E-02	0.0008	5.546E-02	0.0028
Th-230	4.587E-01	0.0230	3.470E-04	0.0000	0.000E+00	0.0000	5.230E-01	0.0262	2.009E-03	0.0001	1.625E-03	0.0001	9.107E-03	0.0005
Th-232	6.788E+00	0.3402	2.102E-03	0.0001	0.000E+00	0.0000	2.698E+00	0.1352	9.343E-03	0.0005	1.149E-02	0.0006	3.511E-02	0.0018
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Total	1.151E+01	0.5768	2.480E-03	0.0001	0.000E+00	0.0000	8.282E+00	0.4150	3.123E-02	0.0016	2.910E-02	0.0015	9.968E-02	0.0050

0

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.353E+02 years

Water Dependent Pathways

0

0

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio- Nuclide Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.416E+00	0.4719
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.947E-01	0.0499
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.543E+00	0.4783
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.995E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.724E+00	0.6185	9.467E-06	0.0000	0.000E+00	0.0000	2.396E+00	0.3137	8.634E-03	0.0011	1.084E-02	0.0014	1.013E-02	0.0013
Th-230	1.550E-03	0.0002	3.448E-04	0.0000	0.000E+00	0.0000	2.475E-02	0.0032	6.219E-05	0.0000	6.505E-06	0.0000	3.879E-03	0.0005
Th-232	1.741E-01	0.0228	1.737E-03	0.0002	0.000E+00	0.0000	2.607E-01	0.0341	6.900E-04	0.0001	5.796E-04	0.0001	1.994E-02	0.0026
Total	4.900E+00	0.6415	2.092E-03	0.0003	0.000E+00	0.0000	2.682E+00	0.3511	9.387E-03	0.0012	1.143E-02	0.0015	3.395E-02	0.0044

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.150E+00	0.9361
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.060E-02	0.0040
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.577E-01	0.0599
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.638E+00	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.722E+00	0.5602	1.020E-05	0.0000	0.000E+00	0.0000	2.494E+00	0.2958	9.056E-03	0.0011	1.105E-02	0.0013	1.168E-02	0.0014
Th-230	3.596E-03	0.0004	3.449E-04	0.0000	0.000E+00	0.0000	2.581E-02	0.0031	6.594E-05	0.0000	1.118E-05	0.0000	3.883E-03	0.0005
Th-232	5.868E-01	0.0696	1.750E-03	0.0002	0.000E+00	0.0000	5.351E-01	0.0635	1.650E-03	0.0002	1.809E-03	0.0002	2.122E-02	0.0025
Total	5.312E+00	0.6302	2.105E-03	0.0002	0.000E+00	0.0000	3.055E+00	0.3624	1.077E-02	0.0013	1.287E-02	0.0015	3.678E-02	0.0044

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.248E+00	0.8598
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.371E-02	0.0040
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.148E+00	0.1362
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.430E+00	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.718E+00	0.4696	1.160E-05	0.0000	0.000E+00	0.0000	2.677E+00	0.2664	9.819E-03	0.0010	1.144E-02	0.0011	1.463E-02	0.0015
Th-230	7.686E-03	0.0008	3.449E-04	0.0000	0.000E+00	0.0000	2.805E-02	0.0028	7.412E-05	0.0000	2.093E-05	0.0000	3.895E-03	0.0004
Th-232	1.546E+00	0.1538	1.794E-03	0.0002	0.000E+00	0.0000	9.983E-01	0.0994	3.301E-03	0.0003	3.897E-03	0.0004	2.371E-02	0.0024
Total	6.271E+00	0.6242	2.151E-03	0.0002	0.000E+00	0.0000	3.703E+00	0.3686	1.319E-02	0.0013	1.536E-02	0.0015	4.224E-02	0.0042

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.431E+00	0.7396
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.007E-02	0.0040
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.577E+00	0.2564
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.005E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.704E+00	0.3267	1.586E-05	0.0000	0.000E+00	0.0000	3.232E+00	0.2245	1.214E-02	0.0008	1.261E-02	0.0009	2.360E-02	0.0016
Th-230	2.197E-02	0.0015	3.449E-04	0.0000	0.000E+00	0.0000	3.704E-02	0.0026	1.075E-04	0.0000	5.745E-05	0.0000	3.953E-03	0.0003
Th-232	4.335E+00	0.3010	1.953E-03	0.0001	0.000E+00	0.0000	1.970E+00	0.1368	6.757E-03	0.0005	8.248E-03	0.0006	2.996E-02	0.0021
Total	9.061E+00	0.6292	2.314E-03	0.0002	0.000E+00	0.0000	5.239E+00	0.3639	1.900E-02	0.0013	2.091E-02	0.0015	5.751E-02	0.0040

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.985E+00	0.5545
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.347E-02	0.0044
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.351E+00	0.4411
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.440E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.664E+00	0.2534	2.388E-05	0.0000	0.000E+00	0.0000	4.275E+00	0.2322	1.649E-02	0.0009	1.478E-02	0.0008	4.050E-02	0.0022
Th-230	6.255E-02	0.0034	3.450E-04	0.0000	0.000E+00	0.0000	7.004E-02	0.0038	2.336E-04	0.0000	1.771E-04	0.0000	4.237E-03	0.0002
Th-232	6.568E+00	0.3568	2.089E-03	0.0001	0.000E+00	0.0000	2.634E+00	0.1431	9.116E-03	0.0005	1.121E-02	0.0006	3.466E-02	0.0019
Total	1.129E+01	0.6136	2.458E-03	0.0001	0.000E+00	0.0000	6.979E+00	0.3791	2.584E-02	0.0014	2.617E-02	0.0014	7.940E-02	0.0043

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.010E+00	0.4895
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.376E-01	0.0075
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.259E+00	0.5030
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.841E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.524E+00	0.2282	3.142E-05	0.0000	0.000E+00	0.0000	5.229E+00	0.2638	2.051E-02	0.0010	1.665E-02	0.0008	5.660E-02	0.0029
Th-230	2.018E-01	0.0102	3.456E-04	0.0000	0.000E+00	0.0000	2.198E-01	0.0111	8.181E-04	0.0000	6.656E-04	0.0000	5.798E-03	0.0003
Th-232	6.788E+00	0.3425	2.103E-03	0.0001	0.000E+00	0.0000	2.698E+00	0.1361	9.344E-03	0.0005	1.150E-02	0.0006	3.512E-02	0.0018
Total	1.151E+01	0.5809	2.480E-03	0.0001	0.000E+00	0.0000	8.147E+00	0.4110	3.067E-02	0.0015	2.881E-02	0.0015	9.751E-02	0.0049

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.847E+00	0.4968
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.291E-01	0.0217
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.545E+00	0.4816
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.982E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.144E+00	0.2077	2.978E-05	0.0000	0.000E+00	0.0000	4.921E+00	0.2467	1.933E-02	0.0010	1.553E-02	0.0008	5.394E-02	0.0027
Th-230	5.762E-01	0.0289	3.476E-04	0.0000	0.000E+00	0.0000	6.625E-01	0.0332	2.557E-03	0.0001	2.065E-03	0.0001	1.063E-02	0.0005
Th-232	6.787E+00	0.3402	2.102E-03	0.0001	0.000E+00	0.0000	2.698E+00	0.1352	9.342E-03	0.0005	1.149E-02	0.0006	3.511E-02	0.0018
Total	1.151E+01	0.5768	2.480E-03	0.0001	0.000E+00	0.0000	8.281E+00	0.4151	3.123E-02	0.0016	2.909E-02	0.0015	9.969E-02	0.0050

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.154E+00	0.4588
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.254E+00	0.0629
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.543E+00	0.4783
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.995E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	3.048E+00	0.1532	2.191E-05	0.0000	0.000E+00	0.0000	3.620E+00	0.1819	1.422E-02	0.0007	1.143E-02	0.0006	3.968E-02	0.0020
Th-230	1.650E+00	0.0829	3.530E-04	0.0000	0.000E+00	0.0000	1.938E+00	0.0974	7.570E-03	0.0004	6.092E-03	0.0003	2.460E-02	0.0012
Th-232	6.783E+00	0.3409	2.101E-03	0.0001	0.000E+00	0.0000	2.696E+00	0.1355	9.337E-03	0.0005	1.149E-02	0.0006	3.509E-02	0.0018
Total	1.148E+01	0.5770	2.476E-03	0.0001	0.000E+00	0.0000	8.255E+00	0.4148	3.113E-02	0.0016	2.901E-02	0.0015	9.937E-02	0.0050

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.734E+00	0.3384
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.627E+00	0.1823
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.537E+00	0.4793
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.990E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Dose/Source Ratios Summed Over All Pathways											
Parent and Progeny Principal Radionuclide Contributions Indicated											
0	Parent (i)	Product (j)	Thread Fraction	DSR(jt) At Time in Years (mrem/yr)/(pCi/g)							
				0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
	Ra-226+D	Ra-226+D	1.000E+00	7.090E+00	7.087E+00	7.081E+00	7.059E+00	6.997E+00	6.786E+00	6.216E+00	4.573E+00
	Ra-226+D	Pb-210+D	1.000E+00	6.008E-02	1.609E-01	3.502E-01	9.260E-01	2.013E+00	3.061E+00	2.938E+00	2.162E+00
	Ra-226+D	-DSR(j)		7.150E+00	7.248E+00	7.431E+00	7.985E+00	9.010E+00	9.847E+00	9.154E+00	6.734E+00
0	Th-230	Th-230	1.000E+00	2.908E-02	2.908E-02	2.908E-02	2.908E-02	2.907E-02	2.905E-02	2.900E-02	2.880E-02
	Th-230	Ra-226+D	1.000E+00	1.505E-03	4.570E-03	1.071E-02	3.215E-02	9.303E-02	3.019E-01	8.636E-01	2.475E+00
	Th-230	Pb-210+D	1.000E+00	9.490E-06	5.784E-05	2.801E-04	2.247E-03	1.548E-02	9.823E-02	3.618E-01	1.124E+00
	Th-230	-DSR(j)		3.060E-02	3.371E-02	4.007E-02	6.347E-02	1.376E-01	4.291E-01	1.254E+00	3.627E+00
0	Th-232	Th-232	1.000E+00	1.425E-01	1.425E-01	1.425E-01	1.425E-01	1.425E-01	1.425E-01	1.425E-01	1.424E-01
	Th-232	Ra-226+D	1.000E+00	2.861E-01	8.301E-01	1.741E+00	3.640E+00	4.932E+00	5.057E+00	5.056E+00	5.053E+00
	Th-232	Th-228+D	1.000E+00	2.914E-02	1.757E-01	6.927E-01	2.569E+00	4.185E+00	4.345E+00	4.344E+00	4.342E+00
	Th-232	-DSR(j)		4.577E-01	1.148E+00	2.577E+00	6.351E+00	9.259E+00	9.545E+00	9.543E+00	9.537E+00

The DSR includes contributions from associated (half-life « 180 days) daughters.

Single Radionuclide Soil Guidelines G(it) in pCi/g								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
0	Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02
	Ra-226		3.496E+00	3.449E+00	3.364E+00	3.131E+00	2.775E+00	2.539E+00
	Th-230		8.171E+02	7.416E+02	6.239E+02	3.939E+02	1.817E+02	5.826E+01
	Th-232		5.462E+01	2.177E+01	9.703E+00	3.936E+00	2.700E+00	2.619E+00

Summed Dose/Source Ratios DSR(it) in (mrem/yr)/(pCi/g)						
and Single Radionuclide Soil Guidelines G(it) in pCi/g						
at tmin = time of minimum single radionuclide soil guideline						
and at tmax = time of maximum total dose = 235.3 ± 0.5 years						
0	Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(itmin)	G(itmin) (pCi/g)	DSR(itmax) G(itmax) (pCi/g)
	Ra-226	1.000E+00	101.4 ± 0.2	9.847E+00	2.539E+00	9.416E+00 2.655E+00
	Th-230	1.000E+00	1.000E+03	3.627E+00	6.892E+00	9.947E-01 2.513E+01
	Th-232	1.000E+00	98.7 ± 0.2	9.545E+00	2.619E+00	9.543E+00 2.620E+00

Individual Nuclide Dose Summed Over All Pathways											
Parent Nuclide and Branch Fraction Indicated											
ONuclide	Parent	THF(i)	DOSE(jt) mrem/yr								
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	Ra-226	1.000E+00		7.090E+00	7.087E+00	7.081E+00	7.059E+00	6.997E+00	6.786E+00	6.216E+00	4.573E+00
Ra-226	Th-230	1.000E+00		1.505E-03	4.570E-03	1.071E-02	3.215E-02	9.303E-02	3.019E-01	8.636E-01	2.475E+00
Ra-226	-DOSE(j)			7.091E+00	7.091E+00	7.091E+00	7.091E+00	7.090E+00	7.088E+00	7.079E+00	7.047E+00
OPb-210	Ra-226	1.000E+00		6.008E-02	1.609E-01	3.502E-01	9.260E-01	2.013E+00	3.061E+00	2.938E+00	2.162E+00
Pb-210	Th-230	1.000E+00		9.490E-06	5.784E-05	2.801E-04	2.247E-03	1.548E-02	9.823E-02	3.618E-01	1.124E+00
Pb-210	-DOSE(j)			6.009E-02	1.610E-01	3.505E-01	9.283E-01	2.029E+00	3.159E+00	3.300E+00	3.285E+00
0Th-230	Th-230	1.000E+00		2.908E-02	2.908E-02	2.908E-02	2.908E-02	2.907E-02	2.905E-02	2.900E-02	2.880E-02
0Th-232	Th-232	1.000E+00		1.425E-01	1.425E-01	1.425E-01	1.425E-01	1.425E-01	1.425E-01	1.425E-01	1.424E-01
ORa-228	Th-232	1.000E+00		2.861E-01	8.301E-01	1.741E+00	3.640E+00	4.932E+00	5.057E+00	5.056E+00	5.053E+00
0Th-228	Th-232	1.000E+00		2.914E-02	1.757E-01	6.927E-01	2.569E+00	4.185E+00	4.345E+00	4.344E+00	4.342E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration											
Parent Nuclide and Branch Fraction Indicated											
ONuclide	Parent	THF(i)	S(jt) pCi/g								
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Ra-226	Ra-226	1.000E+00		1.000E+00	9.996E-01	9.987E-01	9.956E-01	9.869E-01	9.571E-01	8.767E-01	6.449E-01
Ra-226	Th-230	1.000E+00		0.000E+00	4.331E-04	1.299E-03	4.322E-03	1.291E-02	4.236E-02	1.216E-01	3.489E-01
Ra-226	-S(j):			1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.995E-01	9.983E-01	9.938E-01
OPb-210	Ra-226	1.000E+00		0.000E+00	3.060E-02	8.897E-02	2.665E-01	6.018E-01	9.254E-01	8.891E-01	6.541E-01
Pb-210	Th-230	1.000E+00		0.000E+00	6.663E-06	5.873E-05	6.077E-04	4.523E-03	2.947E-02	1.092E-01	3.398E-01
Pb-210	-S(j):			0.000E+00	3.060E-02	8.903E-02	2.671E-01	6.063E-01	9.548E-01	9.983E-01	9.939E-01
0Th-230	Th-230	1.000E+00		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.990E-01	9.970E-01	9.902E-01
0Th-232	Th-232	1.000E+00		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.991E-01
ORa-228	Th-232	1.000E+00		0.000E+00	1.135E-01	3.031E-01	6.980E-01	9.669E-01	9.929E-01	9.927E-01	9.921E-01
0Th-228	Th-232	1.000E+00		0.000E+00	1.864E-02	1.242E-01	5.628E-01	9.538E-01	9.929E-01	9.927E-01	9.921E-01

THF(i) is the thread fraction of the parent nuclide.

ORESCALC.EXE execution time = 0.28 seconds

**RESRAD OUTPUT SUMMARY REPORT FOR AOC = 300
m²**

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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: FGR 12 & FGR 11

0	Menu	Parameter	Current Value#	Base Case*	Parameter Name
	A-1	DCF's for external ground radiation (mrem/yr)/(pCi/g)			
	A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
	A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(2)
	A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(3)
	A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(4)
	A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(5)
	A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(6)
	A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(7)
	A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(8)
	A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(9)
	A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(10)
	A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(11)
	A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(12)
	A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(13)
	A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(14)
	A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(15)
	A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(16)
	A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(17)
	A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(18)
	A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(19)
	A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(20)
	A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(21)
	A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(22)
	A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(23)
	B-1	Dose conversion factors for inhalation mrem/pCi:			
	B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
	B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
	B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(3)
	B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(4)
	B-1	Th-230	3.260E-01	3.260E-01	DCF2(5)
	B-1	Th-232	1.640E+00	1.640E+00	DCF2(6)
	D-1	Dose conversion factors for ingestion mrem/pCi:			
	D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
	D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
	D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(3)
	D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(4)

D-1	Th-230		5.480E-04	5.480E-04	DCF3(5)
D-1	Th-232		2.730E-03	2.730E-03	DCF3(6)
D-34	Food transfer factors:				
D-34	Pb-210+D	plant/soil concentration ratio dimensionless	1.000E-02	1.000E-02	RTF(11)
D-34	Pb-210+D	beef/livestock-intake ratio (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(12)
D-34	Pb-210+D	milk/livestock-intake ratio (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(13)
D-34					
D-34	Ra-226+D	plant/soil concentration ratio dimensionless	4.000E-02	4.000E-02	RTF(21)
D-34	Ra-226+D	beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(22)
D-34	Ra-226+D	milk/livestock-intake ratio (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(23)
D-34					

Dose Conversion Factor (and Related) Parameter Summary (continued)
Dose Library: FGR 12 & FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Ra-228+D plant/soil concentration ratio dimensionless	4.000E-02	4.000E-02	RTF(31)
D-34	Ra-228+D beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(32)
D-34	Ra-228+D milk/livestock-intake ratio (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(33)
D-34	Th-228+D plant/soil concentration ratio dimensionless	1.000E-03	1.000E-03	RTF(41)
D-34	Th-228+D beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(42)
D-34	Th-228+D milk/livestock-intake ratio (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(43)
D-34	Th-230 plant/soil concentration ratio dimensionless	1.000E-03	1.000E-03	RTF(51)
D-34	Th-230 beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(52)
D-34	Th-230 milk/livestock-intake ratio (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(53)
D-34	Th-232 plant/soil concentration ratio dimensionless	1.000E-03	1.000E-03	RTF(61)
D-34	Th-232 beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(62)
D-34	Th-232 milk/livestock-intake ratio (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(63)
D-5	Bioaccumulation factors fresh water L/kg:			
D-5	Pb-210+D fish	3.000E+02	3.000E+02	BIOFAC(11)
D-5	Pb-210+D crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(12)
D-5	Ra-226+D fish	5.000E+01	5.000E+01	BIOFAC(21)
D-5	Ra-226+D crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(22)
D-5	Ra-228+D fish	5.000E+01	5.000E+01	BIOFAC(31)
D-5	Ra-228+D crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(32)
D-5	Th-228+D fish	1.000E+02	1.000E+02	BIOFAC(41)
D-5	Th-228+D crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(42)
D-5	Th-230 fish	1.000E+02	1.000E+02	BIOFAC(51)
D-5	Th-230 crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(52)
D-5	Th-232 fish	1.000E+02	1.000E+02	BIOFAC(61)
D-5	Th-232 crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(62)

#For DCF1(xxx) only factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
*Base Case means Default.Lib w/o Associate Nuclide contributions.

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Summary : Determination of Area Factor
File : C:\USERS\MRAHMAN\DOCUMENTS\FLASH DRIVE\REMOVABLE DISK\HILL AFB\AREA_300.RAD

Site-Specific Parameter Summary					
0	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	3.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	3.048E+00	2.000E+00	---	THICK0
R011	Fraction of contamination that is submerged	0.000E+00	0.000E+00	---	SUBMFRACT
R011	Length parallel to aquifer flow (m)	1.700E+01	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-230	1.000E+00	0.000E+00	---	S1(5)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(6)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-230	not used	0.000E+00	---	W1(5)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(6)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.431E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.600E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	1.040E+01	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	2.000E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	4.060E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF

R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.431E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.600E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	1.040E+01	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT

Site-Specific Parameter Summary (continued)

0		User		Used by RESRAD	Parameter
Menu	Parameter	Input	Default	(If different from user input)	Name
R014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1 thickness (m)	4.000E+00	4.000E+00	---	H (1)
R015	Unsat. zone 1 soil density (g/cm**3)	1.431E+00	1.500E+00	---	DENSUZ (1)
R015	Unsat. zone 1 total porosity	4.600E-01	4.000E-01	---	TPUZ (1)
R015	Unsat. zone 1 effective porosity	2.000E-01	2.000E-01	---	EPUZ (1)
R015	Unsat. zone 1 field capacity	2.000E-01	2.000E-01	---	FCUZ (1)
R015	Unsat. zone 1 soil-specific b parameter	1.040E+01	5.300E+00	---	BUZ (1)
R015	Unsat. zone 1 hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ (1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	1.121E+04	7.000E+01	---	DCNUCC (2)
R016	Unsat. zone 1 (cm**3/g)	1.121E+04	7.000E+01	---	DCNUCU (21)
R016	Saturated zone (cm**3/g)	1.121E+04	7.000E+01	---	DCNUCS (2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.368E-06	ALEACH (2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (2)
R016	Distribution coefficients for Th-230				
R016	Contaminated zone (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCC (5)
R016	Unsat. zone 1 (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCU (51)
R016	Saturated zone (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.903E-07	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCC (6)
R016	Unsat. zone 1 (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCU (61)
R016	Saturated zone (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCS (6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.903E-07	ALEACH (6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (6)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	1.549E+04	1.000E+02	---	DCNUCC (1)
R016	Unsat. zone 1 (cm**3/g)	1.549E+04	1.000E+02	---	DCNUCU (11)
R016	Saturated zone (cm**3/g)	1.549E+04	1.000E+02	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.884E-06	ALEACH (1)

R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC (3)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU (31)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS (3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.561E-04	ALEACH (3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (3)

Site-Specific Parameter Summary (continued)

0	Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
	R016	Distribution coefficients for daughter Th-228				
	R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC (4)
	R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU (41)
	R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS (4)
	R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.003E-06	ALEACH (4)
	R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
	R017	Inhalation rate (m**3/yr)	6.650E+03	8.400E+03	---	INHALR
	R017	Mass loading for inhalation (g/m**3)	4.600E-06	1.000E-04	---	MLINH
	R017	Exposure duration	2.600E+01	3.000E+01	---	ED
	R017	Shielding factor inhalation	2.448E-01	4.000E-01	---	SHF3
	R017	Shielding factor external gamma	5.512E-01	7.000E-01	---	SHF1
	R017	Fraction of time spent indoors	6.571E-01	5.000E-01	---	FIND
	R017	Fraction of time spent outdoors (on site)	1.181E-01	2.500E-01	---	FOTD
	R017	Shape factor flag external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
	R017	Radii of shape factor array (used if FS = -1):				
	R017	Outer annular radius (m) ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
	R017	Outer annular radius (m) ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
	R017	Outer annular radius (m) ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
	R017	Outer annular radius (m) ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
	R017	Outer annular radius (m) ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
	R017	Outer annular radius (m) ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
	R017	Outer annular radius (m) ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
	R017	Outer annular radius (m) ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
	R017	Outer annular radius (m) ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
	R017	Outer annular radius (m) ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
	R017	Outer annular radius (m) ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
	R017	Outer annular radius (m) ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
	R017	Fractions of annular areas within AREA:				
	R017	Ring 1	not used	1.000E+00	---	FRACA (1)
	R017	Ring 2	not used	2.732E-01	---	FRACA (2)
	R017	Ring 3	not used	0.000E+00	---	FRACA (3)
	R017	Ring 4	not used	0.000E+00	---	FRACA (4)
	R017	Ring 5	not used	0.000E+00	---	FRACA (5)
	R017	Ring 6	not used	0.000E+00	---	FRACA (6)
	R017	Ring 7	not used	0.000E+00	---	FRACA (7)
	R017	Ring 8	not used	0.000E+00	---	FRACA (8)
	R017	Ring 9	not used	0.000E+00	---	FRACA (9)

R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits vegetables and grain consumption (kg/yr)	1.660E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	1.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	1.000E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.510E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	not used	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	not used	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.825E+01	3.650E+01	---	SOIL

Site-Specific Parameter Summary (continued)

0		User		Used by RESRAD	Parameter
Menu	Parameter	Input	Default	(If different from user input)	Name
R018	Drinking water intake (L/yr)	not used	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	not used	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	1.500E-01	-1	---	FPLANT
R018	Contamination fraction of meat	2.000E-02	-1	---	FMEAT
R018	Contamination fraction of milk	2.000E-02	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	6.800E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	5.500E+01	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	1.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	not used	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	8.000E-02	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	2.000E+01	2.000E+01	---	WLAM

C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Site-Specific Parameter Summary (continued)

0		User		Used by RESRAD	Parameter
Menu	Parameter	Input	Default	(If different from user input)	Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits non-leafy vegetables and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	32	---	---	NPTS
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	257	---	---	KYMAX

Summary of Pathway Selections

Pathway User Selection

```
-----  
1 -- external gamma           active  
2 -- inhalation (w/o radon)   active  
3 -- plant ingestion          active  
4 -- meat ingestion           active  
5 -- milk ingestion           active  
6 -- aquatic foods            suppressed  
7 -- drinking water           suppressed  
8 -- soil ingestion           active  
9 -- radon                    suppressed  
Find peak pathway doses      suppressed  
-----I-----
```

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Contaminated Zone Dimensions		Initial Soil Concentrations pCi/g	
-----		-----	
Area:	300.00 square meters	Ra-226	1.000E+00
Thickness:	3.05 meters	Th-230	1.000E+00
Cover Depth:	0.00 meters	Th-232	1.000E+00

0

Total Dose TDOSE(t) mrem/yr
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr
 Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	6.407E+00	7.035E+00	8.362E+00	1.201E+01	1.524E+01	1.617E+01	1.624E+01	1.620E+01
M(t):	2.563E-01	2.814E-01	3.345E-01	4.802E-01	6.095E-01	6.467E-01	6.497E-01	6.481E-01

0Maximum TDOSE(t): 1.625E+01 mrem/yr at t = 227.5 ñ 0.5 years

0

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.275E+02 years

Water Independent Pathways (Inhalation excludes radon)

0

0

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio- Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Nuclide	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Ra-226	4.158E+00	0.2559	2.911E-05	0.0000	0.000E+00	0.0000	3.047E+00	0.1875	1.330E-02	0.0008	1.069E-02	0.0007	3.339E-02	0.0021
Th-230	4.318E-01	0.0266	3.287E-04	0.0000	0.000E+00	0.0000	3.035E-01	0.0187	1.295E-03	0.0001	1.047E-03	0.0001	5.352E-03	0.0003
Th-232	6.585E+00	0.4053	1.992E-03	0.0001	0.000E+00	0.0000	1.619E+00	0.0996	6.229E-03	0.0004	7.663E-03	0.0005	2.107E-02	0.0013
Total	1.117E+01	0.6878	2.350E-03	0.0001	0.000E+00	0.0000	4.969E+00	0.3059	2.082E-02	0.0013	1.940E-02	0.0012	5.981E-02	0.0037

0

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.275E+02 years

Water Dependent Pathways

0

0

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio- Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Nuclide	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.262E+00	0.4470
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.434E-01	0.0458
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.241E+00	0.5073
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.625E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.591E+00	0.7166	8.969E-06	0.0000	0.000E+00	0.0000	1.438E+00	0.2244	5.756E-03	0.0009	7.228E-03	0.0011	6.080E-03	0.0009
Th-230	1.510E-03	0.0002	3.267E-04	0.0001	0.000E+00	0.0000	1.485E-02	0.0023	4.146E-05	0.0000	4.337E-06	0.0000	2.327E-03	0.0004
Th-232	1.692E-01	0.0264	1.646E-03	0.0003	0.000E+00	0.0000	1.564E-01	0.0244	4.600E-04	0.0001	3.864E-04	0.0001	1.196E-02	0.0019
Total	4.762E+00	0.7432	1.982E-03	0.0003	0.000E+00	0.0000	1.609E+00	0.2511	6.258E-03	0.0010	7.619E-03	0.0012	2.037E-02	0.0032

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.048E+00	0.9439
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.906E-02	0.0030
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.401E-01	0.0531
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.407E+00	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.589E+00	0.6523	9.665E-06	0.0000	0.000E+00	0.0000	1.496E+00	0.2127	6.037E-03	0.0009	7.368E-03	0.0010	7.008E-03	0.0010
Th-230	3.498E-03	0.0005	3.267E-04	0.0000	0.000E+00	0.0000	1.548E-02	0.0022	4.396E-05	0.0000	7.454E-06	0.0000	2.330E-03	0.0003
Th-232	5.700E-01	0.0810	1.658E-03	0.0002	0.000E+00	0.0000	3.211E-01	0.0456	1.100E-03	0.0002	1.206E-03	0.0002	1.273E-02	0.0018
Total	5.163E+00	0.7338	1.995E-03	0.0003	0.000E+00	0.0000	1.833E+00	0.2605	7.181E-03	0.0010	8.581E-03	0.0012	2.207E-02	0.0031

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.106E+00	0.8679
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.169E-02	0.0031
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.078E-01	0.1290
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.035E+00	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.585E+00	0.5484	1.099E-05	0.0000	0.000E+00	0.0000	1.606E+00	0.1921	6.546E-03	0.0008	7.625E-03	0.0009	8.777E-03	0.0010
Th-230	7.473E-03	0.0009	3.267E-04	0.0000	0.000E+00	0.0000	1.683E-02	0.0020	4.941E-05	0.0000	1.395E-05	0.0000	2.337E-03	0.0003
Th-232	1.501E+00	0.1795	1.700E-03	0.0002	0.000E+00	0.0000	5.990E-01	0.0716	2.201E-03	0.0003	2.598E-03	0.0003	1.423E-02	0.0017
Total	6.093E+00	0.7287	2.038E-03	0.0002	0.000E+00	0.0000	2.222E+00	0.2657	8.797E-03	0.0011	1.024E-02	0.0012	2.534E-02	0.0030

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.214E+00	0.7432
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.703E-02	0.0032
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.120E+00	0.2536
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.362E+00	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.572E+00	0.3808	1.503E-05	0.0000	0.000E+00	0.0000	1.939E+00	0.1615	8.093E-03	0.0007	8.404E-03	0.0007	1.416E-02	0.0012
Th-230	2.136E-02	0.0018	3.267E-04	0.0000	0.000E+00	0.0000	2.222E-02	0.0019	7.169E-05	0.0000	3.830E-05	0.0000	2.372E-03	0.0002
Th-232	4.206E+00	0.3503	1.850E-03	0.0002	0.000E+00	0.0000	1.182E+00	0.0984	4.505E-03	0.0004	5.499E-03	0.0005	1.798E-02	0.0015
Total	8.799E+00	0.7329	2.192E-03	0.0002	0.000E+00	0.0000	3.144E+00	0.2618	1.267E-02	0.0011	1.394E-02	0.0012	3.451E-02	0.0029

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.542E+00	0.5449
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.639E-02	0.0039
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.418E+00	0.4513
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.201E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.533E+00	0.2975	2.263E-05	0.0000	0.000E+00	0.0000	2.565E+00	0.1683	1.100E-02	0.0007	9.855E-03	0.0006	2.430E-02	0.0016
Th-230	6.079E-02	0.0040	3.268E-04	0.0000	0.000E+00	0.0000	4.202E-02	0.0028	1.557E-04	0.0000	1.181E-04	0.0000	2.542E-03	0.0002
Th-232	6.372E+00	0.4182	1.979E-03	0.0001	0.000E+00	0.0000	1.580E+00	0.1037	6.077E-03	0.0004	7.474E-03	0.0005	2.080E-02	0.0014
Total	1.097E+01	0.7196	2.329E-03	0.0002	0.000E+00	0.0000	4.187E+00	0.2748	1.723E-02	0.0011	1.745E-02	0.0011	4.764E-02	0.0031

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.143E+00	0.4688
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.060E-01	0.0070
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.989E+00	0.5243
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.524E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.396E+00	0.2719	2.977E-05	0.0000	0.000E+00	0.0000	3.137E+00	0.1941	1.367E-02	0.0008	1.110E-02	0.0007	3.396E-02	0.0021
Th-230	1.961E-01	0.0121	3.275E-04	0.0000	0.000E+00	0.0000	1.319E-01	0.0082	5.454E-04	0.0000	4.438E-04	0.0000	3.479E-03	0.0002
Th-232	6.586E+00	0.4074	1.992E-03	0.0001	0.000E+00	0.0000	1.619E+00	0.1001	6.229E-03	0.0004	7.664E-03	0.0005	2.107E-02	0.0013
Total	1.118E+01	0.6914	2.349E-03	0.0001	0.000E+00	0.0000	4.888E+00	0.3024	2.045E-02	0.0013	1.921E-02	0.0012	5.851E-02	0.0036

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.593E+00	0.4696
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.327E-01	0.0206
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.242E+00	0.5098
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.617E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.027E+00	0.2479	2.821E-05	0.0000	0.000E+00	0.0000	2.953E+00	0.1818	1.289E-02	0.0008	1.035E-02	0.0006	3.236E-02	0.0020
Th-230	5.600E-01	0.0345	3.293E-04	0.0000	0.000E+00	0.0000	3.975E-01	0.0245	1.705E-03	0.0001	1.377E-03	0.0001	6.381E-03	0.0004
Th-232	6.585E+00	0.4054	1.992E-03	0.0001	0.000E+00	0.0000	1.619E+00	0.0996	6.228E-03	0.0004	7.663E-03	0.0005	2.107E-02	0.0013
Total	1.117E+01	0.6878	2.349E-03	0.0001	0.000E+00	0.0000	4.969E+00	0.3059	2.082E-02	0.0013	1.939E-02	0.0012	5.981E-02	0.0037

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.036E+00	0.4331
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.673E-01	0.0596
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.240E+00	0.5073
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.624E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	2.963E+00	0.1829	2.076E-05	0.0000	0.000E+00	0.0000	2.172E+00	0.1341	9.482E-03	0.0006	7.618E-03	0.0005	2.381E-02	0.0015
Th-230	1.604E+00	0.0990	3.344E-04	0.0000	0.000E+00	0.0000	1.163E+00	0.0718	5.047E-03	0.0003	4.061E-03	0.0003	1.476E-02	0.0009
Th-232	6.580E+00	0.4062	1.991E-03	0.0001	0.000E+00	0.0000	1.618E+00	0.0998	6.224E-03	0.0004	7.658E-03	0.0005	2.105E-02	0.0013
Total	1.115E+01	0.6880	2.346E-03	0.0001	0.000E+00	0.0000	4.953E+00	0.3057	2.075E-02	0.0013	1.934E-02	0.0012	5.962E-02	0.0037

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.176E+00	0.3195
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.791E+00	0.1723
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.235E+00	0.5083
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.620E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Dose/Source Ratios Summed Over All Pathways											
Parent and Progeny Principal Radionuclide Contributions Indicated											
0	Parent (i)	Product (j)	Thread Fraction	DSR(jt) At Time in Years (mrem/yr)/(pCi/g)							
				0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
	Ra-226+D	Ra-226+D	1.000E+00	6.012E+00	6.009E+00	6.004E+00	5.986E+00	5.933E+00	5.754E+00	5.271E+00	3.877E+00
	Ra-226+D	Pb-210+D	1.000E+00	3.610E-02	9.667E-02	2.104E-01	5.563E-01	1.209E+00	1.839E+00	1.765E+00	1.298E+00
	Ra-226+D	-DSR(j)		6.048E+00	6.106E+00	6.214E+00	6.542E+00	7.143E+00	7.593E+00	7.036E+00	5.176E+00
0	Th-230	Th-230	1.000E+00	1.777E-02	1.777E-02	1.777E-02	1.777E-02	1.777E-02	1.775E-02	1.772E-02	1.760E-02
	Th-230	Ra-226+D	1.000E+00	1.283E-03	3.884E-03	9.088E-03	2.727E-02	7.889E-02	2.560E-01	7.323E-01	2.099E+00
	Th-230	Pb-210+D	1.000E+00	5.701E-06	3.475E-05	1.683E-04	1.350E-03	9.297E-03	5.901E-02	2.173E-01	6.751E-01
	Th-230	-DSR(j)		1.906E-02	2.169E-02	2.703E-02	4.639E-02	1.060E-01	3.327E-01	9.673E-01	2.791E+00
0	Th-232	Th-232	1.000E+00	8.621E-02	8.621E-02	8.621E-02	8.621E-02	8.621E-02	8.620E-02	8.619E-02	8.613E-02
	Th-232	Ra-226+D	1.000E+00	2.261E-01	6.530E-01	1.368E+00	2.856E+00	3.870E+00	3.968E+00	3.967E+00	3.964E+00
	Th-232	Th-228+D	1.000E+00	2.777E-02	1.686E-01	6.664E-01	2.475E+00	4.033E+00	4.188E+00	4.187E+00	4.184E+00
	Th-232	-DSR(j)		3.401E-01	9.078E-01	2.120E+00	5.418E+00	7.989E+00	8.242E+00	8.240E+00	8.235E+00

The DSR includes contributions from associated (half-life « 180 days) daughters.

Single Radionuclide Soil Guidelines G(it) in pCi/g								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
0	Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02
	Ra-226		4.134E+00	4.094E+00	4.023E+00	3.822E+00	3.500E+00	3.293E+00
	Th-230		1.312E+03	1.153E+03	9.250E+02	5.389E+02	2.360E+02	7.514E+01
	Th-232		7.352E+01	2.754E+01	1.179E+01	4.615E+00	3.129E+00	3.033E+00

Summed Dose/Source Ratios DSR(it) in (mrem/yr)/(pCi/g)						
and Single Radionuclide Soil Guidelines G(it) in pCi/g						
at tmin = time of minimum single radionuclide soil guideline						
and at tmax = time of maximum total dose = 227.5 ± 0.5 years						
0	Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(itmin)	G(itmin) (pCi/g)	DSR(itmax) G(itmax) (pCi/g)
	Ra-226	1.000E+00	93.3 ± 0.2	7.595E+00	3.292E+00	7.262E+00 3.443E+00
	Th-230	1.000E+00	1.000E+03	2.791E+00	8.957E+00	7.434E-01 3.363E+01
	Th-232	1.000E+00	99.7 ± 0.2	8.242E+00	3.033E+00	8.241E+00 3.034E+00

Individual Nuclide Dose Summed Over All Pathways											
Parent Nuclide and Branch Fraction Indicated											
ONuclide	Parent	THF(i)	DOSE(jt) mrem/yr								
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	Ra-226	1.000E+00		6.012E+00	6.009E+00	6.004E+00	5.986E+00	5.933E+00	5.754E+00	5.271E+00	3.877E+00
Ra-226	Th-230	1.000E+00		1.283E-03	3.884E-03	9.088E-03	2.727E-02	7.889E-02	2.560E-01	7.323E-01	2.099E+00
Ra-226	-DOSE(j)			6.013E+00	6.013E+00	6.013E+00	6.013E+00	6.012E+00	6.010E+00	6.003E+00	5.976E+00
OPb-210	Ra-226	1.000E+00		3.610E-02	9.667E-02	2.104E-01	5.563E-01	1.209E+00	1.839E+00	1.765E+00	1.298E+00
Pb-210	Th-230	1.000E+00		5.701E-06	3.475E-05	1.683E-04	1.350E-03	9.297E-03	5.901E-02	2.173E-01	6.751E-01
Pb-210	-DOSE(j)			3.610E-02	9.671E-02	2.106E-01	5.576E-01	1.219E+00	1.898E+00	1.982E+00	1.974E+00
0Th-230	Th-230	1.000E+00		1.777E-02	1.777E-02	1.777E-02	1.777E-02	1.777E-02	1.775E-02	1.772E-02	1.760E-02
0Th-232	Th-232	1.000E+00		8.621E-02	8.621E-02	8.621E-02	8.621E-02	8.621E-02	8.620E-02	8.619E-02	8.613E-02
ORa-228	Th-232	1.000E+00		2.261E-01	6.530E-01	1.368E+00	2.856E+00	3.870E+00	3.968E+00	3.967E+00	3.964E+00
0Th-228	Th-232	1.000E+00		2.777E-02	1.686E-01	6.664E-01	2.475E+00	4.033E+00	4.188E+00	4.187E+00	4.184E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration											
Parent Nuclide and Branch Fraction Indicated											
ONuclide	Parent	THF(i)	S(jt) pCi/g								
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Ra-226	Ra-226	1.000E+00		1.000E+00	9.996E-01	9.987E-01	9.956E-01	9.869E-01	9.571E-01	8.767E-01	6.449E-01
Ra-226	Th-230	1.000E+00		0.000E+00	4.331E-04	1.299E-03	4.322E-03	1.291E-02	4.236E-02	1.216E-01	3.489E-01
Ra-226	-S(j):			1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.995E-01	9.983E-01	9.938E-01
OPb-210	Ra-226	1.000E+00		0.000E+00	3.060E-02	8.897E-02	2.665E-01	6.018E-01	9.254E-01	8.891E-01	6.541E-01
Pb-210	Th-230	1.000E+00		0.000E+00	6.663E-06	5.873E-05	6.077E-04	4.523E-03	2.947E-02	1.092E-01	3.398E-01
Pb-210	-S(j):			0.000E+00	3.060E-02	8.903E-02	2.671E-01	6.063E-01	9.548E-01	9.983E-01	9.939E-01
0Th-230	Th-230	1.000E+00		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.990E-01	9.970E-01	9.902E-01
0Th-232	Th-232	1.000E+00		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.991E-01
ORa-228	Th-232	1.000E+00		0.000E+00	1.135E-01	3.031E-01	6.980E-01	9.669E-01	9.929E-01	9.927E-01	9.921E-01
0Th-228	Th-232	1.000E+00		0.000E+00	1.864E-02	1.242E-01	5.628E-01	9.538E-01	9.929E-01	9.927E-01	9.921E-01

THF(i) is the thread fraction of the parent nuclide.

ORESCALC.EXE execution time = 0.25 seconds

RESRAD OUTPUT SUMMARY REPORT FOR AOC = 200
m²

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Time = 3.000E+00	12
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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: FGR 12 & FGR 11

0	Menu	Parameter	Current Value#	Base Case*	Parameter Name
	A-1	DCF's for external ground radiation (mrem/yr)/(pCi/g)			
	A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
	A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(2)
	A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(3)
	A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(4)
	A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(5)
	A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(6)
	A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(7)
	A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(8)
	A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(9)
	A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(10)
	A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(11)
	A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(12)
	A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(13)
	A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(14)
	A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(15)
	A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(16)
	A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(17)
	A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(18)
	A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(19)
	A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(20)
	A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(21)
	A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(22)
	A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(23)
	B-1	Dose conversion factors for inhalation mrem/pCi:			
	B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
	B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
	B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(3)
	B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(4)
	B-1	Th-230	3.260E-01	3.260E-01	DCF2(5)
	B-1	Th-232	1.640E+00	1.640E+00	DCF2(6)
	D-1	Dose conversion factors for ingestion mrem/pCi:			
	D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
	D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
	D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(3)
	D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(4)

D-1	Th-230		5.480E-04	5.480E-04	DCF3(5)
D-1	Th-232		2.730E-03	2.730E-03	DCF3(6)
D-34	Food transfer factors:				
D-34	Pb-210+D	plant/soil concentration ratio dimensionless	1.000E-02	1.000E-02	RTF(11)
D-34	Pb-210+D	beef/livestock-intake ratio (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(12)
D-34	Pb-210+D	milk/livestock-intake ratio (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(13)
D-34					
D-34	Ra-226+D	plant/soil concentration ratio dimensionless	4.000E-02	4.000E-02	RTF(21)
D-34	Ra-226+D	beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(22)
D-34	Ra-226+D	milk/livestock-intake ratio (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(23)
D-34					

Dose Conversion Factor (and Related) Parameter Summary (continued)
 Dose Library: FGR 12 & FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Ra-228+D plant/soil concentration ratio dimensionless	4.000E-02	4.000E-02	RTF(31)
D-34	Ra-228+D beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(32)
D-34	Ra-228+D milk/livestock-intake ratio (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(33)
D-34	Th-228+D plant/soil concentration ratio dimensionless	1.000E-03	1.000E-03	RTF(41)
D-34	Th-228+D beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(42)
D-34	Th-228+D milk/livestock-intake ratio (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(43)
D-34	Th-230 plant/soil concentration ratio dimensionless	1.000E-03	1.000E-03	RTF(51)
D-34	Th-230 beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(52)
D-34	Th-230 milk/livestock-intake ratio (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(53)
D-34	Th-232 plant/soil concentration ratio dimensionless	1.000E-03	1.000E-03	RTF(61)
D-34	Th-232 beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(62)
D-34	Th-232 milk/livestock-intake ratio (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(63)
D-5	Bioaccumulation factors fresh water L/kg:			
D-5	Pb-210+D fish	3.000E+02	3.000E+02	BIOFAC(11)
D-5	Pb-210+D crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(12)
D-5	Ra-226+D fish	5.000E+01	5.000E+01	BIOFAC(21)
D-5	Ra-226+D crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(22)
D-5	Ra-228+D fish	5.000E+01	5.000E+01	BIOFAC(31)
D-5	Ra-228+D crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(32)
D-5	Th-228+D fish	1.000E+02	1.000E+02	BIOFAC(41)
D-5	Th-228+D crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(42)
D-5	Th-230 fish	1.000E+02	1.000E+02	BIOFAC(51)
D-5	Th-230 crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(52)
D-5	Th-232 fish	1.000E+02	1.000E+02	BIOFAC(61)
D-5	Th-232 crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(62)

#For DCF1(xxx) only factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
 *Base Case means Default.Lib w/o Associate Nuclide contributions.

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Site-Specific Parameter Summary					
0		User		Used by RESRAD	Parameter
Menu	Parameter	Input	Default	(If different from user input)	Name
R011	Area of contaminated zone (m**2)	2.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	3.048E+00	2.000E+00	---	THICK0
R011	Fraction of contamination that is submerged	0.000E+00	0.000E+00	---	SUBMFRACT
R011	Length parallel to aquifer flow (m)	1.400E+01	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-230	1.000E+00	0.000E+00	---	S1(5)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(6)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-230	not used	0.000E+00	---	W1(5)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(6)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.431E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.600E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	1.040E+01	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	2.000E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	4.060E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF

R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.431E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.600E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	1.040E+01	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT

Site-Specific Parameter Summary (continued)

0		User		Used by RESRAD	
Menu	Parameter	Input	Default	(If different from user input)	Parameter Name
R014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1 thickness (m)	4.000E+00	4.000E+00	---	H (1)
R015	Unsat. zone 1 soil density (g/cm**3)	1.431E+00	1.500E+00	---	DENSUZ (1)
R015	Unsat. zone 1 total porosity	4.600E-01	4.000E-01	---	TPUZ (1)
R015	Unsat. zone 1 effective porosity	2.000E-01	2.000E-01	---	EPUZ (1)
R015	Unsat. zone 1 field capacity	2.000E-01	2.000E-01	---	FCUZ (1)
R015	Unsat. zone 1 soil-specific b parameter	1.040E+01	5.300E+00	---	BUZ (1)
R015	Unsat. zone 1 hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ (1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	1.121E+04	7.000E+01	---	DCNUCC (2)
R016	Unsaturated zone 1 (cm**3/g)	1.121E+04	7.000E+01	---	DCNUCU (21)
R016	Saturated zone (cm**3/g)	1.121E+04	7.000E+01	---	DCNUCS (2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.368E-06	ALEACH (2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (2)
R016	Distribution coefficients for Th-230				
R016	Contaminated zone (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCU (51)
R016	Saturated zone (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.903E-07	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCC (6)
R016	Unsaturated zone 1 (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCU (61)
R016	Saturated zone (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCS (6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.903E-07	ALEACH (6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (6)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	1.549E+04	1.000E+02	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	1.549E+04	1.000E+02	---	DCNUCU (11)
R016	Saturated zone (cm**3/g)	1.549E+04	1.000E+02	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.884E-06	ALEACH (1)

R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC (3)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU (31)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS (3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.561E-04	ALEACH (3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (3)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU (41)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.003E-06	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R017	Inhalation rate (m**3/yr)	6.650E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	4.600E-06	1.000E-04	---	MLINH
R017	Exposure duration	2.600E+01	3.000E+01	---	ED
R017	Shielding factor inhalation	2.448E-01	4.000E-01	---	SHF3
R017	Shielding factor external gamma	5.512E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.571E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.181E-01	2.500E-01	---	FOTD
R017	Shape factor flag external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m) ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m) ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m) ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m) ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m) ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m) ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m) ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m) ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m) ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m) ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m) ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m) ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)

R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits vegetables and grain consumption (kg/yr)	1.660E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	1.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	1.000E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.510E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	not used	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	not used	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.825E+01	3.650E+01	---	SOIL

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	not used	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	not used	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	1.000E-01	-1	---	FPLANT
R018	Contamination fraction of meat	1.000E-02	-1	---	FMEAT
R018	Contamination fraction of milk	1.000E-02	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	6.800E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	5.500E+01	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	1.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	not used	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	8.000E-02	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	2.000E+01	2.000E+01	---	WLAM

C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Site-Specific Parameter Summary (continued)

0		User		Used by RESRAD	Parameter
Menu	Parameter	Input	Default	(If different from user input)	Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits non-leafy vegetables and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	32	---	---	NPTS
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	257	---	---	KYMAX

Summary of Pathway Selections

Pathway User Selection

```
-----  
1 -- external gamma           active  
2 -- inhalation (w/o radon)   active  
3 -- plant ingestion          active  
4 -- meat ingestion           active  
5 -- milk ingestion           active  
6 -- aquatic foods            suppressed  
7 -- drinking water           suppressed  
8 -- soil ingestion           active  
9 -- radon                    suppressed  
Find peak pathway doses      suppressed  
-----I-----
```

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Contaminated Zone Dimensions		Initial Soil Concentrations pCi/g	
-----		-----	
Area:	200.00 square meters	Ra-226	1.000E+00
Thickness:	3.05 meters	Th-230	1.000E+00
Cover Depth:	0.00 meters	Th-232	1.000E+00

0

Total Dose TDOSE(t) mrem/yr
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr
 Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	5.770E+00	6.315E+00	7.491E+00	1.077E+01	1.360E+01	1.429E+01	1.434E+01	1.430E+01
M(t):	2.308E-01	2.526E-01	2.996E-01	4.307E-01	5.440E-01	5.715E-01	5.734E-01	5.720E-01

0Maximum TDOSE(t): 1.434E+01 mrem/yr at t = 217.3 ñ 0.4 years

0

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.173E+02 years

Water Independent Pathways (Inhalation excludes radon)

0

0

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio- Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Nuclide	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Ra-226	4.100E+00	0.2859	2.800E-05	0.0000	0.000E+00	0.0000	2.040E+00	0.1423	6.678E-03	0.0005	5.366E-03	0.0004	2.235E-02	0.0016
Th-230	4.060E-01	0.0283	3.147E-04	0.0000	0.000E+00	0.0000	1.934E-01	0.0135	6.180E-04	0.0000	5.000E-04	0.0000	3.470E-03	0.0002
Th-232	6.457E+00	0.4504	1.908E-03	0.0001	0.000E+00	0.0000	1.079E+00	0.0753	3.114E-03	0.0002	3.832E-03	0.0003	1.405E-02	0.0010
Total	1.096E+01	0.7646	2.251E-03	0.0002	0.000E+00	0.0000	3.312E+00	0.2310	1.041E-02	0.0007	9.698E-03	0.0007	3.987E-02	0.0028

0

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.173E+02 years

Water Dependent Pathways

0

0

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio- Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Nuclide	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.174E+00	0.4306
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.043E-01	0.0421
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.559E+00	0.5272
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.434E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.507E+00	0.7812	8.591E-06	0.0000	0.000E+00	0.0000	9.585E-01	0.1661	2.878E-03	0.0005	3.614E-03	0.0006	4.053E-03	0.0007
Th-230	1.484E-03	0.0003	3.130E-04	0.0001	0.000E+00	0.0000	9.901E-03	0.0017	2.073E-05	0.0000	2.168E-06	0.0000	1.551E-03	0.0003
Th-232	1.661E-01	0.0288	1.577E-03	0.0003	0.000E+00	0.0000	1.043E-01	0.0181	2.300E-04	0.0000	1.932E-04	0.0000	7.976E-03	0.0014
Total	4.675E+00	0.8102	1.898E-03	0.0003	0.000E+00	0.0000	1.073E+00	0.1859	3.129E-03	0.0005	3.810E-03	0.0007	1.358E-02	0.0024

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.476E+00	0.9491
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.327E-02	0.0023
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.804E-01	0.0486
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.770E+00	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.505E+00	0.7135	9.258E-06	0.0000	0.000E+00	0.0000	9.975E-01	0.1580	3.019E-03	0.0005	3.684E-03	0.0006	4.672E-03	0.0007
Th-230	3.436E-03	0.0005	3.130E-04	0.0000	0.000E+00	0.0000	1.032E-02	0.0016	2.198E-05	0.0000	3.727E-06	0.0000	1.553E-03	0.0002
Th-232	5.594E-01	0.0886	1.588E-03	0.0003	0.000E+00	0.0000	2.140E-01	0.0339	5.501E-04	0.0001	6.030E-04	0.0001	8.488E-03	0.0013
Total	5.068E+00	0.8026	1.911E-03	0.0003	0.000E+00	0.0000	1.222E+00	0.1935	3.591E-03	0.0006	4.291E-03	0.0007	1.471E-02	0.0023

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.514E+00	0.8733
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.565E-02	0.0025
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.847E-01	0.1243
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.315E+00	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.502E+00	0.6010	1.053E-05	0.0000	0.000E+00	0.0000	1.071E+00	0.1429	3.273E-03	0.0004	3.812E-03	0.0005	5.852E-03	0.0008
Th-230	7.338E-03	0.0010	3.130E-04	0.0000	0.000E+00	0.0000	1.122E-02	0.0015	2.471E-05	0.0000	6.975E-06	0.0000	1.558E-03	0.0002
Th-232	1.472E+00	0.1965	1.628E-03	0.0002	0.000E+00	0.0000	3.993E-01	0.0533	1.100E-03	0.0001	1.299E-03	0.0002	9.486E-03	0.0013
Total	5.981E+00	0.7985	1.952E-03	0.0003	0.000E+00	0.0000	1.481E+00	0.1977	4.398E-03	0.0006	5.118E-03	0.0007	1.690E-02	0.0023

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.585E+00	0.7456
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.046E-02	0.0027
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.885E+00	0.2516
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.491E+00	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.488E+00	0.4168	1.440E-05	0.0000	0.000E+00	0.0000	1.293E+00	0.1201	4.046E-03	0.0004	4.202E-03	0.0004	9.439E-03	0.0009
Th-230	2.097E-02	0.0019	3.130E-04	0.0000	0.000E+00	0.0000	1.481E-02	0.0014	3.585E-05	0.0000	1.915E-05	0.0000	1.581E-03	0.0001
Th-232	4.125E+00	0.3831	1.772E-03	0.0002	0.000E+00	0.0000	7.879E-01	0.0732	2.252E-03	0.0002	2.749E-03	0.0003	1.198E-02	0.0011
Total	8.634E+00	0.8018	2.100E-03	0.0002	0.000E+00	0.0000	2.096E+00	0.1946	6.334E-03	0.0006	6.971E-03	0.0006	2.300E-02	0.0021

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.799E+00	0.5385
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.773E-02	0.0035
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.932E+00	0.4580
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.077E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.450E+00	0.3272	2.167E-05	0.0000	0.000E+00	0.0000	1.710E+00	0.1257	5.498E-03	0.0004	4.928E-03	0.0004	1.620E-02	0.0012
Th-230	5.968E-02	0.0044	3.131E-04	0.0000	0.000E+00	0.0000	2.801E-02	0.0021	7.786E-05	0.0000	5.904E-05	0.0000	1.695E-03	0.0001
Th-232	6.248E+00	0.4594	1.896E-03	0.0001	0.000E+00	0.0000	1.054E+00	0.0775	3.039E-03	0.0002	3.737E-03	0.0003	1.386E-02	0.0010
Total	1.076E+01	0.7910	2.231E-03	0.0002	0.000E+00	0.0000	2.791E+00	0.2052	8.614E-03	0.0006	8.723E-03	0.0006	3.176E-02	0.0023

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.186E+00	0.4549
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.984E-02	0.0066
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.325E+00	0.5385
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.360E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.316E+00	0.3021	2.851E-05	0.0000	0.000E+00	0.0000	2.092E+00	0.1464	6.836E-03	0.0005	5.550E-03	0.0004	2.264E-02	0.0016
Th-230	1.925E-01	0.0135	3.137E-04	0.0000	0.000E+00	0.0000	8.790E-02	0.0062	2.727E-04	0.0000	2.219E-04	0.0000	2.319E-03	0.0002
Th-232	6.458E+00	0.4520	1.908E-03	0.0001	0.000E+00	0.0000	1.079E+00	0.0755	3.115E-03	0.0002	3.832E-03	0.0003	1.405E-02	0.0010
Total	1.097E+01	0.7676	2.250E-03	0.0002	0.000E+00	0.0000	3.259E+00	0.2281	1.022E-02	0.0007	9.604E-03	0.0007	3.900E-02	0.0027

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.443E+00	0.4510
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.835E-01	0.0198
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.560E+00	0.5292
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.429E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	3.954E+00	0.2758	2.703E-05	0.0000	0.000E+00	0.0000	1.968E+00	0.1373	6.445E-03	0.0004	5.177E-03	0.0004	2.158E-02	0.0015
Th-230	5.498E-01	0.0384	3.155E-04	0.0000	0.000E+00	0.0000	2.650E-01	0.0185	8.524E-04	0.0001	6.884E-04	0.0000	4.254E-03	0.0003
Th-232	6.457E+00	0.4504	1.908E-03	0.0001	0.000E+00	0.0000	1.079E+00	0.0753	3.114E-03	0.0002	3.831E-03	0.0003	1.404E-02	0.0010
Total	1.096E+01	0.7646	2.250E-03	0.0002	0.000E+00	0.0000	3.312E+00	0.2311	1.041E-02	0.0007	9.697E-03	0.0007	3.987E-02	0.0028

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.955E+00	0.4154
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.209E-01	0.0573
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.559E+00	0.5273
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.434E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	2.909E+00	0.2034	1.988E-05	0.0000	0.000E+00	0.0000	1.448E+00	0.1013	4.741E-03	0.0003	3.809E-03	0.0003	1.587E-02	0.0011
Th-230	1.575E+00	0.1101	3.203E-04	0.0000	0.000E+00	0.0000	7.753E-01	0.0542	2.523E-03	0.0002	2.031E-03	0.0001	9.838E-03	0.0007
Th-232	6.453E+00	0.4512	1.907E-03	0.0001	0.000E+00	0.0000	1.078E+00	0.0754	3.112E-03	0.0002	3.829E-03	0.0003	1.404E-02	0.0010
Total	1.094E+01	0.7648	2.247E-03	0.0002	0.000E+00	0.0000	3.302E+00	0.2309	1.038E-02	0.0007	9.669E-03	0.0007	3.975E-02	0.0028

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.381E+00	0.3064
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.365E+00	0.1654
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.554E+00	0.5283
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.430E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Dose/Source Ratios Summed Over All Pathways											
Parent and Progeny Principal Radionuclide Contributions Indicated											
0	Parent (i)	Product (j)	Thread Fraction	DSR(jt) At Time in Years (mrem/yr)/(pCi/g)							
				0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
	Ra-226+D	Ra-226+D	1.000E+00	5.452E+00	5.450E+00	5.445E+00	5.428E+00	5.381E+00	5.218E+00	4.780E+00	3.516E+00
	Ra-226+D	Pb-210+D	1.000E+00	2.402E-02	6.436E-02	1.401E-01	3.704E-01	8.053E-01	1.224E+00	1.175E+00	8.647E-01
	Ra-226+D	-DSR(j)		5.476E+00	5.514E+00	5.585E+00	5.799E+00	6.186E+00	6.443E+00	5.955E+00	4.381E+00
0	Th-230	Th-230	1.000E+00	1.210E-02	1.210E-02	1.210E-02	1.210E-02	1.210E-02	1.209E-02	1.206E-02	1.198E-02
	Th-230	Ra-226+D	1.000E+00	1.169E-03	3.528E-03	8.248E-03	2.473E-02	7.155E-02	2.321E-01	6.641E-01	1.903E+00
	Th-230	Pb-210+D	1.000E+00	3.794E-06	2.313E-05	1.120E-04	8.990E-04	6.191E-03	3.929E-02	1.447E-01	4.496E-01
	Th-230	-DSR(j)		1.327E-02	1.565E-02	2.046E-02	3.773E-02	8.984E-02	2.835E-01	8.209E-01	2.365E+00
0	Th-232	Th-232	1.000E+00	5.799E-02	5.799E-02	5.799E-02	5.799E-02	5.798E-02	5.798E-02	5.797E-02	5.793E-02
	Th-232	Ra-226+D	1.000E+00	1.954E-01	5.624E-01	1.177E+00	2.456E+00	3.327E+00	3.411E+00	3.410E+00	3.408E+00
	Th-232	Th-228+D	1.000E+00	2.698E-02	1.643E-01	6.505E-01	2.418E+00	3.940E+00	4.091E+00	4.091E+00	4.088E+00
	Th-232	-DSR(j)		2.804E-01	7.847E-01	1.885E+00	4.932E+00	7.325E+00	7.560E+00	7.559E+00	7.554E+00

The DSR includes contributions from associated (half-life « 180 days) daughters.

Single Radionuclide Soil Guidelines G(it) in pCi/g								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
0	Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02
	Ra-226	4.565E+00	4.534E+00	4.476E+00	4.311E+00	4.041E+00	3.880E+00	4.198E+00
	Th-230	1.884E+03	1.597E+03	1.222E+03	6.626E+02	2.783E+02	8.817E+01	3.045E+01
	Th-232	8.917E+01	3.186E+01	1.326E+01	5.069E+00	3.413E+00	3.307E+00	3.309E+00

Summed Dose/Source Ratios DSR(it) in (mrem/yr)/(pCi/g)						
and Single Radionuclide Soil Guidelines G(it) in pCi/g						
at tmin = time of minimum single radionuclide soil guideline						
and at tmax = time of maximum total dose = 217.3 ± 0.4 years						
0	Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(itmin) (pCi/g)	DSR(itmax) (pCi/g)	G(itmax) (pCi/g)
	Ra-226	1.000E+00	85.5 ± 0.2	6.451E+00	3.876E+00	6.174E+00
	Th-230	1.000E+00	1.000E+03	2.365E+00	1.057E+01	6.043E-01
	Th-232	1.000E+00	99.6 ± 0.2	7.560E+00	3.307E+00	7.559E+00

Individual Nuclide Dose Summed Over All Pathways											
Parent Nuclide and Branch Fraction Indicated											
ONuclide	Parent	THF(i)	DOSE(jt) mrem/yr								
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	Ra-226	1.000E+00		5.452E+00	5.450E+00	5.445E+00	5.428E+00	5.381E+00	5.218E+00	4.780E+00	3.516E+00
Ra-226	Th-230	1.000E+00		1.169E-03	3.528E-03	8.248E-03	2.473E-02	7.155E-02	2.321E-01	6.641E-01	1.903E+00
Ra-226	-DOSE(j)			5.453E+00	5.453E+00	5.453E+00	5.453E+00	5.453E+00	5.451E+00	5.444E+00	5.420E+00
OPb-210	Ra-226	1.000E+00		2.402E-02	6.436E-02	1.401E-01	3.704E-01	8.053E-01	1.224E+00	1.175E+00	8.647E-01
Pb-210	Th-230	1.000E+00		3.794E-06	2.313E-05	1.120E-04	8.990E-04	6.191E-03	3.929E-02	1.447E-01	4.496E-01
Pb-210	-DOSE(j)			2.403E-02	6.438E-02	1.402E-01	3.713E-01	8.115E-01	1.264E+00	1.320E+00	1.314E+00
0Th-230	Th-230	1.000E+00		1.210E-02	1.210E-02	1.210E-02	1.210E-02	1.210E-02	1.209E-02	1.206E-02	1.198E-02
0Th-232	Th-232	1.000E+00		5.799E-02	5.799E-02	5.799E-02	5.799E-02	5.798E-02	5.798E-02	5.797E-02	5.793E-02
ORa-228	Th-232	1.000E+00		1.954E-01	5.624E-01	1.177E+00	2.456E+00	3.327E+00	3.411E+00	3.410E+00	3.408E+00
0Th-228	Th-232	1.000E+00		2.698E-02	1.643E-01	6.505E-01	2.418E+00	3.940E+00	4.091E+00	4.091E+00	4.088E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration											
Parent Nuclide and Branch Fraction Indicated											
ONuclide	Parent	THF(i)	S(jt) pCi/g								
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Ra-226	Ra-226	1.000E+00		1.000E+00	9.996E-01	9.987E-01	9.956E-01	9.869E-01	9.571E-01	8.767E-01	6.449E-01
Ra-226	Th-230	1.000E+00		0.000E+00	4.331E-04	1.299E-03	4.322E-03	1.291E-02	4.236E-02	1.216E-01	3.489E-01
Ra-226	-S(j):			1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.995E-01	9.983E-01	9.938E-01
OPb-210	Ra-226	1.000E+00		0.000E+00	3.060E-02	8.897E-02	2.665E-01	6.018E-01	9.254E-01	8.891E-01	6.541E-01
Pb-210	Th-230	1.000E+00		0.000E+00	6.663E-06	5.873E-05	6.077E-04	4.523E-03	2.947E-02	1.092E-01	3.398E-01
Pb-210	-S(j):			0.000E+00	3.060E-02	8.903E-02	2.671E-01	6.063E-01	9.548E-01	9.983E-01	9.939E-01
0Th-230	Th-230	1.000E+00		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.990E-01	9.970E-01	9.902E-01
0Th-232	Th-232	1.000E+00		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.991E-01
ORa-228	Th-232	1.000E+00		0.000E+00	1.135E-01	3.031E-01	6.980E-01	9.669E-01	9.929E-01	9.927E-01	9.921E-01
0Th-228	Th-232	1.000E+00		0.000E+00	1.864E-02	1.242E-01	5.628E-01	9.538E-01	9.929E-01	9.927E-01	9.921E-01

THF(i) is the thread fraction of the parent nuclide.

ORESCALC.EXE execution time = 0.29 seconds

**RESRAD OUTPUT SUMMARY REPORT FOR AOC = 100
m²**

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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: FGR 12 & FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation (mrem/yr)/(pCi/g)			
A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(2)
A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(3)
A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(4)
A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(5)
A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(6)
A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(7)
A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(8)
A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(9)
A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(10)
A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(11)
A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(12)
A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(13)
A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(14)
A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(15)
A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(16)
A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(17)
A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(18)
A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(19)
A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(20)
A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(21)
A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(22)
A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(23)
B-1	Dose conversion factors for inhalation mrem/pCi:			
B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(3)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(4)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(5)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(6)
D-1	Dose conversion factors for ingestion mrem/pCi:			
D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(3)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(4)

D-1	Th-230		5.480E-04	5.480E-04	DCF3(5)
D-1	Th-232		2.730E-03	2.730E-03	DCF3(6)
D-34	Food transfer factors:				
D-34	Pb-210+D	plant/soil concentration ratio dimensionless	1.000E-02	1.000E-02	RTF(11)
D-34	Pb-210+D	beef/livestock-intake ratio (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(12)
D-34	Pb-210+D	milk/livestock-intake ratio (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(13)
D-34					
D-34	Ra-226+D	plant/soil concentration ratio dimensionless	4.000E-02	4.000E-02	RTF(21)
D-34	Ra-226+D	beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(22)
D-34	Ra-226+D	milk/livestock-intake ratio (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(23)
D-34					

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Dose Conversion Factor (and Related) Parameter Summary (continued)
 Dose Library: FGR 12 & FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Ra-228+D plant/soil concentration ratio dimensionless	4.000E-02	4.000E-02	RTF(31)
D-34	Ra-228+D beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(32)
D-34	Ra-228+D milk/livestock-intake ratio (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(33)
D-34	Th-228+D plant/soil concentration ratio dimensionless	1.000E-03	1.000E-03	RTF(41)
D-34	Th-228+D beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(42)
D-34	Th-228+D milk/livestock-intake ratio (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(43)
D-34	Th-230 plant/soil concentration ratio dimensionless	1.000E-03	1.000E-03	RTF(51)
D-34	Th-230 beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(52)
D-34	Th-230 milk/livestock-intake ratio (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(53)
D-34	Th-232 plant/soil concentration ratio dimensionless	1.000E-03	1.000E-03	RTF(61)
D-34	Th-232 beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(62)
D-34	Th-232 milk/livestock-intake ratio (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(63)
D-5	Bioaccumulation factors fresh water L/kg:			
D-5	Pb-210+D fish	3.000E+02	3.000E+02	BIOFAC(11)
D-5	Pb-210+D crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(12)
D-5	Ra-226+D fish	5.000E+01	5.000E+01	BIOFAC(21)
D-5	Ra-226+D crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(22)
D-5	Ra-228+D fish	5.000E+01	5.000E+01	BIOFAC(31)
D-5	Ra-228+D crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(32)
D-5	Th-228+D fish	1.000E+02	1.000E+02	BIOFAC(41)
D-5	Th-228+D crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(42)
D-5	Th-230 fish	1.000E+02	1.000E+02	BIOFAC(51)
D-5	Th-230 crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(52)
D-5	Th-232 fish	1.000E+02	1.000E+02	BIOFAC(61)
D-5	Th-232 crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(62)

#For DCF1(xxx) only factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
 *Base Case means Default.Lib w/o Associate Nuclide contributions.

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Site-Specific Parameter Summary					
0	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	1.000E+02	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	3.048E+00	2.000E+00	---	THICK0
R011	Fraction of contamination that is submerged	0.000E+00	0.000E+00	---	SUBMFRACT
R011	Length parallel to aquifer flow (m)	1.000E+01	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-230	1.000E+00	0.000E+00	---	S1(5)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(6)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-230	not used	0.000E+00	---	W1(5)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(6)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.431E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.600E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	1.040E+01	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	2.000E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	4.060E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF

R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.431E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.600E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	1.040E+01	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1 thickness (m)	4.000E+00	4.000E+00	---	H (1)
R015	Unsat. zone 1 soil density (g/cm**3)	1.431E+00	1.500E+00	---	DENSUZ (1)
R015	Unsat. zone 1 total porosity	4.600E-01	4.000E-01	---	TPUZ (1)
R015	Unsat. zone 1 effective porosity	2.000E-01	2.000E-01	---	EPUZ (1)
R015	Unsat. zone 1 field capacity	2.000E-01	2.000E-01	---	FCUZ (1)
R015	Unsat. zone 1 soil-specific b parameter	1.040E+01	5.300E+00	---	BUZ (1)
R015	Unsat. zone 1 hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ (1)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	1.121E+04	7.000E+01	---	DCNUCC (2)
R016	Unsat. zone 1 (cm**3/g)	1.121E+04	7.000E+01	---	DCNUCU (21)
R016	Saturated zone (cm**3/g)	1.121E+04	7.000E+01	---	DCNUCS (2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.368E-06	ALEACH (2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (2)
R016	Distribution coefficients for Th-230				
R016	Contaminated zone (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCC (5)
R016	Unsat. zone 1 (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCU (51)
R016	Saturated zone (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.903E-07	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCC (6)
R016	Unsat. zone 1 (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCU (61)
R016	Saturated zone (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCS (6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.903E-07	ALEACH (6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (6)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	1.549E+04	1.000E+02	---	DCNUCC (1)
R016	Unsat. zone 1 (cm**3/g)	1.549E+04	1.000E+02	---	DCNUCU (11)
R016	Saturated zone (cm**3/g)	1.549E+04	1.000E+02	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.884E-06	ALEACH (1)

R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC (3)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU (31)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS (3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.561E-04	ALEACH (3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (3)

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU (41)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.003E-06	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R017	Inhalation rate (m**3/yr)	6.650E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	4.600E-06	1.000E-04	---	MLINH
R017	Exposure duration	2.600E+01	3.000E+01	---	ED
R017	Shielding factor inhalation	2.448E-01	4.000E-01	---	SHF3
R017	Shielding factor external gamma	5.512E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.571E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	1.181E-01	2.500E-01	---	FOTD
R017	Shape factor flag external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m) ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m) ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m) ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m) ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m) ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m) ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m) ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m) ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m) ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m) ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m) ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m) ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)

R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits vegetables and grain consumption (kg/yr)	1.660E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	1.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	1.000E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.510E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	not used	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	not used	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.825E+01	3.650E+01	---	SOIL

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R018	Drinking water intake (L/yr)	not used	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	not used	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	5.000E-02	-1	---	FPLANT
R018	Contamination fraction of meat	5.000E-03	-1	---	FMEAT
R018	Contamination fraction of milk	5.000E-03	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	6.800E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	5.500E+01	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	1.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	not used	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	8.000E-02	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	2.000E+01	2.000E+01	---	WLAM

C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

Site-Specific Parameter Summary (continued)

0		User		Used by RESRAD	Parameter
Menu	Parameter	Input	Default	(If different from user input)	Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits non-leafy vegetables and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	32	---	---	NPTS
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	257	---	---	KYMAX

Summary of Pathway Selections

Pathway User Selection

```
-----  
1 -- external gamma           active  
2 -- inhalation (w/o radon)    active  
3 -- plant ingestion           active  
4 -- meat ingestion            active  
5 -- milk ingestion            active  
6 -- aquatic foods             suppressed  
7 -- drinking water            suppressed  
8 -- soil ingestion            active  
9 -- radon                     suppressed  
Find peak pathway doses       suppressed  
-----I-----
```

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Contaminated Zone Dimensions		Initial Soil Concentrations pCi/g	
-----		-----	
Area:	100.00 square meters	Ra-226	1.000E+00
Thickness:	3.05 meters	Th-230	1.000E+00
Cover Depth:	0.00 meters	Th-232	1.000E+00

0

Total Dose TDOSE(t) mrem/yr
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr
 Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	4.943E+00	5.390E+00	6.381E+00	9.193E+00	1.155E+01	1.198E+01	1.200E+01	1.198E+01
M(t):	1.977E-01	2.156E-01	2.552E-01	3.677E-01	4.619E-01	4.793E-01	4.802E-01	4.790E-01

0Maximum TDOSE(t): 1.201E+01 mrem/yr at t = 203.1 ñ 0.4 years

0

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.031E+02 years

Water Independent Pathways (Inhalation excludes radon)

0

0

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio- Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Nuclide	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Ra-226	3.878E+00	0.3230	2.616E-05	0.0000	0.000E+00	0.0000	1.026E+00	0.0854	3.358E-03	0.0003	2.699E-03	0.0002	1.124E-02	0.0009
Th-230	3.579E-01	0.0298	2.922E-04	0.0000	0.000E+00	0.0000	9.042E-02	0.0075	2.884E-04	0.0000	2.335E-04	0.0000	1.666E-03	0.0001
Th-232	6.083E+00	0.5066	1.772E-03	0.0001	0.000E+00	0.0000	5.396E-01	0.0449	1.557E-03	0.0001	1.916E-03	0.0002	7.023E-03	0.0006
Total	1.032E+01	0.8594	2.091E-03	0.0002	0.000E+00	0.0000	1.656E+00	0.1379	5.204E-03	0.0004	4.848E-03	0.0004	1.993E-02	0.0017

0

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.031E+02 years

Water Dependent Pathways

0

0

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio- Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Nuclide	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.921E+00	0.4099
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.508E-01	0.0375
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.635E+00	0.5526
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.201E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.237E+00	0.8571	7.980E-06	0.0000	0.000E+00	0.0000	4.793E-01	0.0970	1.439E-03	0.0003	1.807E-03	0.0004	2.027E-03	0.0004
Th-230	1.400E-03	0.0003	2.907E-04	0.0001	0.000E+00	0.0000	4.950E-03	0.0010	1.036E-05	0.0000	1.084E-06	0.0000	7.757E-04	0.0002
Th-232	1.566E-01	0.0317	1.465E-03	0.0003	0.000E+00	0.0000	5.213E-02	0.0105	1.150E-04	0.0000	9.659E-05	0.0000	3.988E-03	0.0008
Total	4.395E+00	0.8891	1.763E-03	0.0004	0.000E+00	0.0000	5.363E-01	0.1085	1.564E-03	0.0003	1.905E-03	0.0004	6.790E-03	0.0014

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.721E+00	0.9551
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.428E-03	0.0015
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.144E-01	0.0434
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.943E+00	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.235E+00	0.7858	8.599E-06	0.0000	0.000E+00	0.0000	4.988E-01	0.0925	1.509E-03	0.0003	1.842E-03	0.0003	2.336E-03	0.0004
Th-230	3.235E-03	0.0006	2.907E-04	0.0001	0.000E+00	0.0000	5.161E-03	0.0010	1.099E-05	0.0000	1.863E-06	0.0000	7.766E-04	0.0001
Th-232	5.272E-01	0.0978	1.475E-03	0.0003	0.000E+00	0.0000	1.070E-01	0.0199	2.751E-04	0.0001	3.015E-04	0.0001	4.244E-03	0.0008
Total	4.766E+00	0.8842	1.775E-03	0.0003	0.000E+00	0.0000	6.110E-01	0.1134	1.795E-03	0.0003	2.145E-03	0.0004	7.356E-03	0.0014

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.740E+00	0.8794
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.476E-03	0.0018
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.405E-01	0.1188
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.390E+00	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.232E+00	0.6631	9.781E-06	0.0000	0.000E+00	0.0000	5.354E-01	0.0839	1.637E-03	0.0003	1.906E-03	0.0003	2.926E-03	0.0005
Th-230	6.903E-03	0.0011	2.907E-04	0.0000	0.000E+00	0.0000	5.609E-03	0.0009	1.235E-05	0.0000	3.487E-06	0.0000	7.789E-04	0.0001
Th-232	1.387E+00	0.2174	1.512E-03	0.0002	0.000E+00	0.0000	1.997E-01	0.0313	5.502E-04	0.0001	6.495E-04	0.0001	4.743E-03	0.0007
Total	5.626E+00	0.8816	1.813E-03	0.0003	0.000E+00	0.0000	7.406E-01	0.1161	2.199E-03	0.0003	2.559E-03	0.0004	8.448E-03	0.0013

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.773E+00	0.7480
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.360E-02	0.0021
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.594E+00	0.2498
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.381E+00	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.219E+00	0.4590	1.337E-05	0.0000	0.000E+00	0.0000	6.465E-01	0.0703	2.023E-03	0.0002	2.101E-03	0.0002	4.719E-03	0.0005
Th-230	1.971E-02	0.0021	2.907E-04	0.0000	0.000E+00	0.0000	7.407E-03	0.0008	1.792E-05	0.0000	9.574E-06	0.0000	7.905E-04	0.0001
Th-232	3.886E+00	0.4227	1.646E-03	0.0002	0.000E+00	0.0000	3.940E-01	0.0429	1.126E-03	0.0001	1.375E-03	0.0001	5.992E-03	0.0007
Total	8.125E+00	0.8838	1.950E-03	0.0002	0.000E+00	0.0000	1.048E+00	0.1140	3.167E-03	0.0003	3.485E-03	0.0004	1.150E-02	0.0013

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.874E+00	0.5302
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.823E-02	0.0031
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.290E+00	0.4667
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.193E+00	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.183E+00	0.3622	2.013E-05	0.0000	0.000E+00	0.0000	8.549E-01	0.0740	2.749E-03	0.0002	2.464E-03	0.0002	8.100E-03	0.0007
Th-230	5.611E-02	0.0049	2.908E-04	0.0000	0.000E+00	0.0000	1.401E-02	0.0012	3.893E-05	0.0000	2.952E-05	0.0000	8.475E-04	0.0001
Th-232	5.886E+00	0.5097	1.761E-03	0.0002	0.000E+00	0.0000	5.268E-01	0.0456	1.519E-03	0.0001	1.868E-03	0.0002	6.932E-03	0.0006
Total	1.013E+01	0.8768	2.072E-03	0.0002	0.000E+00	0.0000	1.396E+00	0.1209	4.307E-03	0.0004	4.362E-03	0.0004	1.588E-02	0.0014

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.051E+00	0.4374
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.132E-02	0.0062
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.425E+00	0.5564
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.155E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.057E+00	0.3386	2.648E-05	0.0000	0.000E+00	0.0000	1.046E+00	0.0873	3.418E-03	0.0003	2.775E-03	0.0002	1.132E-02	0.0009
Th-230	1.810E-01	0.0151	2.913E-04	0.0000	0.000E+00	0.0000	4.395E-02	0.0037	1.363E-04	0.0000	1.109E-04	0.0000	1.160E-03	0.0001
Th-232	6.083E+00	0.5077	1.772E-03	0.0001	0.000E+00	0.0000	5.396E-01	0.0450	1.557E-03	0.0001	1.916E-03	0.0002	7.023E-03	0.0006
Total	1.032E+01	0.8614	2.090E-03	0.0002	0.000E+00	0.0000	1.629E+00	0.1360	5.112E-03	0.0004	4.802E-03	0.0004	1.950E-02	0.0016

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.121E+00	0.4273
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.266E-01	0.0189
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.635E+00	0.5537
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.198E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	3.717E+00	0.3096	2.510E-05	0.0000	0.000E+00	0.0000	9.842E-01	0.0820	3.222E-03	0.0003	2.589E-03	0.0002	1.079E-02	0.0009
Th-230	5.168E-01	0.0431	2.930E-04	0.0000	0.000E+00	0.0000	1.325E-01	0.0110	4.262E-04	0.0000	3.442E-04	0.0000	2.127E-03	0.0002
Th-232	6.082E+00	0.5067	1.772E-03	0.0001	0.000E+00	0.0000	5.395E-01	0.0449	1.557E-03	0.0001	1.916E-03	0.0002	7.022E-03	0.0006
Total	1.032E+01	0.8594	2.090E-03	0.0002	0.000E+00	0.0000	1.656E+00	0.1380	5.206E-03	0.0004	4.849E-03	0.0004	1.994E-02	0.0017

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.717E+00	0.3930
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.525E-01	0.0544
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.634E+00	0.5527
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.200E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	2.734E+00	0.2283	1.847E-05	0.0000	0.000E+00	0.0000	7.241E-01	0.0605	2.371E-03	0.0002	1.904E-03	0.0002	7.937E-03	0.0007
Th-230	1.480E+00	0.1236	2.975E-04	0.0000	0.000E+00	0.0000	3.877E-01	0.0324	1.262E-03	0.0001	1.015E-03	0.0001	4.919E-03	0.0004
Th-232	6.079E+00	0.5076	1.771E-03	0.0001	0.000E+00	0.0000	5.392E-01	0.0450	1.556E-03	0.0001	1.914E-03	0.0002	7.018E-03	0.0006
Total	1.029E+01	0.8595	2.087E-03	0.0002	0.000E+00	0.0000	1.651E+00	0.1379	5.188E-03	0.0004	4.834E-03	0.0004	1.987E-02	0.0017

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.470E+00	0.2898
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.875E+00	0.1566
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.630E+00	0.5536
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.198E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Dose/Source Ratios Summed Over All Pathways											
Parent and Progeny Principal Radionuclide Contributions Indicated											
0	Parent (i)	Product (j)	Thread Fraction	DSR(jt) At Time in Years (mrem/yr)/(pCi/g)							
				0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
	Ra-226+D	Ra-226+D	1.000E+00	4.709E+00	4.707E+00	4.703E+00	4.689E+00	4.648E+00	4.507E+00	4.129E+00	3.037E+00
	Ra-226+D	Pb-210+D	1.000E+00	1.203E-02	3.223E-02	7.016E-02	1.855E-01	4.033E-01	6.133E-01	5.887E-01	4.331E-01
	Ra-226+D	-DSR(j)		4.721E+00	4.740E+00	4.773E+00	4.874E+00	5.051E+00	5.121E+00	4.717E+00	3.470E+00
0	Th-230	Th-230	1.000E+00	6.412E-03	6.412E-03	6.412E-03	6.412E-03	6.410E-03	6.406E-03	6.393E-03	6.349E-03
	Th-230	Ra-226+D	1.000E+00	1.014E-03	3.053E-03	7.129E-03	2.137E-02	6.181E-02	2.005E-01	5.736E-01	1.644E+00
	Th-230	Pb-210+D	1.000E+00	1.900E-06	1.158E-05	5.611E-05	4.502E-04	3.101E-03	1.968E-02	7.249E-02	2.252E-01
	Th-230	-DSR(j)		7.428E-03	9.476E-03	1.360E-02	2.823E-02	7.132E-02	2.266E-01	6.525E-01	1.875E+00
0	Th-232	Th-232	1.000E+00	2.977E-02	2.977E-02	2.977E-02	2.977E-02	2.977E-02	2.976E-02	2.976E-02	2.974E-02
	Th-232	Ra-226+D	1.000E+00	1.594E-01	4.569E-01	9.543E-01	1.990E+00	2.696E+00	2.764E+00	2.763E+00	2.762E+00
	Th-232	Th-228+D	1.000E+00	2.518E-02	1.539E-01	6.102E-01	2.270E+00	3.700E+00	3.842E+00	3.841E+00	3.839E+00
	Th-232	-DSR(j)		2.144E-01	6.405E-01	1.594E+00	4.290E+00	6.425E+00	6.635E+00	6.634E+00	6.630E+00

The DSR includes contributions from associated (half-life « 180 days) daughters.

Single Radionuclide Soil Guidelines G(it) in pCi/g								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
0	Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02
	Ra-226		5.295E+00	5.275E+00	5.237E+00	5.129E+00	4.949E+00	4.882E+00
	Th-230		3.366E+03	2.638E+03	1.839E+03	8.856E+02	3.505E+02	1.103E+02
	Th-232		1.166E+02	3.903E+01	1.568E+01	5.828E+00	3.891E+00	3.768E+00

Summed Dose/Source Ratios DSR(it) in (mrem/yr)/(pCi/g)						
and Single Radionuclide Soil Guidelines G(it) in pCi/g						
at tmin = time of minimum single radionuclide soil guideline						
and at tmax = time of maximum total dose = 203.1 ± 0.4 years						
0	Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(itmin)	G(itmin) (pCi/g)	DSR(itmax)
						G(itmax) (pCi/g)
	Ra-226	1.000E+00	70.5 ± 0.1	5.143E+00	4.861E+00	4.921E+00
	Th-230	1.000E+03	1.000E+03	1.875E+00	1.333E+01	4.508E-01
	Th-232	1.000E+00	99.1 ± 0.2	6.635E+00	3.768E+00	6.635E+00

Individual Nuclide Dose Summed Over All Pathways											
Parent Nuclide and Branch Fraction Indicated											
ONuclide	Parent	THF(i)	DOSE(jt) mrem/yr								
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	Ra-226	1.000E+00		4.709E+00	4.707E+00	4.703E+00	4.689E+00	4.648E+00	4.507E+00	4.129E+00	3.037E+00
Ra-226	Th-230	1.000E+00		1.014E-03	3.053E-03	7.129E-03	2.137E-02	6.181E-02	2.005E-01	5.736E-01	1.644E+00
Ra-226	-DOSE(j)			4.710E+00	4.710E+00	4.710E+00	4.710E+00	4.710E+00	4.708E+00	4.702E+00	4.681E+00
OPb-210	Ra-226	1.000E+00		1.203E-02	3.223E-02	7.016E-02	1.855E-01	4.033E-01	6.133E-01	5.887E-01	4.331E-01
Pb-210	Th-230	1.000E+00		1.900E-06	1.158E-05	5.611E-05	4.502E-04	3.101E-03	1.968E-02	7.249E-02	2.252E-01
Pb-210	-DOSE(j)			1.203E-02	3.224E-02	7.022E-02	1.860E-01	4.064E-01	6.329E-01	6.612E-01	6.583E-01
0Th-230	Th-230	1.000E+00		6.412E-03	6.412E-03	6.412E-03	6.412E-03	6.410E-03	6.406E-03	6.393E-03	6.349E-03
0Th-232	Th-232	1.000E+00		2.977E-02	2.977E-02	2.977E-02	2.977E-02	2.977E-02	2.976E-02	2.976E-02	2.974E-02
ORa-228	Th-232	1.000E+00		1.594E-01	4.569E-01	9.543E-01	1.990E+00	2.696E+00	2.764E+00	2.763E+00	2.762E+00
0Th-228	Th-232	1.000E+00		2.518E-02	1.539E-01	6.102E-01	2.270E+00	3.700E+00	3.842E+00	3.841E+00	3.839E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration											
Parent Nuclide and Branch Fraction Indicated											
ONuclide	Parent	THF(i)	S(jt) pCi/g								
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Ra-226	Ra-226	1.000E+00		1.000E+00	9.996E-01	9.987E-01	9.956E-01	9.869E-01	9.571E-01	8.767E-01	6.449E-01
Ra-226	Th-230	1.000E+00		0.000E+00	4.331E-04	1.299E-03	4.322E-03	1.291E-02	4.236E-02	1.216E-01	3.489E-01
Ra-226	-S(j):			1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.995E-01	9.983E-01	9.938E-01
OPb-210	Ra-226	1.000E+00		0.000E+00	3.060E-02	8.897E-02	2.665E-01	6.018E-01	9.254E-01	8.891E-01	6.541E-01
Pb-210	Th-230	1.000E+00		0.000E+00	6.663E-06	5.873E-05	6.077E-04	4.523E-03	2.947E-02	1.092E-01	3.398E-01
Pb-210	-S(j):			0.000E+00	3.060E-02	8.903E-02	2.671E-01	6.063E-01	9.548E-01	9.983E-01	9.939E-01
0Th-230	Th-230	1.000E+00		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.990E-01	9.970E-01	9.902E-01
0Th-232	Th-232	1.000E+00		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.991E-01
ORa-228	Th-232	1.000E+00		0.000E+00	1.135E-01	3.031E-01	6.980E-01	9.669E-01	9.929E-01	9.927E-01	9.921E-01
0Th-228	Th-232	1.000E+00		0.000E+00	1.864E-02	1.242E-01	5.628E-01	9.538E-01	9.929E-01	9.927E-01	9.921E-01

THF(i) is the thread fraction of the parent nuclide.

ORESCALC.EXE execution time = 0.34 seconds

RESRAD OUTPUT SUMMARY REPORT FOR AOC = 75 m²

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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: FGR 12 & FGR 11

0	Menu	Parameter	Current Value#	Base Case*	Parameter Name
	A-1	DCF's for external ground radiation (mrem/yr)/(pCi/g)			
	A-1	Ac-228 (Source: FGR 12)	5.978E+00	5.978E+00	DCF1(1)
	A-1	At-218 (Source: FGR 12)	5.847E-03	5.847E-03	DCF1(2)
	A-1	Bi-210 (Source: FGR 12)	3.606E-03	3.606E-03	DCF1(3)
	A-1	Bi-212 (Source: FGR 12)	1.171E+00	1.171E+00	DCF1(4)
	A-1	Bi-214 (Source: FGR 12)	9.808E+00	9.808E+00	DCF1(5)
	A-1	Pb-210 (Source: FGR 12)	2.447E-03	2.447E-03	DCF1(6)
	A-1	Pb-212 (Source: FGR 12)	7.043E-01	7.043E-01	DCF1(7)
	A-1	Pb-214 (Source: FGR 12)	1.341E+00	1.341E+00	DCF1(8)
	A-1	Po-210 (Source: FGR 12)	5.231E-05	5.231E-05	DCF1(9)
	A-1	Po-212 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(10)
	A-1	Po-214 (Source: FGR 12)	5.138E-04	5.138E-04	DCF1(11)
	A-1	Po-216 (Source: FGR 12)	1.042E-04	1.042E-04	DCF1(12)
	A-1	Po-218 (Source: FGR 12)	5.642E-05	5.642E-05	DCF1(13)
	A-1	Ra-224 (Source: FGR 12)	5.119E-02	5.119E-02	DCF1(14)
	A-1	Ra-226 (Source: FGR 12)	3.176E-02	3.176E-02	DCF1(15)
	A-1	Ra-228 (Source: FGR 12)	0.000E+00	0.000E+00	DCF1(16)
	A-1	Rn-220 (Source: FGR 12)	2.298E-03	2.298E-03	DCF1(17)
	A-1	Rn-222 (Source: FGR 12)	2.354E-03	2.354E-03	DCF1(18)
	A-1	Th-228 (Source: FGR 12)	7.940E-03	7.940E-03	DCF1(19)
	A-1	Th-230 (Source: FGR 12)	1.209E-03	1.209E-03	DCF1(20)
	A-1	Th-232 (Source: FGR 12)	5.212E-04	5.212E-04	DCF1(21)
	A-1	Tl-208 (Source: FGR 12)	2.298E+01	2.298E+01	DCF1(22)
	A-1	Tl-210 (Source: no data)	0.000E+00	-2.000E+00	DCF1(23)
	B-1	Dose conversion factors for inhalation mrem/pCi:			
	B-1	Pb-210+D	2.320E-02	1.360E-02	DCF2(1)
	B-1	Ra-226+D	8.594E-03	8.580E-03	DCF2(2)
	B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(3)
	B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(4)
	B-1	Th-230	3.260E-01	3.260E-01	DCF2(5)
	B-1	Th-232	1.640E+00	1.640E+00	DCF2(6)
	D-1	Dose conversion factors for ingestion mrem/pCi:			
	D-1	Pb-210+D	7.276E-03	5.370E-03	DCF3(1)
	D-1	Ra-226+D	1.321E-03	1.320E-03	DCF3(2)
	D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(3)
	D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(4)

D-1	Th-230		5.480E-04	5.480E-04	DCF3(5)
D-1	Th-232		2.730E-03	2.730E-03	DCF3(6)
D-34	Food transfer factors:				
D-34	Pb-210+D	plant/soil concentration ratio dimensionless	1.000E-02	1.000E-02	RTF(11)
D-34	Pb-210+D	beef/livestock-intake ratio (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(12)
D-34	Pb-210+D	milk/livestock-intake ratio (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(13)
D-34					
D-34	Ra-226+D	plant/soil concentration ratio dimensionless	4.000E-02	4.000E-02	RTF(21)
D-34	Ra-226+D	beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(22)
D-34	Ra-226+D	milk/livestock-intake ratio (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(23)
D-34					

Dose Conversion Factor (and Related) Parameter Summary (continued)
Dose Library: FGR 12 & FGR 11

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-34	Ra-228+D plant/soil concentration ratio dimensionless	4.000E-02	4.000E-02	RTF(31)
D-34	Ra-228+D beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(32)
D-34	Ra-228+D milk/livestock-intake ratio (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(33)
D-34	Th-228+D plant/soil concentration ratio dimensionless	1.000E-03	1.000E-03	RTF(41)
D-34	Th-228+D beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(42)
D-34	Th-228+D milk/livestock-intake ratio (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(43)
D-34	Th-230 plant/soil concentration ratio dimensionless	1.000E-03	1.000E-03	RTF(51)
D-34	Th-230 beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(52)
D-34	Th-230 milk/livestock-intake ratio (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(53)
D-34	Th-232 plant/soil concentration ratio dimensionless	1.000E-03	1.000E-03	RTF(61)
D-34	Th-232 beef/livestock-intake ratio (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(62)
D-34	Th-232 milk/livestock-intake ratio (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(63)
D-5	Bioaccumulation factors fresh water L/kg:			
D-5	Pb-210+D fish	3.000E+02	3.000E+02	BIOFAC(11)
D-5	Pb-210+D crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(12)
D-5	Ra-226+D fish	5.000E+01	5.000E+01	BIOFAC(21)
D-5	Ra-226+D crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(22)
D-5	Ra-228+D fish	5.000E+01	5.000E+01	BIOFAC(31)
D-5	Ra-228+D crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(32)
D-5	Th-228+D fish	1.000E+02	1.000E+02	BIOFAC(41)
D-5	Th-228+D crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(42)
D-5	Th-230 fish	1.000E+02	1.000E+02	BIOFAC(51)
D-5	Th-230 crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(52)
D-5	Th-232 fish	1.000E+02	1.000E+02	BIOFAC(61)
D-5	Th-232 crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(62)

#For DCF1(xxx) only factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.
*Base Case means Default.Lib w/o Associate Nuclide contributions.

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Site-Specific Parameter Summary					
0	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	7.500E+01	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	3.048E+00	2.000E+00	---	THICK0
R011	Fraction of contamination that is submerged	0.000E+00	0.000E+00	---	SUBMFRACT
R011	Length parallel to aquifer flow (m)	9.000E+00	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): Ra-226	1.000E+00	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Th-230	1.000E+00	0.000E+00	---	S1(5)
R012	Initial principal radionuclide (pCi/g): Th-232	1.000E+00	0.000E+00	---	S1(6)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Th-230	not used	0.000E+00	---	W1(5)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(6)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.431E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.600E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	1.040E+01	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	2.000E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	4.060E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF

R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.431E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.600E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	1.040E+01	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT

Site-Specific Parameter Summary (continued)

0	Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
	R014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
	R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
	R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW
	R015	Number of unsaturated zone strata	1	1	---	NS
	R015	Unsat. zone 1 thickness (m)	4.000E+00	4.000E+00	---	H (1)
	R015	Unsat. zone 1 soil density (g/cm**3)	1.431E+00	1.500E+00	---	DENSUZ (1)
	R015	Unsat. zone 1 total porosity	4.600E-01	4.000E-01	---	TPUZ (1)
	R015	Unsat. zone 1 effective porosity	2.000E-01	2.000E-01	---	EPUZ (1)
	R015	Unsat. zone 1 field capacity	2.000E-01	2.000E-01	---	FCUZ (1)
	R015	Unsat. zone 1 soil-specific b parameter	1.040E+01	5.300E+00	---	BUZ (1)
	R015	Unsat. zone 1 hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ (1)
	R016	Distribution coefficients for Ra-226				
	R016	Contaminated zone (cm**3/g)	1.121E+04	7.000E+01	---	DCNUCC (2)
	R016	Unsat. zone 1 (cm**3/g)	1.121E+04	7.000E+01	---	DCNUCU (21)
	R016	Saturated zone (cm**3/g)	1.121E+04	7.000E+01	---	DCNUCS (2)
	R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.368E-06	ALEACH (2)
	R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (2)
	R016	Distribution coefficients for Th-230				
	R016	Contaminated zone (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCC (5)
	R016	Unsat. zone 1 (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCU (51)
	R016	Saturated zone (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCS (5)
	R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.903E-07	ALEACH (5)
	R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)
	R016	Distribution coefficients for Th-232				
	R016	Contaminated zone (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCC (6)
	R016	Unsat. zone 1 (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCU (61)
	R016	Saturated zone (cm**3/g)	6.757E+04	6.000E+04	---	DCNUCS (6)
	R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.903E-07	ALEACH (6)
	R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (6)
	R016	Distribution coefficients for daughter Pb-210				
	R016	Contaminated zone (cm**3/g)	1.549E+04	1.000E+02	---	DCNUCC (1)
	R016	Unsat. zone 1 (cm**3/g)	1.549E+04	1.000E+02	---	DCNUCU (11)
	R016	Saturated zone (cm**3/g)	1.549E+04	1.000E+02	---	DCNUCS (1)
	R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.884E-06	ALEACH (1)

R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC (3)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU (31)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS (3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.561E-04	ALEACH (3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (3)

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Site-Specific Parameter Summary (continued)

0	Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
	R016	Distribution coefficients for daughter Th-228				
	R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC (4)
	R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU (41)
	R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS (4)
	R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.003E-06	ALEACH (4)
	R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
	R017	Inhalation rate (m**3/yr)	6.650E+03	8.400E+03	---	INHALR
	R017	Mass loading for inhalation (g/m**3)	4.600E-06	1.000E-04	---	MLINH
	R017	Exposure duration	2.600E+01	3.000E+01	---	ED
	R017	Shielding factor inhalation	2.448E-01	4.000E-01	---	SHF3
	R017	Shielding factor external gamma	5.512E-01	7.000E-01	---	SHF1
	R017	Fraction of time spent indoors	6.571E-01	5.000E-01	---	FIND
	R017	Fraction of time spent outdoors (on site)	1.181E-01	2.500E-01	---	FOTD
	R017	Shape factor flag external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
	R017	Radii of shape factor array (used if FS = -1):				
	R017	Outer annular radius (m) ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
	R017	Outer annular radius (m) ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
	R017	Outer annular radius (m) ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
	R017	Outer annular radius (m) ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
	R017	Outer annular radius (m) ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
	R017	Outer annular radius (m) ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
	R017	Outer annular radius (m) ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
	R017	Outer annular radius (m) ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
	R017	Outer annular radius (m) ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
	R017	Outer annular radius (m) ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
	R017	Outer annular radius (m) ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
	R017	Outer annular radius (m) ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)
	R017	Fractions of annular areas within AREA:				
	R017	Ring 1	not used	1.000E+00	---	FRACA (1)
	R017	Ring 2	not used	2.732E-01	---	FRACA (2)
	R017	Ring 3	not used	0.000E+00	---	FRACA (3)
	R017	Ring 4	not used	0.000E+00	---	FRACA (4)
	R017	Ring 5	not used	0.000E+00	---	FRACA (5)
	R017	Ring 6	not used	0.000E+00	---	FRACA (6)
	R017	Ring 7	not used	0.000E+00	---	FRACA (7)
	R017	Ring 8	not used	0.000E+00	---	FRACA (8)
	R017	Ring 9	not used	0.000E+00	---	FRACA (9)

R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits vegetables and grain consumption (kg/yr)	1.660E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	1.100E+01	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	1.000E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	6.510E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	not used	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	not used	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.825E+01	3.650E+01	---	SOIL

Site-Specific Parameter Summary (continued)

0		User		Used by RESRAD	Parameter
Menu	Parameter	Input	Default	(If different from user input)	Name
R018	Drinking water intake (L/yr)	not used	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	not used	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	4.000E-02	-1	---	FPLANT
R018	Contamination fraction of meat	4.000E-03	-1	---	FMEAT
R018	Contamination fraction of milk	4.000E-03	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	6.800E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	5.500E+01	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	1.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	not used	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	8.000E-02	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	2.000E+01	2.000E+01	---	WLAM

C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5

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Site-Specific Parameter Summary (continued)

0		User		Used by RESRAD	Parameter
Menu	Parameter	Input	Default	(If different from user input)	Name
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits non-leafy vegetables and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	32	---	---	NPTS
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	257	---	---	KYMAX

Summary of Pathway Selections

Pathway User Selection

```
-----  
1 -- external gamma           active  
2 -- inhalation (w/o radon)   active  
3 -- plant ingestion          active  
4 -- meat ingestion           active  
5 -- milk ingestion           active  
6 -- aquatic foods            suppressed  
7 -- drinking water           suppressed  
8 -- soil ingestion           active  
9 -- radon                    suppressed  
Find peak pathway doses      suppressed  
-----I-----
```


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Contaminated Zone Dimensions		Initial Soil Concentrations pCi/g	
-----		-----	
Area:	75.00 square meters	Ra-226	1.000E+00
Thickness:	3.05 meters	Th-230	1.000E+00
Cover Depth:	0.00 meters	Th-232	1.000E+00

0

Total Dose TDOSE(t) mrem/yr
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr
 Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	4.657E+00	5.073E+00	6.003E+00	8.649E+00	1.085E+01	1.123E+01	1.125E+01	1.122E+01
M(t):	1.863E-01	2.029E-01	2.401E-01	3.460E-01	4.340E-01	4.492E-01	4.498E-01	4.488E-01

0Maximum TDOSE(t): 1.125E+01 mrem/yr at t = 197.7 ñ 0.4 years

0

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.977E+02 years

Water Independent Pathways (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio- Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Nuclide	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Ra-226	3.731E+00	0.3317	2.542E-05	0.0000	0.000E+00	0.0000	8.224E-01	0.0731	2.692E-03	0.0002	2.164E-03	0.0002	8.446E-03	0.0008
Th-230	3.349E-01	0.0298	2.833E-04	0.0000	0.000E+00	0.0000	7.043E-02	0.0063	2.245E-04	0.0000	1.818E-04	0.0000	1.230E-03	0.0001
Th-232	5.833E+00	0.5186	1.719E-03	0.0002	0.000E+00	0.0000	4.317E-01	0.0384	1.246E-03	0.0001	1.533E-03	0.0001	5.267E-03	0.0005
Total	9.899E+00	0.8800	2.027E-03	0.0002	0.000E+00	0.0000	1.325E+00	0.1178	4.163E-03	0.0004	3.878E-03	0.0003	1.494E-02	0.0013

0

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.977E+02 years

Water Dependent Pathways

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio- Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Nuclide	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.567E+00	0.4060
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.072E-01	0.0362
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.275E+00	0.5578
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.125E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.066E+00	0.8732	7.738E-06	0.0000	0.000E+00	0.0000	3.834E-01	0.0823	1.151E-03	0.0002	1.446E-03	0.0003	1.520E-03	0.0003
Th-230	1.345E-03	0.0003	2.819E-04	0.0001	0.000E+00	0.0000	3.960E-03	0.0009	8.291E-06	0.0000	8.673E-07	0.0000	5.818E-04	0.0001
Th-232	1.502E-01	0.0323	1.420E-03	0.0003	0.000E+00	0.0000	4.171E-02	0.0090	9.200E-05	0.0000	7.727E-05	0.0000	2.991E-03	0.0006
Total	4.218E+00	0.9058	1.710E-03	0.0004	0.000E+00	0.0000	4.291E-01	0.0921	1.252E-03	0.0003	1.524E-03	0.0003	5.093E-03	0.0011

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.454E+00	0.9565
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.178E-03	0.0013
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.965E-01	0.0422
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.657E+00	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.065E+00	0.8013	8.339E-06	0.0000	0.000E+00	0.0000	3.990E-01	0.0787	1.207E-03	0.0002	1.474E-03	0.0003	1.752E-03	0.0003
Th-230	3.106E-03	0.0006	2.819E-04	0.0001	0.000E+00	0.0000	4.129E-03	0.0008	8.791E-06	0.0000	1.491E-06	0.0000	5.825E-04	0.0001
Th-232	5.058E-01	0.0997	1.431E-03	0.0003	0.000E+00	0.0000	8.562E-02	0.0169	2.201E-04	0.0000	2.412E-04	0.0000	3.183E-03	0.0006
Total	4.574E+00	0.9016	1.721E-03	0.0003	0.000E+00	0.0000	4.888E-01	0.0963	1.436E-03	0.0003	1.716E-03	0.0003	5.517E-03	0.0011

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.468E+00	0.8808
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.110E-03	0.0016
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.965E-01	0.1176
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.073E+00	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.061E+00	0.6766	9.485E-06	0.0000	0.000E+00	0.0000	4.283E-01	0.0713	1.309E-03	0.0002	1.525E-03	0.0003	2.194E-03	0.0004
Th-230	6.626E-03	0.0011	2.819E-04	0.0000	0.000E+00	0.0000	4.487E-03	0.0007	9.882E-06	0.0000	2.790E-06	0.0000	5.842E-04	0.0001
Th-232	1.331E+00	0.2216	1.467E-03	0.0002	0.000E+00	0.0000	1.597E-01	0.0266	4.402E-04	0.0001	5.196E-04	0.0001	3.557E-03	0.0006
Total	5.398E+00	0.8993	1.758E-03	0.0003	0.000E+00	0.0000	5.925E-01	0.0987	1.759E-03	0.0003	2.047E-03	0.0003	6.336E-03	0.0011

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.495E+00	0.7487
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.199E-02	0.0020
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.496E+00	0.2493
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.003E+00	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.049E+00	0.4682	1.297E-05	0.0000	0.000E+00	0.0000	5.172E-01	0.0598	1.618E-03	0.0002	1.681E-03	0.0002	3.540E-03	0.0004
Th-230	1.892E-02	0.0022	2.819E-04	0.0000	0.000E+00	0.0000	5.926E-03	0.0007	1.434E-05	0.0000	7.659E-06	0.0000	5.929E-04	0.0001
Th-232	3.727E+00	0.4309	1.596E-03	0.0002	0.000E+00	0.0000	3.152E-01	0.0364	9.009E-04	0.0001	1.100E-03	0.0001	4.494E-03	0.0005
Total	7.795E+00	0.9012	1.891E-03	0.0002	0.000E+00	0.0000	8.383E-01	0.0969	2.534E-03	0.0003	2.788E-03	0.0003	8.627E-03	0.0010

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.573E+00	0.5288
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.575E-02	0.0030
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.050E+00	0.4683
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.649E+00	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	4.015E+00	0.3700	1.952E-05	0.0000	0.000E+00	0.0000	6.839E-01	0.0630	2.199E-03	0.0002	1.971E-03	0.0002	6.075E-03	0.0006
Th-230	5.385E-02	0.0050	2.820E-04	0.0000	0.000E+00	0.0000	1.121E-02	0.0010	3.114E-05	0.0000	2.362E-05	0.0000	6.356E-04	0.0001
Th-232	5.645E+00	0.5202	1.708E-03	0.0002	0.000E+00	0.0000	4.214E-01	0.0388	1.215E-03	0.0001	1.495E-03	0.0001	5.199E-03	0.0005
Total	9.713E+00	0.8952	2.009E-03	0.0002	0.000E+00	0.0000	1.117E+00	0.1029	3.446E-03	0.0003	3.489E-03	0.0003	1.191E-02	0.0011

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.709E+00	0.4340
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.603E-02	0.0061
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.076E+00	0.5599
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.085E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	3.894E+00	0.3468	2.568E-05	0.0000	0.000E+00	0.0000	8.366E-01	0.0745	2.735E-03	0.0002	2.220E-03	0.0002	8.489E-03	0.0008
Th-230	1.737E-01	0.0155	2.825E-04	0.0000	0.000E+00	0.0000	3.516E-02	0.0031	1.091E-04	0.0000	8.875E-05	0.0000	8.696E-04	0.0001
Th-232	5.834E+00	0.5195	1.719E-03	0.0002	0.000E+00	0.0000	4.317E-01	0.0384	1.246E-03	0.0001	1.533E-03	0.0001	5.268E-03	0.0005
Total	9.902E+00	0.8817	2.027E-03	0.0002	0.000E+00	0.0000	1.303E+00	0.1161	4.089E-03	0.0004	3.842E-03	0.0003	1.463E-02	0.0013

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.744E+00	0.4225
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.102E-01	0.0187
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.275E+00	0.5588
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.123E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	3.567E+00	0.3172	2.434E-05	0.0000	0.000E+00	0.0000	7.874E-01	0.0700	2.578E-03	0.0002	2.071E-03	0.0002	8.091E-03	0.0007
Th-230	4.960E-01	0.0441	2.841E-04	0.0000	0.000E+00	0.0000	1.060E-01	0.0094	3.410E-04	0.0000	2.754E-04	0.0000	1.595E-03	0.0001
Th-232	5.833E+00	0.5187	1.718E-03	0.0002	0.000E+00	0.0000	4.316E-01	0.0384	1.246E-03	0.0001	1.533E-03	0.0001	5.267E-03	0.0005
Total	9.896E+00	0.8800	2.027E-03	0.0002	0.000E+00	0.0000	1.325E+00	0.1178	4.164E-03	0.0004	3.879E-03	0.0003	1.495E-02	0.0013

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.367E+00	0.3883
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.045E-01	0.0538
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.274E+00	0.5579
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.125E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	2.624E+00	0.2339	1.791E-05	0.0000	0.000E+00	0.0000	5.793E-01	0.0516	1.896E-03	0.0002	1.524E-03	0.0001	5.953E-03	0.0005
Th-230	1.421E+00	0.1266	2.885E-04	0.0000	0.000E+00	0.0000	3.101E-01	0.0276	1.009E-03	0.0001	8.123E-04	0.0001	3.689E-03	0.0003
Th-232	5.829E+00	0.5195	1.717E-03	0.0002	0.000E+00	0.0000	4.314E-01	0.0384	1.245E-03	0.0001	1.532E-03	0.0001	5.263E-03	0.0005
Total	9.874E+00	0.8801	2.024E-03	0.0002	0.000E+00	0.0000	1.321E+00	0.1177	4.151E-03	0.0004	3.867E-03	0.0003	1.491E-02	0.0013

Total Dose Contributions TDOSE(ipt) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.213E+00	0.2864
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.737E+00	0.1548
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.270E+00	0.5589
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.122E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Dose/Source Ratios Summed Over All Pathways											
Parent and Progeny Principal Radionuclide Contributions Indicated											
0	Parent (i)	Product (j)	Thread Fraction	DSR(jt) At Time in Years (mrem/yr)/(pCi/g)							
				0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
	Ra-226+D	Ra-226+D	1.000E+00	4.444E+00	4.442E+00	4.439E+00	4.425E+00	4.386E+00	4.254E+00	3.896E+00	2.866E+00
	Ra-226+D	Pb-210+D	1.000E+00	9.622E-03	2.578E-02	5.612E-02	1.484E-01	3.226E-01	4.905E-01	4.708E-01	3.464E-01
	Ra-226+D	-DSR(j)		4.454E+00	4.468E+00	4.495E+00	4.573E+00	4.709E+00	4.744E+00	4.367E+00	3.213E+00
0	Th-230	Th-230	1.000E+00	5.218E-03	5.218E-03	5.218E-03	5.218E-03	5.217E-03	5.213E-03	5.203E-03	5.167E-03
	Th-230	Ra-226+D	1.000E+00	9.578E-04	2.882E-03	6.729E-03	2.017E-02	5.833E-02	1.892E-01	5.414E-01	1.551E+00
	Th-230	Pb-210+D	1.000E+00	1.519E-06	9.264E-06	4.488E-05	3.601E-04	2.480E-03	1.574E-02	5.798E-02	1.801E-01
	Th-230	-DSR(j)		6.178E-03	8.110E-03	1.199E-02	2.575E-02	6.603E-02	2.102E-01	6.045E-01	1.737E+00
0	Th-232	Th-232	1.000E+00	2.390E-02	2.390E-02	2.390E-02	2.390E-02	2.390E-02	2.390E-02	2.390E-02	2.388E-02
	Th-232	Ra-228+D	1.000E+00	1.485E-01	4.253E-01	8.878E-01	1.851E+00	2.508E+00	2.571E+00	2.570E+00	2.569E+00
	Th-232	Th-228+D	1.000E+00	2.410E-02	1.473E-01	5.845E-01	2.175E+00	3.544E+00	3.681E+00	3.680E+00	3.678E+00
	Th-232	-DSR(j)		1.965E-01	5.965E-01	1.496E+00	4.050E+00	6.076E+00	6.275E+00	6.274E+00	6.270E+00

The DSR includes contributions from associated (half-life « 180 days) daughters.

Single Radionuclide Soil Guidelines G(it) in pCi/g								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
0	Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02
	Ra-226		5.613E+00	5.595E+00	5.562E+00	5.466E+00	5.309E+00	5.270E+00
	Th-230		4.047E+03	3.083E+03	2.085E+03	9.710E+02	3.786E+02	1.189E+02
	Th-232		1.272E+02	4.191E+01	1.671E+01	6.173E+00	4.115E+00	3.984E+00

Summed Dose/Source Ratios DSR(it) in (mrem/yr)/(pCi/g)						
and Single Radionuclide Soil Guidelines G(it) in pCi/g						
at tmin = time of minimum single radionuclide soil guideline						
and at tmax = time of maximum total dose = 197.7 ± 0.4 years						
0	Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(itmin) (pCi/g)	DSR(itmax) (pCi/g)	G(itmax) (pCi/g)
	Ra-226	1.000E+00	65.8 ± 0.1	4.772E+00	5.239E+00	4.567E+00
	Th-230	1.000E+00	1.000E+03	1.737E+00	1.440E+01	4.072E-01
	Th-232	1.000E+00	99.6 ± 0.2	6.275E+00	3.984E+00	6.139E+01

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Individual Nuclide Dose Summed Over All Pathways											
Parent Nuclide and Branch Fraction Indicated											
ONuclide	Parent	THF(i)	DOSE(jt) mrem/yr								
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ra-226	Ra-226	1.000E+00		4.444E+00	4.442E+00	4.439E+00	4.425E+00	4.386E+00	4.254E+00	3.896E+00	2.866E+00
Ra-226	Th-230	1.000E+00		9.578E-04	2.882E-03	6.729E-03	2.017E-02	5.833E-02	1.892E-01	5.414E-01	1.551E+00
Ra-226	-DOSE(j)			4.445E+00	4.445E+00	4.445E+00	4.445E+00	4.445E+00	4.443E+00	4.438E+00	4.418E+00
OPb-210	Ra-226	1.000E+00		9.622E-03	2.578E-02	5.612E-02	1.484E-01	3.226E-01	4.905E-01	4.708E-01	3.464E-01
Pb-210	Th-230	1.000E+00		1.519E-06	9.264E-06	4.488E-05	3.601E-04	2.480E-03	1.574E-02	5.798E-02	1.801E-01
Pb-210	-DOSE(j)			9.623E-03	2.579E-02	5.616E-02	1.488E-01	3.251E-01	5.062E-01	5.288E-01	5.265E-01
0Th-230	Th-230	1.000E+00		5.218E-03	5.218E-03	5.218E-03	5.218E-03	5.217E-03	5.213E-03	5.203E-03	5.167E-03
0Th-232	Th-232	1.000E+00		2.390E-02	2.390E-02	2.390E-02	2.390E-02	2.390E-02	2.390E-02	2.390E-02	2.388E-02
ORa-228	Th-232	1.000E+00		1.485E-01	4.253E-01	8.878E-01	1.851E+00	2.508E+00	2.571E+00	2.570E+00	2.569E+00
0Th-228	Th-232	1.000E+00		2.410E-02	1.473E-01	5.845E-01	2.175E+00	3.544E+00	3.681E+00	3.680E+00	3.678E+00

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration											
Parent Nuclide and Branch Fraction Indicated											
ONuclide	Parent	THF(i)	S(jt) pCi/g								
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Ra-226	Ra-226	1.000E+00		1.000E+00	9.996E-01	9.987E-01	9.956E-01	9.869E-01	9.571E-01	8.767E-01	6.449E-01
Ra-226	Th-230	1.000E+00		0.000E+00	4.331E-04	1.299E-03	4.322E-03	1.291E-02	4.236E-02	1.216E-01	3.489E-01
Ra-226	-S(j):			1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.998E-01	9.995E-01	9.983E-01	9.938E-01
OPb-210	Ra-226	1.000E+00		0.000E+00	3.060E-02	8.897E-02	2.665E-01	6.018E-01	9.254E-01	8.891E-01	6.541E-01
Pb-210	Th-230	1.000E+00		0.000E+00	6.663E-06	5.873E-05	6.077E-04	4.523E-03	2.947E-02	1.092E-01	3.398E-01
Pb-210	-S(j):			0.000E+00	3.060E-02	8.903E-02	2.671E-01	6.063E-01	9.548E-01	9.983E-01	9.939E-01
0Th-230	Th-230	1.000E+00		1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.990E-01	9.970E-01	9.902E-01
0Th-232	Th-232	1.000E+00		1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.999E-01	9.997E-01	9.991E-01
ORa-228	Th-232	1.000E+00		0.000E+00	1.135E-01	3.031E-01	6.980E-01	9.669E-01	9.929E-01	9.927E-01	9.921E-01
0Th-228	Th-232	1.000E+00		0.000E+00	1.864E-02	1.242E-01	5.628E-01	9.538E-01	9.929E-01	9.927E-01	9.921E-01

THF(i) is the thread fraction of the parent nuclide.

ORESCALC.EXE execution time = 0.53 seconds