



BARTLETT

ENGINEERING CALCULATION

Calculation Number: ENG-HB-001

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Calculation Title: RESRAD Input Parameter Sensitivity Analysis - Humboldt Bay

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1.0 PURPOSE

The purpose of this calculation is to determine which of the input parameters for the resident farmer scenario have a significant impact on the calculated dose (i.e., those parameters whose values greatly influence the calculated dose; aka, "sensitive" input parameters). The results of this calculation will support the development of soil derived concentration guideline levels (DCGLs) for the Pacific Gas & Electric (PGE) Humboldt Bay nuclear power site. This calculation is a deliverable product specified in the scope of work section in Contract No. GT012 3500895165.

2.0 APPLICABILITY

This calculation addresses only the sensitivity analysis for input parameters for the resident farmer scenario that will be used to develop the DCGLs for soils at the PGE Humboldt Bay site.

3.0 REFERENCES

- 3.1 ANL/EAIS-8, Data Collection Handbook to Support Modeling the Impacts of Radioactive Material in Soil; U.S. Department of Energy – Argonne National Laboratory, April 1993.
- 3.2 NUREG/CR-5512, Residual Radioactive Contamination from Decommissioning
 - Volume 1: *Technical Basis for Translating Contamination Levels to Annual Total Effective Dose Equivalent*, Oct. 1992 (PNL-7994)
 - Volume 3: *Parameter Analysis, Draft Report for Comment*, Oct. 1999 (SAND99-2148)
- 3.3 ANL/EAD-4, User's Manual for RESRAD Version 6, U.S. Department of Energy – Argonne National Laboratory, July, 2001.
- 3.4 NUREG/CR-6697, Development of Probabilistic RESRAD 6.0 and RESRAD-BUILD 3.0 Computer Codes, U.S. Nuclear Regulatory Commission, December 2000.
- 3.5 Procedure ENG-AP-02, Verification of Software Operability
- 3.6 NUREG/CR-6676, Probabilistic Dose Analysis Using Parameter Distributions Developed for RESRAD and RESRAD-Build Codes, May 2000 (ANL/EAD/TM-89)
- 3.7 NUREG/CR-6692, "Probabilistic Modules for the RESRAD 6.0 and RESRAD-BUILD 3.0 Computer Codes", LePoire, D., et al., US Department of Energy- Argonne National Laboratory, November 2000.
- 3.8 HBPP-TBD-001, *Site-Specific Suite of Radionuclides*, 8/2007.
- 3.9 Humboldt Bay SAFSTOR Environmental Report, July 1984.
- 3.10 Humboldt Bay Power Plant *Historical Site Assessment*, 9/2008

4.0 METHOD OF CALCULATION

The operability of the RESRAD Version 6.5 code was verified on each computer used for code executions in accordance with Bartlett Engineering procedure ENG-AP-02, *Verification of Software Operability* [ref. 3.5]. The RESRAD User's manual [ref. 3.3] provided guidance for code operation and execution. The RESRAD code has undergone extensive review, benchmarking, verification, and validation. Details on reviews, benchmarking, verification, and validation for the RESRAD code are summarized in Sections 5.1–5.4 of RESRAD User's manual [ref. 3.3].

The RESidual RADIOactivity (RESRAD) model and computer code was developed at Argonne National Laboratory (ANL) as a multifunctional tool to assist in developing radiological criteria for unrestricted release and assessing the dose or risk associated with residual radioactive material. The RESRAD computer code is a pathway analysis model designed to evaluate the potential radiological dose associated with residual radioactive material for a defined receptor scenario. The RESRAD software allow the user to evaluate radiation exposure through several pathways: direct external radiation, inhalation, ingestion of plants, meat, milk, aquatic foods, and drinking water, inadvertent ingestion of contaminated soil, and radon exposure.

The code requires input for numerous parameters in order to calculate the dose via various exposure pathways. The probabilistic modules in RESRAD permit the user to perform a sensitivity analysis to identify parameters that have the greatest impact on dose. In addition, the probabilistic modules allow the evaluation of dose as a function of parameter distributions. Monte Carlo simulations are executed using the Latin Hypercube Sampling techniques to generate vectors for the input parameters.

The approach taken in this calculation consists of two primary phases: the selection of input parameter values and performing RESRAD runs. The first phase involves classifying and prioritizing the RESRAD input parameters. The selection process is based on guidance provided in NUREG/CR-6697 [ref. 3.4], NUREG/CR-6676 [ref. 3.6], and NUREG/CR-6692 [ref. 3.7]. Figure 1 provides a flow diagram for the parameter selection process.

Classification, prioritization, and treatment of input parameters: Parameters were classified as behavioral, metabolic, or physical parameters consistent to the classifications found in NUREG/CR-6697 [ref. 3.4]. Behavioral parameters depend on the behavior of the receptor and the scenario definition. Metabolic parameters are independent of the defined scenario, and represent the metabolic characteristics of the receptor. Physical parameters are those parameters that would not change if the receptor changed.

Following the classification process, parameters were assigned priority rankings. Priority 1 parameters are high priority; Priority 2 parameters are medium priority; and Priority 3 parameters are low priority. NUREG/CR-6697 [ref. 3.4] provides prioritization rankings for input parameters. Those rankings were adopted in this calculation. The priority of a given parameter is based on:

- the relevance of the parameter in dose calculations,
- the variability of the dose because of changes in the parameter value,
- the parameter type, and
- the availability of parameter-specific data.

Input parameters were treated as either deterministic (a single value is assigned) or stochastic (a probability distribution is assigned). Treatment depended on parameter type, availability of site-specific data, and the relevance of the parameter in the dose calculations.

- Behavioral and metabolic parameters were treated as deterministic and the assigned values were from NUREG/CR05512, volume 3 [ref. 3.2], NUREG/CR-6697 [ref. 3.4], or the RESRAD User Manual [ref. 3.3]. Parameters for which site-specific data are available were treated as deterministic.
- Physical parameters for which site-specific data are unavailable were assigned values based on priority. Priority 1 and 2 physical parameters were treated stochastic and assigned probability distributions from NUREG/CR-6697 [ref. 3.4], or assigned a deterministic value from NUREG/CR-5512, volume 3 [ref. 3.2]. Priority 3 physical parameters were treated as deterministic and were assigned values from NUREG/CR-5512, volume 3 [ref. 3.2], or the RESRAD User's Manual [ref. 3.3].

Following the parameter selection process, RESRAD input files were developed based on the results of the parameter selection process and a parameter sensitivity analysis was performed for each radionuclide of concern. Input correlations were applied based on guidance in NUREG/CR-6676 [ref. 3.6]. The following correlations were used for each code execution:

- Total porosity and bulk density = - 0.99 (contaminated zone, unsaturated and saturated zones);
- Total porosity and effective porosity = 0.96 (unsaturated and saturated zones);
- Effective porosity and bulk density = -0.99 (unsaturated and saturated zones); and
- Well Pumping rate and irrigation = 0.96.

The RESRAD Probabilistic Output Report provides regression and correlation coefficients for the average doses at the user defined evaluation times. The Partial Rank Correlation Coefficient (PRCC) has been used to identify sensitive parameters. NUREG/CR-6692 [ref. 3.7] and NUREG/CR-6697 [ref. 3.4] recommend the use of the PRCC for cases where a non-linear relationship and widely disparate scales exists between the input and output. The guidance further recommends the use of the PRCC if strong correlations exist between input parameters. The criterion for sensitivity used in this calculation was a PRCC value with an absolute value greater than 0.25. In addition, PRCC values greater than zero (positive value) or less than zero (negative value) identify whether sensitive parameters are positively or negatively correlated to dose, respectively. Therefore, 75th percentile values were determined for sensitive parameters that had positive PRCC values and 25th percentile values were determined for sensitive parameters that had negative PRCC values. These 25th and 75th percentile values address the uncertainties associated with the input parameters and are proposed as reasonably conservative input for the DCGL calculation for the Humboldt Bay site.

The 25th and 75th percentile values were obtained using the following method:

1. Open the RESRAD "*.buo" file generated during from the sensitivity run using the "View Interactive Output" button on the RESRAD navigator.
2. Click the "Results" tab in the interactive output window.
3. Click on the "Graphics" tab.

4. Select "input vector" by scrolling through the choices under the "Primary Object" prompt.
5. Select the desired parameter by scrolling through the choices under the "Input Parameter" prompt.
6. Right click on the cumulative probability graph and select "Edit Chart Data."
7. Scroll down until the desired fraction (i.e., 0.25 or 0.75) is visible in column C2. The corresponding value in column C1 is the percentile value.

The sensitivity analyses were run using 2000 observations and 1 repetition. The Latin Hypercube Sampling (LHS) technique was used to sample the probability distributions for each of the stochastic input parameters. The correlated or uncorrelated grouping option and a random seed of 1000 were used to preserve the prescribed correlations.

5.0 ASSUMPTIONS AND INPUT

5.1 Assumptions

5.1.1. Radionuclides of Concern (ROC). Twenty-two ROCs are identified for the Humboldt Bay [refs. 3.8 and 3.10]: Am-241, C-14, Cm243/244/245/246, Co-60, Cs-137, Eu-152, Eu-154, H-3, I-129, Nb-94, Ni-59, Ni-63, Np-237, Pu-238/239/240/241, Sr-90, and Tc-99.

5.1.2. Resident Farmer Scenario: The dose model used to perform the sensitivity analyses is based upon the Resident Farmer Scenario defined in NUREG/CR-5512 Volume 3 (ref. 3.2). The average member of the critical group is the resident farmer that lives on the plant site, grows all or a portion of his / her diet onsite, and drinks water from a groundwater source onsite. The pathways used to estimate human radiation exposure resulting from residual radioactivity in the soil for this scenario includes the following:

- Direct external radiation exposure pathway;
- Inhalation exposure pathway;
- Ingestion exposure pathway:
 - plant foods grown in the soil material containing residual radioactivity,
 - meat and milk from livestock fed with fodder grown in soil containing residual radioactivity and watercontaining residual radioactivity,
 - drinking water containing residual radioactivity from a well, and
 - aquatic food from a pond containing residual radioactivity;
- Inadvertent ingestion of contaminated soil

5.1.3. Conceptual Model: The conceptual hydrological model for this resident farmer scenario has three geological strata: 1) a contaminated zone, 2) an unsaturated zone, and 3) a saturated zone. The contaminated zone is assumed to be uncovered, equivalent in size to the largest contiguous Class 1 and 2 area at the Humboldt Bay site (see Figure 2), and variable in thickness. The unsaturated zone is initially uncontaminated and also variable in thickness. The groundwater in the saturated zone is assumed initially uncontaminated.

5.2 Input

5.2.1. Contaminated zone: The thickness of the contaminated zone was determined from characterization soil sample data provided in the HSA [ref. 3.10]. Plant-related radioactivity was detected in surface soil samples (6 inches or less in depth) and in a sub-surface sample collected at a depth of 11.5 feet. To account for the uncertainty of thickness of the contaminated zone, a uniform distribution was established using a minimum thickness equal to 6 inches and a maximum thickness equal to 11.5 feet.

Well installation logs for 22 groundwater monitoring wells were reviewed for soil type descriptions to a depth of 11.5 ft (the maximum thickness of the contaminated zone) to determine a representative soil type for the contaminated zone. The soil type descriptions and the USCS codes recorded on the well logs were then compared to the soil categories listed in Tables 3.1-1 and 3.2-1 in Attachment C to NUREG/CR-6697 [ref. 3.4]. Soil descriptions recorded in the "Lithologic Description" section of the logs served as the primary factor for selecting a RESRAD soil type category from the surface to a depth. When those descriptions did not match one of the soil types given in Attachment C to NUREG/CR-6697, the USCS code was used. Soil type selection focused on two soil characteristics: density and total porosity. These characteristics were weighted by depth and overall averages determined. The soil type for the contaminated zone was selected based on matching the overall average density and total porosity to the soil types given in Tables 3.1-1 and 3.2-1 in Attachment C to NUREG/CR-6697.

Based on that approach, "clay loam" was selected from the soil type provided in NUREG/CR-6697 [ref. 3.4] as reasonably representative soil type for the contaminated zone. The "clay loam" soil classification was used as the basis for selecting input for other soil type-dependent parameters, such as hydraulic conductivity and the RESRAD soil-b parameter. Table 1A summarizes the soil type determination for the contaminated zone.

5.2.2. Unsaturated zone: The thickness of the unsaturated zone was determined from 2009 groundwater monitoring data, which showed a minimum depth to groundwater equal to approximately 4.9 feet and a maximum depth equal to approximately 27 feet. To account for the uncertainty of thickness of the unsaturated zone, a uniform distribution was established using a minimum thickness equal to 0 inches and a maximum thickness equal to 26.5 feet.

Using the same approach as that used to determine the soil type for the contaminated zone, "clay loam" was selected as reasonably representative soil type for the unsaturated zone. "Clay loam" was selected from the soil type provided in NUREG/CR-6697 [ref. 3.4] as reasonably representative soil type for the unsaturated zone. The "clay loam" soil classification was used as the basis for selecting input for other soil type-dependent parameters, such as effective porosity, hydraulic conductivity, and the RESRAD soil-b parameter. Table 1B summarizes the soil type determination for the unsaturated zone.

5.2.3. Saturated zone: Using the same approach as that used to determine the soil type for the contaminated and unsaturated zones, "silty clay loam" was selected as reasonably representative soil type for the saturated zone. The "silty clay loam" soil classification was used as the basis for selecting input for other soil type-dependent parameters, such as effective porosity, hydraulic conductivity, and the RESRAD soil-

b parameter. Table 1C summarizes the soil type determination for the saturated zone.

5.2.4. The value of the Lower Elk River Watershed [from the Humboldt Bay Power Plant FSAR], $2.52\text{E}+07 \text{ m}^2$, was used as input for the RESRAD parameter "Watershed Area for Nearby Streams and Ponds."

5.2.5. Input values for annual precipitation and evapo-transpiration were obtained from the SAFSTOR Environmental Report [ref. 3.9]. NOAA recorded average wind speed data obtained from the National Climate Data Center website were used as the basis for wind speed.

5.2.6. Table 2 summarizes the parameter name, type, priority, treatment, values/distribution and the reference source that provides the bases for each input parameter. Some parameter values required calculations. These calculations are documented in the next section.

6.0 CALCULATIONS AND RESULTS

6.1 Figure 2, *Area of the Contaminated Zone*, was generated with AutoCAD. The size of the contaminated zone is based on the largest contiguous MARSSIM Class 1 and Class 2 at the Humboldt Bay site and includes the Protected Area and adjacent impacted areas. That area, $29,781 \text{ m}^2$, was then rounded to the nearest thousand. For modeling purposes, the size of the Humboldt Bay contaminated zone is $30,000 \text{ m}^2$.

6.2 The length parallel to the aquifer is defined as is the maximum horizontal distance measured in the contaminated zone, from its up gradient edge to the down gradient edge, along the direction of the groundwater flow in the underlying aquifer. It was assumed that the area of the contaminated zone could be approximated by a circle with an area of $30,000 \text{ m}^2$ (the area of the contaminated zone). The diameter of the circle is suitable as input for the length parallel to the aquifer parameter and is calculated as follows:

$$A = \pi r^2$$

Where A is the area in m^2 and r is the radius in meters.

$$r = \sqrt{\frac{30000}{\pi}}$$

$$r = 97.7 \text{ m}$$

$$D = 2 \times r = 2 \times 97.7$$

$$D = 195 \text{ m}$$

Therefore, the length of parallel is 195 m.

6.3 Contaminated zone erosion rate: The slope of the contaminated zone was determined using elevations from site contour maps provided in the HSA [ref. 3.10] to determine the site grades in 3 directions within the contaminated zone (shown in Figure 3, *Site Slope Directions*). This determination is summarized below:

Trial	Grade Difference	Approximate Distance between Points ^a	Estimated Slope
A	9.1 m	110 m	8%
B	6.1 m	151 m	4%
C	6.1 m	85 m	7%
		average	6%

^a Locations of points shown in Figure 3.

Data from NUREG/CR-6697, Attachment C, Section 3.8, was used to select the appropriate Erosion Rate that corresponds to the Humboldt Bay site slope of 6%.

The data below was generated using NUREG/CR-6697's row-crop Erosion Rate of 6.0 E-4 for a 2 % slope. As recommended in this section of NUREG/CR-6697, the Erosion Rate of 6.0 E-4 for a 2% slope was assumed based on a farm-garden scenario where the dose contribution from the food ingestion pathway is expected to be significant. Erosion rates were then calculated for 5, 10 and 15 percent slopes (presented below) using their rate increase factors as specified in the Section 14.2 of Reference 3.1.

Percent Slope	Erosion Rate (m/y)
2	6.0E-4
5	1.8E-3
10	4.2E-3
15	9.0E-3

Figure 5, *Erosion Rate vs. Slope*, was generated by plotting the above erosion rate/slope data. A value of 2.2E-03 m/y was selected from Figure 5 as input for the Erosion Rate parameter.

6.4 Field capacity defines the relationship of field capacity (residual water content) to effective porosity [ref. 3.1]. The field capacity is the ratio of the volume of water retained in the soil sample, after all drainage has ceased, to the total volume of the soil sample. Equation 4.4 in Reference 3.1 relates total and effective porosities to field capacity as follows:

$$\text{Effective Porosity} = \text{Total Porosity} - \text{Field Capacity}$$

Rearranging this equation:

$$\text{Field Capacity} = \text{Total Porosity} - \text{Effective Porosity}$$

For the Contaminated and Unsaturated Zones, the mean total porosity for clay loam soil is of 0.41 and the mean effective porosity is 0.315 [ref. 3.4]. Therefore the field capacity for these two zones is approximately:

$$\text{Field Capacity} = 0.41 - 0.315 = 0.095$$

For the Saturated Zone, the mean total porosity for silty clay loam soil is of 0.43 and the mean effective porosity is 0.342 [ref. 3.4]. Therefore the field capacity for this zone is approximately:

$$\text{Field Capacity} = 0.43 - 0.342 = 0.088$$

6.5 Hydraulic conductivity in the unsaturated zone: Attachment C to NUREG/CR-6697 discusses this parameter's use in the determination of the groundwater flow rate, which effects the rise time and the dilution of radionuclides in the well water. The method for calculating the hydraulic gradient is given in NUREG/CR-6697, Attachment C, Equation 3.6-1:

$$J_x = (h_1 - h_2)/\Delta_x$$

Where J_x is the hydraulic gradient, h_1 and h_2 represent the hydraulic heads or the water level elevations at location 1 and 2, and Δ_x is the distance between the two locations. The water level elevations are referenced to mean sea level (msl). An average value for the Humboldt Bay site was calculated from three separate hydraulic gradient determinations as follows below. Figure 4, *Well Locations*, shows the well locations.

Well	Type	2009 Average GW Elevation	Distance (ft) Between Wells	J_x
RCW-SFP-1	intermediate	5.65		
RCW-SFP-2	intermediate	5.41	194	0.0012
1C-MW-08	shallow	5.23		
1E-MW-13	shallow	5.53	289	0.0028
RCW-CS-1	deep	5.23		
RCW-CS-5	deep	6.03	157	0.0020
			Average	0.0020

6.6 Runoff Coefficient: Table 10.1 of Reference 3.1 provides the equation below to calculate the Runoff Coefficient, C_r , for an agricultural environment and also provides values for the terms c_1 , c_2 , and c_3 .

$$C_r = 1 - c_1 - c_2 - c_3$$

$c_1 = 0.2$ for rolling land with an average slope between 4.6 to 6.1 m/mi. (assumed representative for the Humboldt Bay site)

$c_2 = 0.2$ for intermediate combinations of clay and loam

$c_3 = 0.1$ for cultivated lands (consistent with the resident farmer scenario).

$$C_r = 1 - 0.2 - 0.2 - 0.1 = 0.5$$

6.7 Fraction of Time Spent Indoors: Table 6.87 in NUREG/CR-5512 [ref. 3.2] provides values for the residential parameters. The indoors time is given as 240 days. Dividing by 365.25 d/y yields the fraction of time spent indoors equal to 0.6571.

6.8 Fraction of Time Spent Outdoor: Table 6.87 in NUREG/CR-5512 [ref. 3.2] provides values for the residential parameters. The outdoor time value includes the period outdoors, 40.2 days, and time spent gardening, 2.92 days, which yields a sum of 42.92 days outdoor. Dividing by 365.25 d/y gives a fraction of time spent of 0.1175.

- 6.9 Inhalation Rate: Appendix C to NUREG/CR-6697 [ref. 3.24] provides an estimated daily inhalation rate equal to 23 m³/d for an adult male. This results an annual inhalation rate equal to approximately 8400 m³/y.
- 6.10 Soil Ingestion Rate: Table 6.87 in NUREG/CR-5512 [ref. 3.2] provides values for the residential parameters. The soil ingestion rate is given as 0.05 g/d; multiplying by 365.25 d/y gives a soil ingestion rate of 18.26 g/y.
- 6.11 Drinking Water Intake: Table 6.87 in NUREG/CR-5512 [ref. 3.2] provides values for the residential parameters. The drinking water ingestion rate is given as 1.31 liters/d; multiplying by 365.25 d/y gives a drinking water ingestion rate of 478.5 liters/y.
- 6.12 Irrigation Rate: Attachment C to NUREG/CR-6697 [ref. 3.4] discusses the Irrigation Rate in terms of the Evapotranspiration Coefficient, and provides the following equation for the Evapotranspiration Coefficient:

$$Ce = (ETr)/(1-Cr)(Pr) + IRr$$

Where: ETr = the Evapotranspiration Rate (m/y) = 0.61 [ref. 3.9]
 Pr = the Precipitation Rate (m/y) = 0.91 [ref. 3.9]
 IRr = the Irrigation Rate (m/y) and
 Cr = the Runoff Coefficient = 0.5 (from step 6.5).

NUREG/CR-6697, Attachment C, Section 4.3 defines the Evapotranspiration Coefficient, Ce, as the ratio of the total volume of water (a combination of evaporation from soil surfaces and transpiration from vegetation) transferred to the atmosphere to the total volume of water available within the root zone of the soil. The NUREG/CR recommends the use of a uniform distribution with minimum and maximum values for Ce equal to 0.5 and 0.75, respectively, and with 0.625 as median.

Rearranging this equation above, the Irrigation Rate can be expressed as:

$$IRr = (ETr/Ce)-(1-Cr)(Pr)$$

The input values for the variables in the equation above follow:

Variable	Use of Min Ce Value	Use of Max Ce Value
ETr (m/y)	0.61	0.61
Pr (m/y)	0.91	0.91
Cr	0.5	0.5
Ce	0.5	0.75
IRr (m/y)	0.77	0.36

The irrigation rate equation yields a minimum IRr value equal to 0.36 and a maximum IRr value equal to 0.77 m/y. A uniform distribution with minimum and maximum value equal to 0.36 and 0.77, respectively, and a median equal to 0.56 was assigned as input for this parameter.

6.13 Well Pumping Rate: Attachment C to NUREG/CR-6697 [ref. 3.4] states that "A site-specific input distribution for well pumping rate can be determined as the sum of individual water needs." The household use component as determined from the domestic use data is summarized below.

Water Use Component (family of four)	Median	Minimum	Maximum
Household* (m ³ /y)	374	374	374
Livestock (m ³ /y)	76.7	76.7	76.7
Contaminated fraction for Irrigation $f_p = 1$ (assumes irrigation of the entire area))	1	1	1
Irrigation rate I_r (m/y)	0.56	0.36	0.76
Irrigation water (m ³ /y) $f_p \times I_r \times 2000$	1120	720	1520
Drinking Water (m ³ /y)	2.04	2.04	2.04
Total for Family of Four (m ³ /y)	1573	1173	1973

* Household Use: Domestic Water Use for family of four, 376 m³/y, minus the drinking water component, 1.91 m³/y, or approximately 374 m³/y.

Domestic water use based on 272 gallons per day per family and drinking water based on use of 511 L/y per individual.

Conversion: $272 \text{ gal/day} \times 3.79\text{E-}3 \text{ gal/m}^3 \times 365.25\text{day/y} = 376 \text{ m}^3/\text{y}$
 $511 \text{ L/y-Ind} \times 4 \text{ Ind} \times 1\text{m}^3/1000\text{L} = 2.04 \text{ m}^3/\text{y}.$

A uniform distribution with a minimum value equal to 1173 m³/y, a maximum value equal to 1973 m³/y, and a median value equal to 1573 m³/y was assigned as input for the Well Pump Rate parameter.

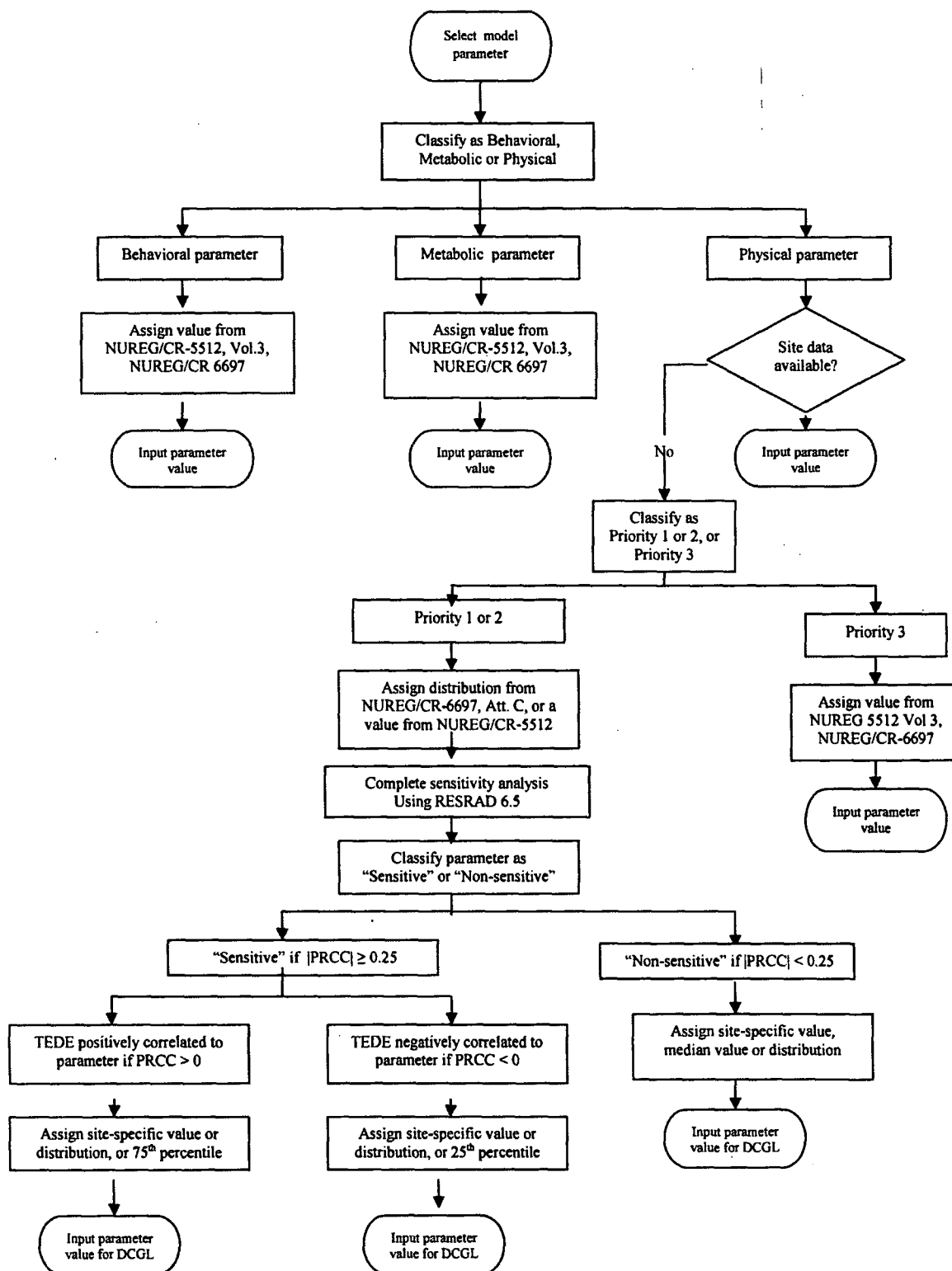


Figure 1: Parameter Selection Process



Figure 2: Area of the Contaminated Zone

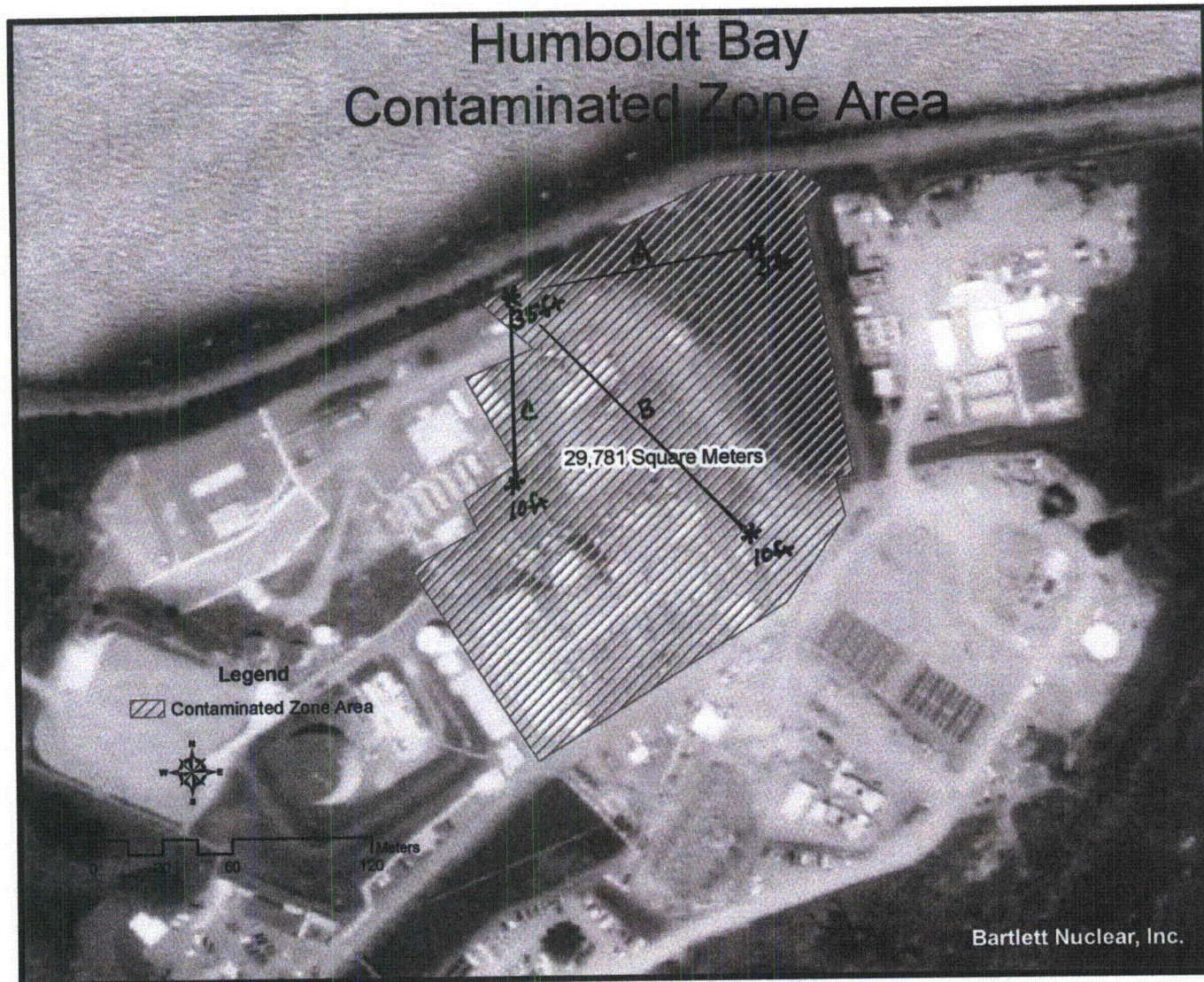


Figure 3: Site Slope Directions



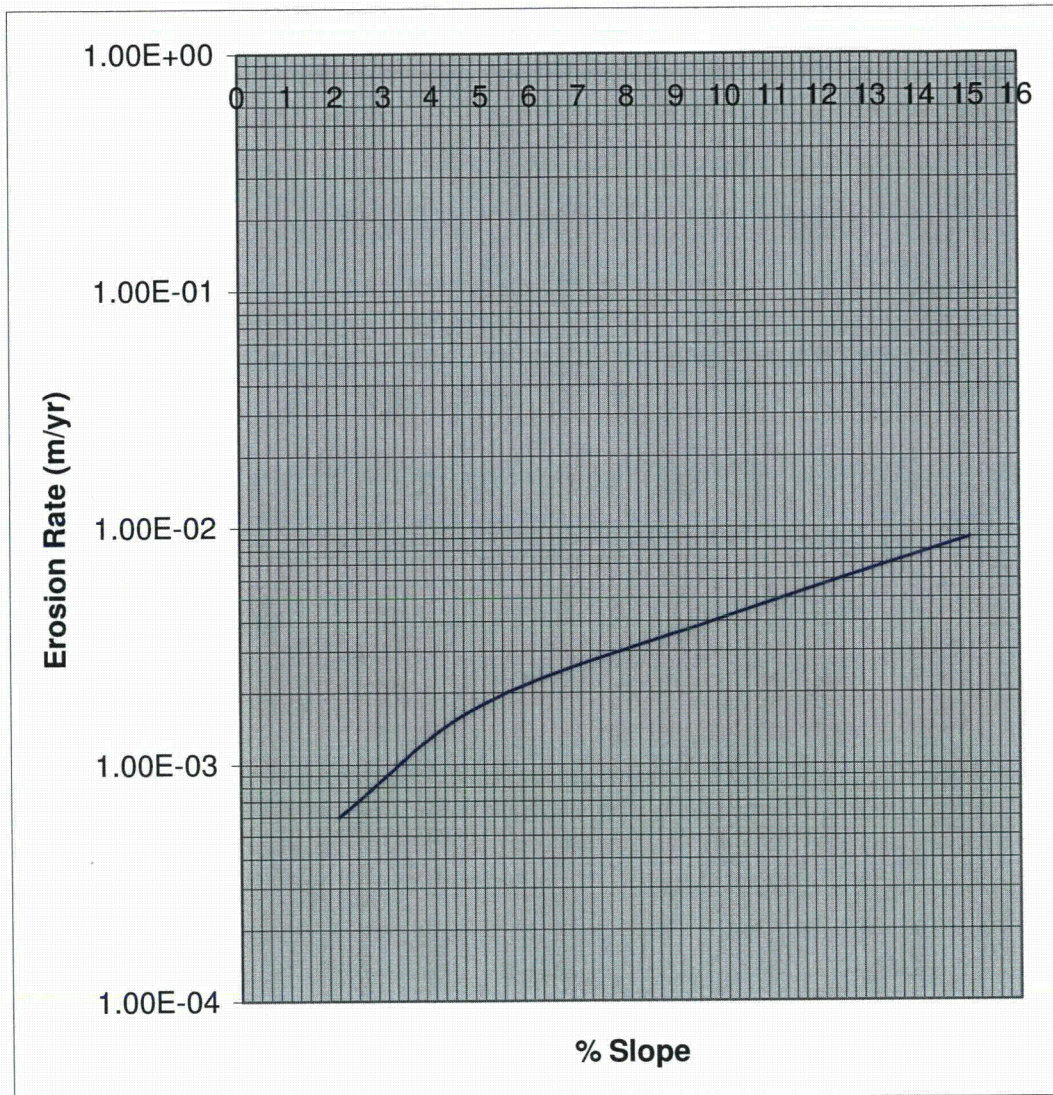


Figure 5: Erosion Rate vs. Slope

7.0 RESULTS

- 7.1 RESRAD 6.5 was executed for each ROC using the input values provided in Table 2. An absolute PRCC value ≥ 0.25 was used as the criterion for identifying sensitive input parameters.
- 7.2 Table 3 summarizes the sensitive parameters for each ROC. Selected pages from the RESRAD 6.5 Uncertainty Reports from each code execution are provided in Appendix A.
- 7.3 For the sensitive parameters, the 75th percentile value of the distribution was selected when the absolute value of the PRCC was ≥ 0.25 and the PRCC had a positive value. The 25th percentile value was selected when the absolute value of the PRCC value was ≥ 0.25 but had a negative value. Table 4, *RESRAD-Generated Percentile Values for Sensitive Input Parameters*, summarizes the 25th and 75th percentile values for each identified sensitive input parameter and identifies the ROC for which a parameter was found to be sensitive.

8.0 CONCLUSION

- 8.1 Sensitive input parameters varied among the ROCs and included parameters such as thickness of the contaminated zone, Kd values, transfer factors (plant, milk, meat), depth of roots, external shielding factor, and thickness of evasion layer (for C-14) in soil.
- 8.2 The 25th and 75th percentile values for sensitive input parameters have been determined from the parameter distributions and provide reasonably conservative input for DCGL development.

Table 1A: Soil Type Determination for the Contaminated Zone

Well Name	Depth (ft)	Delta Depth	Weighting Factor	ARCADIS Description ^a	USCS code - Description ^a		Mean Density	Weighted Mean Density	Mean Porosity	Weighted Mean Porosity
1H-MW-01	.5 to 2	1.5	0.167	Sandy silt	ML	silt	1.431	0.239	0.46	0.077
	2 to 4	2	---	No Data		No Data	---	---	---	---
	4 to 5	1	0.111	Sandy silt	ML	silt	1.431	0.159	0.46	0.051
	5 to 6.5	1.5	0.167	Sandy silt	ML	silt	1.431	0.239	0.46	0.077
	6.5 to 8.5	2	0.222	Sandy silt	ML	silt	1.431	0.318	0.46	0.102
	8.5 to 10	1.5	0.167	Silt	ML	silt	1.431	0.39	0.46	0.077
	10 to 11.5	1.5	0.167	Silty Clay	CH	clay of high plasticity	1.696	0.283	0.36	0.060
							Average	1.475		0.443
1H-MW-02	0 - 5	5	---	No Data		No Data	---	---	---	---
	5 to 8	3	0.462	Silty Clay	CL	clay	1.696	0.783	0.36	0.166
	8 to 11.5	3.5	0.538	Silty Clay	CL	clay	1.696	0.913	0.36	0.194
							Average	1.70		0.360
5G-MW-03	0 to 4.5	4.5	0.391	Clayey silt	ML	Silt	1.431	0.56	0.46	0.180
	4.5 to 8	3.5	0.304	Silty Clay	ML	Silt	1.696	0.52	0.36	0.110
	8 to 11.5	3.5	0.304	Clayey Silt	ML	Silt	1.431	0.44	0.46	0.140
							Average	1.51		0.430
1A-MW-04	1 to 8	7	0.667	Sandy Clay	CL	clay	1.643	1.10	0.38	0.253
	8 to 11.5	3.5	0.333	Lean Clay	CL	clay	1.643	0.55	0.38	0.127
							Average	1.64		0.380
1C-MW-05	1 to 8	7	0.667	Silty Clay	CL	clay	1.696	1.13	0.36	0.240
	8 to 11.5	3.5	0.333	Clay	CH	clay of high plasticity	1.643	0.55	0.38	0.127
							Average	1.68		0.367

Table 1A: Soil Type Determination for the Contaminated Zone

Well Name	Depth (ft)	Delta Depth	Weighting Factor	ARCADIS Description ^a	USCS code - Description ^a		Mean Density	Weighted Mean Density	Mean Porosity	Weighted Mean Porosity
1C-MW-06	.5 to 3	2.5	0.227	Silty Clay	CL	clay	1.696	0.39	0.36	0.082
	3 to 11	8	0.727	Clay	CH	clay of high plasticity	1.643	1.19	0.38	0.276
	11 to 11.5	0.5	0.045	Silt	ML	Silt	1.431	0.07	0.46	0.021
	Average							1.65		0.379
1C-MW-07	.5 to 2	1.5	0.136	Silty Clay	CL	clay	1.696	0.23	0.36	0.049
	2 to 7	5	0.455	Silty Clay	CL	clay	1.696	0.77	0.36	0.164
	7 to 8	1	0.091	Silty Clay	CL	clay	1.696	0.15	0.36	0.033
	8 to 10.5	2.5	0.227	Clay	CH	clay of high plasticity	1.643	0.37	0.38	0.086
	10.5 to 11.5	1	0.091	Clayey Silt	ML	Silt	1.696	0.15	0.46	0.042
	Average							1.68		0.374
1C-MW-08	.5 to 8	7.5	0.682	Silty Clay	CL	clay	1.696	1.16	0.36	0.245
	8 to 11	3	0.273	Silty Clay	CL	clay	1.696	0.46	0.36	0.098
	11 to 11.5	0.5	0.045	Clay	CH	clay of high plasticity	1.643	0.07	0.38	0.017
	Average							1.69		0.361
1D-MW-10	.5 to 4	3.5	0.318	sand	SW	fine grain Sand	1.5105	0.48	0.43	0.137
	4 to 9	5	0.455	clay	CH	clay of high plasticity	1.643	0.75	0.38	0.173
	9 to 11.5	2.5	0.227	clay	CL	clay	1.643	0.37	0.38	0.086
	Average							1.60		0.396

Table 1A: Soil Type Determination for the Contaminated Zone

Well Name	Depth (ft)	Delta Depth	Weighting Factor	ARCADIS Description ^a	USCS code - Description ^a		Mean Density	Weighted Mean Density	Mean Porosity	Weighted Mean Porosity
1E-MW-12	0 to 3.5	3.5	0.304	clay	CH	clay of high plasticity	1.643	0.50	0.38	0.116
	3.5 to 5.5	2	0.174	silty clay	CH	clay of high plasticity	1.696	0.29	0.36	0.063
	5.5 to 10.5	5	0.435	clayey silt	ML	Silt	1.431	0.62	0.46	0.200
	10.5 to 11.5	1	0.087	sandy silt	ML	Silt	1.431	0.12	0.46	0.040
	Average							1.54		0.418
RCW-CS-1	.5 to 4	3.5	0.318	silt with clay	ML	Silt	1.431	0.46	0.46	0.146
	4 to 11.5	7.5	0.682	clay with silt	CL	clay	1.643	1.12	0.38	0.259
	Average							1.58		0.405
RCW-CS-2	.5 to 4	3.5	0.318	silt with clay	ML	Silt	1.431	0.46	0.46	0.146
	4 to 11.5	7.5	0.682	clay with silt	CL	clay	1.643	1.12	0.38	0.259
	Average							1.58		0.405
RCW-CS-3	1.5 to 7	5.5	0.550	silt w/ sand	ML	Silt	1.431	0.79	0.46	0.253
	7 to 11	4	0.400	silt w/ clay	ML	Silt	1.431	0.57	0.46	0.184
	11 to 11.5	0.5	0.050	clay w/ silt	CL	clay	1.643	0.08	0.38	0.019
	Average							1.44		0.456
RCW-CS-4	1 to 11.5	10.5	1.000	silt w/ clay	ML	Silt	1.431	1.43	0.46	0.460
	Average							1.43		0.460
RCW-CS-5	.5 to 11.5	11	1.000	silt w/ clay	ML	Silt	1.431	1.43	0.46	0.460
	Average							1.43		0.460

Table 1A: Soil Type Determination for the Contaminated Zone

Well Name	Depth (ft)	Delta Depth	Weighting Factor	ARCADIS Description ^a	USCS code - Description ^a		Mean Density	Weighted Mean Density	Mean Porosity	Weighted Mean Porosity
RCW-SFP-1	.5 to 5	4.5	0.409	silt w/ sand	ML	Silt	1.431	0.59	0.46	0.188
	5 to 6	1	0.091	clay w/ silt	CL	clay	1.643	0.15	0.38	0.035
	6 to 11.5	5.5	0.500	silt w/ sand	ML	Silt	1.431	0.72	0.46	0.230
							Average	1.45		0.453
RCW-SFP-2	1 to 11.5	10.5	1.000	silt w/ clay	ML	Silt	1.431	1.43	0.46	0.460
							Average	1.43		0.460
MW-1	.5 to 3	2.5	0.227	sandy clay	CL	sandy clay	1.643	0.37	0.38	0.086
	3 to 9	6	0.545	clay	CH	clay	1.643	0.90	0.38	0.207
	9 to 11.5	2.5	0.227	Clayey Silt	ML	Silt	1.431	0.33	0.46	0.105
							Average	1.59		0.398
MW-2	0 to 7	7	0.609	sand and gravel		sand	1.5105	0.92	0.43	0.262
	7 to 8.5	1.5	0.130	clay	CH	clay	1.643	0.21	0.38	0.050
	8.5 to 11.5	3	0.261	Clayey Silt	ML	Silt	1.431	0.37	0.46	0.120
							Average	1.51		0.431
MW-4	1.5 to 5.7	4.2	0.420	silty clay	CL	silty clay	1.696	0.71	0.36	0.151
	5.7 to 9	3.3	0.330	silt	ML	Silt	1.431	0.47	0.46	0.152
	9 to 11.5	2.5	0.250	Clayey Silt	CL	clay	1.643	0.41	0.38	0.095
							Average	1.60		0.398
MW-6	3.7 to 4.5	0.8	0.103	clay	CH	clay	1.643	0.17	0.38	0.039
	4.5 to 11.5	7	0.897	Clayey Silt	ML	Silt	1.431	1.28	0.46	0.413
							Average	1.45		0.452

Table 1A: Soil Type Determination for the Contaminated Zone

Well Name	Depth (ft)	Delta Depth	Weighting Factor	ARCADIS Description ^a	USCS code - Description ^a		Mean Density	Weighted Mean Density	Mean Porosity	Weighted Mean Porosity
MW-11	0 to 4.8	4.8	0.417	sand	SP	sand	1.5105	0.63	0.43	0.179
	4.8 to 11.3	6.5	0.565	clay	CH	clay	1.643	0.93	0.38	0.215
	11.3 to 11.5	0.2	0.017	Clayey Silt	ML	Silt	1.431	0.02	0.46	0.008
	Average							1.58		0.402
Overall Average								1.56		0.413
Selected soil type based on overall averages for density and porosity: Clay Loam										

^a Bold font indicates description used.

Table 1B: Soil Type Determination for the Unsaturated Zone

Well Name	Depth (ft)	Delta Depth	Weighting Factor	ARCADIS Description	USCS code	Mean Density	Weighted Mean Density	Mean Porosity	Weighted Mean Porosity
1H-MW-01	.5 to 2	1.5	0.061	Sandy silt	ML silt	1.431	0.088	0.46	0.028
	2 to 4		---	No Data	No Data	---	---	---	---
	4 to 5	1	0.041	Sandy silt	ML silt	1.431	0.058	0.46	0.019
	5 to 6.5	1.5	0.061	silt clay	ML silt	1.696	0.104	0.36	0.022
	6.5 to 8.5	2	0.082	silt loam	ML silt	1.4575	0.119	0.45	0.037
	8.5 to 10	1.5	0.061	Silt	ML silt	1.431	0.088	0.46	0.028
	10 to 12.5	2.5	0.102	Silty Clay	CH Clay-high plasticity	1.696	0.173	0.36	0.037
	12.5 to 16.5	4	0.163	Clay	CH Clay-high plasticity	1.643	0.268	0.38	0.062
	16.5 to 20	3.5	0.143	Silt	ML silt	1.431	0.20	0.46	0.066
	20 to 25.5	5.5	0.224	Sandy silt	ML silt	1.431	0.292	0.46	0.094
	25.5 to 27	1.5	0.061	Sand	SW sand	1.5105	0.09	0.43	0.026
					Average:		1.498		0.435
1H-MW-02	0 - 5		---	No Data	No Data	---	---	---	---
	5 to 8	3	0.136	Silty Clay	CL silty clay	1.696	0.231	0.36	0.049
	8 to 12.5	4.5	0.205	Silty Clay	CL Silty Clay	1.696	0.347	0.36	0.074
	12.5 to 16.5	3	0.136	Clay	CH clay	1.643	0.224	0.38	0.052
	16.5 to 20	4.5	0.205	Clay	CH Clay	1.643	0.340	0.38	0.078
	20 to 21	1	0.045	Clayey Silt	ML silt	1.431	0.075	0.46	0.021
	21 to 26	6	0.273	Silty Sand	SM loamy sand	1.5635	0.35	0.41	0.091
	26 to 27	1	0.045	Silt	ML silt	1.431	0.07	0.46	0.021
					Average:		1.624		0.387
5G-MW-03	0 to 4.5	4.5	0.167	Clayey silt	ML Silt	1.431	0.24	0.46	0.077
	4.5 to 8	3.5	0.130	Silty Clay	ML Silt	1.696	0.22	0.36	0.047
	8 to 12.5	4.5	0.167	Clayey Silt	ML Silt	1.431	0.24	0.46	0.077
	12.5 to 17	4.5	0.167	Sandy Silt	ML silt	1.431	0.24	0.46	0.077
	17 to 20	3	0.111	Silty Clay	CH Silty Clay	1.696	0.19	0.36	0.040
	20 to 24.5	4.5	0.167	Clay	CH clay	1.643	0.274	0.38	0.063

Table 1B: Soil Type Determination for the Unsaturated Zone

Well Name	Depth (ft)	Delta Depth	Weighting Factor	ARCADIS Description	USCS code		Mean Density	Weighted Mean Density	Mean Porosity	Weighted Mean Porosity
	24.5 to 26.5	2	0.074	Clayey silt	ML	silt	1.431	0.11	0.46	0.034
	26.5 to 27	0.5	0.019	Poorly graded Sand	SP	Sand	1.5105	0.03	0.43	0.008
							Average:	1.53		0.422
1A-MW-04	1 to 8	7	0.292	Sandy Clay	CL	clay	1.643	0.48	0.38	0.111
	8 to 14	6	0.250	Lean Clay	CL	Clay	1.643	0.41	0.38	0.095
	14 to 18	4	0.167	Fat Clay	CH	Clay	1.643	0.27	0.38	0.063
	18 to 19	1	0.042	Lean Clay	CL	clay	1.696	0.07	0.36	0.015
	19 to 21.5	2.5	0.104	Clayey Sand	SC	loamy sand	1.5635	0.16	0.41	0.043
	21.5 to 25	3.5	0.146	Sand	SP	Sand	1.5105	0.22	0.43	0.063
							Average:	1.62		0.390
1C-MW-05	1 to 8	7	0.292	Silty Clay	CL	clay	1.696	0.49	0.36	0.105
	8 to 12	4	0.167	Clay	CH	clay of high plasticity	1.643	0.27	0.38	0.063
	12 to 14	2	0.083	Silty Sand	SM	loamy sand	1.5635	0.13	0.41	0.034
	14 to 17	3	0.125	Sand	SP	Sand	1.5105	0.19	0.43	0.054
	17 to 18.5	1.5	0.063	Clay	CH	clay	1.696	0.11	0.36	0.023
	18.5 to 21.5	3	0.125	Silty Sand	SM	loamy sand	1.5635	0.20	0.41	0.051
	21.5 to 23.5	2	0.083	Sand	SP	Sand	1.5105	0.13	0.43	0.036
	23.5 to 24.5	1	0.042	Sandy Clay	CL	Sandy Clay	1.643	0.07	0.38	0.016
	24.5 to 25	0.5	0.021	Sand	SP	Sand	1.5105	0.03	0.43	0.009
							Average:	1.61		0.391

Table 1B: Soil Type Determination for the Unsaturated Zone

Well Name	Depth (ft)	Delta Depth	Weighting Factor	ARCADIS Description	USCS code	Mean Density	Weighted Mean Density	Mean Porosity	Weighted Mean Porosity
1C-MW-06	.5 to 3	2.5	0.102	Silty Clay	CL clay	1.696	0.17	0.36	0.037
	3 to 11	8	0.327	Clay	CH clay of high plasticity	1.643	0.54	0.38	0.124
	11 to 14	3	0.122	Silt	ML Silt	1.431	0.18	0.46	0.056
	14 to 18.5	4.5	0.184	Poorly Graded Sand	SP Sand	1.5105	0.28	0.43	0.079
	18.5 to 25	6.5	0.265	Silty Sand	SM loamy sand	1.5635	0.41	0.41	0.109
Average:							1.58		0.405
1C-MW-07	.5 to 2	1.5	0.061	Silty Clay	CL clay	1.696	0.10	0.36	0.022
	2 to 7	5	0.204	Silty Clay	CL clay	1.696	0.35	0.36	0.073
	7 to 8	1	0.041	Silty Clay	CL clay	1.696	0.07	0.36	0.015
	8 to 10.5	2.5	0.102	Clay	CH clay of high plasticity	1.643	0.17	0.38	0.039
	10.5 to 12	1.5	0.061	Clayey Silt	ML Silt	1.431	0.09	0.46	0.028
	12 to 14	2	0.082	Clay	CL clay	1.696	0.14	0.36	0.029
	14 to 15.5	1.5	0.061	Poorly Graded Sand	SP Sand	1.5105	0.09	0.43	0.026
	15.5 to 21.5	6	0.245	Silty Sand	SM loamy sand	1.5635	0.38	0.41	0.100
	21.5 to 25	3.5	0.143	Clayey Sand	SC clay	1.696	0.24	0.36	0.051
Average:							1.63		0.385
1C-MW-08	.5 to 8	7.5	0.306	Silty Clay	CL clay	1.696	0.52	0.36	0.110
	8 to 11	3	0.122	Silty Clay	CL clay	1.696	0.21	0.36	0.044
	11 to 21	10	0.408	Clay	CH clay of high plasticity	1.643	0.67	0.38	0.155
	21 to 23.5	2.5	0.102	Sandy Clay	CL Sandy Clay	1.643	0.17	0.38	0.039
	23.5 to 25	1.5	0.061	Clayey Sand	SC loamy sand	1.5635	0.10	0.41	0.025
Average:							1.66		0.373

Table 1B: Soil Type Determination for the Unsaturated Zone

Well Name	Depth (ft)	Delta Depth	Weighting Factor	ARCADIS Description	USCS code	Mean Density	Weighted Mean Density	Mean Porosity	Weighted Mean Porosity
1D-MW-10	.5 to 4	3.5	0.143	sand	SW fine grain Sand	1.5105	0.22	0.43	0.061
	4 to 9	5	0.204	clay	CH clay of high plasticity	1.643	0.34	0.38	0.078
	9 to 13.5	4.5	0.184	clay	CL clay	1.643	0.30	0.38	0.070
	13.5 to 16	2.5	0.102	Clayey Sand	SC loamy sand	1.5635	0.16	0.41	0.042
	16 to 18	2	0.082	Clay	CH clay	1.643	0.13	0.38	0.031
	18 to 19	1	0.041	Sand	SP Sand	1.5105	0.06	0.43	0.018
	19 to 25	6	0.245	Clay	CH clay	1.643	0.40	0.38	0.093
Average:							1.61		0.392
1E-MW-12	0 to 3.5	3.5	0.140	clay	CH clay of high plasticity	1.643	0.23	0.38	0.053
	3.5 to 5.5	2	0.080	silty clay	CH clay of high plasticity	1.696	0.14	0.36	0.029
	5.5 to 10.5	5	0.200	clayey silt	ML Silt	1.431	0.29	0.46	0.092
	10.5 to 15	4.5	0.180	sandy silt	ML Silt	1.431	0.26	0.46	0.083
	15 to 25	10	0.400	Silty Clay	CH Silty Clay	1.696	0.68	0.36	0.144
Average:							1.59		0.401
RCW-CS-1	.5 to 4	3.5	0.132	silt with clay	ML Silt	1.431	0.19	0.46	0.061
	4 to 12	8	0.302	clay with silt	CL clay	1.643	0.50	0.38	0.115
	12 to 22	10	0.377	silt with clay	ML Silt	1.431	0.54	0.46	0.174
	22 to 24	2	0.075	silt with clay	ML Silt	1.431	0.11	0.46	0.035
	24 to 27	3	0.113	sand w/ fines	SP sand	1.5105	0.17	0.43	0.049
Average:							1.50		0.432

Table 1B: Soil Type Determination for the Unsaturated Zone

Well Name	Depth (ft)	Delta Depth	Weighting Factor	ARCADIS Description	USCS code		Mean Density	Weighted Mean Density	Mean Porosity	Weighted Mean Porosity
RCW-CS-2	.5 to 4	3.5	0.132	silt with clay	ML	Silt	1.431	0.19	0.46	0.061
	4 to 14	10	0.377	clay with silt	CL	clay	1.643	0.62	0.38	0.143
	14 to 17	3	0.113	silt w/ sand	ML	Silt	1.431	0.16	0.46	0.052
	17 to 21	4	0.151	Sand w/ Silt	SM	loamy sand	1.5635	0.24	0.41	0.062
	21 to 25	4	0.151	Sand w/ Silt	SP	sand	1.5105	0.23	0.43	0.065
	25 to 27	2	0.075	Sand w/ Silt	SM	loamy sand	1.5635	0.12	0.41	0.031
	Average:							1.55		0.414
RCW-CS-3	1.5 to 7	5.5	0.216	silt w/ sand	ML	Silt	1.431	0.31	0.46	0.099
	7 to 11	4	0.157	silt w/ clay	ML	Silt	1.431	0.22	0.46	0.072
	11 to 16	5	0.196	clay w/ silt	CL	clay	1.643	0.32	0.38	0.075
	16 to 27	11	0.431	silt w/ clay	ML	Silt	1.431	0.62	0.46	0.198
	Average:							1.47		0.444
RCW-CS-4	1 to 17	16	0.615	silt w/ clay	ML	Silt	1.431	0.88	0.46	0.283
	17 to 23	6	0.231	clay w/silt	CL	clay	1.643	0.38	0.38	0.088
	23 to 27	4	0.154	silt w/ clay	ML	Silt	1.431	0.22	0.46	0.071
	Average:							1.48		0.442
RCW-CS-5	.5 to 17	16.5	0.623	silt w/ clay	ML	Silt	1.431	0.89	0.46	0.286
	17 to 20.5	3.5	0.132	Silt w/ Sand	ML	Silt	1.431	0.19	0.46	0.061
	20.5 to 27	6.5	0.245	silt w/ clay	ML	Silt	1.431	0.35	0.46	0.113
	Average:							1.43		0.460

Table 1B: Soil Type Determination for the Unsaturated Zone

Well Name	Depth (ft)	Delta Depth	Weighting Factor	ARCADIS Description	USCS code		Mean Density	Weighted Mean Density	Mean Porosity	Weighted Mean Porosity
RCW-SFP-1	.5 to 5	4.5	0.170	silt w/ sand	ML	Silt	1.431	0.24	0.46	0.078
	5 to 6	1	0.038	clay w/ silt	CL	clay	1.643	0.06	0.38	0.014
	6 to 14	8	0.302	silt w/ sand	ML	Silt	1.431	0.43	0.46	0.139
	14 to 20	6	0.226	silt w/ sand	ML	Silt	1.431	0.32	0.46	0.104
	20 to 21	1	0.038	Sand	SP	sand	1.5105	0.06	0.43	0.016
	21 to 24.5	3.5	0.132	Clay w/ silt	CL	clay	1.643	0.22	0.38	0.050
	24.5 to 27	2.5	0.094	Silt w/ Clay	ML	Silt	1.431	0.14	0.46	0.043
							Average:	1.47		0.445
RCW-SFP-2	.5 to 23	22.5	0.849	silt w/ clay	ML	Silt	1.431	1.22	0.46	0.391
	23 to 24	1	0.038	sand w/silt	SP	sand	1.5105	0.06	0.43	0.016
	24 to 26	2	0.075	silt w/ clay	ML	Silt	1.431	0.11	0.46	0.035
	26 to 27	1	0.038	sand w/silt	SP	sand	1.5105	0.06	0.43	0.016
							Average:	1.44		0.458
MW-1	.5 to 3	2.5	0.094	sandy clay	CL	sandy clay	1.643	0.16	0.38	0.036
	3 to 9	6	0.226	clay	CH	clay	1.643	0.37	0.38	0.086
	9 to 18.8	9.8	0.370	Clayey Silt	ML	Silt	1.431	0.53	0.46	0.170
	18.8 to 27	8.2	0.309	Silty Sand	SM	loamy sand	1.5635	0.48	0.41	0.127
							Average:	1.54		0.419
MW-2	0 to 7	7	0.259	sand and gravel		sand	1.5105	0.39	0.43	0.111
	7 to 8.5	1.5	0.056	clay	CH	clay	1.643	0.09	0.38	0.021
	8.5 to 24.5	16	0.593	Clayey Silt	ML	Silt	1.431	0.85	0.46	0.273
	24.5 to 27	2.5	0.093	Sand		sand	1.5105	0.14	0.43	0.040
							Average:	1.47		0.445

Table 1B: Soil Type Determination for the Unsaturated Zone

Well Name	Depth (ft)	Delta Depth	Weighting Factor	ARCADIS Description	USCS code	Mean Density	Weighted Mean Density	Mean Porosity	Weighted Mean Porosity
MW-4	1.5 to 5.7	4.2	0.165	silty clay	CL silty clay	1.696	0.28	0.36	0.059
	5.7 to 9	3.3	0.129	silt	ML Silt	1.431	0.19	0.46	0.060
	9 to 16.4	7.4	0.290	Clayey Silt	CL clay	1.643	0.48	0.38	0.110
	16.4 to 27	10.6	0.416	Silty Sand	SP sand	1.5105	0.63	0.43	0.179
Average:							1.57		0.408
MW-6	3.7 to 4.5	0.8	0.034	clay	CH clay	1.643	0.06	0.38	0.013
	4.5 to 13.8	9.3	0.399	Clayey Silt	ML Silt	1.431	0.57	0.46	0.184
	13.8 to 20.5	6.7	0.288	Sandy Silt	ML Silt	1.431	0.41	0.46	0.132
	20.5 to 27	6.5	0.279	Sand	sand	1.5105	0.42	0.43	0.120
Average:							1.46		0.449
MW-11	0 to 4.8	4.8	0.178	sand	SP sand	1.5105	0.27	0.43	0.076
	4.8 to 11.3	6.5	0.241	clay	CH clay	1.643	0.40	0.38	0.091
	11.3 to 22.6	11.3	0.419	Clayey Silt	ML Silt	1.431	0.60	0.46	0.193
	22.6 to 27	4.4	0.163	Silt	ML Silt	1.431	0.23	0.46	0.075
Average:							1.50		0.435
Overall Average:							1.54		0.419
Selected soil type based on overall averages for density and porosity: Clay Loam									

^a Bold font indicates description used.

Table 1C: Soil Type Determination for the Saturated Zone

Well Name	Depth (ft.)	Delta Depth	Weighting Factor	ARCADIS Description	USCS code	Mean Density	Weighted Mean Density	Mean Porosity	Weighted Mean Porosity
1H-MW-01	5 to 6.5	1.5	0.038	Sandy Silt	ML silt	1.431	0.054	0.46	0.017
	6.5 to 8.5	2	0.050	Clayey Silt	ML silt	1.431	0.072	0.46	0.023
	8.5 to 10	1.5	0.038	Silt	ML silt	1.431	0.054	0.46	0.017
	10 to 12.5	2.5	0.063	Silty Clay	CH clay of high plasticity	1.696	0.106	0.36	0.023
	12.5 to 16.5	4	0.100	Clay	CH clay of high plasticity	1.643	0.164	0.38	0.038
	16.5 to 20	3.5	0.088	Silt	ML silt	1.431	0.13	0.46	0.040
	20 to 25.5	5.5	0.138	Sandy silt	ML silt	1.431	0.197	0.46	0.063
	25.5 to 38	12.5	0.313	Well Graded Sand	SW Sand	1.5105	0.47	0.43	0.134
	38 to 40	2	0.050	Clay	CH Clay	1.643	0.082	0.38	0.019
	40 to 42	2	0.050	Poorly Graded Sand	GP Sand	1.5105	0.08	0.43	0.022
	42 to 45	3	0.075	Silty Clay	CH clay of high plasticity	1.696	0.127	0.36	0.027
Average:							1.528		0.423
1H-MW-02	5 to 8	3	0.120	Silty Clay	CL Silty clay	1.696	0.204	0.36	0.043
	8 to 12.5	4.5	0.180	Silty Clay	CL Silty Clay	1.696	0.305	0.36	0.065
	12.5 to 16.5	3	0.120	Clay	CH clay	1.643	0.197	0.38	0.046
	16.5 to 20	4.5	0.180	Clay	CH Clay	1.643	0.30	0.38	0.068
	20 to 21	1	0.040	Clayey Silt	ML silt	1.431	0.06	0.46	0.018
	21 to 27	6	0.240	Silty Sand	SM loamy sand	1.5635	0.38	0.41	0.098
	27 to 30	3	0.120	Graded Sand	SW Sand	1.5105	0.18	0.43	0.052
Average:							1.62		0.390

Table 1C: Soil Type Determination for the Saturated Zone

Well Name	Depth (ft.)	Delta Depth	Weighting Factor	ARCADIS Description		USCS code	Mean Density	Weighted Mean Density	Mean Porosity	Weighted Mean Porosity
5G-MW-03	5 to 8	3	0.120	Silty Clay	ML	Silt	1.696	0.20	0.36	0.043
	8 to 12.5	4.5	0.180	Clayey Silt	ML	Silt	1.431	0.26	0.46	0.083
	12.5 to 17	4.5	0.180	Sandy Silt	ML	silt	1.431	0.26	0.46	0.083
	17 to 20	3	0.120	Silty Clay	CH	Silty Clay	1.696	0.20	0.36	0.043
	20 to 24.5	4.5	0.180	Clay	CH	clay	1.643	0.296	0.38	0.068
	24.5 to 26.5	2	0.080	Clayey silt	ML	silt	1.431	0.11	0.46	0.037
	26.5 to 29	2.5	0.100	Poorly graded Sand	SP	Sand	1.5105	0.15	0.43	0.043
	29 to 30	1	0.040	Silt	ML	silt	1.431	0.06	0.46	0.018
Average:							1.54		0.419	
RCW-CS-1	5 to 12	7	0.184	clay with silt	CL	clay	1.643	0.30	0.38	0.070
	12 to 22	10	0.263	silt with clay	ML	Silt	1.431	0.38	0.46	0.121
	22 to 24	2	0.053	silt with clay	ML	Silt	1.431	0.08	0.46	0.024
	24 to 27	3	0.079	sand w/ fines	SP	sand	1.5105	0.12	0.43	0.034
	27 to 37	10	0.263	Sand	SP	sand	1.5105	0.40	0.43	0.113
	37 to 41	4	0.105	Sand w/ gravel	SW	Sand	1.5105	0.16	0.43	0.045
	41 to 43	2	0.053	Sand w/ silt	SP	Sand	1.5105	0.08	0.43	0.023
Average:							1.51		0.430	

Table 1C: Soil Type Determination for the Saturated Zone

Well Name	Depth (ft.)	Delta Depth	Weighting Factor	ARCADIS Description	USCS code	Mean Density	Weighted Mean Density	Mean Porosity	Weighted Mean Porosity
RCW-CS-2	5 to 14	9	0.188	clay with silt	CL	clay	1.643	0.31	0.071
	14 to 17	3	0.063	silt w/ sand	ML	Silt	1.431	0.09	0.029
	17 to 21	4	0.083	Sand w/ Silt	SM	loamy sand	1.5635	0.13	0.034
	21 to 25	4	0.083	Sand w/ Silt	SP	sand	1.5105	0.13	0.036
	25 to 27	2	0.042	Sand w/ Silt	SM	loamy sand	1.5635	0.07	0.017
	27 to 34	7	0.146	Sand w/ silt	SP	sand	1.5105	0.22	0.063
	34 to 35	1	0.021	gravel	SP	sand	1.5105	0.03	0.009
	35 to 44	9	0.188	Sand	SP	sand	1.5105	0.28	0.081
	44 to 48	4	0.083	Silt w/ sand	ML	Silt	1.431	0.12	0.038
	48 to 49.5	1.5	0.031	Sand	SP	sand	1.5105	0.05	0.013
	49.5 to 53	3.5	0.073	Silt w/ clay	ML	Silt	1.431	0.10	0.034
Average:							1.52		0.425
RCW-CS-3	5 to 7	2	0.042	silt w/ sand	ML	Silt	1.431	0.06	0.019
	7 to 11	4	0.083	silt w/ clay	ML	Silt	1.431	0.12	0.038
	11 to 16	5	0.104	clay w/ silt	CL	clay	1.643	0.17	0.040
	16 to 27	11	0.229	silt w/ clay	ML	Silt	1.431	0.33	0.105
	27 to 30	3	0.063	Sand	SW	Sand	1.5105	0.09	0.027
	30 to 37	7	0.146	Sand	SP	Sand	1.5105	0.22	0.063
	37 to 44	7	0.146	sand	SW	Sand	1.5105	0.22	0.063
	44 to 55	9	0.188	Sand	SP	Sand	1.5105	0.28	0.081
Average:							1.50		0.435

Table 1C: Soil Type Determination for the Saturated Zone

Well Name	Depth (ft.)	Delta Depth	Weighting Factor	ARCADIS Description		USCS code	Mean Density	Weighted Mean Density	Mean Porosity	Weighted Mean Porosity
RCW-CS-4	5 to 17	12	0.231	silt w/ clay	ML	Silt	1.431	0.33	0.46	0.106
	17 to 23	6	0.115	clay w/silt	CL	clay	1.643	0.19	0.38	0.044
	23 to 27	4	0.077	silt w/ clay	ML	Silt	1.431	0.11	0.46	0.035
	27 to 30	3	0.058	sand w/ silt	SM	loamy sand	1.5635	0.09	0.41	0.024
	30 to 32	2	0.038	sand	SP	Sand	1.5105	0.06	0.43	0.017
	32 to 35.5	3.5	0.067	Sand w/ silt	SP	Sand	1.5105	0.10	0.43	0.029
	35.5 to 37	1.5	0.029	Silt w clay	ML	Silt	1.431	0.04	0.46	0.013
	37 to 41	4	0.077	sand	SP	Sand	1.5105	0.12	0.43	0.033
	41 to 57	16	0.308	Sand	SW	Sand	1.5105	0.46	0.43	0.132
Average:							1.50			0.433
RCW-CS-5	5 to 17	12	0.267	silt w/ clay	ML	Silt	1.431	0.38	0.46	0.123
	17 to 20.5	3.5	0.078	Silt w/ Sand	ML	Silt	1.431	0.11	0.46	0.036
	20.5 to 27	6.5	0.144	silt w/ clay	ML	Silt	1.431	0.21	0.46	0.066
	27 to 33	6	0.133	Sand w/ silt	SM	loamy sand	1.5635	0.21	0.41	0.055
	33 to 39	6	0.133	Sand w/ silt	SP	sand	1.5105	0.20	0.43	0.057
	39 to 44	5	0.111	Gravel	GP	sand	1.5105	0.17	0.43	0.048
	44 to 45	1	0.022	Sand	SP	sand	1.5105	0.03	0.43	0.010
	45 to 50	5	0.111	Gravel	GP	sand	1.5105	0.17	0.43	0.048
	Average:							1.48		

Table 1C: Soil Type Determination for the Saturated Zone

Well Name	Depth (ft.)	Delta Depth	Weighting Factor	ARCADIS Description	USCS code	Mean Density	Weighted Mean Density	Mean Porosity	Weighted Mean Porosity
RCW-SFP-1	5 to 6	1	0.020	clay w/ silt	CL	clay	1.643	0.03	0.008
	6 to 14	8	0.163	silt w/ sand	ML	Silt	1.431	0.23	0.075
	14 to 20	6	0.122	silt w/ sand	ML	Silt	1.431	0.18	0.056
	20 to 21	1	0.020	Sand	SP	sand	1.5105	0.03	0.009
	21 to 24.5	3.5	0.071	Clay w/ silt	CL	clay	1.643	0.12	0.027
	24.5 to 34.5	10	0.204	Silt w/ Clay	ML	Silt	1.431	0.29	0.094
	34.5 to 38	3.5	0.071	Sand	SP	sand	1.5105	0.11	0.031
	38 to 41	3	0.061	Silt w/sand	ML	Silt	1.431	0.09	0.028
	41 to 44	3	0.061	Sand w/ Silt	SP	sand	1.5105	0.09	0.026
	44 to 45	1	0.020	Sand w/ Gravel	SW	Sand	1.5105	0.03	0.009
	45 to 54	9	0.184	Sand	SP	sand	1.5105	0.28	0.079
Average:							1.48		0.442
RCW-SFP-2	5 to 23	18	0.818	silt w/ clay	ML	Silt	1.431	1.17	0.376
	23 to 24	1	0.045	sand w/silt	SP	sand	1.5105	0.07	0.020
	24 to 26	2	0.091	silt w/ clay	ML	Silt	1.431	0.13	0.042
	26 to 27	1	0.045	sand w/silt	SP	sand	1.5105	0.07	0.020
Average:							1.44		0.457
MW-1	5 to 9	4	0.090	clay	CH	clay	1.643	0.15	0.034
	9 to 18.8	9.8	0.220	Clayey Silt	ML	Silt	1.431	0.32	0.101
	18.8 to 43.0	24.2	0.544	Silty Sand	SM	loamy sand	1.5635	0.85	0.223
	43 to 49.5	6.5	0.146	Gravel	SW	Sand	1.5105	0.22	0.063
Average:							1.53		0.421

Table 1C: Soil Type Determination for the Saturated Zone

Well Name	Depth (ft.)	Delta Depth	Weighting Factor	ARCADIS Description	USCS code	Mean Density	Weighted Mean Density	Mean Porosity	Weighted Mean Porosity
MW-2	5 to 7	2	0.084	sand and gravel	Fill	sand	1.5105	0.13	0.036
	7 to 8.5	1.5	0.063	clay	CH	clay	1.643	0.10	0.024
	8.5 to 24.5	16	0.675	Clayey Silt	ML	Silt	1.431	0.97	0.311
	24.5 to 39.7	15.2	0.641	Sand		sand	1.5105	0.97	0.276
Average:							1.48		0.442
MW-4	5 to 5.7	0.7	0.015	Silty clay	CL	Silty clay	1.696	0.03	0.006
	5.7 to 9	3.3	0.072	silt	ML	Silt	1.431	0.10	0.033
	9 to 16.4	7.4	0.162	Clayey Silt	CL	clay	1.643	0.27	0.062
	16.4 to 50.6	34.2	0.750	Silty Sand	SP	sand	1.5105	1.13	0.323
Average:							1.53		0.423
MW-6	5 to 13.8	8.8	0.196	Clayey Silt	ML	Silt	1.431	0.28	0.090
	13.8 to 20.5	6.7	0.149	Sandy Silt	ML	Silt	1.431	0.21	0.068
	20.5 to 50	29.5	0.656	Sand		sand	1.5105	0.99	0.282
Average:							1.48		0.440
MW-11	5 to 11.3	6.3	0.140	clay	CH	clay	1.643	0.23	0.053
	11.3 to 22.6	11.3	0.251	Clayey Silt	ML	Silt	1.431	0.36	0.116
	22.6 to 32.1	9.5	0.211	Silt	ML	Silt	1.431	0.30	0.097
	32.1 to 50	17.9	0.398	Sand	SP	sand	1.5105	0.60	0.171
Average:							1.49		0.437
Overall Average:							1.51		0.431
Selected soil type based on overall averages for density and porosity:							Silty Clay Loam		

^a Bold font indicates description used.

Table 2: Summary of Values for RESRAD Input Parameters

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				
						1	2	3	4	Mean/ Median
Soil Concentrations										
Basic radiation dose limit (mrem/y)		3	D	25	10 CFR 20.1402	NR	NR	NR	NR	
Initial principal radionuclide (pCi/g)	P	2	D	1	Unit Value	NR	NR	NR	NR	
Distribution coefficients (contaminated, unsaturated, and saturated zones) (cm ³ /g)										
Ac-227 (daughter for Cm-243 and Pu-239)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	6.72	3.22	0.001	0.999	825
Am-241 (also daughter for Cm-245 and Pu-241)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	7.28	3.15	0.001	0.999	1445
Am-243 (daughter for Cm-243)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	7.28	3.15	0.001	0.999	1445
C-14	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	2.4	3.22	0.001	0.999	11
Cm-243	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	8.82	1.82	0.001	0.999	6761
Cm-244	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	8.82	1.82	0.001	0.999	6761
Cm-245	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	8.82	1.82	0.001	0.999	6761
Cm-246	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	8.82	1.82	0.001	0.999	6761
Co-60	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	5.46	2.53	0.001	0.999	235
Cs-137	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	6.1	2.33	0.001	0.999	446
Eu-152	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	6.72	3.22	0.001	0.999	825
Eu-154	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	6.72	3.22	0.001	0.999	825
Gd-152 (daughter for Eu-152)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	6.72	3.22	0.001	0.999	825
H-3	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-2.81	0.5	0.001	0.999	0.06
I-129	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	1.52	2.19	0.001	0.999	4.6
Nb-94	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	5.94	3.22	0.001	0.999	380
Ni-59	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	6.05	1.46	0.001	0.999	424
Ni-63	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	6.05	1.46	0.001	0.999	424
Np-237 (also daughter for Am-241, Cm-245, and Pu-241)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	2.84	2.25	0.001	0.999	17
Pa-231 (daughter for Cm-243 and Pu-239)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	5.94	3.22	0.001	0.999	380
Po-210 (daughter for Cm-246)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	5.20	1.68	0.001	0.999	181
Pb-210 (daughter for Cm-246 and Pu-238)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	7.78	2.76	0.001	0.999	2392
Pu-238	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	6.86	1.89	0.001	0.999	953

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Pu-239 (also daughter for Cm-243)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	6.86	1.89	0.001	0.999	953
Pu-240 (also daughter for Cm-244)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	6.86	1.89	0.001	0.999	953
Pu-241 (also daughter for Cm-245)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	6.86	1.89	0.001	0.999	953
Pu-242 (daughter for Cm-246)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	6.86	1.89	0.001	0.999	953
Ra-226 (daughter for Cm-246 and Pu-238)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	8.17	1.7	0.001	0.999	3533
Ra-228 (daughter for Cm-244 and Pu-240)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	8.17	1.7	0.001	0.999	3533
Sr-90	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	3.45	2.12	0.001	0.999	32
Tc-99	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-0.67	3.16	0.001	0.999	0.51
Th-228 (daughter for Cm-244 and Pu-240)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	8.68	3.62	0.001	0.999	5884
Th-229 (daughter for Am-241, Cm-245, Np-237, and Pu-241)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	8.68	3.62	0.001	0.999	5884
Th-230 (daughter for Cm-246 and Pu-238)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	8.68	3.62	0.001	0.999	5884
Th-232 (daughter for Cm-244 and Pu-240)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	8.68	3.62	0.001	0.999	5884
U-233 (daughter for Am-241, Cm-245, Np-237, and Pu-241)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	4.84	3.13	0.001	0.999	126
U-234 (daughter for Cm-246 and Pu-238)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	4.84	3.13	0.001	0.999	126
U-235 (daughter for Cm-243 and Pu-239)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	4.84	3.13	0.001	0.999	126
U-236 (daughter for Cm-244 and Pu-240)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	4.84	3.13	0.001	0.999	126
U-238 (daughter for Cm-246)	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	4.84	3.13	0.001	0.999	126
Initial concentration of radionuclides present in groundwater (pCi/l)	P	3	D	0	Ground water initially uncontaminated for this scenario	NR	NR	NR	NR	
Calculation Times										
Time since placement of material (y)	P	3	D	0		NR	NR	NR	NR	
Time for calculations (y)	P	3	D	0, 1, 3, 10, 30, 100, 300, 1000	RESRAD Default	NR	NR	NR	NR	
Contaminated Zone										
Area of contaminated zone (m ²)	P	2	D	30,000	Site-specific: largest contiguous class 1/class 2 area (rounded to nearest thousands)	NR	NR	NR	NR	

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Thickness of contaminated zone (m)	P	2	S	Uniform	Site-specific; equal to depth of soil mixing layer (0.15m) and max depth of subsurface sample yielding detectable plant-related radioactivity (11.5 ft, LTP chap 2, Table 2-4)	0.15	3.51			1.83
Length parallel to aquifer flow (m)	P	2	D	195	Site-specific - diameter of circle with an area of 30,000 m ²	NR	NR	NR	NR	
Contaminated fraction below water table	P	2	D	0	Ground water initially uncontaminated for this scenario	NR	NR	NR	NR	
Cover and Contaminated Zone Hydrological Data										
Cover depth (m)	P	2	D	0	Site-specific - no cover assumed	NR	NR	NR	NR	
Density of contaminated zone (g/cm ³)	P	1	S	Bounded Normal	NUREG 6697 dist for site soil type - clay loam	1.5635	0.2385	0.827	2.3	1.5635
Contaminated zone erosion rate (m/y)	P	2	D	2.2E-3	Calculated value based on site-specific slope of 6%	NR	NR	NR	NR	
Contaminated zone total porosity	P	2	S	Bounded Normal	NUREG 6697 dist for site soil type - clay loam	0.41	0.09	0.1319	0.6881	0.41
Contaminated zone field capacity	P	3	D	0.095	Site-specific value calculated in step 6.4	NR	NR	NR	NR	0.095
Contaminated zone hydraulic conductivity (m/y)	P	2	S	Bounded Log Normal n	NUREG 6697 dist for site soil type - clay loam	1.36	2.17	0.00478	3190	3.90
Contaminated zone b parameter	P	2	S	Bounded Log Normal n	NUREG 6697 dist for site soil type - clay loam	1.73	0.323	2.08	15.3	5.6
Humidity in air (g/m ³)	P	3	D	8.2	Regional value for northern CA as represented by San Francisco	NR	NR	NR	NR	
Evapotranspiration coefficient	P	2	S	Uniform	NUREG/CR-6697 Att. C, Ref. 4	0.5	0.75	NR	NR	0.625
Average annual wind speed (m/s)	P	2	D	3.04	Site-specific value (from NCDC website)	NR	NR	NR	NR	

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Precipitation (m/y)	P	2	D	0.91	Site-specific value from HB SAFSTOR Environmental Report, section 4.1.1	NR	NR	NR	NR	
Irrigation (m/y)	B	3	S	Uniform	NUREG/CR-6697, Att C methodology	0.36	0.76	NR	NR	0.56
Irrigation mode	B	3	D	Overhead	Overhead irrigation is common practice in U. S.	NR	NR	NR	NR	
Runoff coefficient	P	2	D	0.5	Site-specific value; NUREG/CR-6697, Att. C section 4.2 methodology	NR	NR	NR	NR	
Watershed area for nearby stream or pond (m ²)	P	3	D	2.52E+07	Site-specific value from (HB SAFSTOR Environmental Report)	NR	NR	NR	NR	
Accuracy for water/soil computations	-	3	D	1.00E-03	RESRAD Default	NR	NR	NR	NR	
Saturated Zone Hydrological Data										
Density of saturated zone (g/cm ³)	P	1	S	Bounded Normal	NUREG 6697 dist for site soil type - silty clay loam	1.5105	0.1855	0.937	2.084	1.5105
Saturated zone total porosity	P	1	S	Bounded Normal	NUREG 6697 dist for site soil type - silty clay loam	0.43	0.0699	0.214	0.646	0.43
Saturated zone effective porosity	P	1	S	Bounded Normal	NUREG 6697 dist for site soil type - silty clay loam	0.342	0.0705	0.124	0.56	0.342
Saturated zone field capacity	P	3	D	0.088	Site-specific value calculated in step 6.4	NR	NR	NR	NR	0.088
Saturated zone hydraulic conductivity (m/y)	P	1	S	Bounded Log Normal n	NUREG 6697 dist for site soil type - silty clay loam	0.362	1.59	0.0106	195	1.44
Saturated zone hydraulic gradient	P	2	D	0.002	Site-specific value determined using method described in NUREG/CR-6697, App. C (step 6.5)	NR	NR	NR	NR	
Saturated zone b parameter	P	2	S	Bounded Log Normal n	NUREG 6697 dist for site soil type - silty clay loam	1.96	0.265	3.02	15.5	7.1
Water table drop rate (m/y)	P	3	D	1.00E-03	RESRAD User Manual	NR	NR	NR	NR	
Well pump intake depth (m below water table)	P	2	S	Triangular	NUREG/CR-6697, Att. C	6	10	30		10
Model: Nondispersion (ND) or Mass-Balance (MB)	P	3	D	ND	ND model recommended for contaminant areas > 1,000 m ²	NR	NR	NR	NR	

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Well pumping rate (m ³ /y)	P	2	S	Uniform	Min, Max, median value based on site irrigation and area and calculated according to NUREG/CR-6697, Att. C section 3.10 method. (see step 6.13)	1173	1973			1573
Unsaturated Zone Hydrological Data										
Number of unsaturated zone strata	P	3	D	1	Site-specific value	NR	NR	NR	NR	
Unsat. zone thickness (m)	P	2	S	Uniform	Site-specific distribution base on thickness of CZ and groundwater elevations	0.00	8.08			4.04
Unsat. zone soil density (g/cm ³)	P	1	S	Bounded Normal	NUREG 6697 dist for site soil type - clay loam	1.5635	0.2385	0.827	2.3	1.5635
Unsat. zone total porosity	P	2	S	Bounded Normal	NUREG 6697 dist for site soil type - clay loam	0.41	0.09	0.1319	0.6881	0.41
Unsat. zone effective porosity	P	1	S	Bounded Normal	NUREG 6697 dist for site soil type - clay loam	0.315	0.0905	0.0349	0.594	0.315
Unsat. zone field capacity	P	3	D	0.095	Site-specific value calculated using Equation 4.4 from Ref	NR	NR	NR	NR	0.095
Unsat. zone hydraulic conductivity (m/y)	P	1	S	Bounded Log Normal n	NUREG 6697 dist for site soil type - clay loam	1.36	2.17	0.00478	3190	3.90
Unsat. zone soil-specific b parameter	P	2	S	Bounded Log Normal n	NUREG 6697 dist for site soil type - clay loam	1.73	0.323	2.08	15.3	5.6
Occupancy										
Inhalation rate (m ³ /y)	B	3	D	8400	NUREG/CR-6697, Att C	NR	NR	NR	NR	
Mass loading for inhalation (g/m ³)	P	2	S	Continuous linear	NUREG/CR-6697, Att. C					2.33E-05
Exposure duration	B	3	D	30	User's Manual for RESRAD Version 6; parameter value not used in dose calculation	NR	NR	NR	NR	
Indoor dust filtration factor	P	2	S	Uniform	NUREG/CR-6697, Att. C	0.15	0.95			0.55
Shielding factor, external gamma	P	2	S	Bounded lognormal-n	NUREG/CR-6697, Att. C	-1.3	0.59	0.044	1	0.2725
Fraction of time spent indoors	B	3	D	0.6571	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Fraction of time spent outdoors (on site)	B	3	D	0.1181	NUREG/CR-5512, Vol. 3 Table 6.87 (outdoors + gardening)	NR	NR	NR	NR	

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Shape factor flag, external gamma	P	3	D	Circular	Circular contaminated zone assumed for modeling purposes	NR	NR	NR	NR	
Ingestion, Dietary										
Fruits, vegetables, grain consumption (kg/y)	B	2	D	112	NUREG/CR-5512, Vol. 3 (other vegetables + fruits + grain)	NR	NR	NR	NR	
Leafy vegetable consumption (kg/y)	B	3	D	21.4	NUREG/CR-5512, Vol. 3	NR	NR	NR	NR	
Milk consumption (L/y)	B	2	D	233	NUREG/CR-5512, Vol. 3	NR	NR	NR	NR	
Meat and poultry consumption (kg/y)	B	3	D	65.1	NUREG/CR-5512, Vol. 3 (beef + poultry)	NR	NR	NR	NR	
Fish consumption (kg/y)	B	3	D	20.6	NUREG/CR-5512, Vol. 3	NR	NR	NR	NR	
Other seafood consumption (kg/y)	B	3	D	0.9	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Soil ingestion rate (g/y)	B	2	D	18.26	NUREG/CR-5512, Vol. 3	NR	NR	NR	NR	
Drinking water intake (L/y)	B	2	D	511	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Contamination fraction of drinking water	P	3	D	1	All water assumed contaminated	NR	NR	NR	NR	
Contamination fraction of household water (if used)	P	3		NA						
Contamination fraction of livestock water	P	3	D	1	All water assumed contaminated	NR	NR	NR	NR	
Contamination fraction of irrigation water	P	3	D	1	All water assumed contaminate	NR	NR	NR	NR	
Contamination fraction of aquatic food	P	2	D	1	NUREG/CR-5512, Vol. 3	NR	NR	NR	NR	
Contamination fraction of plant food	P	3	D	1	NUREG/CR-5512, Vol. 3	NR	NR	NR	NR	
Contamination fraction of meat	P	3	D	1	NUREG/CR-5512, Vol. 3	NR	NR	NR	NR	
Contamination fraction of milk	P	3	D	1	NUREG/CR-5512, Vol. 3	NR	NR	NR	NR	
Ingestion, Non-Dietary										
Livestock fodder intake for meat (kg/day)	M	3	D	27.1	NUREG/CR-5512, Vol. 3 Table 6.87, beef cattle + poultry + layer hen	NR	NR	NR	NR	

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Livestock fodder intake for milk (kg/day)	M	3	D	63.2	NUREG/CR5512, Vol. 3 Table 6.87, forage + grain + hay	NR	NR	NR	NR	
Livestock water intake for meat (L/day)	M	3	D	50.6	NUREG/CR5512, Vol. 3 Table 6.87, beef cattle + poultry + layer hen	NR	NR	NR	NR	
Livestock water intake for milk (L/day)	M	3	D	60	NUREG/CR5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Livestock soil intake (kg/day)	M	3	D	0.5	User's Manual for RESRAD Version 6, Appendix L	NR	NR	NR	NR	
Mass loading for foliar deposition (g/m ³)	P	3	D	4.00E-04	NUREG/CR-5512, Vol. 3 Table 6.87, gardening	NR	NR	NR	NR	
Depth of soil mixing layer (m)	P	2	S	Triangular	NUREG/CR-6697, Att. C	0	0.15	0.6		0.23
Depth of roots (m)	P	1	S	Uniform	Min. from NUREG/CR-6697, Att. C	0.3	4.0			2.15
Drinking water fraction from ground water	P	3	D	1	All water assumed to be supplied from groundwater	NR	NR	NR	NR	
Household water fraction from ground water (if used)	P	3		NA						
Livestock water fraction from ground water	P	3	D	1	All water assumed to be supplied from groundwater	NR	NR	NR	NR	
Irrigation fraction from ground water	P	3	D	1	All water assumed to be supplied from groundwater	NR	NR	NR	NR	
Wet weight crop yield for Non-Leafy (kg/m ²)	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	0.56	0.48	0.001	0.999	1.75
Wet weight crop yield for Leafy (kg/m ²)	P	3	D	2.88921	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Wet weight crop yield for Fodder (kg/m ²)	P	3	D	1.8868	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Growing Season for Non-Leafy (y)	P	3	D	0.246	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Growing Season for Leafy (y)	P	3	D	0.123	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Growing Season for Fodder (y)	P	3	D	0.082	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Translocation Factor for Non-Leafy	P	3	D	0.1	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^a				Mean/ Median
						1	2	3	4	
Translocation Factor for Leafy	P	3	D	1	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Translocation Factor for Fodder	P	3	D	1	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Weathering Removal Constant for Vegetation (1/y)	P	2	S	Triangular	NUREG/CR-6697, Att. C	5.1	18	84		33
Wet Foliar Interception Fraction for Non-Leafy	P	3	D	0.35	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Wet Foliar Interception Fraction for Leafy	P	2	S	Triangular	NUREG/CR-6697, Att. C	0.06	0.67	0.95		0.58
Wet Foliar Interception Fraction for Fodder	P	3	D	0.35	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Dry Foliar Interception Fraction for Non-Leafy	P	3	D	0.35	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Dry Foliar Interception Fraction for Leafy	P	3	D	0.35	NUREG/CR-5512, Vol. 3	NR	NR	NR	NR	
Dry Foliar Interception Fraction for Fodder	P	3	D	0.35	NUREG/CR-5512, Vol. 3	NR	NR	NR	NR	
Storage times of contaminated foodstuffs (days):										
Fruits, non-leafy vegetables, and grain	B	3	D	14	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Leafy vegetables	B	3	D	1	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Milk	B	3	D	1	NUREG/CR-5512, Vol. 3 Table 6.87	NR	NR	NR	NR	
Meat and poultry	B	3	D	20	NUREG/CR-5512, Vol. 3 Table 6.87 (holdup period for beef)	NR	NR	NR	NR	
Fish	B	3	D	7	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Crustacea and mollusks	B	3	D	7	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Well water	B	3	D	1	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Surface water	B	3	D	1	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Livestock fodder	B	3	D	45	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Special Radionuclides (C-14)										
C-12 concentration in water (g/cm ³)	P	3	D	2.00E-05	User's Manual for RESRAD Version 6, Appendix L	NR	NR	NR	NR	
C-12 concentration in contaminated soil (g/g)	P	3	D	3.00E-02	User's Manual for RESRAD Version 6, Appendix L	NR	NR	NR	NR	
Fraction of vegetation carbon from soil	P	3	D	2.00E-02	User's Manual for RESRAD Version 6, Appendix L	NR	NR	NR	NR	
Fraction of vegetation carbon from air	P	3	D	9.80E-01	User's Manual for RESRAD Version 6, Appendix L	NR	NR	NR	NR	
C-14 evasion layer thickness in soil (m)	P	2	S	Triangular	NUREG/CR-6697, Att. C	0.2	0.3	0.6		0.3
C-14 evasion flux rate from soil (1/sec)	P	3	D	7.00E-07	User's Manual for RESRAD Version 6, Appendix L	NR	NR	NR	NR	
C-12 evasion flux rate from soil (1/sec)	P	3	D	1.00E-10	User's Manual for RESRAD Version 6, Appendix L	NR	NR	NR	NR	
Fraction of grain in beef cattle feed	B	3	D	0.2500	NUREG/CR-6697, Att. B	NR	NR	NR	NR	
Fraction of grain in milk cow feed	B	3	D	0.1000	NUREG/CR-6697, Att. B	NR	NR	NR	NR	
Dose Conversion Factors (Inhalation mrem/pCi)										
Ac-227	M	3	D	6.70E+00	FGR11 (RESRAD Dose Conversion Library)	NR	NR	NR	NR	
Am-241	M	3	D	4.44E-01	FGR11	NR	NR	NR	NR	
Am-243	M	3	D	4.40E-01	FGR11	NR	NR	NR	NR	
C-14	M	3	D	2.09E-06	FGR11	NR	NR	NR	NR	
Cm-243	M	3	D	3.07E-01	FGR11	NR	NR	NR	NR	
Cm-244	M	3	D	2.48E-01	FGR11	NR	NR	NR	NR	
Cm-245	M	3	D	4.55E-01	FGR11	NR	NR	NR	NR	
Cm-246	M	3	D	4.51E-01	FGR11	NR	NR	NR	NR	
Co-60	M	3	D	2.19E-04	FGR11	NR	NR	NR	NR	

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Cs-137	M	3	D	3.19E-05	FGR11	NR	NR	NR	NR	
Eu-152	M	3	D	2.21E-04	FGR11	NR	NR	NR	NR	
Eu-154	M	3	D	2.86E-04	FGR11	NR	NR	NR	NR	
Gd-152	M	3	D	2.43E-01	FGR11	NR	NR	NR	NR	
H-3	M	3	D	6.40E-08	FGR11	NR	NR	NR	NR	
I-129	M	3	D	1.74E-04	FGR11	NR	NR	NR	NR	
Nb-94	M	3	D	4.14E-04	FGR11	NR	NR	NR	NR	
Ni-59	M	3	D	2.70E-06	FGR11	NR	NR	NR	NR	
Ni-63	M	3	D	6.29E-06	FGR11	NR	NR	NR	NR	
Np-237	M	3	D	5.40E-01	FGR11	NR	NR	NR	NR	
Pa-231	M	3	D	1.28E+00	FGR11	NR	NR	NR	NR	
Pb-210	M	3	D	1.36E-02	FGR11	NR	NR	NR	NR	
Po-210	M	3	D	9.40E-03	FGR11	NR	NR	NR	NR	
Pu-238	M	3	D	3.92E-01	FGR11	NR	NR	NR	NR	
Pu-239	M	3	D	4.29E-01	FGR11	NR	NR	NR	NR	
Pu-240	M	3	D	4.29E-01	FGR11	NR	NR	NR	NR	
Pu-241	M	3	D	8.25E-03	FGR11	NR	NR	NR	NR	
Pu-242	M	3	D	4.11E-01	FGR11	NR	NR	NR	NR	
Ra-226	M	3	D	8.58E-03	FGR11	NR	NR	NR	NR	
Ra-228	M	3	D	4.77E-03	FGR11	NR	NR	NR	NR	
Sr-90	M	3	D	1.30E-03	FGR11	NR	NR	NR	NR	
Tc-99	M	3	D	8.32E-06	FGR11	NR	NR	NR	NR	
Th-228	M	3	D	3.42E-01	FGR11	NR	NR	NR	NR	
Th-229	M	3	D	2.15E+00	FGR11	NR	NR	NR	NR	
Th-230	M	3	D	3.26E-01	FGR11	NR	NR	NR	NR	
Th232	M	3	D	1.64E+00	FGR11	NR	NR	NR	NR	
U-233	M	3	D	1.35E-01	FGR11	NR	NR	NR	NR	
U-234	M	3	D	1.32E-01	FGR11	NR	NR	NR	NR	
U-235	M	3	D	1.23E-01	FGR11	NR	NR	NR	NR	
U-236	M	3	D	1.25E-01	FGR11	NR	NR	NR	NR	

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
U-238	M	3	D	1.18E-01	FGR11	NR	NR	NR	NR	
Dose Conversion Factors (Ingestion mrem/pCi)										
Ac-227	M	3	D	1.41E-02	FGR11 (RESRAD Dose Conversion Library)	NR	NR	NR	NR	
Am-241	M	3	D	3.64E-03	FGR11	NR	NR	NR	NR	
Am-243	M	3	D	3.62E-03	FGR11	NR	NR	NR	NR	
C-14	M	3	D	2.09E-06	FGR11	NR	NR	NR	NR	
Cm-243	M	3	D	2.51E-03	FGR11	NR	NR	NR	NR	
Cm-244	M	3	D	2.02E-03	FGR11	NR	NR	NR	NR	
Cm-245	M	3	D	3.74E-03	FGR11	NR	NR	NR	NR	
Cm-246	M	3	D	3.70E-03	FGR11	NR	NR	NR	NR	
Co-60	M	3	D	2.69E-05	FGR11	NR	NR	NR	NR	
Cs-137	M	3	D	5.00E-05	FGR11	NR	NR	NR	NR	
Eu-152	M	3	D	6.48E-06	FGR11	NR	NR	NR	NR	
Eu-154	M	3	D	9.55E-06	FGR11	NR	NR	NR	NR	
Gd-152	M	3	D	1.61E-04	FGR11	NR	NR	NR	NR	
H-3	M	3	D	6.40E-08	FGR11	NR	NR	NR	NR	
I-129	M	3	D	2.76E-04	FGR11	NR	NR	NR	NR	
Nb-94	M	3	D	7.14E-06	FGR11	NR	NR	NR	NR	
Ni-59	M	3	D	2.10E-07	FGR11	NR	NR	NR	NR	
Ni-63	M	3	D	5.77E-07	FGR11	NR	NR	NR	NR	
Np-237	M	3	D	4.44E-03	FGR11	NR	NR	NR	NR	
Pa-231	M	3	D	1.06E-02	FGR11	NR	NR	NR	NR	
Pb-210	M	3	D	5.37E-03	FGR11	NR	NR	NR	NR	
Pb-210	M	3	D	1.90E-03	FGR11	NR	NR	NR	NR	
Pu-238	M	3	D	3.20E-03	FGR11	NR	NR	NR	NR	
Pu-239	M	3	D	3.54E-03	FGR11	NR	NR	NR	NR	
Pu-240	M	3	D	3.54E-03	FGR11	NR	NR	NR	NR	
Pu-241	M	3	D	6.84E-05	FGR11	NR	NR	NR	NR	
Pu-242	M	3	D	3.36E-03	FGR11	NR	NR	NR	NR	
Ra-226	M	3	D	1.32E-03	FGR11	NR	NR	NR	NR	
Ra-228	M	3	D	1.44E-03	FGR11	NR	NR	NR	NR	

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Sr-90	M	3	D	1.42E-04	FGR11	NR	NR	NR	NR	
Tc-99	M	3	D	1.46E-06	FGR11	NR	NR	NR	NR	
Th-228	M	3	D	3.96E-04	FGR11	NR	NR	NR	NR	
Th-229	M	3	D	3.53E-03	FGR11	NR	NR	NR	NR	
Th-230	M	3	D	5.48E-04	FGR11	NR	NR	NR	NR	
Th-232	M	3	D	2.73E-03	FGR11	NR	NR	NR	NR	
U-233	M	3	D	2.89E-04	FGR11	NR	NR	NR	NR	
U-234	M	3	D	2.83E-04	FGR11	NR	NR	NR	NR	
U-235	M	3	D	2.66E-04	FGR11	NR	NR	NR	NR	
U-236	M	3	D	2.69E-04	FGR11	NR	NR	NR	NR	
U-238	M	3	D	2.55E-04	FGR11	NR	NR	NR	NR	
Plant Transfer Factors (pCi/g plant)/(pCi/g soil)										
Ac-227	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	1.1	0.001	0.999	1.0E-03
Am-241	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.9	0.001	0.999	1.0E-03
Am-243	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.9	0.001	0.999	1.0E-03
C-14	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-0.36	0.9	0.001	0.999	7.0E-01
Cm-243	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.9	0.001	0.999	1.0E-03
Cm-244	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.9	0.001	0.999	1.0E-03
Cm-245	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.9	0.001	0.999	1.0E-03
Cm-246	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.9	0.001	0.999	1.0E-03
Co-60	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-2.53	0.9	0.001	0.999	8.0E-02
Cs-137	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-3.22	1.0	0.001	0.999	4.0E-02
Eu-152	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.21	1.1	0.001	0.999	2.0E-03
Eu-154	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.21	1.1	0.001	0.999	2.0E-03
Gd-152	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.21	1.1	0.001	0.999	2.0E-03
H-3	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	1.57	1.1	0.001	0.999	4.8E+00
I-129	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-3.91	0.9	0.001	0.999	2.0E-02
Nb-94	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-4.61	1.1	0.001	0.999	1.0E-02
Ni-59	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-3.0	0.9	0.001	0.999	5.0E-02
Ni-63	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-3.0	0.9	0.001	0.999	5.0E-02
Np-237	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-3.91	0.9	0.001	0.999	2.0E-02
Pa-231	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-4.61	1.1	0.001	0.999	1.0E-02

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Pb-210	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-5.52	0.9	0.001	0.999	4.0E-03
Po-210	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.90	0.9	0.001	0.999	1.0E-03
Pu-238	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.9	0.001	0.999	1.0E-03
Pu-239	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.9	0.001	0.999	1.0E-03
Pu-240	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.9	0.001	0.999	1.0E-03
Pu-241	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.9	0.001	0.999	1.0E-03
Pu-242	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.9	0.001	0.999	1.0E-03
Ra-226	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-3.22	0.9	0.001	0.999	4.0E-02
Ra-228	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-3.22	0.9	0.001	0.999	4.0E-02
Sr-90	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-1.20	1.0	0.001	0.999	3.0E-01
Tc-99	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	1.61	0.9	0.001	0.999	5.0E+00
Th-228	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.9	0.001	0.999	1.0E-03
Th-229	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.9	0.001	0.999	1.0E-03
Th-230	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.9	0.001	0.999	1.0E-03
Th-232	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.9	0.001	0.999	1.0E-03
U-233	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.21	0.9	0.001	0.999	2.0E-03
U-234	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.21	0.9	0.001	0.999	2.0E-03
U-235	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.21	0.9	0.001	0.999	2.0E-03
U-236	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.21	0.9	0.001	0.999	2.0E-03
U-238	P	1	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.21	0.9	0.001	0.999	2.0E-03
Meat Transfer Factors (pCi/kg)/(pCi/d)										
Ac-227	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-10.82	1.0	0.001	0.999	2.0E-05
Am-241	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.90	0.2	0.001	0.999	5.0E-05
Am-243	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.90	0.2	0.001	0.999	5.0E-05
C-14	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-3.47	1.0	0.001	0.999	3.1E-02
Cm-243	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-10.82	1.0	0.001	0.999	2.0E-05
Cm-244	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-10.82	1.0	0.001	0.999	2.0E-05
Cm-245	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-10.82	1.0	0.001	0.999	2.0E-05
Cm-246	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-10.82	1.0	0.001	0.999	2.0E-05
Co-60	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-3.51	1.0	0.001	0.999	3.0E-02
Cs-137	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-3.00	0.4	0.001	0.999	5.0E-02
Eu-152	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.21	1.0	0.001	0.999	2.0E-03

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Eu-154	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.21	1.0	0.001	0.999	2.0E-03
Gd-152	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.21	1.0	0.001	0.999	2.0E-03
H-3	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-4.42	1.0	0.001	0.999	1.2E-02
I-129	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-3.22	0.4	0.001	0.999	4.0E-02
Nb-94	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.82	0.9	0.001	0.999	1.0E-06
Ni-59	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-5.30	0.9	0.001	0.999	5.0E-03
Ni-63	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-5.30	0.9	0.001	0.999	5.0E-03
Np-237	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.7	0.001	0.999	1.0E-03
Pa-231	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-12.21	1.0	0.001	0.999	5.0E-06
Po-210	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-5.30	0.7	0.001	0.999	5.0E-03
Pb-210	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-7.13	0.7	0.001	0.999	8.0E-04
Pu-238	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.21	0.2	0.001	0.999	1.0E-04
Pu-239	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.21	0.2	0.001	0.999	1.0E-04
Pu-240	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.21	0.2	0.001	0.999	1.0E-04
Pu-241	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.21	0.2	0.001	0.999	1.0E-04
Pu-242	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.21	0.2	0.001	0.999	1.0E-04
Ra-226	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.7	0.001	0.999	1.0E-03
Ra-228	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.7	0.001	0.999	1.0E-03
Sr-90	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-4.61	0.4	0.001	0.999	1.0E-02
Tc-99	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.21	0.7	0.001	0.999	1.0E-04
Th-228	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.21	1.0	0.001	0.999	1.0E-04
Th-229	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.21	1.0	0.001	0.999	1.0E-04
Th-230	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.21	1.0	0.001	0.999	1.0E-04
Th-232	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.21	1.0	0.001	0.999	1.0E-04
U-233	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-7.13	0.7	0.001	0.999	8.0E-04
U-234	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-7.13	0.7	0.001	0.999	8.0E-04
U-235	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-7.13	0.7	0.001	0.999	8.0E-04
U-236	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-7.13	0.7	0.001	0.999	8.0E-04
U-238	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-7.13	0.7	0.001	0.999	8.0E-04
Milk Transfer Factors (pCi/L)/(pCi/d)										
Ac-227	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.12	0.9	0.001	0.999	2.0E-06
Am-241	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.12	0.7	0.001	0.999	2.0E-06

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Am-243	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.12	0.7	0.001	0.999	2.0E-06
C-14	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-4.4	0.9	0.001	0.999	1.2E-02
Cm-243	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.12	0.9	0.001	0.999	2.0E-06
Cm-244	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.12	0.9	0.001	0.999	2.0E-06
Cm-245	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.12	0.9	0.001	0.999	2.0E-06
Cm-246	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.12	0.9	0.001	0.999	2.0E-06
Co-60	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.21	0.7	0.001	0.999	2.0E-03
Cs-137	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-4.61	0.5	0.001	0.999	1.0E-02
Eu-152	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.72	0.9	0.001	0.999	6.0E-05
Eu-154	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.72	0.9	0.001	0.999	6.0E-05
Gd-152	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-9.72	0.9	0.001	0.999	6.0E-05
H-3	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-4.6	0.9	0.001	0.999	1.0E-02
I-129	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-4.61	0.5	0.001	0.999	1.0E-03
Nb-94	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.12	0.7	0.001	0.999	2.0E-06
Ni-59	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-3.91	0.7	0.001	0.999	2.0E-02
Ni-63	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-3.91	0.7	0.001	0.999	2.0E-02
Np-237	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-11.51	0.7	0.001	0.999	1.0E-05
Pa-231	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-12.21	0.9	0.001	0.999	5.0E-06
Po-210	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-7.82	0.7	0.001	0.999	4.0E-04
Pb-210	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-8.11	0.9	0.001	0.999	3.0E-04
Pu-238	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.82	0.5	0.001	0.999	1.0E-06
Pu-239	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.82	0.5	0.001	0.999	1.0E-06
Pu-240	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.82	0.5	0.001	0.999	1.0E-06
Pu-241	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.82	0.5	0.001	0.999	1.0E-06
Pu-242	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-13.82	0.5	0.001	0.999	1.0E-06
Ra-226	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.5	0.001	0.999	1.0E-03
Ra-228	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.5	0.001	0.999	1.0E-03
Sr-90	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.21	0.5	0.001	0.999	2.0E-03
Tc-99	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-6.91	0.7	0.001	0.999	1.0E-03
Th-228	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-12.21	0.9	0.001	0.999	5.0E-06
Th-229	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-12.21	0.9	0.001	0.999	5.0E-06
Th-230	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-12.21	0.9	0.001	0.999	5.0E-06

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Th-232	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-12.21	0.9	0.001	0.999	5.0E-06
U-233	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-7.82	0.6	0.001	0.999	4.0E-04
U-234	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-7.82	0.6	0.001	0.999	4.0E-04
U-235	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-7.82	0.6	0.001	0.999	4.0E-04
U-236	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-7.82	0.6	0.001	0.999	4.0E-04
U-238	P	2	S	Truncated lognormal-n	NUREG/CR-6697, Att. C	-7.82	0.6	0.001	0.999	4.0E-04
Bioaccumulation Factors for Fish ((pCi/kg)/(pCi/L))										
Ac-227	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	2.7	1.1			1.5E+01
Am-241	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.4	1.1			3.0E+01
Am-243	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.4	1.1			3.0E+01
C-14	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	10.8	1.1			4.9E+04
Cm-243	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.4	1.1			3.0E+01
Cm-244	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.4	1.1			3.0E+01
Cm-245	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.4	1.1			3.0E+01
Cm-246	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.4	1.1			3.0E+01
Co-60	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	5.7	1.1			3.0E+02
Cs-137	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	7.6	0.7			2.0E+03
Eu-152	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.9	1.1			4.9E+01
Eu-154	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.9	1.1			4.9E+01
Gd-152	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.2	1.1			2.5E+01
H-3	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	0	0.1			1.0E+00
I-129	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.7	1.1			4.0E+01
Nb-94	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	5.7	1.1			3.0E+02
Ni-59	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	4.6	1.1			9.9E+01
Ni-63	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	4.6	1.1			9.9E+01
Np-237	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.4	1.1			3.0E+01
Pa-231	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	2.3	1.1			9.9E+00
Po-210	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	4.6	1.1			1.0E+01
Pb-210	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	5.7	1.1			3.0E+02
Pu-238	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.4	1.1			3.0E+01
Pu-239	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.4	1.1			3.0E+01
Pu-240	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.4	1.1			3.0E+01

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Pu-241	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.4	1.1			3.0E+01
Pu-242	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.4	1.1			3.0E+01
Ra-226	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.9	1.1			4.9E+01
Ra-228	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3.9	1.1			4.9E+01
Sr-90	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	4.1	1.1			6.0E+01
Tc-99	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	3	1.1			2.0E+01
Th-228	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	4.6	1.1			9.9E+01
Th-229	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	4.6	1.1			9.9E+01
Th-230	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	4.6	1.1			9.9E+01
Th-232	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	4.6	1.1			9.9E+01
U-233	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	2.3	1.1			1.0E+01
U-234	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	2.3	1.1			1.0E+01
U-235	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	2.3	1.1			1.0E+01
U-236	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	2.3	1.1			1.0E+01
U-238	P	2	S	Lognormal-n	NUREG/CR-6697, Att. C	2.3	1.1			1.0E+01
Bioaccumulation Factors for Crustacea/ Mollusks ((pCi/kg)/(pCi/L))										
Ac-227	P	3	D	1.00E+03	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Am-241	P	3	D	1.00E+03	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Am-243	P	3	D	1.00E+03	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
C-14	P	3	D	9.10E+03	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Cm-243	P	3	D	1.00E+03	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Cm-244	P	3	D	1.00E+03	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Cm-245	P	3	D	1.00E+03	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Cm-246	P	3	D	1.00E+03	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Co-60	P	3	D	2.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Cs-137	P	3	D	1.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Eu-152	P	3	D	1.00E+03	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Eu-154	P	3	D	1.00E+03	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Gd-152	P	3	D	1.00E+03	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
H-3	P	3	D	1.00E+00	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
I-129	P	3	D	5.00E+00	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Nb-94	P	3	D	1.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Ni-59	P	3	D	1.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Ni-63	P	3	D	1.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Np-237	P	3	D	4.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Pa-231	P	3	D	1.10E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Pb-210	P	3	D	1.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
Po-210	P	S	D	2.0E+04	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Pu-238	P	3	D	1.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Pu-239	P	3	D	1.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Pu-240	P	3	D	1.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Pu-241	P	3	D	1.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Pu-242	P	3	D	1.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Ra-226	P	3	D	2.50E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Ra-228	P	3	D	2.50E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Sr-90	P	3	D	1.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Tc-99	P	3	D	5.00E+00	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Th-228	P	3	D	5.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Th-229	P	3	D	5.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Th-230	P	3	D	5.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Th-232	P	3	D	5.00E+02	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	

Parameter (unit)	Type	Priority	Treatment	Value/Distribution	Basis	Distribution's Statistical Parameters ^d				Mean/ Median
						1	2	3	4	
U-233	P	3	D	6.00E+01	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
U-234	P	3	D	6.00E+01	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
U-235	P	3	D	6.00E+01	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
U-236	P	3	D	6.00E+01	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
U-238	P	3	D	6.00E+01	User's Manual for RESRAD Version 6, Appendix D	NR	NR	NR	NR	
Graphics Parameters										
Number of points				32	RESRAD Default	NR	NR	NR	NR	
Spacing				log	RESRAD Default	NR	NR	NR	NR	
Time integration parameters										
Maximum number of points for dose				17	RESRAD Default	NR	NR	NR	NR	

Table 2 Notes:

^a P = physical, B = behavioral, M = metabolic; (see NUREG/CR-6697, Attachment B, Table 4.)

^b 1 = high-priority parameter, 2 = medium-priority parameter, 3 = low-priority parameter (see NUREG/CR-6697, Attachment B, Table 4.1)

^c D = deterministic, S = stochastic

^d Distributions Statistical Parameters:

Lognormal-n: 1= mean, 2 = standard deviation

Bounded lognormal-n: 1= mean, 2 = standard deviation, 3 = minimum, 4 = maximum

Truncated lognormal-n: 1= mean, 2 = standard deviation, 3 = lower quantile, 4 = upper quantile

Bounded normal: 1 = mean, 2 = standard deviation, 3 = minimum, 4 = maximum

Triangular: 1 = minimum, 2 = mode, 3 = maximum

Uniform: 1 = minimum, 2 = maximum

Additional Sensitivity Analysis Data:

Sampling technique = Latin Hypercube

Number of observations =2000

Number of repetitions = 1

Input Rank Correlation Coefficients:

Total porosity and bulk density = - 0.99 (contaminated zone, unsaturated and saturated zones)

Total porosity and effective porosity = 0.96 (unsaturated and saturated zones)

Effective porosity and bulk density = -0.99 (unsaturated and saturated zones)

Well Pumping Rate and Irrigation Rate = 0.96

Table 3: Sensitive Input Parameter by Radionuclide

Radionuclide (RESRAD 6.5 Uncertainty Report file name)	Sensitive Parameter	PRCC Value
Am-241 (MCSUMMAR_HB soil_Am241)	Plant transfer factor for Am	0.93
	Thickness of contaminated zone	0.79
	Depth of roots	-0.59
C-14 (MCSUMMAR_HB soil_C14)	Thickness of contaminated zone	0.98
	Depth of roots	-0.76
	Thickness of evasion layer for C-14 in soil	0.35
Cm-243 (MCSUMMAR_HB soil_Cm243)	Plant transfer factor for Cm	0.91
	Thickness of contaminated zone	0.73
	External gamma shielding factor	0.60
	Depth of roots	-0.56
Cm-244 (MCSUMMAR_HB soil_Cm244)	Plant transfer factor for Cm	0.92
	Thickness of contaminated zone	0.78
	Depth of roots	-0.60
Cm-245 (MCSUMMAR_HB soil_Cm245)	Plant transfer factor for Cm	0.84
	Thickness of contaminated zone	0.80
	Depth of roots	-0.54
Cm-246 (MCSUMMAR_HB soil_Cm246)	Plant transfer factor for Cm	0.92
	Thickness of contaminated zone	0.79
	Depth of roots	-0.60
Co-60 (MCSUMMAR_HB soil_Co60)	External gamma shielding factor	0.95
	Plant transfer factor for Co	0.65
	Thickness of contaminated zone	0.39
	Meat transfer factor for Co	0.35
Cs-137 (MCSUMMAR_HB soil_Cs137)	Plant transfer factor for Cs	0.86
	External gamma shielding factor	0.76
	Thickness of contaminated zone	0.58
	Milk transfer factor for Cs	0.39
	Depth of roots	-0.35
Eu-152 (MCSUMMAR_HB soil_Eu152)	Meat transfer factor for Cs	0.28
	External gamma shielding factor	1.00
	Kd of Eu-152 in contaminated zone	0.26
Eu-154 (MCSUMMAR_HB soil_Eu154)	External gamma shielding factor	0.99
H-3 (MCSUMMAR_HB soil_H3)	Thickness of contaminated zone	0.93
	Depth of roots	-0.64
	Kd of H-3 in contaminated zone	-0.27
I-129 (MCSUMMAR_HB soil_I129)	Plant transfer factor for I	0.89
	Thickness of contaminated zone	0.75
	Milk transfer factor for I	0.60
	Depth of roots	-0.49
	Meat transfer factor for I	0.44
Nb-94 (MCSUMMAR_HB soil_Nb94)	External gamma shielding factor	0.99
	Kd of Nb-94 in contaminated zone	0.32
Ni-59 (MCSUMMAR_HB soil_Ni59)	Plant transfer factor for Ni	0.90
	Milk transfer factor for Ni	0.81
	Thickness of contaminated zone	0.74
	Depth of roots	-0.54

Radionuclide (RESRAD 6.5 Uncertainty Report file name)	Sensitive Parameter	PRCC Value
Ni-63 (MCSUMMAR_HB soil_Ni63)	Plant transfer factor for Ni	0.90
	Milk transfer factor for Ni	0.81
	Thickness of contaminated zone	0.74
	Depth of roots	-0.53
Np-237 (MCSUMMAR_HB soil_Np237)	Plant transfer factor for Np	0.92
	Thickness of contaminated zone	0.79
	Depth of roots	-0.60
Pu-238 (MCSUMMAR_HB soil_Pu238)	Plant transfer factor for Pu	0.92
	Thickness of contaminated zone	0.79
	Depth of roots	-0.62
Pu-239 (MCSUMMAR_HB soil_Pu239)	Plant transfer factor for Pu	0.93
	Thickness of contaminated zone	0.79
	Depth of roots	-0.60
Pu-240 (MCSUMMAR_HB soil_Pu240)	Plant transfer factor for Pu	0.92
	Thickness of contaminated zone	0.79
	Depth of roots	-0.60
Pu-241 (MCSUMMAR_HB soil_Pu241)	Plant transfer factor for Am	0.84
	Thickness of contaminated zone	0.75
	Depth of roots	-0.51
	Kd of Am in contaminated zone	0.25
Sr-90 (MCSUMMAR_HB soil_Sr90)	Plant transfer factor for Sr	0.93
	Thickness of contaminated zone	0.78
	Depth of roots	-0.58
Tc-99 (MCSUMMAR_HB soil_Tc99)	Plant transfer factor for Tc	0.91
	Thickness of contaminated zone	0.80
	Depth of roots	-0.54
	Kd of Tc-99 in contaminated zone	0.26

Table 4: RESRAD-Generated Percentile Values for Sensitive Input Parameters

Sensitive Input Parameter	Affected Nuclide	RESRAD Percentile Value ^a	
		25 th	75 th
Thickness of contaminated zone (m)	Am-241, C-14, Cm-243/244/245/246, Co-60, Cs-137, H-3, I-129, Ni-59, Ni-63, Np-237, Pu-238/239/240/241, Sr-90, Tc-99		2.67E+00
Depth of roots (m)	Am-241, C-14, Cm-243/244/245/246, Co-60, Cs-137, H-3, I-129, Ni-59, Ni-63, Np-237, Pu-238/239/240/241, Sr-90, Tc-99	1.22E+00	
External shielding factor	Cm-243, Co-60, Cs-137, Eu-152, Eu-154, Nb-94		3.98E-01
Thickness of evasion layer (m)	C-14		4.27E-01
Plant transfer factor (pCi/g plant per pCi/g soil)	Am-241 (the plant transfer factor was also found sensitive for the Am-241 as a daughter product for Pu-241)		1.83E-03
	Cm-243/244/245/246		1.83E-03
	Co-60		1.46E-01
	Cs-137		7.82E-02
	I-129		3.67E-02
	Ni-59/63		9.12E-02
	Np-237		3.67E-02
	Pu-238/239/240		1.83E-03
	Sr-90		5.90E-01
	Tc-99		9.16E+00
Meat transfer factor (pCi/kg per pCi/d)	Co-60		5.86E-02
	Cs-137		6.52E-02
	I-129		5.23E-02
Milk transfer factor (pCi/l per pCi/d)	Cs-137		1.39E-02
	I-129		1.39E-02
	Ni-59/63		3.21E-02
Kd in contaminated zone (cm ³ /g)	Am-241 (as daughter product for Pu-241)		1.20E+04
	Eu-152		7.22E+03
	H-3	4.30E-02	
	Nb-94		3.56E+03
	Tc-99		4.28E+00

^a The 75th percentile value was selected when the absolute value of the PRCC for a given parameter was ≥ 0.25 and PRCC had a positive value. The 25th percentile value was selected when the absolute value of the PRCC value for a given parameter was ≥ 0.25 and the PRCC had a negative value.

Appendix A
Selected Pages from RESRAD Code Executions

Probabilistic Input									
Number of Sample Runs: 2000									
Number	Name	Distribution	Parameters						
AAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA
1	THICK0	UNIFORM	.15	3.51					
2	DENSZC	BOUNDED NORMAL	1.5635	.2385	.827	2.3			
3	TPCZ	BOUNDED NORMAL	.41	.09	.1319	.6881			
4	HCCZ	BOUNDED LOGNORMAL-N	1.36	2.17	.00478	3190			
5	BCZ	BOUNDED LOGNORMAL-N	1.73	.323	2.08	15.3			
6	EVAPTR	UNIFORM	.5	.75					
7	RI	UNIFORM	.36	.76					
8	DENSAQ	BOUNDED NORMAL	1.5105	.1855	.937	2.084			
9	TPSZ	BOUNDED NORMAL	.43	.0699	.214	.646			
10	EPSZ	BOUNDED NORMAL	.342	.0705	.124	.56			
11	HCSZ	BOUNDED LOGNORMAL-N	.362	1.59	.0106	195			
12	BSZ	BOUNDED LOGNORMAL-N	1.96	.265	3.02	15.5			
13	DWIBWT	TRIANGULAR	6	10	30				
14	UM	UNIFORM	1173	1973					
15	H(1)	UNIFORM	0	8.08					
16	DENSZC(1)	BOUNDED NORMAL	1.5635	.2385	.827	2.3			
17	TPUZ(1)	BOUNDED NORMAL	.41	.09	.1319	.6881			
18	EPUZ(1)	BOUNDED NORMAL	.315	.0905	.0349	.594			
19	HCZ(1)	BOUNDED LOGNORMAL-N	1.36	2.17	.00478	3190			
20	BUZ(1)	BOUNDED LOGNORMAL-N	1.73	.323	2.08	15.3			
21	MLINH	CONTINUOUS LINEAR	8	0	0	.000008	.0151	.000016	.1365
.00003	.8119	.00004	.9495	.00006	.9937	.000076	.9983	.0001	1
22	SHF3	UNIFORM	.15	.95					
23	SHF1	BOUNDED LOGNORMAL-N	-1.3	.59	.044	1			
24	DM	TRIANGULAR	0	.15	.6				
25	DROOT	UNIFORM	.3	.4					
26	YV(1)	TRUNCATED LOGNORMAL-N	.56	.48	.001	.999			
27	WLAM	TRIANGULAR	5.1	18	84				
28	RWET(2)	TRIANGULAR	.06	.67	.95				
29	DCACTC(1)	TRUNCATED LOGNORMAL-N	7.28	3.15	.001	.999			
30	DCACTU1(1)	TRUNCATED LOGNORMAL-N	7.28	3.15	.001	.999			
31	DCACTS(1)	TRUNCATED LOGNORMAL-N	7.28	3.15	.001	.999			
32	DCACTC(2)	TRUNCATED LOGNORMAL-N	2.84	2.25	.001	.999			
33	DCACTU1(2)	TRUNCATED LOGNORMAL-N	2.84	2.25	.001	.999			
34	DCACTS(2)	TRUNCATED LOGNORMAL-N	2.84	2.25	.001	.999			
35	DCACTC(3)	TRUNCATED LOGNORMAL-N	8.68	3.62	.001	.999			
36	DCACTU1(3)	TRUNCATED LOGNORMAL-N	8.68	3.62	.001	.999			
37	DCACTS(3)	TRUNCATED LOGNORMAL-N	8.68	3.62	.001	.999			
38	DCACTC(4)	TRUNCATED LOGNORMAL-N	4.84	3.13	.001	.999			
39	DCACTU1(4)	TRUNCATED LOGNORMAL-N	4.84	3.13	.001	.999			
40	DCACTS(4)	TRUNCATED LOGNORMAL-N	4.84	3.13	.001	.999			
41	BRTF(95,1)	TRUNCATED LOGNORMAL-N	-6.91	.9	.001	.999			
42	BRTF(95,2)	TRUNCATED LOGNORMAL-N	-9.9	.2	.001	.999			
43	BRTF(95,3)	TRUNCATED LOGNORMAL-N	-13.12	.7	.001	.999			
44	BBIO(95,1)	LOGNORMAL-N	3.4	1.1					
45	BRTF(93,1)	TRUNCATED LOGNORMAL-N	-3.91	.9	.001	.999			
46	BRTF(93,2)	TRUNCATED LOGNORMAL-N	-6.91	.7	.001	.999			
47	BRTF(93,3)	TRUNCATED LOGNORMAL-N	-11.51	.7	.001	.999			
48	BBIO(93,1)	LOGNORMAL-N	3.4	1.1					
49	BRTF(90,1)	TRUNCATED LOGNORMAL-N	-6.91	.9	.001	.999			
50	BRTF(90,2)	TRUNCATED LOGNORMAL-N	-9.21	1	.001	.999			
51	BRTF(90,3)	TRUNCATED LOGNORMAL-N	-12.21	.9	.001	.999			
52	BBIO(90,1)	LOGNORMAL-N	4.6	1.1					
53	BRTF(92,1)	TRUNCATED LOGNORMAL-N	-6.21	.9	.001	.999			

RESRAD Regression and Correlation output 11/06/11 10:52 Page: Coef 1
Title : HB sensitivity analysis_soil_Am241
Input File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\AM241\HB SOIL SA_AM241_1.RAD

Coefficients for peak of mean dose time Dose
Coefficient =
Repetition =

Description of Probabilistic Variable	PCC 1		SRC 1		PRCC 1		SRRC 1	
	Sig	Coeff	Sig	Coeff	Sig	Coeff	Sig	Coeff
Thickness of contaminated zone	2	0.54	7	0.27	2	0.79	2	0.42
Density of contaminated zone	49	0.00	19	-0.01	35	-0.01	9	-0.02
Contaminated zone total porosity	54	0.00	35	-0.01	40	-0.01	11	-0.02
Contaminated zone hydraulic conductivity	29	0.02	31	0.01	5	-0.06	12	-0.02
Contaminated zone b parameter	9	-0.04	15	-0.02	7	-0.04	17	-0.01
Evapotranspiration coefficient	44	-0.01	46	0.00	14	-0.03	24	-0.01
Irrigation	27	-0.02	10	-0.03	22	-0.02	10	-0.02
Density of saturated zone	8	-0.05	2	-0.66	55	0.00	14	-0.02
Saturated zone total porosity	7	-0.05	4	-0.34	46	0.00	8	-0.02
Saturated zone effective porosity	10	-0.04	5	-0.32	53	0.00	16	0.01
Saturated zone hydraulic conductivity	25	0.02	28	0.01	20	0.02	27	0.01
Saturated zone b parameter	16	0.03	20	0.01	19	0.02	26	0.01
Well pump intake depth	28	-0.02	30	-0.01	50	0.00	52	0.00
Well pumping rate	31	0.02	13	0.02	30	0.01	15	0.02
Thickness of Unsaturated zone 1	30	0.02	32	0.01	52	0.00	54	0.00
Density of Unsaturated zone 1	14	0.04	3	0.51	16	0.03	3	0.29
Total Porosity of Unsaturated zone 1	17	0.03	8	0.24	17	0.03	6	0.14
Effective Porosity of Unsaturated zone 1	13	0.04	6	0.28	15	0.03	5	0.16
Hydraulic Conductivity of Unsaturated zone 1	22	-0.03	25	-0.01	37	-0.01	41	0.00
b Parameter of Unsaturated zone 1	33	0.01	34	0.01	11	0.04	21	0.01
Mass loading for inhalation	38	0.01	40	0.00	4	0.08	7	0.03
Indoor dust filtration factor	40	0.01	42	0.00	6	0.05	13	0.02
External gamma shielding factor	48	-0.01	50	0.00	43	0.01	46	0.00
Depth of soil mixing layer	18	-0.03	21	-0.01	36	-0.01	40	0.00
Depth of roots	3	-0.39	9	-0.18	3	-0.59	4	-0.24
wet weight crop yield of fruit, grain and non-leafy vegetables	21	-0.03	24	-0.01	24	-0.02	30	-0.01
weathering removal constant of all vegetation	34	-0.01	36	-0.01	21	-0.02	28	-0.01
wet foliar interception fraction of leafy vegetables	5	-0.06	12	-0.02	8	-0.04	18	-0.01
Kd of Am-241 in Contaminated Zone	6	0.05	14	0.02	34	-0.01	39	0.00
Kd of Am-241 in Unsaturated Zone 1	19	0.03	22	0.01	32	-0.01	37	0.00
Kd of Am-241 in Saturated Zone	35	0.01	37	0.01	47	0.00	49	0.00
Kd of Np-237 in Contaminated Zone	46	0.01	48	0.00	12	-0.03	22	-0.01
Kd of Np-237 in Unsaturated Zone 1	53	0.00	54	0.00	44	0.01	47	0.00
Kd of Np-237 in Saturated Zone	47	-0.01	49	0.00	25	0.02	31	0.01
Kd of Th-229 in Contaminated Zone	37	-0.01	39	-0.01	33	-0.01	38	0.00
Kd of Th-229 in Unsaturated Zone 1	12	-0.04	17	-0.02	45	0.00	48	0.00
Kd of Th-229 in Saturated Zone	26	0.02	29	0.01	18	0.02	25	0.01
Kd of U-233 in Contaminated Zone	32	0.02	33	0.01	31	-0.01	36	0.00
Kd of U-233 in Unsaturated Zone 1	42	-0.01	44	0.00	13	-0.03	23	-0.01
Kd of U-233 in Saturated Zone	51	0.00	52	0.00	49	0.00	51	0.00
Plant transfer factor for Am	1	0.89	1	0.85	1	0.93	1	0.81
Meat transfer factor for Am	50	0.00	51	0.00	23	0.02	29	0.01
Milk transfer factor for Am	55	0.00	55	0.00	27	0.02	33	0.01
Fish transfer factor for Am	20	0.03	23	0.01	48	0.00	50	0.00
Plant transfer factor for Np	52	0.00	53	0.00	42	-0.01	45	0.00
Meat transfer factor for Np	41	-0.01	43	0.00	56	0.00	56	0.00
Milk transfer factor for Np	4	-0.06	11	-0.02	28	-0.02	34	-0.01
Fish transfer factor for Np	36	-0.01	38	-0.01	38	0.01	42	0.00
Plant transfer factor for Th	23	-0.02	26	-0.01	54	0.00	55	0.00
Meat transfer factor for Th	11	0.04	16	0.02	29	0.02	35	0.00
Milk transfer factor for Th	43	0.01	45	0.00	39	-0.01	43	0.00
Fish transfer factor for Th	56	0.00	56	0.00	26	-0.02	32	-0.01
Plant transfer factor for U	45	-0.01	47	0.00	51	0.00	53	0.00
Meat transfer factor for U	39	0.01	41	0.00	41	0.01	44	0.00
Milk transfer factor for U	24	0.02	27	0.01	9	-0.04	19	-0.01
Fish transfer factor for U	15	-0.04	18	-0.01	10	-0.04	20	-0.01
R-SQUARE		0.82		0.82		0.89		0.89

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

RESRAD Regression and Correlation output 11/06/11 11:18 Page: Coef 1
Title : HB sensitivity analysis_soil_C-14
Input File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\C14\HB SOIL SA_C14-1.RAD

Coefficients for peak of mean dose time Dose		PCC		SRC		PRCC		SRRC	
Coefficient =	Repetition =	1		1		1		1	
Description of Probabilistic Variable		Sig	Coeff	Sig	Coeff	Sig	Coeff	Sig	Coeff
Thickness of contaminated zone		1	0.97	1	0.91	1	0.98	1	0.92
Density of contaminated zone		4	0.09	4	0.14	5	0.09	5	0.13
Contaminated zone total porosity		5	-0.05	9	-0.08	7	-0.05	9	-0.07
Contaminated zone hydraulic conductivity		22	-0.02	23	0.00	16	-0.02	21	0.00
Contaminated zone b parameter		23	-0.01	24	0.00	17	-0.02	22	0.00
Evapotranspiration coefficient		29	0.01	29	0.00	35	0.00	35	0.00
Irrigation		16	0.02	12	0.02	27	0.01	15	0.01
Density of saturated zone		20	-0.02	5	-0.12	10	-0.04	2	-0.24
Saturated zone total porosity		18	-0.02	10	-0.07	9	-0.04	4	-0.13
Saturated zone effective porosity		24	-0.01	11	-0.05	13	-0.03	6	-0.11
Saturated zone hydraulic conductivity		12	0.02	17	0.01	28	0.01	30	0.00
Saturated zone b parameter		33	0.00	33	0.00	36	0.00	36	0.00
well pump intake depth		32	0.00	32	0.00	34	0.00	34	0.00
well pumping rate		21	-0.02	13	-0.01	30	-0.01	20	-0.01
Thickness of Unsaturated zone 1		27	0.01	27	0.00	21	0.01	26	0.00
Density of Unsaturated zone 1		8	0.03	3	0.23	24	0.01	7	0.08
Total Porosity of Unsaturated zone 1		9	0.03	6	0.11	29	0.01	11	0.04
Effective Porosity of Unsaturated zone 1		11	0.03	7	0.11	25	0.01	10	0.04
Hydraulic Conductivity of Unsaturated zone 1		31	0.01	31	0.00	11	0.03	16	0.01
b Parameter of Unsaturated zone 1		25	0.01	25	0.00	18	0.02	23	0.00
Mass loading for inhalation		19	-0.02	22	0.00	33	0.00	33	0.00
Indoor dust filtration factor		13	-0.02	18	-0.01	26	-0.01	29	0.00
External gamma shielding factor		34	0.00	34	0.00	22	-0.01	27	0.00
Depth of soil mixing layer		17	-0.02	21	0.00	12	-0.03	17	-0.01
Depth of roots		2	-0.71	2	-0.23	2	-0.76	3	-0.24
wet weight crop yield of fruit, grain and non-leafy vegetables		10	-0.03	16	-0.01	15	-0.03	19	-0.01
weathering removal constant of all vegetation		36	0.00	36	0.00	32	0.00	32	0.00
wet foliar interception fraction of leafy vegetables		30	-0.01	30	0.00	31	-0.01	31	0.00
Kd of C-14 in Contaminated Zone		35	0.00	35	0.00	4	0.11	12	0.02
Kd of C-14 in Unsaturated zone 1		6	0.05	14	0.01	20	0.02	25	0.00
Kd of C-14 in Saturated Zone		7	0.04	15	0.01	14	0.03	18	0.01
Plant transfer factor for C		26	-0.01	26	0.00	19	-0.02	24	0.00
Meat transfer factor for C		28	0.01	28	0.00	6	0.05	13	0.01
Milk transfer factor for C		15	0.02	20	0.00	8	0.05	14	0.01
Fish transfer factor for C		14	-0.02	19	-0.01	23	0.01	28	0.00
Thickness of evasion layer of C-14 in soil		3	0.37	8	0.09	3	0.35	8	0.08
R-SQUARE			0.95		0.95		0.96		0.96

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

RESRAD, Version 6.5 T« Limit = 30 days 11/07/2011 08:56 Page 1
Probabilistic results summary : HB sensitivity analysis_soil_Cm243
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM243\HB SOIL SA_CM243-1.RAD

RESRAD Uncertainty Analysis Results

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Dose vs Pathway: Plant (Water Ind.)	9
Dose vs Pathway: Meat (Water Ind.)	10
Dose vs Pathway: Milk (Water Ind.)	11
Dose vs Pathway: Soil Ingestion	12
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Probabilistic results summary: HB sensitivity analysis_soil_cm243
File: C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM243\HB SOIL SA_CM243-1.RAD

Number of Sample Runs: 2000

Number	Name	Distribution	Parameters
AAAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA
1	THICK0	UNIFORM	.15 .3 .51
2	DENSCHZ	BOUNDED NORMAL	1.5635 .2385 .827 2.3
3	TPCZ	BOUNDED LOGNORMAL-N	.41 .09 .1319 .6881
4	HCCZ	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
5	BCZ	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
6	EVAPTR	UNIFORM	.5 .75
7	RT	UNIFORM	.36 .76
8	DENSAQ	BOUNDED NORMAL	1.5105 .1855 .937 2.084
9	TPSZ	BOUNDED NORMAL	.43 .0699 .214 .646
10	EPSZ	BOUNDED NORMAL	.342 .0705 .124 .56
11	HCSZ	BOUNDED LOGNORMAL-N	.362 1.59 .0106 195
12	BSZ	BOUNDED LOGNORMAL-N	1.96 .265 3.02 15.5
13	DWIBWT	TRIANGULAR	6 10 30
14	UW	UNIFORM	1173 1973
15	H(1)	UNIFORM	0 8.08
16	DENSUZ(1)	BOUNDED NORMAL	1.5635 .2385 .827 2.3
17	TPUZ(1)	BOUNDED NORMAL	.41 .09 .1319 .6881
18	EPUZ(1)	BOUNDED NORMAL	.315 .0905 .0349 .594
19	HCUZ(1)	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
20	BUZ(1)	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
21	MLINH	CONTINUOUS LINEAR	8 0 0
.00003	.8119 .00004 .9495	.00006 .9937	.000076 .9983 .0001 .000008 .0151 .000016 .1365
22	SHF3	UNIFORM	.15 .95
23	SHF1	BOUNDED LOGNORMAL-N	-1.3 .59 .044 1
24	DM	TRIANGULAR	0 .15 .6
25	DROOT	UNIFORM	3 4
26	YV(1)	TRUNCATED LOGNORMAL-N	.56 .48 .001 .999
27	WLAM	TRIANGULAR	5.1 18 84
28	RWET(2)	TRIANGULAR	.06 .67 .95
29	DCACTC(3)	TRUNCATED LOGNORMAL-N	8.82 1.82 .001 .999
30	DCACTU1(3)	TRUNCATED LOGNORMAL-N	8.82 1.82 .001 .999
31	DCACTS(3)	TRUNCATED LOGNORMAL-N	8.82 1.82 .001 .999
32	DCACTC(1)	TRUNCATED LOGNORMAL-N	6.72 3.22 .001 .999
33	DCACTU1(1)	TRUNCATED LOGNORMAL-N	6.72 3.22 .001 .999
34	DCACTS(1)	TRUNCATED LOGNORMAL-N	6.72 3.22 .001 .999
35	DCACTC(2)	TRUNCATED LOGNORMAL-N	7.28 3.15 .001 .999
36	DCACTU1(2)	TRUNCATED LOGNORMAL-N	7.28 3.15 .001 .999
37	DCACTS(2)	TRUNCATED LOGNORMAL-N	7.28 3.15 .001 .999
38	DCACTC(5)	TRUNCATED LOGNORMAL-N	5.94 3.22 .001 .999
39	DCACTU1(5)	TRUNCATED LOGNORMAL-N	5.94 3.22 .001 .999
40	DCACTS(5)	TRUNCATED LOGNORMAL-N	5.94 3.22 .001 .999
41	DCACTC(6)	TRUNCATED LOGNORMAL-N	6.86 1.89 .001 .999
42	DCACTU1(6)	TRUNCATED LOGNORMAL-N	6.86 1.89 .001 .999
43	DCACTS(6)	TRUNCATED LOGNORMAL-N	6.86 1.89 .001 .999
44	DCACTC(7)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999
45	DCACTU1(7)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999
46	DCACTS(7)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999
47	BRTF(96,1)	TRUNCATED LOGNORMAL-N	-6.91 .9 .001 .999
48	BRTF(96,2)	TRUNCATED LOGNORMAL-N	-10.82 1 .001 .999
49	BRTF(96,3)	TRUNCATED LOGNORMAL-N	-13.12 .9 .001 .999
50	BBIO(96,1)	LOGNORMAL-N	3.4 1.1 .001 .999
51	BRTF(89,1)	TRUNCATED LOGNORMAL-N	-6.91 1.1 .001 .999
52	BRTF(89,2)	TRUNCATED LOGNORMAL-N	-10.82 1 .001 .999
53	BRTF(89,3)	TRUNCATED LOGNORMAL-N	-13.12 .9 .001 .999
54	BBIO(89,1)	LOGNORMAL-N	2.7 1.1 .001 .999
55	BRTF(95,1)	TRUNCATED LOGNORMAL-N	-6.91 .9 .001 .999
56	BRTF(95,2)	TRUNCATED LOGNORMAL-N	-9.9 .2 .001 .999
57	BRTF(95,3)	TRUNCATED LOGNORMAL-N	-13.12 .7 .001 .999
58	BBIO(95,1)	LOGNORMAL-N	3.4 1.1 .001 .999
59	BRTF(91,1)	TRUNCATED LOGNORMAL-N	-4.61 1.1 .001 .999
60	BRTF(91,2)	TRUNCATED LOGNORMAL-N	-12.21 1 .001 .999
61	BRTF(91,3)	TRUNCATED LOGNORMAL-N	-12.21 .9 .001 .999
62	BBIO(91,1)	LOGNORMAL-N	2.3 1.1 .001 .999
63	BRTF(94,1)	TRUNCATED LOGNORMAL-N	-6.91 .9 .001 .999
64	BRTF(94,2)	TRUNCATED LOGNORMAL-N	-9.21 .2 .001 .999
65	BRTF(94,3)	TRUNCATED LOGNORMAL-N	-13.82 .5 .001 .999
66	BBIO(94,1)	LOGNORMAL-N	3.4 1.1 .001 .999
67	BRTF(92,1)	TRUNCATED LOGNORMAL-N	-6.21 .9 .001 .999
68	BRTF(92,2)	TRUNCATED LOGNORMAL-N	-7.13 .7 .001 .999
69	BRTF(92,3)	TRUNCATED LOGNORMAL-N	-7.82 .6 .001 .999

70 BBIO(92,1) LOGNORMAL-N 2.3 1.1
RESRAD Regression and Correlation output 11/07/11 09:33 Page: Coef 1
Title : HB sensitivity analysis_soil_Cm243
Input File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM243\HB SOIL SA_CM243-1.RAD

Coefficients for peak of mean dose time Dose
Coefficient =
Repetition =

Description of Probabilistic Variable	PCC		SRC		PRCC		SRRC	
	Sig	Coeff	Sig	Coeff	Sig	Coeff	Sig	Coeff
Thickness of contaminated zone	2	0.57	3	0.26	2	0.73	2	0.38
Density of contaminated zone	58	0.01	14	0.02	58	0.00	21	0.01
Contaminated zone total porosity	64	0.00	20	0.01	68	0.00	60	0.00
Contaminated zone hydraulic conductivity	39	-0.02	45	-0.01	12	0.04	18	0.01
Contaminated zone b parameter	20	0.03	28	0.01	46	0.01	49	0.00
Evapotranspiration coefficient	44	-0.01	50	0.00	28	0.02	35	0.01
Irrigation	68	0.00	58	0.00	61	0.00	48	0.00
Density of saturated zone	31	-0.02	2	-0.26	41	0.01	6	0.16
Saturated zone total porosity	32	-0.02	6	-0.13	53	0.01	10	0.06
Saturated zone effective porosity	33	-0.02	7	-0.12	29	0.02	7	0.10
Saturated zone hydraulic conductivity	52	-0.01	57	0.00	25	-0.02	32	-0.01
Saturated zone b parameter	10	-0.03	17	-0.01	36	0.01	40	0.01
Well pump intake depth	38	-0.02	44	-0.01	16	-0.03	23	-0.01
Well pumping rate	55	-0.01	34	-0.01	70	0.00	70	0.00
Thickness of Unsaturated zone 1	18	-0.03	26	-0.01	63	0.00	64	0.00
Density of Unsaturated zone 1	53	-0.01	8	-0.09	32	-0.02	5	-0.19
Total Porosity of Unsaturated zone 1	66	0.00	10	-0.02	43	-0.01	9	-0.08
Effective Porosity of Unsaturated zone 1	48	-0.01	9	-0.05	30	-0.02	8	-0.10
Hydraulic Conductivity of Unsaturated zone 1	26	0.02	35	0.01	31	0.02	36	0.01
b Parameter of Unsaturated zone 1	67	0.00	68	0.00	39	-0.01	43	0.00
Mass loading for inhalation	50	0.01	56	0.00	14	0.03	20	0.01
Indoor dust filtration factor	11	0.03	18	0.01	13	0.03	19	0.01
External gamma shielding factor	4	0.37	5	0.15	3	0.60	3	0.27
Depth of soil mixing layer	7	-0.04	13	-0.02	50	-0.01	53	0.00
Depth of roots	3	-0.44	4	-0.18	4	-0.56	4	-0.24
wet weight crop yield of fruit, grain and non-leafy vegetables	21	0.03	29	0.01	52	0.01	55	0.00
weathering removal constant of all vegetation	16	0.03	25	0.01	38	-0.01	42	0.00
wet foliar interception fraction of leafy vegetables	22	0.02	30	0.01	69	0.00	69	0.00
Kd of Cm-243 in Contaminated Zone	41	0.01	47	0.00	20	-0.02	27	-0.01
Kd of Cm-243 in Unsaturated Zone 1	24	0.02	32	0.01	9	-0.04	15	-0.01
Kd of Cm-243 in Saturated Zone	63	0.00	66	0.00	11	0.04	17	0.01
Kd of Ac-227 in Contaminated Zone	15	0.03	23	0.01	27	0.02	34	0.01
Kd of Ac-227 in Unsaturated Zone 1	49	0.01	54	0.00	24	-0.02	31	-0.01
Kd of Ac-227 in Saturated Zone	61	-0.01	64	0.00	56	-0.01	58	0.00
Kd of Am-243 in Contaminated Zone	69	0.00	69	0.00	42	-0.01	45	0.00
Kd of Am-243 in Unsaturated Zone 1	47	-0.01	53	0.00	44	0.01	46	0.00
Kd of Am-243 in Saturated Zone	45	0.01	51	0.00	6	-0.06	12	-0.02
Kd of Pa-231 in Contaminated Zone	42	-0.01	48	0.00	59	0.00	61	0.00
Kd of Pa-231 in Unsaturated Zone 1	54	-0.01	59	0.00	8	0.04	14	0.02
Kd of Pa-231 in Saturated Zone	40	-0.02	46	-0.01	67	0.00	68	0.00
Kd of Pu-239 in Contaminated Zone	23	0.02	31	0.01	62	0.00	63	0.00
Kd of Pu-239 in Unsaturated Zone 1	57	0.01	61	0.00	60	0.00	62	0.00
Kd of Pu-239 in Saturated Zone	6	-0.05	12	-0.02	23	0.02	30	0.01
Kd of U-235 in Contaminated Zone	12	0.03	19	0.01	15	0.03	22	0.01
Kd of U-235 in Unsaturated Zone 1	60	-0.01	63	0.00	40	-0.01	44	0.00
Kd of U-235 in Saturated Zone	56	-0.01	60	0.00	26	0.02	33	0.01
Plant transfer factor for Cm	1	0.92	1	0.85	1	0.91	1	0.77
Meat transfer factor for Cm	9	0.04	16	0.01	18	0.02	25	0.01
Milk transfer factor for Cm	51	0.01	55	0.00	45	0.01	47	0.00
Fish transfer factor for Cm	27	-0.02	36	-0.01	5	-0.06	11	-0.02
Plant transfer factor for Ac	29	0.02	38	0.01	66	0.00	67	0.00
Meat transfer factor for Ac	30	0.02	39	0.01	22	-0.02	29	-0.01
Milk transfer factor for Ac	59	0.01	62	0.00	33	0.02	37	0.01
Fish transfer factor for Ac	43	0.01	49	0.00	19	0.02	26	0.01
Plant transfer factor for Am	17	-0.03	24	-0.01	51	-0.01	54	0.00
Meat transfer factor for Am	19	-0.03	27	-0.01	37	-0.01	41	-0.01
Milk transfer factor for Am	70	0.00	70	0.00	49	-0.01	52	0.00
Fish transfer factor for Am	14	-0.03	22	-0.01	35	-0.01	39	-0.01
Plant transfer factor for Pa	13	-0.03	21	-0.01	54	-0.01	56	0.00
Meat transfer factor for Pa	5	0.06	11	0.02	10	0.04	16	0.01
Milk transfer factor for Pa	8	0.04	15	0.01	21	0.02	28	0.01
Fish transfer factor for Pa	62	-0.01	65	0.00	57	0.01	59	0.00
Plant transfer factor for Pu	46	-0.01	52	0.00	34	-0.02	38	-0.01
Meat transfer factor for Pu	34	0.02	40	0.01	55	-0.01	57	0.00
Milk transfer factor for Pu	25	-0.02	33	-0.01	65	0.00	66	0.00
Fish transfer factor for Pu	65	0.00	67	0.00	47	-0.01	50	0.00
Plant transfer factor for U	28	-0.02	37	-0.01	7	-0.06	13	-0.02
Meat transfer factor for U	36	0.02	42	0.01	48	0.01	51	0.00
Milk transfer factor for U	35	-0.02	41	-0.01	64	0.00	65	0.00
Fish transfer factor for U	37	0.02	43	0.01	17	0.03	24	0.01
R-SQUARE		0.87		0.87		0.87		0.87

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (dose) explained by regression on the independent variables.

Cm-244 Results:

RESRAD, Version 6.5 T« Limit = 30 days 11/07/2011 09:44 Page 1
Probabilistic results summary : HB sensitivity analysis_soil_Cm244
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM244\HB SOIL SA_CM244-1.RAD

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Dose vs Pathway: Meat (water Ind.)	10
Dose vs Pathway: Milk (water Ind.)	11
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Probabilistic results summary : HB sensitivity analysis_soil_Cm244
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM244\HB SOIL SA_CM244-1.RAD

Probabilistic Input
Number of Sample Runs: 2000

Number	Name	Distribution	Parameters						
1	THICK0	UNIFORM	.15 3.51						
2	DENSCH	BOUNDED NORMAL	1.5635 .2385	.827	2.3				
3	TPCZ	BOUNDED NORMAL	.41 .09	.1319	.6881				
4	HCCZ	BOUNDED LOGNORMAL-N	1.36 2.17	.00478	.3190				
5	BCZ	BOUNDED LOGNORMAL-N	1.73 .323	2.08	15.3				
6	EVAPTR	UNIFORM	.5 .75						
7	RI	UNIFORM	.36 .76						
8	DENSAQ	BOUNDED NORMAL	1.5105 .1855	.937	2.084				
9	TPSZ	BOUNDED NORMAL	.43 .0699	.214	.646				
10	EPSZ	BOUNDED NORMAL	.342 .0705	.124	.56				
11	HCSZ	BOUNDED LOGNORMAL-N	1.362 1.59	.0106	.195				
12	BSZ	BOUNDED LOGNORMAL-N	1.96 .265	3.02	15.5				
13	DWIBWT	TRIANGULAR	6 10 30						
14	UW	UNIFORM	1173 1973						
15	H(1)	UNIFORM	0 8.08						
16	DENSUZ(1)	BOUNDED NORMAL	1.5635 .2385	.827	2.3				
17	TPUZ(1)	BOUNDED NORMAL	.41 .09	.1319	.6881				
18	EPUZ(1)	BOUNDED NORMAL	.315 .0905	.0349	.594				
19	HCUZ(1)	BOUNDED LOGNORMAL-N	1.36 2.17	.00478	.3190				
20	BUZ(1)	BOUNDED LOGNORMAL-N	1.73 .323	2.08	15.3				
21	MLINH	CONTINUOUS LINEAR	8 0 0	.000008	.0151	.000016	.1365		
.00003	.8119	.00004 .9495	.00006 .9937	.000076 .9983	.0001	1			
22	SHF3	UNIFORM	.15 .95						
23	SHF1	BOUNDED LOGNORMAL-N	-1.3 .59	.044	1				
24	DM	TRIANGULAR	0 .15	.6					
25	DROOT	UNIFORM	.3 4						
26	YV(1)	TRUNCATED LOGNORMAL-N	.56 .48	.001	.999				
27	WLAM	TRIANGULAR	5.1 18	.84					
28	RWET(2)	TRIANGULAR	.06 .67	.95					
29	DCACTC(1)	TRUNCATED LOGNORMAL-N	8.82 1.82	.001	.999				
30	DCACTU(1)	TRUNCATED LOGNORMAL-N	8.82 1.82	.001	.999				
31	DCACTS(1)	TRUNCATED LOGNORMAL-N	8.82 1.82	.001	.999				
32	DCACTC(4)	TRUNCATED LOGNORMAL-N	6.86 1.89	.001	.999				
33	DCACTU(4)	TRUNCATED LOGNORMAL-N	6.86 1.89	.001	.999				
34	DCACTS(4)	TRUNCATED LOGNORMAL-N	6.86 1.89	.001	.999				
35	DCACTC(6)	TRUNCATED LOGNORMAL-N	8.17 1.7	.001	.999				
36	DCACTU(6)	TRUNCATED LOGNORMAL-N	8.17 1.7	.001	.999				
37	DCACTS(6)	TRUNCATED LOGNORMAL-N	8.17 1.7	.001	.999				
38	DCACTC(7)	TRUNCATED LOGNORMAL-N	8.68 3.62	.001	.999				
39	DCACTU(7)	TRUNCATED LOGNORMAL-N	8.68 3.62	.001	.999				
40	DCACTS(7)	TRUNCATED LOGNORMAL-N	8.68 3.62	.001	.999				
41	DCACTC(8)	TRUNCATED LOGNORMAL-N	8.68 3.62	.001	.999				
42	DCACTU(8)	TRUNCATED LOGNORMAL-N	8.68 3.62	.001	.999				
43	DCACTS(8)	TRUNCATED LOGNORMAL-N	8.68 3.62	.001	.999				
44	DCACTC(9)	TRUNCATED LOGNORMAL-N	4.84 3.13	.001	.999				
45	DCACTU(9)	TRUNCATED LOGNORMAL-N	4.84 3.13	.001	.999				
46	DCACTS(9)	TRUNCATED LOGNORMAL-N	4.84 3.13	.001	.999				
47	BRTE(96,1)	TRUNCATED LOGNORMAL-N	-6.91 .9	.001	.999				
48	BRTE(96,2)	TRUNCATED LOGNORMAL-N	-10.82 1	.001	.999				
49	BRTE(96,3)	TRUNCATED LOGNORMAL-N	-13.12 .9	.001	.999				
50	BBIO(96,1)	LOGNORMAL-N	3.4 1.1	.001	.999				
51	BRTE(94,1)	TRUNCATED LOGNORMAL-N	-6.91 .9	.001	.999				
52	BRTE(94,2)	TRUNCATED LOGNORMAL-N	-9.21 .2	.001	.999				
53	BRTE(94,3)	TRUNCATED LOGNORMAL-N	-13.82 .5	.001	.999				
54	BBIO(94,1)	LOGNORMAL-N	3.4 1.1	.001	.999				
55	BRTE(88,1)	TRUNCATED LOGNORMAL-N	-2.22 .9	.001	.999				
56	BRTE(88,2)	TRUNCATED LOGNORMAL-N	-6.91 .7	.001	.999				
57	BRTE(88,3)	TRUNCATED LOGNORMAL-N	-6.91 .5	.001	.999				
58	BBIO(88,1)	LOGNORMAL-N	3.9 1.1	.001	.999				
59	BRTE(90,1)	TRUNCATED LOGNORMAL-N	-6.91 .9	.001	.999				
60	BRTE(90,2)	TRUNCATED LOGNORMAL-N	-9.21 1	.001	.999				
61	BRTE(90,3)	TRUNCATED LOGNORMAL-N	-12.21 .9	.001	.999				
62	BBIO(90,1)	LOGNORMAL-N	4.6 1.1	.001	.999				
63	BRTE(92,1)	TRUNCATED LOGNORMAL-N	-6.21 .9	.001	.999				
64	BRTE(92,2)	TRUNCATED LOGNORMAL-N	-7.13 .7	.001	.999				
65	BRTE(92,3)	TRUNCATED LOGNORMAL-N	-7.82 .6	.001	.999				
66	BBIO(92,1)	LOGNORMAL-N	2.3 1.1						

RESRAD Regression and Correlation output 11/07/11 10:01 Page: Coef 1
Title : HB sensitivity analysis_soil_Cm244
Input File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM244\HB SOIL SA_CM244-1.RAD

Coefficients for peak of mean dose time Dose Coefficient = Repetition =	PCC 1		SRC 1		PRCC 1		SRRC 1	
	Sig	Coeff	Sig	Coeff	Sig	Coeff	Sig	Coeff
Description of Probabilistic Variable								
Thickness of contaminated zone	2	0.57	3	0.29	2	0.78	2	0.42
Density of contaminated zone	36	-0.01	11	-0.03	62	0.00	23	0.01
Contaminated zone total porosity	44	-0.01	12	-0.03	66	0.00	66	0.00
Contaminated zone hydraulic conductivity	7	0.03	17	0.01	37	0.02	41	0.01
Contaminated zone b parameter	14	-0.03	24	-0.01	13	0.03	20	0.01
Evapotranspiration coefficient	59	0.00	59	0.00	42	-0.01	44	0.00
Irrigation	29	0.02	13	0.02	41	-0.01	15	-0.02
Density of saturated zone	15	-0.03	2	-0.38	40	-0.02	6	-0.16
Saturated zone total porosity	17	-0.03	7	-0.19	44	-0.01	9	-0.07
Saturated zone effective porosity	16	-0.03	6	-0.19	36	-0.02	8	-0.10
Saturated zone hydraulic conductivity	27	-0.02	30	-0.01	12	-0.03	19	-0.01
Saturated zone b parameter	24	-0.02	28	-0.01	63	0.00	63	0.00
well pump intake depth	57	0.00	57	0.00	51	0.01	52	0.00
well pumping rate	20	-0.02	10	-0.03	34	0.02	10	0.02
Thickness of Unsaturated zone 1	50	-0.01	50	0.00	38	0.02	42	0.01
Density of Unsaturated zone 1	23	-0.02	4	-0.28	16	-0.03	3	-0.31
Total Porosity of Unsaturated zone 1	26	-0.02	9	-0.13	33	-0.02	7	-0.11
Effective Porosity of Unsaturated zone 1	22	-0.02	8	-0.15	11	-0.03	5	-0.19
Hydraulic Conductivity of Unsaturated zone 1	45	-0.01	45	0.00	6	0.05	13	0.02
b Parameter of Unsaturated zone 1	46	-0.01	47	0.00	26	-0.02	33	-0.01
Mass loading for inhalation	8	0.03	18	0.01	4	0.06	11	0.02
Indoor dust filtration factor	63	0.00	63	0.00	35	-0.02	40	-0.01
External gamma shielding factor	6	0.04	16	0.02	19	0.03	26	0.01
Depth of soil mixing layer	13	0.03	23	0.01	63	0.00	65	0.00
Depth of roots	3	-0.43	5	-0.20	3	0.60	4	-0.25
wet weight crop yield of fruit, grain and non-leafy vegetables	43	-0.01	44	0.00	64	0.00	64	0.00
weathering removal constant of all vegetation	19	-0.03	26	-0.01	22	-0.02	29	-0.01
wet foliar interception fraction of leafy vegetables	51	0.01	51	0.00	24	0.02	31	0.01
Kd of Cm-244 in Contaminated Zone	58	0.00	58	0.00	48	-0.01	49	0.00
Kd of Cm-244 in Unsaturated Zone 1	33	-0.01	35	-0.01	55	-0.01	56	0.00
Kd of Cm-244 in Saturated Zone	52	-0.01	52	0.00	45	0.01	46	0.00
Kd of Pu-240 in Contaminated Zone	54	-0.01	54	0.00	46	-0.01	47	0.00
Kd of Pu-240 in Unsaturated Zone 1	4	0.04	14	0.02	17	-0.03	24	-0.01
Kd of Pu-240 in Saturated Zone	38	-0.01	39	0.00	57	-0.01	58	0.00
Kd of Ra-228 in Contaminated Zone	35	0.01	37	0.00	58	-0.01	59	0.00
Kd of Ra-228 in Unsaturated Zone 1	31	0.01	33	0.01	20	-0.03	27	-0.01
Kd of Ra-228 in Saturated Zone	10	-0.03	20	-0.01	5	-0.05	12	-0.02
Kd of Th-228 in Contaminated Zone	56	0.00	56	0.00	27	0.02	34	0.01
Kd of Th-228 in Unsaturated Zone 1	47	0.01	46	0.00	43	0.01	45	0.00
Kd of Th-228 in Saturated Zone	37	0.01	38	0.00	30	0.02	37	0.01
Kd of Th-232 in Contaminated Zone	32	0.01	34	0.01	54	0.01	55	0.00
Kd of Th-232 in Unsaturated Zone 1	11	-0.03	21	-0.01	53	-0.01	54	0.00
Kd of Th-232 in Saturated Zone	28	-0.02	31	-0.01	59	-0.01	60	0.00
Kd of U-236 in Contaminated Zone	55	-0.01	55	0.00	50	0.01	51	0.00
Kd of U-236 in Unsaturated Zone 1	25	-0.02	29	-0.01	10	0.04	18	0.01
Kd of U-236 in Saturated Zone	60	0.00	60	0.00	32	-0.02	39	-0.01
Plant transfer factor for Cm	1	0.90	1	0.85	1	0.92	1	0.80
Meat transfer factor for Cm	61	0.00	61	0.00	7	0.05	14	0.02
Milk transfer factor for Cm	65	0.00	65	0.00	21	-0.03	28	-0.01
Fish transfer factor for Cm	48	-0.01	48	0.00	31	0.02	38	0.01
Plant transfer factor for Pu	49	-0.01	49	0.00	61	0.00	62	0.00
Meat transfer factor for Pu	21	-0.02	27	-0.01	14	-0.03	21	-0.01
Milk transfer factor for Pu	41	-0.01	42	0.00	56	-0.01	57	0.00
Fish transfer factor for Pu	18	0.03	25	0.01	15	0.03	22	0.01
Plant transfer factor for Ra	53	-0.01	53	0.00	52	-0.01	53	0.00
Meat transfer factor for Ra	66	0.00	66	0.00	29	0.02	36	0.01
Milk transfer factor for Ra	30	-0.02	32	-0.01	60	-0.01	61	0.00
Fish transfer factor for Ra	39	-0.01	40	0.00	39	0.02	43	0.01
Plant transfer factor for Th	9	-0.03	19	-0.01	18	0.03	25	0.01
Meat transfer factor for Th	62	0.00	62	0.00	49	0.01	50	0.00
Milk transfer factor for Th	64	0.00	64	0.00	28	-0.02	35	-0.01
Fish transfer factor for Th	40	0.01	41	0.00	47	0.01	48	0.00
Plant transfer factor for U	5	-0.04	15	-0.02	23	-0.02	30	-0.01
Meat transfer factor for U	12	0.03	22	0.01	9	0.04	17	0.01
Milk transfer factor for U	42	-0.01	43	0.00	25	0.02	32	0.01
Fish transfer factor for U	34	-0.01	36	-0.01	8	-0.05	16	-0.02
R-SQUARE		0.83		0.83		0.89		0.89

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

RESRAD, Version 6.5 T« Limit = 30 days 11/09/2011 08:13 Page 1
Probabilistic results summary : HB sensitivity analysis_soil_Cm245
File : C:\RESRAD_FAMILY\RESRAD\6.5\HB SOIL SA_CM245-1.RAD

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Probabilistic results summary : HB sensitivity analysis_soil_cm245
File : C:\RESRAD_FAMILY\RESRAD\6.5\HB SOIL SA_CM245-1.RAD
      Probabilistic Input
Number of Sample Runs: 2000
```

Number	Name	Distribution	Parameters
AAAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA
1	THICK0	UNIFORM	.15 3.51
2	DENS CZ	BOUNDED NORMAL	1.5635 .2385 .827 2.3
3	TPCZ	BOUNDED NORMAL	.41 .09 .1319 .6881
4	HCCZ	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
5	BCZ	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
6	EVAPTR	UNIFORM	.5 .75
7	RI	UNIFORM	.36 .76
8	DENSAQ	BOUNDED NORMAL	1.5105 .1855 .937 2.084
9	TPSZ	BOUNDED NORMAL	.43 .0699 .214 .646
10	EPSZ	BOUNDED NORMAL	.342 .0705 .124 .56
11	HCSZ	BOUNDED LOGNORMAL-N	.362 1.59 .0106 195
12	BSZ	BOUNDED LOGNORMAL-N	1.96 .265 3.02 15.5
13	DWIBWT	TRIANGULAR	6 10 30
14	UW	UNIFORM	1173 1973
15	H(1)	UNIFORM	0 8.08
16	DENS UZ(1)	BOUNDED NORMAL	1.5635 .2385 .827 2.3
17	TPUZ(1)	BOUNDED NORMAL	.41 .09 .1319 .6881
18	EPUZ(1)	BOUNDED NORMAL	.315 .0905 .0349 .594
19	HCUZ(1)	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
20	BUZ(1)	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
21	MLINH	CONTINUOUS LINEAR	8 0 0 .000008 .0151 .000016 .1365
.00003	.8119 .00004 .9495	.00006 .9937	.000076 .9983 .0001 1
22	SHF3	UNIFORM	.15 .95
23	SHF1	BOUNDED LOGNORMAL-N	-1.3 .59 .044 1
24	DM	TRIANGULAR	0 .15 .6
25	DROOT	UNIFORM	.3 4
26	YV(1)	TRUNCATED LOGNORMAL-N	.56 .48 .001 .999
27	WLAM	TRIANGULAR	5.1 18 84
28	RWET(2)	TRIANGULAR	.06 .67 .95
29	DCACTC(2)	TRUNCATED LOGNORMAL-N	8.82 1.82 .001 .999
30	DCACTU1(2)	TRUNCATED LOGNORMAL-N	8.82 1.82 .001 .999
31	DCACTS(2)	TRUNCATED LOGNORMAL-N	8.82 1.82 .001 .999
32	DCACTC(1)	TRUNCATED LOGNORMAL-N	7.28 3.15 .001 .999
33	DCACTU1(1)	TRUNCATED LOGNORMAL-N	7.28 3.15 .001 .999
34	DCACTS(1)	TRUNCATED LOGNORMAL-N	7.28 3.15 .001 .999
35	DCACTC(4)	TRUNCATED LOGNORMAL-N	2.84 2.25 .001 .999
36	DCACTU1(4)	TRUNCATED LOGNORMAL-N	2.84 2.25 .001 .999
37	DCACTS(4)	TRUNCATED LOGNORMAL-N	2.84 2.25 .001 .999
38	DCACTC(5)	TRUNCATED LOGNORMAL-N	6.68 1.89 .001 .999
39	DCACTU1(5)	TRUNCATED LOGNORMAL-N	6.68 1.89 .001 .999
40	DCACTS(5)	TRUNCATED LOGNORMAL-N	6.68 1.89 .001 .999
41	DCACTC(7)	TRUNCATED LOGNORMAL-N	8.68 3.62 .001 .999
42	DCACTU1(7)	TRUNCATED LOGNORMAL-N	8.68 3.62 .001 .999
43	DCACTS(7)	TRUNCATED LOGNORMAL-N	8.68 3.62 .001 .999
44	DCACTC(8)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999
45	DCACTU1(8)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999
46	DCACTS(8)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999
47	BRTF(96,1)	TRUNCATED LOGNORMAL-N	-6.91 .9 .001 .999
48	BRTF(96,2)	TRUNCATED LOGNORMAL-N	-10.82 1 .001 .999
49	BRTF(96,3)	TRUNCATED LOGNORMAL-N	-13.12 .9 .001 .999
50	BBIO(96,1)	LOGNORMAL-N	3.4 1.1
51	BRTF(95,1)	TRUNCATED LOGNORMAL-N	-6.91 .9 .001 .999
52	BRTF(95,2)	TRUNCATED LOGNORMAL-N	-9.9 .2 .001 .999
53	BRTF(95,3)	TRUNCATED LOGNORMAL-N	-13.12 .7 .001 .999
54	BBIO(95,1)	LOGNORMAL-N	3.4 1.1
55	BRTF(93,1)	TRUNCATED LOGNORMAL-N	-3.91 .9 .001 .999
56	BRTF(93,2)	TRUNCATED LOGNORMAL-N	-6.91 .7 .001 .999
57	BRTF(93,3)	TRUNCATED LOGNORMAL-N	-11.51 .7 .001 .999
58	BBIO(93,1)	LOGNORMAL-N	3.4 1.1
59	BRTF(94,1)	TRUNCATED LOGNORMAL-N	-6.91 .9 .001 .999
60	BRTF(94,2)	TRUNCATED LOGNORMAL-N	-9.21 .2 .001 .999
61	BRTF(94,3)	TRUNCATED LOGNORMAL-N	-13.82 .5 .001 .999
62	BBIO(94,1)	LOGNORMAL-N	3.4 1.1
63	BRTF(90,1)	TRUNCATED LOGNORMAL-N	-6.91 .9 .001 .999
64	BRTF(90,2)	TRUNCATED LOGNORMAL-N	-9.21 1 .001 .999
65	BRTF(90,3)	TRUNCATED LOGNORMAL-N	-12.21 .9 .001 .999
66	BBIO(90,1)	LOGNORMAL-N	4.6 1.1
67	BRTF(92,1)	TRUNCATED LOGNORMAL-N	-6.21 .9 .001 .999
68	BRTF(92,2)	TRUNCATED LOGNORMAL-N	-7.13 .7 .001 .999
69	BRTF(92,3)	TRUNCATED LOGNORMAL-N	-7.82 .6 .001 .999
70	BBIO(92,1)	LOGNORMAL-N	2.3 1.1

1 RESRAD Regression and Correlation output 11/09/11 19:41 Page: Coef 1
Title : HB sensitivity analysis_soil_Cm245
Input File : C:\RESRAD_FAMILY\RESRAD\6.5\HB SOIL SA_CM245-1.RAD

Coefficients for peak of mean dose time Dose		PCC	SRC	PRCC	SRRC	
Coefficient =		1	1	1	1	
Repetition =						
Description of Probabilistic Variable	Sig	Coeff	Sig	Coeff	Sig	Coeff
Thickness of contaminated zone	2	0.64	2	0.35	2	0.80
Density of contaminated zone	55	0.01	13	0.02	47	0.01
Contaminated zone total porosity	58	0.00	20	0.01	57	0.01
Contaminated zone hydraulic conductivity	22	-0.02	30	-0.01	27	0.02
Contaminated zone b parameter	23	0.02	31	0.01	59	0.00
Evapotranspiration coefficient	40	-0.01	46	-0.01	14	0.03
Irrigation	52	-0.01	24	-0.01	50	-0.01
Density of saturated zone	25	-0.02	3	-0.30	42	0.01
Saturated zone total porosity	21	-0.02	5	-0.16	56	0.01
Saturated zone effective porosity	32	-0.02	6	-0.14	29	0.02
Saturated zone hydraulic conductivity	44	-0.01	50	-0.01	10	-0.04
Saturated zone b parameter	20	-0.02	29	-0.01	69	0.00
well pump intake depth	46	-0.01	52	0.00	55	-0.01
well pumping rate	66	0.00	58	0.00	54	0.01
Thickness of Unsaturated zone 1	8	-0.04	14	-0.02	21	-0.03
Density of Unsaturated zone 1	68	0.00	19	-0.01	49	-0.01
Total Porosity of Unsaturated zone 1	65	0.00	11	0.02	62	0.00
Effective Porosity of Unsaturated zone 1	61	0.00	9	-0.03	39	-0.01
Hydraulic Conductivity of Unsaturated zone 1	28	0.02	35	0.01	33	-0.02
b Parameter of Unsaturated zone 1	53	0.01	59	0.00	64	0.00
Mass loading for inhalation	47	0.01	53	0.00	15	0.03
Indoor dust filtration factor	13	0.03	22	0.01	11	0.04
External gamma shielding factor	5	0.14	8	0.06	4	0.24
Depth of soil mixing layer	9	-0.04	15	-0.02	32	-0.02
Depth of roots	3	-0.43	4	-0.20	3	-0.54
wet weight crop yield of fruit, grain and non-leafy vegetables	15	0.03	23	0.01	43	0.01
weathering removal constant of all vegetation	37	0.01	43	0.01	68	0.00
wet foliar interception fraction of leafy vegetables	33	0.02	39	0.01	30	0.02
Kd of Cm-245 in Contaminated Zone	16	0.03	25	0.01	26	0.02
Kd of Cm-245 in Unsaturated Zone 1	27	0.02	34	0.01	13	-0.04
Kd of Cm-245 in Saturated Zone	62	0.00	65	0.00	9	0.05
Kd of Am-241 in Contaminated Zone	10	0.04	16	0.02	6	0.07
Kd of Am-241 in Unsaturated Zone 1	57	0.01	62	0.00	38	-0.01
Kd of Am-241 in Saturated Zone	59	0.00	63	0.00	65	0.00
Kd of Np-237 in Contaminated Zone	64	0.00	67	0.00	24	-0.02
Kd of Np-237 in Unsaturated Zone 1	41	-0.01	48	-0.01	46	0.01
Kd of Np-237 in Saturated Zone	70	0.00	70	0.00	8	-0.05
Kd of Pu-241 in Contaminated Zone	17	-0.03	26	-0.01	63	0.00
Kd of Pu-241 in Unsaturated Zone 1	38	-0.01	44	-0.01	22	0.03
Kd of Pu-241 in Saturated Zone	50	-0.01	56	0.00	52	0.01
Kd of Th-229 in Contaminated Zone	31	0.02	37	0.01	40	0.01
Kd of Th-229 in Unsaturated Zone 1	69	0.00	69	0.00	45	-0.01
Kd of Th-229 in Saturated Zone	14	-0.03	21	-0.01	35	0.02
Kd of U-233 in Contaminated Zone	12	0.03	18	0.01	18	0.03
Kd of U-233 in Unsaturated Zone 1	67	0.00	68	0.00	48	-0.01
Kd of U-233 in Saturated Zone	42	-0.01	47	-0.01	41	0.01
Plant transfer factor for Cm	1	0.88	1	0.79	1	0.84
Meat transfer factor for Cm	11	0.04	17	0.02	53	0.01
Milk transfer factor for Cm	35	0.02	41	0.01	31	0.02
Fish transfer factor for Cm	49	-0.01	55	0.00	7	-0.05
Plant transfer factor for Am	4	0.21	7	0.09	5	0.24
Meat transfer factor for Am	19	0.02	28	0.01	58	0.00
Milk transfer factor for Am	51	0.01	57	0.00	51	0.01
Fish transfer factor for Am	30	0.02	38	0.01	25	0.02
Plant transfer factor for Np	18	-0.02	27	-0.01	37	-0.01
Meat transfer factor for Np	34	-0.02	40	-0.01	36	-0.01
Milk transfer factor for Np	60	0.00	64	0.00	70	0.00
Fish transfer factor for Np	24	-0.02	32	-0.01	67	0.00
Plant transfer factor for Pu	63	0.00	66	0.00	12	0.04
Meat transfer factor for Pu	6	0.05	10	0.02	28	0.02
Milk transfer factor for Pu	7	0.04	12	0.02	17	0.03
Fish transfer factor for Pu	54	-0.01	60	0.00	19	0.03
Plant transfer factor for Th	39	-0.01	45	-0.01	34	-0.02
Meat transfer factor for Th	45	0.01	51	0.01	20	0.03
Milk transfer factor for Th	26	-0.02	33	-0.01	44	-0.01
Fish transfer factor for Th	56	-0.01	61	0.00	66	0.00
Plant transfer factor for U	48	-0.01	54	0.00	16	-0.03
Meat transfer factor for U	36	0.02	42	0.01	61	0.00
Milk transfer factor for U	43	-0.01	49	-0.01	60	0.00
Fish transfer factor for U	29	0.02	36	0.01	23	0.03
R-SQUARE		0.82		0.82		0.83

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

Cm-246 Results:

RESRAD, Version 6.5 T< Limit = 30 days 01/16/2012 19:25 Page 1
Probabilistic results summary : HB sensitivity analysis_soil_Cm246
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM246_HB SA\HB SOIL SA_CM246-1.RAD

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1RESRAD, Version 6.5 T< Limit = 30 days 01/16/2012 19:25 Page 2
Probabilistic results summary : HB sensitivity analysis_soil_Cm246
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM246_HB SA\HB SOIL SA_CM246-1.RAD

Probabilistic Input

Number of Sample Runs: 2000

Number	Name	Distribution	Parameters
1	THICK0	UNIFORM	.15 3.51
2	DENS0	BOUNDED NORMAL	1.5635 .2385 .827 2.3
3	TPCZ	BOUNDED NORMAL	.41 .09 .1319 .6881
4	HCCZ	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
5	BCZ	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
6	EVAPTR	UNIFORM	.5 .75
7	RI	UNIFORM	.36 .76
8	DENSAQ	BOUNDED NORMAL	1.5105 .1855 .937 2.084
9	TPSZ	BOUNDED NORMAL	.43 .0699 .214 .646
10	EPSZ	BOUNDED NORMAL	.342 .0705 .124 .56
11	HCSZ	BOUNDED LOGNORMAL-N	.362 1.59 .0106 195
12	BSZ	BOUNDED LOGNORMAL-N	1.96 .265 3.02 15.5
13	DWIBWT	TRIANGULAR	6 10 30
14	UW	UNIFORM	1173 1973
15	H(1)	UNIFORM	0 8.08
16	DENSUZ(1)	BOUNDED NORMAL	1.5635 .2385 .827 2.3
17	TPUZ(1)	BOUNDED NORMAL	.41 .09 .1319 .6881
18	EPUZ(1)	BOUNDED NORMAL	.315 .0905 .0349 .594
19	HCUZ(1)	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
20	BUZ(1)	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
21	MLINH	CONTINUOUS LINEAR	8 0 0 .000008 .0151 .000016 .1365
.00003	.8119 .00004 .9495	.00006 .9937	.000076 .9983 .0001 1
22	SHF3	UNIFORM	.15 .95
23	SHF1	BOUNDED LOGNORMAL-N	-1.3 .59 .044 1
24	DM	TRIANGULAR	0 .15 .6
25	DROOT	UNIFORM	.3 4
26	YV(1)	TRUNCATED LOGNORMAL-N	.56 .48 .001 .999
27	WLAM	TRIANGULAR	5.1 18 84
28	RWET(2)	TRIANGULAR	.06 .67 .95
29	DCACT(1)	TRUNCATED LOGNORMAL-N	8.82 1.82 .001 .999
30	DCACTU1(1)	TRUNCATED LOGNORMAL-N	8.82 1.82 .001 .999
31	DCACTS(1)	TRUNCATED LOGNORMAL-N	8.82 1.82 .001 .999
32	DCACT(5)	TRUNCATED LOGNORMAL-N	7.78 2.76 .001 .999
33	DCACTU1(5)	TRUNCATED LOGNORMAL-N	7.78 2.76 .001 .999
34	DCACTS(5)	TRUNCATED LOGNORMAL-N	7.78 2.76 .001 .999
35	DCACT(6)	TRUNCATED LOGNORMAL-N	5.2 1.68 .001 .999
36	DCACTU1(6)	TRUNCATED LOGNORMAL-N	5.2 1.68 .001 .999
37	DCACTS(6)	TRUNCATED LOGNORMAL-N	5.2 1.68 .001 .999
38	DCACT(7)	TRUNCATED LOGNORMAL-N	6.86 1.89 .001 .999
39	DCACTU1(7)	TRUNCATED LOGNORMAL-N	6.86 1.89 .001 .999
40	DCACTS(7)	TRUNCATED LOGNORMAL-N	6.86 1.89 .001 .999
41	DCACT(10)	TRUNCATED LOGNORMAL-N	8.17 1.7 .001 .999
42	DCACTU1(10)	TRUNCATED LOGNORMAL-N	8.17 1.7 .001 .999
43	DCACTS(10)	TRUNCATED LOGNORMAL-N	8.17 1.7 .001 .999
44	DCACT(11)	TRUNCATED LOGNORMAL-N	8.68 3.62 .001 .999
45	DCACTU1(11)	TRUNCATED LOGNORMAL-N	8.68 3.62 .001 .999
46	DCACTS(11)	TRUNCATED LOGNORMAL-N	8.68 3.62 .001 .999
47	DCACT(12)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999
48	DCACTU1(12)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999
49	DCACTS(12)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999
50	DCACT(13)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999
51	DCACTU1(13)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999
52	DCACTS(13)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999
53	BRTF(96,1)	TRUNCATED LOGNORMAL-N	-6.91 .9 .001 .999
54	BRTF(96,2)	TRUNCATED LOGNORMAL-N	-10.82 1 .001 .999
55	BRTF(96,3)	TRUNCATED LOGNORMAL-N	-13.12 .9 .001 .999
56	BBIO(96,1)	LOGNORMAL-N	3.4 1.1 .001 .999
57	BRTF(82,1)	TRUNCATED LOGNORMAL-N	-5.52 .9 .001 .999
58	BRTF(82,2)	TRUNCATED LOGNORMAL-N	-7.13 .7 .001 .999
59	BRTF(82,3)	TRUNCATED LOGNORMAL-N	-8.11 .9 .001 .999
60	BBIO(82,1)	LOGNORMAL-N	5.7 1.1 .001 .999
61	BRTF(84,1)	TRUNCATED LOGNORMAL-N	-6.9 .9 .001 .999
62	BRTF(84,2)	TRUNCATED LOGNORMAL-N	-5.3 .7 .001 .999
63	BRTF(84,3)	TRUNCATED LOGNORMAL-N	-7.82 .7 .001 .999
64	BBIO(84,1)	LOGNORMAL-N	4.6 1.1 .001 .999
65	BRTF(94,1)	TRUNCATED LOGNORMAL-N	-6.91 .9 .001 .999
66	BRTF(94,2)	TRUNCATED LOGNORMAL-N	-9.21 .2 .001 .999
67	BRTF(94,3)	TRUNCATED LOGNORMAL-N	-13.82 .5 .001 .999
68	BBIO(94,1)	LOGNORMAL-N	3.4 1.1 .001 .999
69	BRTF(88,1)	TRUNCATED LOGNORMAL-N	-3.22 .9 .001 .999

70	BRTF(88,2)	TRUNCATED LOGNORMAL-N	-6.91	.7	.001	.999
71	BRTF(88,3)	TRUNCATED LOGNORMAL-N	-6.91	.5	.001	.999
72	BBIO(88,1)	LOGNORMAL-N	3.9	1.1		
73	BRTF(90,1)	TRUNCATED LOGNORMAL-N	-6.91	.9	.001	.999
74	BRTF(90,2)	TRUNCATED LOGNORMAL-N	-9.21	1	.001	.999
75	BRTF(90,3)	TRUNCATED LOGNORMAL-N	-12.21	.9	.001	.999
76	BBIO(90,1)	LOGNORMAL-N	4.6	1.1		
77	BRTF(92,1)	TRUNCATED LOGNORMAL-N	-6.21	.9	.001	.999
78	BRTF(92,2)	TRUNCATED LOGNORMAL-N	-7.13	.7	.001	.999
79	BRTF(92,3)	TRUNCATED LOGNORMAL-N	-7.82	.6	.001	.999
80	BBIO(92,1)	LOGNORMAL-N	2.3	1.1		

1 RESRAD Regression and Correlation output 01/16/12 20:04 Page: Coef 1
Title : HB sensitivity analysis_soil_Cm246
Input File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CM246_HB SA\HB SOIL SA_CM246-1.RAD

Coefficients for peak of mean dose time Dose
Coefficient =
Repetition =

Coefficients for peak of mean dose time Dose		PCC	SRC	PRCC	SRRC
Coefficient	Repetition	1	1	1	1
Description of Probabilistic Variable		Sig Coeff	Sig Coeff	Sig Coeff	Sig Coeff
Thickness of contaminated zone		2 0.56	3 0.26	2 0.79	2 0.43
Density of contaminated zone		11 0.04	8 0.11	14 0.04	9 0.09
Contaminated zone total porosity		9 0.04	7 0.12	11 0.04	8 0.09
Contaminated zone hydraulic conductivity		27 0.03	30 0.01	46 0.02	49 0.01
Contaminated zone b parameter		69 0.00	69 0.00	43 -0.02	47 -0.01
Evapotranspiration coefficient		80 0.00	80 0.00	64 0.01	64 0.00
Irrigation		10 -0.04	10 -0.06	17 -0.04	13 -0.04
Density of saturated zone		63 0.01	9 0.07	52 -0.01	6 -0.15
Saturated zone total porosity		67 0.00	13 0.03	56 -0.01	11 -0.07
Saturated zone effective porosity		59 0.01	12 0.04	51 -0.02	10 -0.09
Saturated zone hydraulic conductivity		77 0.00	77 0.00	57 -0.01	57 0.00
Saturated zone b parameter		50 -0.01	53 0.00	39 -0.02	43 -0.01
well pump intake depth		57 -0.01	60 0.00	68 -0.01	68 0.00
well pumping rate		13 0.04	11 0.05	8 0.05	12 0.05
Thickness of Unsaturated zone 1		28 0.03	32 0.01	33 0.03	37 0.01
Density of Unsaturated zone 1		16 -0.03	2 -0.42	28 -0.03	3 -0.31
Total Porosity of Unsaturated zone 1		14 -0.04	4 -0.25	18 -0.04	5 -0.21
Effective Porosity of Unsaturated zone 1		21 -0.03	5 -0.19	44 -0.02	7 -0.10
Hydraulic Conductivity of Unsaturated zone 1		60 0.01	62 0.00	76 0.00	76 0.00
b Parameter of Unsaturated zone 1		62 -0.01	64 0.00	21 -0.04	26 -0.01
Mass loading for inhalation		5 0.06	15 0.02	12 0.04	20 0.01
Indoor dust filtration factor		51 -0.01	54 0.00	49 -0.02	52 -0.01
External gamma shielding factor		23 0.03	26 0.01	22 -0.04	27 -0.01
Depth of soil mixing layer		55 -0.01	58 0.00	23 -0.03	28 -0.01
Depth of roots		3 -0.42	6 -0.18	3 -0.60	4 -0.25
Wet weight crop yield of fruit, grain and non-leafy vegetables		30 0.02	33 0.01	69 -0.01	69 0.00
weathering removal constant of all vegetation		47 0.01	50 0.00	75 0.00	75 0.00
Wet foliar interception fraction of leafy vegetables		40 0.01	43 0.01	47 -0.02	50 -0.01
Kd of Cm-246 in Contaminated Zone		75 0.00	74 0.00	42 0.02	46 0.01
Kd of Cm-246 in Unsaturated Zone 1		56 0.01	59 0.00	63 0.01	63 0.00
Kd of Cm-246 in Saturated Zone		17 -0.03	21 -0.01	15 -0.04	22 -0.01
Kd of Pb-210 in Contaminated Zone		73 0.00	72 0.00	6 -0.05	16 -0.02
Kd of Pb-210 in Unsaturated Zone 1		41 0.01	44 0.01	67 0.01	67 0.00
Kd of Pb-210 in Saturated Zone		68 0.00	68 0.00	26 0.03	31 0.01
Kd of Po-210 in Contaminated Zone		12 0.04	19 0.02	48 0.02	51 0.01
Kd of Po-210 in Unsaturated Zone 1		32 0.02	35 0.01	59 -0.01	59 0.00
Kd of Po-210 in Saturated Zone		42 0.01	45 0.01	37 -0.02	41 -0.01
Kd of Pu-242 in Contaminated Zone		29 -0.03	31 -0.01	73 0.00	73 0.00
Kd of Pu-242 in Unsaturated Zone 1		74 0.00	75 0.00	79 0.00	79 0.00
Kd of Pu-242 in Saturated Zone		58 -0.01	61 0.00	61 -0.01	61 0.00
Kd of Ra-226 in Contaminated Zone		44 -0.01	47 -0.01	25 -0.03	30 -0.01
Kd of Ra-226 in Unsaturated Zone 1		70 0.00	70 0.00	62 -0.01	62 0.00
Kd of Ra-226 in Saturated Zone		37 0.02	40 0.01	31 -0.03	35 -0.01
Kd of Th-230 in Contaminated Zone		76 0.00	76 0.00	66 -0.01	66 0.00
Kd of Th-230 in Unsaturated Zone 1		19 -0.03	23 -0.01	65 -0.01	65 0.00
Kd of Th-230 in Saturated Zone		66 0.00	66 0.00	72 -0.01	72 0.00
Kd of U-234 in Contaminated Zone		49 0.01	51 0.00	19 0.04	24 0.01
Kd of U-234 in Unsaturated Zone 1		65 0.00	67 0.00	34 0.03	38 0.01
Kd of U-234 in Saturated Zone		52 0.01	55 0.00	78 0.00	78 0.00
Kd of U-238 in Contaminated Zone		79 0.00	79 0.00	71 -0.01	71 0.00
Kd of U-238 in Unsaturated Zone 1		31 0.02	34 0.01	7 0.05	17 0.02
Kd of U-238 in Saturated Zone		46 -0.01	49 0.00	38 0.02	42 0.01
Plant transfer factor for Cm		1 0.92	1 0.86	1 0.92	1 0.80
Meat transfer factor for Cm		18 0.03	22 0.01	4 0.11	14 0.04
Milk transfer factor for Cm		4 0.07	14 0.03	40 0.02	44 0.01
Fish transfer factor for Cm		54 -0.01	56 0.00	5 -0.05	15 -0.02
Plant transfer factor for Pb		45 -0.01	48 -0.01	58 -0.01	58 0.00
Meat transfer factor for Pb		36 0.02	39 0.01	80 0.00	80 0.00
Milk transfer factor for Pb		26 0.03	29 0.01	45 0.02	48 0.01
Fish transfer factor for Pb		20 0.03	24 0.01	32 0.03	36 0.01
Plant transfer factor for Po		35 0.02	38 0.01	74 0.00	74 0.00
Meat transfer factor for Po		78 0.00	78 0.00	24 0.03	29 0.01
Milk transfer factor for Po		43 0.01	46 0.01	60 -0.01	60 0.00
Fish transfer factor for Po		15 -0.04	20 -0.01	77 0.00	77 0.00
Plant transfer factor for Pu		39 -0.02	42 -0.01	16 0.04	23 0.01
Meat transfer factor for Pu		72 0.00	73 0.00	27 -0.03	32 -0.01
Milk transfer factor for Pu		61 0.01	63 0.00	50 0.02	53 0.01
Fish transfer factor for Pu		34 0.02	37 0.01	29 0.03	33 0.01
Plant transfer factor for Ra		71 0.00	71 0.00	30 0.03	34 0.01
Meat transfer factor for Ra		48 -0.01	52 0.00	10 -0.04	19 -0.01
Milk transfer factor for Ra		22 0.03	25 0.01	70 -0.01	70 0.00
Fish transfer factor for Ra		64 -0.01	65 0.00	9 -0.04	18 -0.01
Plant transfer factor for Th		38 0.02	41 0.01	35 -0.02	39 -0.01
Meat transfer factor for Th		33 -0.02	36 -0.01	55 -0.01	56 0.00
Milk transfer factor for Th		8 0.05	18 0.02	54 -0.01	55 0.00
Fish transfer factor for Th		24 0.03	27 0.01	20 0.04	25 0.01
Plant transfer factor for U		53 -0.01	57 0.00	53 -0.01	54 0.00
Meat transfer factor for U		25 0.03	28 0.01	13 0.04	21 0.01
Milk transfer factor for U		6 0.05	16 0.02	36 0.02	40 0.01
Fish transfer factor for U		7 -0.05	17 -0.02	41 -0.02	45 -0.01
R-SQUARE		0.86	0.86	0.89	0.89

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

RESRAD Regression and Correlation output 11/07/11 07:59 Page: Coef 1
Title : HB sensitivity analysis_soil_Co-60
Input File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CO60\HB SOIL SA_CO60-1.RAD

Description of Probabilistic Variable	PCC 1		SRC 1		PRCC 1		SRRC 1	
	Sig	Coeff	Sig	Coeff	Sig	Coeff	Sig	Coeff
Thickness of contaminated zone	4	0.42	6	0.11	3	0.39	4	0.13
Density of contaminated zone	16	-0.02	13	-0.04	8	-0.05	6	-0.10
Contaminated zone total porosity	13	-0.02	11	-0.04	10	-0.05	7	-0.10
Contaminated zone hydraulic conductivity	10	0.03	18	0.01	32	0.00	33	0.00
Contaminated zone b parameter	14	-0.02	21	-0.01	15	-0.02	21	-0.01
Evapotranspiration coefficient	7	0.04	15	0.01	9	0.05	15	0.01
Irrigation	25	-0.01	14	-0.01	30	-0.01	26	-0.01
Density of saturated zone	15	-0.02	3	-0.19	31	0.00	12	0.04
Saturated zone total porosity	22	-0.02	7	-0.07	23	0.01	11	0.06
Saturated zone effective porosity	11	-0.03	5	-0.12	34	0.00	17	-0.01
Saturated zone hydraulic conductivity	27	0.01	29	0.00	19	0.02	25	0.01
Saturated zone b parameter	12	-0.03	19	-0.01	26	-0.01	30	0.00
Well pump intake depth	17	-0.02	22	-0.01	35	0.00	35	0.00
Well pumping rate	28	0.01	20	0.01	29	0.01	24	0.01
Thickness of Unsaturated zone 1	20	0.02	25	0.00	25	-0.01	29	0.00
Density of Unsaturated zone 1	29	0.01	10	0.05	20	-0.02	3	-0.16
Total Porosity of Unsaturated zone 1	24	0.01	9	0.06	21	-0.01	9	-0.06
Effective Porosity of Unsaturated zone 1	35	0.00	32	0.00	18	-0.02	8	-0.09
Hydraulic Conductivity of Unsaturated zone 1	34	0.00	35	0.00	24	-0.01	28	0.00
b Parameter of Unsaturated zone 1	19	0.02	24	0.00	27	0.01	31	0.00
Mass loading for inhalation	8	-0.03	16	-0.01	12	-0.03	18	-0.01
Indoor dust filtration factor	9	0.03	17	0.01	17	-0.02	23	-0.01
External gamma shielding factor	1	0.97	1	0.89	1	0.95	1	0.90
Depth of soil mixing layer	26	0.01	28	0.00	22	0.01	27	0.00
Depth of roots	5	-0.26	8	-0.06	5	-0.19	10	-0.06
Wet weight crop yield of fruit, grain and non-leafy vegetables	31	-0.01	31	0.00	16	-0.02	22	-0.01
Weathering removal constant of all vegetation	30	0.01	30	0.00	28	0.01	32	0.00
Wet foliar interception fraction of leafy vegetables	32	0.00	33	0.00	14	0.02	20	0.01
Kd of Co-60 in Contaminated Zone	21	-0.02	26	0.00	7	0.08	14	0.02
Kd of Co-60 in Unsaturated Zone 1	18	0.02	23	0.00	11	0.04	16	0.01
Kd of Co-60 in Saturated Zone	33	0.00	34	0.00	13	-0.03	19	-0.01
Plant transfer factor for Co	2	0.80	2	0.32	2	0.65	2	0.25
Meat transfer factor for Co	3	0.56	4	0.16	4	0.35	5	0.11
Milk transfer factor for Co	6	0.16	12	0.04	6	0.12	13	0.04
Fish transfer factor for Co	23	-0.01	27	0.00	33	0.00	34	0.00
R-SQUARE		0.94		0.94		0.91		0.91

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

Cs-137 Results:

RESRAD, Version 6.5 T« Limit = 30 days 11/07/2011 08:01 Page 1
Probabilistic results summary : HB sensitivity analysis_soil_Cs137
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CS137\HB SOIL SA_CS137-1.RAD

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Dose vs Pathway: Inhalation (w/o Radon)	6
Dose vs Pathway: Radon (water Ind.)	7
Dose vs Pathway: Plant (water Ind.)	8
Dose vs Pathway: Meat (water Ind.)	9
Dose vs Pathway: Milk (water Ind.)	10
Dose vs Pathway: Soil Ingestion	11
Dose vs Pathway: Water Ingestion	12
Dose vs Pathway: Fish Ingestion	13
Dose vs Pathway: Radon (water Dep.)	14
Dose vs Pathway: Plant (water Dep.)	15
Dose vs Pathway: Meat (water Dep.)	16
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RESRAD, Version 6.5 T« Limit = 30 days 11/07/2011 08:01 Page 2
Probabilistic results summary : HB sensitivity analysis_soil_Cs137
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CS137\HB SOIL SA_CS137-1.RAD

Probabilistic Input

Number of Sample Runs: 2000

Number	Name	Distribution	Parameters						
AAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA
1	THICK0	UNIFORM	.15	3.51					
2	DENSCH	BOUNDED NORMAL	1.5635	.2385	.827	2.3			
3	TPCZ	BOUNDED NORMAL	.41	.09	.1319	.6881			
4	HCCZ	BOUNDED LOGNORMAL-N	1.36	2.17	.00478	3190			
5	BCZ	BOUNDED LOGNORMAL-N	1.73	.323	2.08	15.3			
6	EVAPTR	UNIFORM	.5	.75					
7	RI	UNIFORM	.36	.76					
8	DENSAQ	BOUNDED NORMAL	1.5105	.1855	.937	2.084			
9	TPSZ	BOUNDED NORMAL	.43	.0699	.214	.646			
10	EPSZ	BOUNDED NORMAL	.342	.0705	.124	.56			
11	HCSZ	BOUNDED LOGNORMAL-N	.362	1.59	.0106	195			
12	BSZ	BOUNDED LOGNORMAL-N	1.96	.265	3.02	15.5			
13	DWIBWT	TRIANGULAR	6	10	30				
14	UW	UNIFORM	1173	1973					
15	H(1)	UNIFORM	0	8.08					
16	DENSUZ(1)	BOUNDED NORMAL	1.5635	.2385	.827	2.3			
17	TPUZ(1)	BOUNDED NORMAL	.41	.09	.1319	.6881			
18	EPUZ(1)	BOUNDED NORMAL	.315	.0905	.0349	.594			
19	HCUZ(1)	BOUNDED LOGNORMAL-N	1.36	2.17	.00478	3190			
20	BUZ(1)	BOUNDED LOGNORMAL-N	1.73	.323	2.08	15.3			
21	MLINH	CONTINUOUS LINEAR	8	0	.000008	.0151	.000016	.1365	
.00003	.8119	.00004	.9495	.00006	.9937	.000076	.9983	.0001	1
22	SHF3	UNIFORM	.15	.95					
23	SHF1	BOUNDED LOGNORMAL-N	-1.3	.59	.044	1			
24	DM	TRIANGULAR	0	.15	.6				
25	DROOT	UNIFORM	.3	.4					
26	YV(1)	TRUNCATED LOGNORMAL-N	.56	.48	.001	.999			
27	WLAM	TRIANGULAR	5.1	18	.84				
28	RWET(2)	TRIANGULAR	.06	.67	.95				
29	DCACTC(1)	TRUNCATED LOGNORMAL-N	6.1	2.33	.001	.999			
30	DCACTU1(1)	TRUNCATED LOGNORMAL-N	6.1	2.33	.001	.999			
31	DCACT5(1)	TRUNCATED LOGNORMAL-N	6.1	2.33	.001	.999			
32	BRTF(55,1)	TRUNCATED LOGNORMAL-N	-3.22	1	.001	.999			
33	BRTF(55,2)	TRUNCATED LOGNORMAL-N	-3	.4	.001	.999			
34	BRTF(55,3)	TRUNCATED LOGNORMAL-N	-4.61	.5	.001	.999			
35	BBIO(55,1)	LOGNORMAL-N	7.6	.7					

RESRAD Regression and Correlation output 11/07/11 08:01 Page: Coef 1
Title : HB sensitivity analysis_soil_Cs137
Input File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\CS137\HB SOIL SA_CS137-1.RAD

Coefficients for peak of mean dose time Dose		PCC		SRC		PRCC		SRRC	
Coefficient =		1		1		1		1	
Repetition =									
Description of Probabilistic Variable		Sig	Coeff	Sig	Coeff	Sig	Coeff	Sig	Coeff
Thickness of contaminated zone	3	0.43	4	0.20	3	0.58	3	0.29	
Density of contaminated zone	10	-0.03	13	-0.09	7	-0.04	9	-0.12	
Contaminated zone total porosity	9	-0.03	12	-0.09	8	-0.04	10	-0.11	
Contaminated zone hydraulic conductivity	17	0.02	23	0.01	25	0.01	28	0.00	
Contaminated zone b parameter	29	-0.01	30	0.00	16	-0.02	23	-0.01	
Evapotranspiration coefficient	18	0.02	24	0.01	9	0.04	16	0.02	
Irrigation	20	-0.02	15	-0.03	20	0.01	15	0.02	
Density of saturated zone	26	-0.01	6	-0.17	30	-0.01	11	-0.07	
Saturated zone total porosity	34	0.00	14	-0.04	35	0.00	31	0.00	
Saturated zone effective porosity	22	-0.02	10	-0.14	27	-0.01	12	-0.05	
Saturated zone hydraulic conductivity	25	0.02	27	0.01	23	0.01	26	0.00	
Saturated zone b parameter	28	-0.01	29	0.00	33	0.00	34	0.00	
well pump intake depth	23	-0.02	26	-0.01	31	0.00	32	0.00	
well pumping rate	24	0.02	16	0.02	18	-0.02	14	-0.02	
Thickness of Unsaturated zone 1	31	0.01	32	0.00	34	0.00	35	0.00	
Density of Unsaturated zone 1	15	-0.02	2	-0.35	21	-0.01	5	-0.17	
Total Porosity of Unsaturated zone 1	19	-0.02	8	-0.15	29	-0.01	13	-0.04	
Effective Porosity of Unsaturated zone 1	13	-0.03	5	-0.19	17	-0.02	7	-0.13	
Hydraulic Conductivity of Unsaturated zone 1	27	0.01	28	0.00	11	0.03	18	0.01	
b Parameter of Unsaturated zone 1	11	0.03	19	0.01	19	-0.01	24	-0.01	
Mass loading for inhalation	16	-0.02	22	-0.01	13	-0.02	20	-0.01	
Indoor dust filtration factor	8	0.03	18	0.01	15	-0.02	22	-0.01	
External gamma shielding factor	2	0.52	3	0.26	2	0.76	2	0.48	
Depth of soil mixing layer	35	0.00	35	0.00	28	0.01	30	0.00	
Depth of roots	5	-0.30	9	-0.14	5	-0.35	6	-0.15	
wet weight crop yield of fruit, grain and non-leafy vegetables	14	-0.03	21	-0.01	32	0.00	33	0.00	
weathering removal constant of all vegetation	30	0.01	31	0.00	10	0.03	17	0.01	
wet foliar interception fraction of leafy vegetables	12	-0.03	20	-0.01	14	0.02	21	0.01	
Kd of Cs-137 in Contaminated Zone	7	-0.05	17	-0.02	24	-0.01	27	0.00	
Kd of Cs-137 in Unsaturated Zone 1	32	0.01	33	0.00	12	0.03	19	0.01	
Kd of Cs-137 in Saturated Zone	33	0.01	34	0.00	22	-0.01	25	0.00	
Plant transfer factor for Cs	1	0.88	1	0.80	1	0.86	1	0.68	
Meat transfer factor for Cs	6	0.22	11	0.10	6	0.28	8	0.12	
Milk transfer factor for Cs	4	0.37	7	0.17	4	0.39	4	0.17	
Fish transfer factor for Cs	21	-0.02	25	-0.01	26	-0.01	29	0.00	
R-SQUARE		0.82		0.82		0.83		0.83	

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

RESRAD, Version 6.5 T« Limit = 30 days 11/07/2011 08:09 Page 1
Probabilistic results summary : HB sensitivity analysis_soil_Eu-152
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\EU152\HB SOIL SA_EU152-1.RAD

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RESRAD, Version 6.5 T_{1/2} Limit = 30 days 11/07/2011 08:09 Page 2
Probabilistic results summary : HB sensitivity analysis_soil_Eu-152
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\EU152\HB SOIL SA_EU152-1.RAD

Number of Sample Runs: 2000

Number	Name	Distribution	Parameters
AAAAA	AAAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAAA
1	THICK0	UNIFORM	.15 3.51
2	DENSCHZ	BOUNDED NORMAL	1.5635 .2385 .827 2.3
3	TPCZ	BOUNDED NORMAL	.41 .09 .1319 .6881
4	HCCZ	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
5	BCZ	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
6	EVAPTR	UNIFORM	.5 .75
7	RT	UNIFORM	.36 .76
8	DENSAQ	BOUNDED NORMAL	1.5105 .1855 .937 2.084
9	TPSZ	BOUNDED NORMAL	.43 .0699 .214 .646
10	EPSZ	BOUNDED NORMAL	.342 .0705 .124 .56
11	HCSZ	BOUNDED LOGNORMAL-N	.362 1.59 .0106 195
12	BSZ	BOUNDED LOGNORMAL-N	1.96 .265 3.02 15.5
13	DWIBWT	TRIANGULAR	6 10 30
14	UW	UNIFORM	1173 1973
15	H(1)	UNIFORM	0 8.08
16	DENSUZ(1)	BOUNDED NORMAL	1.5635 .2385 .827 2.3
17	TPUZ(1)	BOUNDED NORMAL	.41 .09 .1319 .6881
18	EPUZ(1)	BOUNDED NORMAL	.315 .0905 .0349 .594
19	HCUZ(1)	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
20	BUZ(1)	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
21	MLINH	CONTINUOUS LINEAR	8 0 0 .000008 .0151 .000016 .1365
.00003	.8119	.00004 .9495	.00006 .9937 .000076 .9983 .0001 1
22	SHF3	UNIFORM	.15 .95
23	SHF1	BOUNDED LOGNORMAL-N	-1.3 .59 .044 1
24	DM	TRIANGULAR	0 .15 .6
25	DROOT	UNIFORM	3 4
26	YV(1)	TRUNCATED LOGNORMAL-N	.56 .48 .001 .999
27	WLAM	TRIANGULAR	5.1 18 84
28	RWET(2)	TRIANGULAR	.06 .67 .95
29	DCACTC(1)	TRUNCATED LOGNORMAL-N	6.72 3.22 .001 .999
30	DCACTU1(1)	TRUNCATED LOGNORMAL-N	6.72 3.22 .001 .999
31	DCACTS(1)	TRUNCATED LOGNORMAL-N	6.72 3.22 .001 .999
32	DCACTC(3)	TRUNCATED LOGNORMAL-N	6.72 3.22 .001 .999
33	DCACTU1(3)	TRUNCATED LOGNORMAL-N	6.72 3.22 .001 .999
34	DCACTS(3)	TRUNCATED LOGNORMAL-N	6.72 3.22 .001 .999
35	BRTF(63,1)	TRUNCATED LOGNORMAL-N	-6.21 1.1 .001 .999
36	BRTF(63,2)	TRUNCATED LOGNORMAL-N	-6.21 1 .001 .999
37	BRTF(63,3)	TRUNCATED LOGNORMAL-N	-9.72 .9 .001 .999
38	BBIO(63,1)	LOGNORMAL-N	3.9 1.1
39	BRTF(64,1)	TRUNCATED LOGNORMAL-N	-6.21 1.1 .001 .999
40	BRTF(64,2)	TRUNCATED LOGNORMAL-N	-6.21 1 .001 .999
41	BRTF(64,3)	TRUNCATED LOGNORMAL-N	-9.72 .9 .001 .999
42	BBIO(64,1)	LOGNORMAL-N	3.2 1.1

RESRAD Regression and Correlation output 11/07/11 08:10 Page: Coef 1
Title : HB sensitivity analysis_soil_Eu-152
Input File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\EU152\HB SOIL SA_EU152-1.RAD

Coefficients for peak of mean dose time Dose		PCC		SRC		PRCC		SRRCC	
Coefficient =		1		1		1		1	
Repetition =									
Description of Probabilistic Variable		Sig	Coeff	Sig	Coeff	Sig	Coeff	Sig	Coeff
Thickness of contaminated zone		2	0.23	9	0.02	3	0.23	5	0.02
Density of contaminated zone		11	-0.03	10	-0.02	15	-0.03	8	-0.02
Contaminated zone total porosity		7	-0.04	6	-0.02	8	-0.04	3	-0.02
Contaminated zone hydraulic conductivity		21	-0.02	25	0.00	6	0.04	13	0.00
Contaminated zone b parameter		13	-0.03	19	0.00	30	-0.01	36	0.00
Evapotranspiration coefficient		5	0.05	13	0.00	5	0.05	12	0.00
Irrigation		29	-0.01	16	0.00	41	0.00	39	0.00
Density of saturated zone		24	-0.02	4	-0.04	34	-0.01	7	-0.02
Saturated zone total porosity		26	-0.02	8	-0.02	35	-0.01	10	-0.01
Saturated zone effective porosity		23	-0.02	7	-0.02	31	-0.01	9	-0.01
Saturated zone hydraulic conductivity		8	-0.04	15	0.00	18	0.02	23	0.00
Saturated zone b parameter		17	-0.02	23	0.00	29	-0.01	35	0.00
Well pump intake depth		22	0.02	27	0.00	14	0.03	20	0.00
Well pumping rate		37	0.01	26	0.00	36	0.00	29	0.00
Thickness of Unsaturated zone 1		15	-0.02	20	0.00	12	-0.03	18	0.00
Density of Unsaturated zone 1		14	0.03	2	0.07	32	0.01	4	0.02
Total Porosity of Unsaturated zone 1		10	0.03	3	0.05	24	0.01	6	0.02
Effective Porosity of Unsaturated zone 1		20	0.02	5	0.03	42	0.00	30	0.00
Hydraulic Conductivity of Unsaturated zone 1		19	-0.02	24	0.00	39	0.00	41	0.00
b Parameter of Unsaturated zone 1		30	-0.01	31	0.00	28	-0.01	34	0.00
Mass loading for inhalation		38	0.01	38	0.00	38	0.00	40	0.00
Indoor dust filtration factor		12	0.03	18	0.00	9	0.03	15	0.00
External gamma shielding factor		1	1.00	1	1.00	1	1.00	1	1.00
Depth of soil mixing layer		31	-0.01	32	0.00	11	-0.03	17	0.00
Depth of roots		9	-0.04	17	0.00	4	-0.05	11	0.00
wet weight crop yield of fruit, grain and non-leafy vegetables		6	-0.05	14	0.00	7	-0.04	14	0.00
weathering removal constant of all vegetation		36	-0.01	37	0.00	33	0.01	37	0.00
wet foliar interception fraction of leafy vegetables		35	-0.01	36	0.00	25	-0.01	31	0.00
Kd of Eu-152 in Contaminated Zone		18	-0.02	22	0.00	2	0.26	2	0.02
Kd of Eu-152 in Unsaturated Zone 1		34	0.01	35	0.00	40	0.00	42	0.00
Kd of Eu-152 in Saturated Zone		28	0.01	30	0.00	22	0.02	27	0.00
Kd of Gd-152 in Contaminated Zone		39	0.00	39	0.00	37	0.00	38	0.00
Kd of Gd-152 in Unsaturated Zone 1		3	-0.08	11	-0.01	23	-0.02	28	0.00
Kd of Gd-152 in Saturated Zone		27	-0.01	29	0.00	27	-0.01	33	0.00
Plant transfer factor for Eu		4	0.07	12	0.01	19	0.02	24	0.00
Meat transfer factor for Eu		32	-0.01	33	0.00	13	-0.03	19	0.00
Milk transfer factor for Eu		33	0.01	34	0.00	20	0.02	25	0.00
Fish transfer factor for Eu		42	0.00	42	0.00	21	0.02	26	0.00
Plant transfer factor for Gd		40	0.00	40	0.00	16	-0.02	21	0.00
Meat transfer factor for Gd		25	0.02	28	0.00	26	0.01	32	0.00
Milk transfer factor for Gd		16	-0.02	21	0.00	10	-0.03	16	0.00
Fish transfer factor for Gd		41	0.00	41	0.00	17	0.02	22	0.00
R-SQUARE			0.99		0.99		0.99		0.99

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

RESRAD, Version 6.5 T_{1/2} Limit = 30 days 11/07/2011 08:12 Page 1
Probabilistic results summary : HB sensitivity analysis_soil_Eu-154
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\EU154\HB SOIL SA_EU154-1.RAD

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File : C:\RESRAD_FAMILY\RESRAD\6.3\USER-FILES\E0134\RB SOIL SALES
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Correlation and Regression coefficients (if any)..... 21
RESRAD, Version 6.5 T_{1/2} Limit = 30 days 11/07/2011 08:12 Page 2
Probabilistic results summary: HB sensitivity analysis_soil_Eu-154
File = C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\EU154\HB SOIL SA_EU154-1.RAD

Probabilistic Input
Number of Sample Runs: 2000

Number	Name	Distribution		Parameters									
AAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA
1	THICK0				.15		3.51						
2	DENS CZ				1.5635		.2385		.827		2.3		
3	TPCZ				.41		.09		.1319		.6881		
4	HCCZ				1.36		2.17		.00478		3190		
5	BCZ				1.73		.323		2.08		15.3		
6	EVAPTR				.5		.75						
7	RI				.36		.76						
8	DENSAQ				1.5105		.1855		.937		2.084		
9	TPSZ				.43		.0699		.214		.646		
10	EPSZ				.342		.0705		.124		.56		
11	HCSZ				.362		1.59		.0106		195		
12	BSZ				1.96		.265		3.02		15.5		
13	DWIBWT				6		10		30				
14	UW				1173		1973						
15	H(1)				0		8.08						
16	DENSUZ(1)				1.5635		.2385		.827		2.3		
17	TPUZ(1)				.41		.09		.1319		.6881		
18	EPUZ(1)				.315		.0905		.0349		.594		
19	HCUZ(1)				1.36		2.17		.00478		3190		
20	BUZ(1)				1.73		.323		2.08		15.3		
21	MLTNH				8		0		0		.000008	.0151	.000016
.00003	.8119	.00004	.9495	.00006	.9937	.000076	.9983	.0001	1				.1365
22	SHF3				.15		.95						
23	SHF1				1.3		.59		.044		1		
24	DM				0		.15		.6				
25	DROOT				.3		4						
26	YV(1)				.56		.48		.001		.999		
27	WLAM				5.1		18		84				
28	RWET(2)				.06		.67		.95				
29	DCACTC(1)				6.72		3.22		.001		.999		
30	DCACTUI(1)				6.72		3.22		.001		.999		
31	DCACTS(1)				6.72		3.22		.001		.999		
32	BRTF(63, 1)				-6.21		1.1		.001		.999		
33	BRTF(63, 2)				-6.21		1		.001		.999		
34	BRTF(63, 3)				-9.72		.9		.001		.999		
35	BRTO(63, 1)				3.9		1.1						

RESRAD Regression and Correlation output 11/07/11 08:12 Page: Coef 1
Title : HB sensitivity analysis_soil_Eu-154
Input File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\EU154\HB SOIL SA_EU154-1.RAD

Coefficients for peak of mean dose time Dose
Coefficient =
Repetition =

Description of Probabilistic Variable	PCC 1		SRC 1		PRCC 1		SRRC 1	
	Sig	Coeff	Sig	Coeff	Sig	Coeff	Sig	Coeff
Thickness of contaminated zone	2	0.20	6	0.02	3	0.21	9	0.02
Density of contaminated zone	19	-0.02	9	-0.01	28	-0.01	11	-0.01
Contaminated zone total porosity	18	-0.02	8	-0.01	27	-0.01	10	-0.01
Contaminated zone hydraulic conductivity	25	0.01	28	0.00	33	0.01	33	0.00
Contaminated zone b parameter	34	0.00	34	0.00	18	-0.02	25	0.00
Evapotranspiration coefficient	15	0.02	20	0.00	16	0.03	23	0.00
Irrigation	30	0.00	25	0.00	32	0.01	21	0.00
Density of saturated zone	24	-0.01	5	-0.03	24	0.02	5	0.05
Saturated zone total porosity	27	-0.01	10	-0.01	22	0.02	6	0.03
Saturated zone effective porosity	23	-0.01	7	-0.02	26	0.01	8	0.02
Saturated zone hydraulic conductivity	21	0.01	26	0.00	10	0.04	18	0.00
Saturated zone b parameter	4	-0.05	12	0.00	5	-0.05	14	-0.01
Well pump intake depth	32	0.00	32	0.00	35	0.00	35	0.00
Well pumping rate	29	0.00	24	0.00	21	-0.02	12	-0.01
Thickness of Unsaturated zone 1	11	-0.03	16	0.00	12	-0.04	19	0.00
Density of Unsaturated zone 1	8	0.03	2	0.11	11	0.04	2	0.13
Total Porosity of Unsaturated zone 1	7	0.04	3	0.06	8	0.04	3	0.07
Effective Porosity of Unsaturated zone 1	10	0.03	4	0.05	13	0.03	4	0.06
Hydraulic Conductivity of Unsaturated zone 1	14	-0.02	19	0.00	17	-0.02	24	0.00
b Parameter of Unsaturated zone 1	6	0.05	14	0.00	4	0.05	13	0.01
Mass loading for inhalation	22	-0.01	27	0.00	15	-0.03	22	0.00
Indoor dust filtration factor	9	0.03	15	0.00	19	0.02	26	0.00
External gamma shielding factor	1	1.00	1	0.99	1	0.99	1	0.99
Depth of soil mixing layer	28	-0.01	30	0.00	20	-0.02	27	0.00
Depth of roots	5	-0.05	13	0.00	9	-0.04	17	0.00
Wet weight crop yield of fruit, grain and non-leafy vegetables	33	0.00	33	0.00	30	-0.01	31	0.00
Weathering removal constant of all vegetation	17	-0.02	22	0.00	25	-0.01	29	0.00
Wet foliar interception fraction of leafy vegetables	12	0.03	17	0.00	14	0.03	20	0.00
Kd of Eu-154 in Contaminated Zone	13	-0.03	18	0.00	2	0.23	7	0.03
Kd of Eu-154 in Unsaturated Zone 1	26	0.01	29	0.00	6	0.04	15	0.00
Kd of Eu-154 in Saturated Zone	35	0.00	35	0.00	29	-0.01	30	0.00
Plant transfer factor for Eu	3	0.07	11	0.01	7	0.04	16	0.00
Meat transfer factor for Eu	31	0.00	31	0.00	23	0.02	28	0.00
Milk transfer factor for Eu	20	0.02	23	0.00	34	0.00	34	0.00
Fish transfer factor for Eu	16	0.02	21	0.00	31	0.01	32	0.00
R-SQUARE		0.99		0.99		0.99		0.99

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

RESRAD Regression and Correlation output 11/06/11 15:15 Page: Coef 1
Title : HB sensitivity analysis soil_H-3
Input File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\H3\HB SOIL SA_H3-1.RAD

Coefficients for peak of mean dose time Dose		PCC		SRC		PRCC		SRRC	
Coefficient =		1		1		1		1	
Repetition =									
Description of Probabilistic Variable		Sig	Coeff	Sig	Coeff	Sig	Coeff	Sig	Coeff
Thickness of contaminated zone		1	0.92	1	0.80	1	0.93	1	0.83
Density of contaminated zone		12	0.05	10	0.12	6	0.06	10	0.14
Contaminated zone total porosity		5	-0.10	8	-0.25	5	-0.08	7	-0.19
Contaminated zone hydraulic conductivity		4	0.14	13	0.05	4	0.22	12	0.08
Contaminated zone b parameter		8	-0.06	15	-0.02	14	-0.04	19	-0.01
Evapotranspiration coefficient		6	0.06	14	0.02	9	0.05	16	0.02
Irrigation		7	-0.06	12	-0.07	16	-0.03	14	-0.04
Density of saturated zone		13	0.05	2	0.55	20	0.03	3	0.31
Saturated zone total porosity		11	0.05	4	0.29	19	0.03	8	0.16
Saturated zone effective porosity		15	0.04	7	0.26	21	0.03	9	0.16
Saturated zone hydraulic conductivity		26	0.01	27	0.00	18	0.03	21	0.01
Saturated zone b parameter		10	-0.05	17	-0.02	12	-0.04	17	-0.01
well pump intake depth		27	-0.01	28	0.00	27	-0.02	27	-0.01
well pumping rate		32	-0.01	24	-0.01	15	-0.03	13	-0.04
Thickness of Unsaturated zone 1		35	0.00	35	0.00	33	0.01	33	0.00
Density of Unsaturated zone 1		16	0.04	3	0.48	10	0.05	2	0.54
Total Porosity of Unsaturated zone 1		14	0.05	5	0.27	7	0.05	4	0.29
Effective Porosity of Unsaturated zone 1		17	0.04	9	0.24	11	0.05	6	0.26
Hydraulic Conductivity of Unsaturated zone 1		34	0.00	34	0.00	23	0.03	23	0.01
b Parameter of Unsaturated zone 1		20	-0.04	20	-0.01	24	-0.02	24	-0.01
Mass loading for inhalation		22	0.02	22	0.01	26	0.02	26	0.01
Indoor dust filtration factor		25	0.01	26	0.00	35	0.01	35	0.00
External gamma shielding factor		19	-0.04	19	-0.01	13	-0.04	18	-0.01
Depth of soil mixing layer		23	0.02	23	0.01	31	0.01	31	0.00
Depth of roots		2	-0.61	6	-0.27	2	-0.64	5	-0.28
wet weight crop yield of fruit, grain and non-leafy vegetables		21	0.03	21	0.01	34	0.01	34	0.00
weathering removal constant of all vegetation		9	0.05	16	0.02	8	0.05	15	0.02
wet foliar interception fraction of leafy vegetables		29	-0.01	30	0.00	28	-0.02	28	-0.01
Kd of H-3 in Contaminated Zone		3	-0.31	11	-0.11	3	-0.27	11	-0.09
Kd of H-3 in Unsaturated Zone 1		18	0.04	18	0.01	25	0.02	25	0.01
Kd of H-3 in Saturated Zone		33	0.00	33	0.00	30	-0.02	30	-0.01
Plant transfer factor for H		24	0.02	25	0.01	17	0.03	20	0.01
Meat transfer factor for H		30	-0.01	31	0.00	29	0.02	29	0.01
Milk transfer factor for H		31	-0.01	32	0.00	32	-0.01	32	0.00
Fish transfer factor for H		28	0.01	29	0.00	22	0.03	22	0.01
R-SQUARE			0.88		0.88		0.89		0.89

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

RESRAD, Version 6.5 T« Limit = 30 days 11/07/2011 08:14 Page 1
 Probabilistic results summary : HB sensitivity analysis_soil_I129
 File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\I129\HB SOIL SA_I129-1.RAD

RESRAD, Version 6.5 T« Limit = 30 days 11/07/2011 08:14 Page 2
 Probabilistic results summary : HB sensitivity analysis_soil_I129
 File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\I129\HB SOIL SA_I129-1.RAD

Number	Name	Distribution	Parameters
AAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA
1	THICK0	UNIFORM	.15 3.51
2	DENSCZ	BOUNDED NORMAL	1.5635 .2385 .827 2.3
3	TPCZ	BOUNDED NORMAL	.41 .09 .1319 .6881
4	HCCZ	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
5	BCZ	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
6	EVAPTR	UNIFORM	.5 .75
7	RI	UNIFORM	.36 .76
8	DENSAQ	BOUNDED NORMAL	1.5105 .1855 .937 2.084
9	TPSZ	BOUNDED NORMAL	.43 .0699 .214 .646
10	EPSZ	BOUNDED NORMAL	.342 .0705 .124 .56
11	HCSZ	BOUNDED LOGNORMAL-N	.362 1.59 .0106 195
12	BSZ	BOUNDED LOGNORMAL-N	1.96 .265 3.02 15.5
13	DWIBWT	TRIANGULAR	6 10 30
14	UW	UNIFORM	1173 1973
15	H(1)	UNIFORM	0 8.08
16	DENSUZ(1)	BOUNDED NORMAL	1.5635 .2385 .827 2.3
17	TPUZ(1)	BOUNDED NORMAL	.41 .09 .1319 .6881
18	EPUZ(1)	BOUNDED NORMAL	.315 .0905 .0349 .594
19	HCUZ(1)	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
20	BUZ(1)	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
21	MLINH	CONTINUOUS LINEAR	8 0 0 .000008 .0151 .000016 .1365
.00003	.8119 .00004 .9495 .00006 .9937 .000076 .9983 .0001 1		
22	SHF3	UNIFORM	.15 .95
23	SHF1	BOUNDED LOGNORMAL-N	-1.3 .59 .044 1
24	DM	TRIANGULAR	0 .15 .6
25	DROOT	UNIFORM	.3 4
26	YV(1)	TRUNCATED LOGNORMAL-N	.56 .48 .001 .999
27	WLAM	TRIANGULAR	5.1 18 84
28	RWET(2)	TRIANGULAR	.06 .67 .95
29	DCACTC(1)	TRUNCATED LOGNORMAL-N	1.52 2.19 .001 .999
30	DCACTU1(1)	TRUNCATED LOGNORMAL-N	1.52 2.19 .001 .999
31	DCACTS(1)	TRUNCATED LOGNORMAL-N	1.52 2.19 .001 .999
32	BRTF(53,1)	TRUNCATED LOGNORMAL-N	-3.91 .9 .001 .999
33	BRTF(53,2)	TRUNCATED LOGNORMAL-N	-3.22 .4 .001 .999
34	BRTF(53,3)	TRUNCATED LOGNORMAL-N	-4.61 .5 .001 .999
35	BBIO(53,1)	LOGNORMAL-N	3.7 1.1

RESRAD Regression and Correlation output 11/07/11 08:15 Page: Coef 1
Title : HB sensitivity analysis_soil_I129
Input File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\I129\HB SOIL SA_I129-1.RAD

Coefficients for peak of mean dose time Dose
Coefficient =
Repetition =

Description of Probabilistic Variable	PCC 1		SRC 1		PRCC 1		SRRC 1	
	Sig	Coeff	Sig	Coeff	Sig	Coeff	Sig	Coeff
Thickness of contaminated zone	2	0.49	3	0.25	2	0.75	2	0.42
Density of contaminated zone	17	-0.02	12	-0.07	9	-0.04	8	-0.11
Contaminated zone total porosity	16	-0.02	11	-0.07	11	-0.04	11	-0.09
Contaminated zone hydraulic conductivity	15	0.02	22	0.01	28	-0.01	30	0.00
Contaminated zone b parameter	27	-0.01	29	0.00	22	-0.02	25	-0.01
Evapotranspiration coefficient	6	0.04	15	0.02	10	0.04	18	0.02
Irrigation	21	-0.02	13	-0.03	13	0.03	15	0.04
Density of saturated zone	29	-0.01	8	-0.14	29	-0.01	9	-0.11
Saturated zone total porosity	35	0.00	25	-0.01	34	0.00	17	-0.02
Saturated zone effective porosity	22	-0.02	9	-0.13	26	-0.01	12	-0.08
Saturated zone hydraulic conductivity	20	0.02	24	0.01	30	0.01	31	0.00
Saturated zone b parameter	28	-0.01	30	0.00	15	-0.03	19	-0.01
well pump intake depth	26	-0.01	28	0.00	17	-0.02	21	-0.01
well pumping rate	23	0.01	14	0.02	8	-0.05	14	-0.06
Thickness of Unsaturated zone 1	24	0.01	26	0.01	32	0.01	33	0.00
Density of Unsaturated zone 1	14	-0.02	2	-0.37	14	0.03	3	0.30
Total Porosity of Unsaturated zone 1	19	-0.02	6	-0.16	12	0.04	5	0.22
Effective Porosity of Unsaturated zone 1	12	-0.03	5	-0.21	21	0.02	10	0.10
Hydraulic Conductivity of Unsaturated zone 1	32	0.01	33	0.00	7	0.05	16	0.02
b Parameter of Unsaturated zone 1	10	0.03	19	0.01	20	0.02	24	0.01
Mass loading for inhalation	11	-0.03	20	-0.01	33	-0.01	34	0.00
Indoor dust filtration factor	7	0.04	16	0.02	19	-0.02	23	-0.01
External gamma shielding factor	25	0.01	27	0.01	25	0.01	28	0.01
Depth of soil mixing layer	33	-0.01	34	0.00	18	-0.02	22	-0.01
Depth of roots	4	-0.32	7	-0.15	4	-0.49	6	-0.21
wet weight crop yield of fruit, grain and non-leafy vegetables	18	-0.02	23	-0.01	27	-0.01	29	0.00
weathering removal constant of all vegetation	34	0.00	35	0.00	16	0.02	20	0.01
wet foliar interception fraction of leafy vegetables	8	-0.03	17	-0.01	23	0.02	26	0.01
Kd of I-129 in Contaminated Zone	9	-0.03	18	-0.01	6	0.16	13	0.06
Kd of I-129 in Unsaturated Zone 1	30	0.01	31	0.00	24	0.02	27	0.01
Kd of I-129 in Saturated Zone	31	0.01	32	0.00	35	0.00	35	0.00
Plant transfer factor for I	1	0.87	1	0.79	1	0.89	1	0.73
Meat transfer factor for I	5	0.25	10	0.12	5	0.44	7	0.18
Milk transfer factor for I	3	0.46	4	0.23	3	0.60	4	0.28
Fish transfer factor for I	13	-0.03	21	-0.01	31	-0.01	32	0.00
R-SQUARE		0.80		0.80		0.86		0.86

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

RESRAD, Version 6.5 T« Limit = 30 days 11/07/2011 08:16 Page 1
Probabilistic results summary : HB sensitivity analysis_soil_Nb-94
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NB94\HB SOIL SA_NB94-1.RAD

Correlation and Regression coefficients (if any)..... 21
RESRAD, Version 6.5 T« Limit = 30 days 11/07/2011 08:16 Page 2
Probabilistic results summary: HB sensitivity analysis_soil_Nb-94
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NB94\HB SOIL SA_NB94-1.RAD

Number of Sample Runs: 2000

Number	Name	Distribution	Parameters
AAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA
1	THICK0	UNIFORM	.15 3.51
2	DENS5CZ	BOUNDED NORMAL	1.5635 .2385 .827 2.3
3	TPCZ	BOUNDED NORMAL	.41 .09 .1319 .6881
4	HCCZ	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
5	BCZ	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
6	EVAPTR	UNIFORM	.5 .75
7	RI	UNIFORM	.36 .76
8	DENSAQ	BOUNDED NORMAL	1.5105 .1855 .937 2.084
9	TPSZ	BOUNDED NORMAL	.43 .0699 .214 .646
10	EPSZ	BOUNDED NORMAL	.342 .0705 .124 .56
11	HCSZ	BOUNDED LOGNORMAL-N	.362 1.59 .0106 195
12	BSZ	BOUNDED LOGNORMAL-N	1.96 .265 3.02 15.5
13	DWIBWT	TRIANGULAR	6 10 30
14	UW	UNIFORM	1173 1973
15	H(1)	UNIFORM	0 8.08
16	DENS5UZ(1)	BOUNDED NORMAL	1.5635 .2385 .827 2.3
17	TPUZ(1)	BOUNDED NORMAL	.41 .09 .1319 .6881
18	EPUZ(1)	BOUNDED NORMAL	.315 .0905 .0349 .594
19	HCUZ(1)	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
20	BUZ(1)	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
21	MLINH	CONTINUOUS LINEAR	8 0 0 .000008 .0151 .000016 .1365
.00003	.8119 .00004 .9495	.00006 .9937	.000076 .9983 .0001 1
22	SHF3	UNIFORM	.15 .95
23	SHF1	BOUNDED LOGNORMAL-N	-1.3 .59 .044 1
24	DM	TRIANGULAR	0 .15 .6
25	DROOT	UNIFORM	.3 4
26	YV(1)	TRUNCATED LOGNORMAL-N	.56 .48 .001 .999
27	WLAM	TRIANGULAR	5.1 18 84
28	RWET(2)	TRIANGULAR	.06 .67 .95
29	DCACTC(1)	TRUNCATED LOGNORMAL-N	5.94 3.33 .001 .999
30	DCACTU1(1)	TRUNCATED LOGNORMAL-N	5.94 3.22 .001 .999
31	DCACTS(1)	TRUNCATED LOGNORMAL-N	5.94 3.22 .001 .999
32	BRTF(41,1)	TRUNCATED LOGNORMAL-N	-4.61 1.1 .001 .999
33	BRTF(41,2)	TRUNCATED LOGNORMAL-N	-13.82 .9 .001 .999
34	BRTF(41,3)	TRUNCATED LOGNORMAL-N	-13.12 .7 .001 .999
35	BBT0(41,1)	LOGNORMAL-N	5.7 1.1

RESRAD Regression and Correlation output 11/07/11 08:16 Page: Coef 1
Title : HB sensitivity analysis_soil_Nb-94
Input File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NB94\HB SOIL SA_NB94-1.RAD

Coefficients for peak of mean dose time Dose		PCC		SRC		PRCC		SRRC	
Coefficient =	Repetition =	1		1		1		1	
Description of Probabilistic Variable		Sig	Coeff	Sig	Coeff	Sig	Coeff	Sig	Coeff
Thickness of contaminated zone		2	0.20	7	0.03	3	0.21	8	0.03
Density of contaminated zone		18	-0.01	10	-0.01	30	-0.01	17	-0.01
Contaminated zone total porosity		20	-0.01	11	-0.01	32	-0.01	19	-0.01
Contaminated zone hydraulic conductivity		25	0.01	28	0.00	22	0.01	28	0.00
Contaminated zone b parameter		35	0.00	35	0.00	18	-0.02	25	0.00
Evapotranspiration coefficient		7	0.04	15	0.01	6	0.05	12	0.01
Irrigation		33	0.00	27	0.00	31	0.01	24	0.00
Density of saturated zone		23	-0.01	5	-0.06	24	0.01	5	0.06
Saturated zone total porosity		27	-0.01	8	-0.02	19	0.02	7	0.04
Saturated zone effective porosity		16	-0.02	6	-0.04	29	0.01	9	0.02
Saturated zone hydraulic conductivity		17	0.02	22	0.00	7	0.05	13	0.01
Saturated zone b parameter		5	-0.05	13	-0.01	8	-0.05	14	-0.01
Well pump intake depth		28	0.01	30	0.00	26	0.01	30	0.00
Well pumping rate		29	0.00	21	0.00	25	-0.01	18	-0.01
Thickness of Unsaturated zone 1		9	-0.03	17	0.00	12	-0.03	21	0.00
Density of Unsaturated zone 1		11	0.03	2	0.11	14	0.03	2	0.13
Total Porosity of Unsaturated zone 1		10	0.03	3	0.06	13	0.03	3	0.07
Effective Porosity of Unsaturated zone 1		13	0.03	4	0.06	16	0.03	4	0.06
Hydraulic Conductivity of Unsaturated zone 1		12	-0.03	18	0.00	11	-0.03	20	0.00
b Parameter of Unsaturated zone 1		6	0.05	14	0.01	5	0.05	11	0.01
Mass loading for inhalation		22	-0.01	25	0.00	15	-0.03	22	0.00
Indoor dust filtration factor		8	0.03	16	0.00	21	0.01	27	0.00
External gamma shielding factor		1	0.99	1	0.99	1	0.99	1	0.99
Depth of soil mixing layer		26	-0.01	29	0.00	17	-0.02	23	0.00
Depth of roots		4	-0.05	12	-0.01	10	-0.04	16	-0.01
Wet weight crop yield of fruit, grain and non-leafy vegetables		30	0.00	31	0.00	33	0.00	33	0.00
Weathering removal constant of all vegetation		14	-0.02	19	0.00	20	-0.02	26	0.00
Wet foliar interception fraction of leafy vegetables		19	0.01	23	0.00	23	0.01	29	0.00
Kd of Nb-94 in Contaminated Zone		32	0.00	33	0.00	2	0.32	6	0.05
Kd of Nb-94 in Unsaturated Zone 1		31	0.00	32	0.00	9	0.04	15	0.01
Kd of Nb-94 in Saturated Zone		34	0.00	34	0.00	28	-0.01	32	0.00
Plant transfer factor for Nb		3	0.12	9	0.02	4	0.09	10	0.01
Meat transfer factor for Nb		24	-0.01	26	0.00	27	0.01	31	0.00
Milk transfer factor for Nb		21	0.01	24	0.00	35	0.00	35	0.00
Fish transfer factor for Nb		15	0.02	20	0.00	34	0.00	34	0.00
R-SQUARE			0.98		0.98		0.98		0.98

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

Number	Name	Distribution	Parameters
AAAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA
1	THICK0	UNIFORM	.15 3.51
2	DENS6Z	BOUNDED NORMAL	1.5635 .2385 .827 2.3
3	TPCZ	BOUNDED NORMAL	.41 .09 .1319 .6881
4	HCCZ	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
5	BCZ	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
6	EVAPTR	UNIFORM	.5 .75
7	RI	UNIFORM	.36 .76
8	DENSAQ	BOUNDED NORMAL	1.5105 .1855 .937 2.084
9	TPSZ	BOUNDED NORMAL	.43 .0699 .214 .646
10	EPSZ	BOUNDED NORMAL	.342 .0705 .124 .56
11	HCSZ	BOUNDED LOGNORMAL-N	.362 1.59 .0106 195
12	BSZ	BOUNDED LOGNORMAL-N	1.96 .265 3.02 15.5
13	DWIBWT	TRIANGULAR	6 10 30
14	UW	UNIFORM	1173 1973
15	H(1)	UNIFORM	0 8.08
16	DENSUZ(1)	BOUNDED NORMAL	1.5635 .2385 .827 2.3
17	TPUZ(1)	BOUNDED NORMAL	.41 .09 .1319 .6881
18	EPUZ(1)	BOUNDED NORMAL	.315 .0905 .0349 .594
19	HCUZ(1)	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
20	BUZ(1)	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
21	MLINH	CONTINUOUS LINEAR	8 0 0 .000008 .0151 .000016 .1365
.00003	.8119	.00004 .9495 .00006 .9937	.000076 .9983 .0001 1
22	SHF3	UNIFORM	.15 .95
23	SHF1	BOUNDED LOGNORMAL-N	-1.3 .59 .044 1
24	DM	TRIANGULAR	0 .15 .6
25	DROOT	UNIFORM	.3 4
26	YV(1)	TRUNCATED LOGNORMAL-N	.56 .48 .001 .999
27	WLAM	TRIANGULAR	5.1 18 84
28	RWET(2)	TRIANGULAR	.06 .67 .95
29	DCACTC(1)	TRUNCATED LOGNORMAL-N	6.05 1.46 .001 .999
30	DCACTU(1)	TRUNCATED LOGNORMAL-N	6.05 1.46 .001 .999
31	DCACTS(1)	TRUNCATED LOGNORMAL-N	6.05 1.46 .001 .999
32	BRTF(28,1)	TRUNCATED LOGNORMAL-N	-3 .9 .001 .999
33	BRTF(28,2)	TRUNCATED LOGNORMAL-N	-5.3 .9 .001 .999
34	BRTF(28,3)	TRUNCATED LOGNORMAL-N	-3.91 .7 .001 .999
35	BRIO(28,1)	LOGNORMAL-N	4.6 1.1

RESRAD Regression and Correlation output 11/07/11 08:18 Page: Coef 1
Title : HB sensitivity analysis_soil_Ni-59
Input File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NI59\HB SOIL SA_NI59-1.RAD

Coefficients for peak of mean dose time Dose
Coefficient =
Repetition =

Description of Probabilistic Variable	PCC 1		SRC 1		PRCC 1		SRRC 1	
	Sig	Coeff	Sig	Coeff	Sig	Coeff	Sig	Coeff
Thickness of contaminated zone	3	0.31	4	0.18	3	0.74	3	0.36
Density of contaminated zone	8	-0.03	6	-0.13	7	-0.05	8	-0.11
Contaminated zone total porosity	6	-0.04	5	-0.14	8	-0.04	9	-0.10
Contaminated zone hydraulic conductivity	16	0.02	22	0.01	28	-0.01	29	0.00
Contaminated zone b parameter	23	-0.01	25	-0.01	26	-0.01	27	0.00
Evapotranspiration coefficient	22	0.01	24	0.01	30	0.01	30	0.00
Irrigation	14	-0.02	13	-0.05	13	0.04	14	0.04
Density of saturated zone	32	0.00	12	-0.05	24	-0.01	7	-0.12
Saturated zone total porosity	25	0.01	11	0.07	29	-0.01	15	-0.03
Saturated zone effective porosity	21	-0.01	8	-0.12	22	-0.01	10	-0.07
Saturated zone hydraulic conductivity	17	0.01	23	0.01	31	0.00	31	0.00
Saturated zone b parameter	35	0.00	35	0.00	11	-0.04	18	-0.01
well pump intake depth	28	-0.01	29	0.00	16	-0.03	21	-0.01
well pumping rate	15	0.02	14	0.04	9	-0.04	12	-0.05
Thickness of Unsaturated zone 1	34	0.00	34	0.00	32	0.00	32	0.00
Density of Unsaturated zone 1	18	-0.01	3	-0.25	17	0.02	4	0.26
Total Porosity of Unsaturated zone 1	19	-0.01	9	-0.12	12	0.04	6	0.20
Effective Porosity of Unsaturated zone 1	20	-0.01	10	-0.12	23	0.01	11	0.07
Hydraulic Conductivity of Unsaturated zone 1	29	0.01	30	0.00	6	0.06	16	0.02
b Parameter of Unsaturated zone 1	11	0.03	19	0.01	34	0.00	34	0.00
Mass loading for inhalation	31	0.00	32	0.00	18	-0.02	22	-0.01
Indoor dust filtration factor	10	0.03	18	0.02	15	-0.03	20	-0.01
External gamma shielding factor	33	0.00	33	0.00	21	0.01	25	0.00
Depth of soil mixing layer	27	-0.01	28	0.00	25	-0.01	26	0.00
Depth of roots	4	-0.22	7	-0.13	4	-0.54	5	-0.21
wet weight crop yield of fruit, grain and non-leafy vegetables	13	-0.03	21	-0.01	27	-0.01	28	0.00
weathering removal constant of all vegetation	24	0.01	26	0.01	14	0.03	19	0.01
wet foliar interception fraction of leafy vegetables	12	-0.03	20	-0.01	20	0.02	24	0.01
Kd of Ni-59 in Contaminated Zone	7	-0.03	16	-0.02	10	-0.04	17	-0.01
Kd of Ni-59 in Unsaturated Zone 1	26	0.01	27	0.00	19	0.02	23	0.01
Kd of Ni-59 in Saturated Zone	30	0.01	31	0.00	35	0.00	35	0.00
Plant transfer factor for Ni	1	0.78	1	0.69	1	0.90	1	0.70
Meat transfer factor for Ni	5	0.05	15	0.03	5	0.14	13	0.05
Milk transfer factor for Ni	2	0.57	2	0.38	2	0.81	2	0.46
Fish transfer factor for Ni	9	-0.03	17	-0.02	33	0.00	33	0.00
R-SQUARE	0.69		0.69		0.89		0.89	

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

RESRAD, Version 6.5 T« Limit = 30 days 11/07/2011 08:20 Page 1
Probabilistic results summary : HB sensitivity analysis_soil_Ni-63
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NI63\HB SOIL SA_NI63-1.RAD

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File : C:\RESRAD_FAMILY\RESRAD (6.3) SERFILES (WIS) (M3) SERFILES
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RESRAD, Version 6.5 T« Limit = 30 days 11/07/2011 08:20 Page 2
Probabilistic results summary : HB sensitivity analysis_soil_Ni-63
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NI63\HB SOIL SA_NI63-1.RAD

Probabilistic Input
Number of Sample Runs: 2000

Number	Name	Distribution	Parameters
AAAAA	AAAAA	AAAAA	AAAAA
1	THICK0	UNIFORM	.15 3.51
2	DENS5CZ	BOUNDED NORMAL	1.5635 .2385 .827 2.3
3	TPCZ	BOUNDED NORMAL	.41 .09 .1319 .6881
4	HCCZ	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
5	BCZ	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
6	EVAPTR	UNIFORM	.5 .75
7	RI	UNIFORM	.36 .76
8	DENSAQ	BOUNDED NORMAL	1.5105 .1855 .937 2.084
9	TPSZ	BOUNDED NORMAL	.43 .0699 .214 .646
10	EPSZ	BOUNDED NORMAL	.342 .0705 .124 .56
11	HCSZ	BOUNDED LOGNORMAL-N	1.362 1.59 .0106 195
12	BSZ	BOUNDED LOGNORMAL-N	1.96 2.65 3.02 15.5
13	DWIBWT	TRIANGULAR	6 10 30
14	UW	UNIFORM	1173 1973
15	H(1)	UNIFORM	0 8.08
16	DENSUZ(1)	BOUNDED NORMAL	1.5635 .2385 .827 2.3
17	TPUZ(1)	BOUNDED NORMAL	.41 .09 .1319 .6881
18	EPUZ(1)	BOUNDED NORMAL	.315 .0905 .0349 .594
19	HCUZ(1)	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
20	BUZ(1)	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
21	MLTNH	CONTINUOUS LINEAR	8 0 0 .000008 .0151 .000016 .1365
.00003	.8119 .00004 .9495 .00006 .9937 .000076 .9983 .0001 1		
22	SHF3	UNIFORM	.15 .95
23	SHF1	BOUNDED LOGNORMAL-N	-1.3 .59 .044 1
24	DM	TRIANGULAR	0 .15 .6
25	DROOT	UNIFORM	.3 4
26	YV(1)	TRUNCATED LOGNORMAL-N	3.56 4.48 .001 .999
27	WLAM	TRIANGULAR	5.1 18 84
28	RWET(2)	TRIANGULAR	.06 .67 .95
29	DCACTC(1)	TRUNCATED LOGNORMAL	6.05 1.46 .001 .999
30	DCACTU1(1)	TRUNCATED LOGNORMAL-N	6.05 1.46 .001 .999
31	DCACTS(1)	TRUNCATED LOGNORMAL-N	6.05 1.46 .001 .999
32	BRTF(28,1)	TRUNCATED LOGNORMAL-N	-3 .9 .001 .999
33	BRTF(28,2)	TRUNCATED LOGNORMAL-N	-5.3 .9 .001 .999
34	BRTF(28,3)	TRUNCATED LOGNORMAL-N	-3.91 .7 .001 .999
35	BBIO(28,1)	LOGNORMAL-N	4.6 1.1

RESRAD Regression and Correlation output 11/07/11 08:20 Page: Coef 1
Title : HB sensitivity analysis_soil_Ni-63
Input File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NI63\HB SOIL SA_NI63-1.RAD

Coefficients for peak of mean dose time Dose		PCC		SRC		PRCC		SRRC	
Coefficient =		1		1		1		1	
Repetition =									
Description of Probabilistic Variable		Sig	Coeff	Sig	Coeff	Sig	Coeff	Sig	Coeff
Thickness of contaminated zone		3	0.32	4	0.19	3	0.74	3	0.37
Density of contaminated zone		7	-0.03	6	-0.13	7	-0.05	8	-0.11
Contaminated zone total porosity		6	-0.03	5	-0.14	8	-0.04	9	-0.10
Contaminated zone hydraulic conductivity		15	-0.02	21	-0.01	29	-0.01	30	0.00
Contaminated zone b parameter		22	-0.01	24	-0.01	27	-0.01	28	0.00
Evapotranspiration coefficient		17	-0.01	23	0.01	21	0.01	25	0.00
Irrigation		13	-0.02	13	-0.04	11	0.04	14	0.04
Density of saturated zone		32	0.00	12	-0.05	26	-0.01	7	-0.11
Saturated zone total porosity		25	0.01	11	0.07	32	0.00	15	-0.03
Saturated zone effective porosity		19	-0.01	8	-0.12	24	-0.01	11	-0.07
Saturated zone hydraulic conductivity		16	0.01	22	0.01	30	0.01	31	0.00
Saturated zone b parameter		35	0.00	35	0.00	12	-0.04	17	-0.01
well pump intake depth		29	-0.01	30	0.00	16	-0.03	21	-0.01
well pumping rate		14	0.02	14	0.04	9	-0.04	12	-0.05
Thickness of Unsaturated zone 1		34	0.00	34	0.00	31	0.00	32	0.00
Density of Unsaturated zone 1		18	-0.01	3	-0.24	17	0.02	4	0.26
Total Porosity of Unsaturated zone 1		20	-0.01	9	-0.11	10	0.04	6	0.20
Effective Porosity of Unsaturated zone 1		21	-0.01	10	-0.11	23	0.01	10	0.07
Hydraulic Conductivity of Unsaturated zone 1		28	0.01	29	0.00	6	0.06	16	0.02
b Parameter of Unsaturated zone 1		10	0.03	18	0.01	34	0.00	34	0.00
Mass loading for inhalation		31	0.00	32	0.00	18	-0.02	22	-0.01
Indoor dust filtration factor		9	0.03	17	0.02	15	-0.03	20	-0.01
External gamma shielding factor		33	0.00	33	0.00	22	0.01	26	0.00
Depth of soil mixing layer		26	-0.01	27	0.00	25	-0.01	27	0.00
Depth of roots		4	-0.22	7	-0.13	4	-0.53	5	-0.21
wet weight crop yield of fruit, grain and non-leafy vegetables		12	-0.03	20	-0.01	28	-0.01	29	0.00
weathering removal constant of all vegetation		23	0.01	25	0.01	14	0.03	19	0.01
wet foliar interception fraction of leafy vegetables		11	-0.03	19	-0.01	20	0.02	24	0.01
Kd of Ni-63 in Contaminated Zone		24	0.01	26	0.00	13	-0.03	18	-0.01
Kd of Ni-63 in Unsaturated Zone 1		27	0.01	28	0.00	19	0.02	23	0.01
Kd of Ni-63 in Saturated Zone		30	0.01	31	0.00	35	0.00	35	0.00
Plant transfer factor for Ni		1	0.78	1	0.69	1	0.90	1	0.70
Meat transfer factor for Ni		5	0.05	15	0.03	5	0.14	13	0.05
Milk transfer factor for Ni		2	0.56	2	0.38	2	0.81	2	0.46
Fish transfer factor for Ni		8	-0.03	16	-0.02	33	0.00	33	0.00
R-SQUARE		0.69		0.69		0.89		0.89	

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

Np-237 Results:

RESRAD, Version 6.5 T« Limit = 30 days 11/07/2011 11:25 Page 1
Probabilistic results summary : HB sensitivity analysis_soil_Np237
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NP237\HB SOIL SA_NP237-1.RAD

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RESRAD, Version 6.5 T« Limit = 30 days 11/07/2011 11:25 Page 2
Probabilistic results summary : HB sensitivity analysis_soil_Np237
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NP237\HB SOIL SA_NP237-1.RAD

Probabilistic Input

Number of Sample Runs: 2000

Number	Name	Distribution	Parameters						
AAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAA
1	THICK0	UNIFORM	.15	3.51					
2	DENSCZ	BOUNDED NORMAL	1.5635	.2385	.827	2.3			
3	TPCZ	BOUNDED NORMAL	.41	.09	.1319	.6881			
4	HCCZ	BOUNDED LOGNORMAL-N	1.36	2.17	.00478	3190			
5	BCZ	BOUNDED LOGNORMAL-N	1.73	.323	2.08	15.3			
6	EVAPTR	UNIFORM	.5	.75					
7	RI	UNIFORM	.36	.76					
8	DENSAQ	BOUNDED NORMAL	1.5105	.1855	.937	2.084			
9	TPSZ	BOUNDED NORMAL	.43	.0699	.214	.646			
10	EPSZ	BOUNDED NORMAL	.342	.0705	.124	.56			
11	HCSZ	BOUNDED LOGNORMAL-N	.362	1.59	.0106	195			
12	BSZ	BOUNDED LOGNORMAL-N	1.96	.265	3.02	15.5			
13	DWIBWT	TRIANGULAR	6	10	30				
14	UW	UNIFORM	1173	1973					
15	H(1)	UNIFORM	0	8.08					
16	DENSUZ(1)	BOUNDED NORMAL	1.5635	.2385	.827	2.3			
17	TPUZ(1)	BOUNDED NORMAL	.41	.09	.1319	.6881			
18	EPUZ(1)	BOUNDED NORMAL	.315	.0905	.0349	.594			
19	HCUZ(1)	BOUNDED LOGNORMAL-N	1.36	2.17	.00478	3190			
20	BUZ(1)	BOUNDED LOGNORMAL-N	1.73	.323	2.08	15.3			
21	MLINH	CONTINUOUS LINEAR	8	0	0	.000008	.0151	.000016	.1365
.00003	.8119	.00004	.9495	.00006	.9937	.000076	.9983	.0001	1
22	SHF3	UNIFORM	.15	.95					
23	SHF1	BOUNDED LOGNORMAL-N	-1.3	.59	.044	1			
24	DM	TRIANGULAR	0	.15	.6				
25	DROOT	UNIFORM	.3	.4					
26	YV(1)	TRUNCATED LOGNORMAL-N	.56	.48	.001	.999			
27	WLAM	TRIANGULAR	5.1	18	84				
28	RWET(2)	TRIANGULAR	.06	.67	.95				
29	DCACTC(1)	TRUNCATED LOGNORMAL-N	2.84	2.25	.001	.999			
30	DCACTU1(1)	TRUNCATED LOGNORMAL-N	2.84	2.25	.001	.999			
31	DCACTS(1)	TRUNCATED LOGNORMAL-N	2.84	2.25	.001	.999			
32	DCACTC(2)	TRUNCATED LOGNORMAL-N	8.68	3.62	.001	.999			
33	DCACTU1(2)	TRUNCATED LOGNORMAL-N	8.68	3.62	.001	.999			
34	DCACTS(2)	TRUNCATED LOGNORMAL-N	8.68	3.62	.001	.999			
35	DCACTC(3)	TRUNCATED LOGNORMAL-N	4.84	3.13	.001	.999			
36	DCACTU1(3)	TRUNCATED LOGNORMAL-N	4.84	3.13	.001	.999			
37	DCACTS(3)	TRUNCATED LOGNORMAL-N	4.84	3.13	.001	.999			
38	BRTF(93,1)	TRUNCATED LOGNORMAL-N	-3.91	.9	.001	.999			
39	BRTF(93,2)	TRUNCATED LOGNORMAL-N	-6.91	.7	.001	.999			
40	BRTF(93,3)	TRUNCATED LOGNORMAL-N	-11.51	.7	.001	.999			
41	BBIO(90,1)	LOGNORMAL-N	3.4	1.1					
42	BRTF(90,1)	TRUNCATED LOGNORMAL-N	-6.91	.9	.001	.999			
43	BRTF(90,2)	TRUNCATED LOGNORMAL-N	-9.21	1	.001	.999			
44	BRTF(90,3)	TRUNCATED LOGNORMAL-N	-12.21	.9	.001	.999			
45	BBIO(90,1)	LOGNORMAL-N	4.6	1.1					
46	BRTF(92,1)	TRUNCATED LOGNORMAL-N	-6.21	.9	.001	.999			
47	BRTF(92,2)	TRUNCATED LOGNORMAL-N	-7.13	.7	.001	.999			
48	BRTF(92,3)	TRUNCATED LOGNORMAL-N	-7.82	.6	.001	.999			

RESRAD Regression and Correlation output 11/07/11 11:30 Page: Coef 1
Title : HB sensitivity analysis_soil_Np237
Input File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\NP237\HB SOIL SA_NP237-1.RAD

Coefficients for peak of mean dose time Dose
Coefficient =
Repetition =

Description of Probabilistic Variable	PCC 1		SRC 1		PRCC 1		SRRC 1	
	Sig	Coeff	Sig	Coeff	Sig	Coeff	Sig	Coeff
Thickness of contaminated zone	2	0.56	2	0.29	2	0.79	2	0.44
Density of contaminated zone	8	-0.03	6	-0.09	43	0.00	23	-0.01
Contaminated zone total porosity	9	-0.03	7	-0.09	40	-0.01	15	-0.01
Contaminated zone hydraulic conductivity	24	-0.01	31	-0.01	30	-0.01	38	0.00
Contaminated zone b parameter	13	0.02	21	0.01	20	0.02	28	0.01
Evapotranspiration coefficient	26	-0.01	33	-0.01	28	0.01	35	0.00
Irrigation	17	-0.02	11	-0.03	48	0.00	45	0.00
Density of saturated zone	34	0.01	4	0.14	49	0.00	37	0.00
Saturated zone total porosity	32	0.01	9	0.08	38	-0.01	8	-0.03
Saturated zone effective porosity	35	0.01	10	0.07	39	0.01	9	0.03
Saturated zone hydraulic conductivity	7	0.03	16	0.01	41	0.00	43	0.00
Saturated zone b parameter	49	0.00	49	0.00	44	0.00	46	0.00
well pump intake depth	5	0.04	14	0.02	17	0.02	25	0.01
well pumping rate	37	0.01	19	0.01	25	0.01	12	0.02
Thickness of Unsaturated zone 1	14	-0.02	22	-0.01	14	-0.03	21	-0.01
Density of Unsaturated zone 1	40	0.01	5	0.10	36	0.01	4	0.08
Total Porosity of Unsaturated zone 1	47	0.00	12	0.02	32	0.01	5	0.05
Effective Porosity of Unsaturated zone 1	27	0.01	8	0.08	35	0.01	7	0.04
Hydraulic Conductivity of Unsaturated zone 1	36	-0.01	39	0.00	12	0.03	19	0.01
b Parameter of Unsaturated zone 1	29	-0.01	35	0.00	27	0.01	34	0.00
Mass loading for inhalation	43	0.01	44	0.00	42	0.00	44	0.00
Indoor dust filtration factor	30	-0.01	37	0.00	34	-0.01	41	0.00
External gamma shielding factor	44	0.00	45	0.00	5	0.06	10	0.02
Depth of soil mixing layer	31	0.01	36	0.00	26	-0.01	33	0.00
Depth of roots	3	-0.40	3	-0.19	3	-0.60	3	-0.25
wet weight crop yield of fruit, grain and non-leafy vegetables	10	0.03	17	0.01	16	-0.03	24	-0.01
weathering removal constant of all vegetation	18	0.02	25	0.01	46	0.00	48	0.00
wet foliar interception fraction of leafy vegetables	46	0.00	47	0.00	19	-0.02	27	-0.01
Kd of Np-237 in Contaminated Zone	16	0.02	24	0.01	4	0.14	6	0.05
Kd of Np-237 in Unsaturated Zone 1	12	-0.03	20	-0.01	21	-0.02	29	-0.01
Kd of Np-237 in Saturated Zone	28	-0.01	34	0.00	15	0.03	22	0.01
Kd of Th-229 in Contaminated Zone	15	-0.02	23	-0.01	47	0.00	49	0.00
Kd of Th-229 in Unsaturated Zone 1	19	-0.02	26	-0.01	22	-0.02	30	-0.01
Kd of Th-229 in Saturated Zone	22	0.01	29	0.01	23	0.02	31	0.01
Kd of U-233 in Contaminated Zone	20	0.02	27	0.01	24	-0.01	32	0.00
Kd of U-233 in Unsaturated Zone 1	38	-0.01	40	0.00	9	-0.03	16	-0.01
Kd of U-233 in Saturated Zone	39	-0.01	41	0.00	11	-0.03	18	-0.01
Plant transfer factor for Np	1	0.89	1	0.84	1	0.92	1	0.79
Meat transfer factor for Np	6	0.04	15	0.02	8	0.04	14	0.01
Milk transfer factor for Np	11	-0.03	18	-0.01	6	0.05	11	0.02
Fish transfer factor for Np	4	-0.04	13	-0.02	13	0.03	20	0.01
Plant transfer factor for Th	41	-0.01	42	0.00	31	-0.01	39	0.00
Meat transfer factor for Th	25	-0.01	32	-0.01	45	0.00	47	0.00
Milk transfer factor for Th	48	0.00	48	0.00	29	0.01	36	0.00
Fish transfer factor for Th	42	0.01	43	0.00	33	0.01	40	0.00
Plant transfer factor for U	45	0.00	46	0.00	10	0.03	17	0.01
Meat transfer factor for U	23	-0.01	30	-0.01	18	-0.02	26	-0.01
Milk transfer factor for U	33	-0.01	38	0.00	7	-0.04	13	-0.01
Fish transfer factor for U	21	0.01	28	0.01	37	0.01	42	0.00
R-SQUARE		0.82		0.82		0.89		0.89

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

RESRAD, Version 6.5 T_{1/2} Limit = 30 days 11/07/2011 11:44 Page 1
Probabilistic results summary : HB sensitivity analysis_soil_Pu-238
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\PU238\HB SOIL SA_PU238-1.RAD

RESRAD, Version 6.5 T« Limit = 30 days 11/07/2011 11:44 Page 2
Probabilistic results summary : HB sensitivity analysis_soil_Pu-238
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\PU238\HB SOIL SA_PU238-1.RAD

Number	Name	Distribution	Parameters
AAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA
1	THICK0	UNIFORM	.15 3.51
2	DENSCZ	BOUNDED NORMAL	1.5635 .2385 .827 2.3
3	TPCZ	BOUNDED NORMAL	.41 .09 .1319 .6881
4	HCCZ	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
5	BCZ	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
6	EVAPTR	UNIFORM	.5 .75
7	RI	UNIFORM	.36 .76
8	DENSAQ	BOUNDED NORMAL	1.5105 .1855 .937 2.084
9	TPSZ	BOUNDED NORMAL	.43 .0699 .214 .646
10	EPSZ	BOUNDED NORMAL	.342 .0705 .124 .56
11	HCSZ	BOUNDED LOGNORMAL-N	.362 1.59 .0106 195
12	BSZ	BOUNDED LOGNORMAL-N	1.96 .265 3.02 15.5
13	DWIBWT	TRIANGULAR	6 10 30
14	UW	UNIFORM	1173 1973
15	H(1)	UNIFORM	0 8.08
16	DENSUZ(1)	BOUNDED NORMAL	1.5635 .2385 .827 2.3
17	TPUZ(1)	BOUNDED NORMAL	.41 .09 .1319 .6881
18	EPUZ(1)	BOUNDED NORMAL	.315 .0905 .0349 .594
19	HCUZ(1)	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
20	BUZ(1)	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
21	MLT(1)	CONTINUOUS LINEAR	8 0 0 .000008 .0151 .000016 .1365
.00003	.8119 .00004 .9495	.00006 .9937	.000076 .9983 .0001 1
22	SHF3	UNIFORM	.15 .95
23	SHF1	BOUNDED LOGNORMAL-N	-1.3 .59 .044 1
24	DM	TRIANGULAR	0 .15 .6
25	DROOT	UNIFORM	.3 4
26	YV(1)	TRUNCATED LOGNORMAL-N	.56 .48 .001 .999
27	WLAM	TRIANGULAR	5.1 18 84
28	RWET(2)	TRIANGULAR	.06 .67 .95
29	DCACTC(3)	TRUNCATED LOGNORMAL-N	6.86 1.89 .001 .999
30	DCACTU1(3)	TRUNCATED LOGNORMAL-N	6.86 1.89 .001 .999
31	DCACTS(3)	TRUNCATED LOGNORMAL-N	6.86 1.89 .001 .999
32	DCACTC(1)	TRUNCATED LOGNORMAL-N	7.78 2.76 .001 .999
33	DCACTU1(1)	TRUNCATED LOGNORMAL-N	7.78 2.76 .001 .999
34	DCACTS(1)	TRUNCATED LOGNORMAL-N	7.78 2.76 .001 .999
35	DCACTC(2)	TRUNCATED LOGNORMAL-N	5.2 1.68 .001 .999
36	DCACTU1(2)	TRUNCATED LOGNORMAL-N	5.2 1.68 .001 .999
37	DCACTS(2)	TRUNCATED LOGNORMAL-N	5.2 1.68 .001 .999
38	DCACTC(5)	TRUNCATED LOGNORMAL-N	8.17 1.7 .001 .999
39	DCACTU1(5)	TRUNCATED LOGNORMAL-N	8.17 1.7 .001 .999
40	DCACTS(5)	TRUNCATED LOGNORMAL-N	8.17 1.7 .001 .999
41	DCACTC(6)	TRUNCATED LOGNORMAL-N	8.68 3.62 .001 .999
42	DCACTU1(6)	TRUNCATED LOGNORMAL-N	8.68 3.62 .001 .999
43	DCACTS(6)	TRUNCATED LOGNORMAL-N	8.68 3.62 .001 .999
44	DCACTC(7)	TRUNCATED LOGNORMAL-N	4.48 3.13 .001 .999
45	DCACTU1(7)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999
46	DCACTS(7)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999
47	BRTF(94,1)	TRUNCATED LOGNORMAL-N	-6.91 .9 .001 .999
48	BRTF(94,2)	TRUNCATED LOGNORMAL-N	-9.21 .2 .001 .999
49	BRTF(94,3)	TRUNCATED LOGNORMAL-N	-13.82 .5 .001 .999
50	BBIO(94,1)	LOGNORMAL-N	3.4 1.1
51	BRTF(82,1)	TRUNCATED LOGNORMAL-N	-5.52 .9 .001 .999
52	BRTF(82,2)	TRUNCATED LOGNORMAL-N	-7.13 .7 .001 .999
53	BRTF(82,3)	TRUNCATED LOGNORMAL-N	-8.11 .9 .001 .999
54	BBIO(82,1)	LOGNORMAL-N	5.7 1.1
55	BRTF(84,1)	TRUNCATED LOGNORMAL-N	-6.9 .9 .001 .999
56	BRTF(84,2)	TRUNCATED LOGNORMAL-N	-3.3 .7 .001 .999
57	BRTF(84,3)	TRUNCATED LOGNORMAL-N	-7.82 .7 .001 .999
58	BBIO(84,1)	LOGNORMAL-N	4.6 1.1
59	BRTF(88,1)	TRUNCATED LOGNORMAL-N	-3.22 .9 .001 .999
60	BRTF(88,2)	TRUNCATED LOGNORMAL-N	-6.91 .7 .001 .999
61	BRTF(88,3)	TRUNCATED LOGNORMAL-N	-6.91 .5 .001 .999
62	BBIO(88,1)	LOGNORMAL-N	3.9 1.1
63	BRTF(90,1)	TRUNCATED LOGNORMAL-N	-6.91 .9 .001 .999
64	BRTF(90,2)	TRUNCATED LOGNORMAL-N	-9.21 1 .001 .999
65	BRTF(90,3)	TRUNCATED LOGNORMAL-N	-12.21 .9 .001 .999
66	BBIO(90,1)	LOGNORMAL-N	4.6 1.1

67	BRTF(92,1)	TRUNCATED LOGNORMAL-N	-6.21	.9	.001	.999
68	BRTF(92,2)	TRUNCATED LOGNORMAL-N	-7.13	.7	.001	.999
69	BRTF(92,3)	TRUNCATED LOGNORMAL-N	-7.82	.6	.001	.999
70	BBIO(92,1)	LOGNORMAL-N	2.3	1.1		

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Coefficients for peak of mean dose time Dose
Coefficient =
Repetition =

Description of Probabilistic Variable	PCC 1		SRC 1		PRCC 1		SRRC 1	
	Sig	Coeff	Sig	Coeff	Sig	Coeff	Sig	Coeff
Thickness of contaminated zone	2	0.57	2	0.26	2	0.79	2	0.42
Density of contaminated zone	57	0.01	14	0.01	22	0.02	9	0.05
Contaminated zone total porosity	60	0.00	20	0.01	31	0.02	10	0.04
Contaminated zone hydraulic conductivity	38	-0.01	44	-0.01	14	0.03	23	0.01
Contaminated zone b parameter	18	0.03	26	0.01	59	-0.01	60	0.00
Evapotranspiration coefficient	43	-0.01	49	0.00	10	0.04	18	0.01
Irrigation	67	0.00	55	0.00	57	-0.01	31	-0.01
Density of saturated zone	28	-0.02	3	-0.25	49	0.01	5	0.11
Saturated zone total porosity	29	-0.02	5	-0.13	63	0.01	11	0.03
Saturated zone effective porosity	32	-0.02	6	-0.12	33	0.02	6	0.08
Saturated zone hydraulic conductivity	49	-0.01	54	0.00	8	-0.05	16	-0.02
Saturated zone b parameter	10	-0.03	17	-0.01	37	0.01	44	0.00
well pump intake depth	33	-0.02	39	-0.01	15	-0.03	24	-0.01
well pumping rate	50	-0.01	31	-0.01	48	0.01	19	0.01
Thickness of Unsaturated zone 1	17	-0.03	25	-0.01	30	-0.02	39	-0.01
Density of Unsaturated zone 1	51	-0.01	7	-0.08	40	-0.01	4	-0.14
Total Porosity of Unsaturated zone 1	61	0.00	9	-0.02	38	-0.01	7	-0.08
Effective Porosity of Unsaturated zone 1	48	-0.01	8	-0.05	52	-0.01	8	-0.06
Hydraulic Conductivity of Unsaturated zone 1	26	0.02	35	0.01	55	-0.01	57	0.00
b Parameter of Unsaturated zone 1	63	0.00	64	0.00	54	-0.01	56	0.00
Mass loading for inhalation	47	0.01	53	0.00	7	0.05	15	0.02
Indoor dust filtration factor	9	0.03	16	0.01	11	0.04	20	0.01
External gamma shielding factor	64	0.00	65	0.00	41	0.01	46	0.00
Depth of soil mixing layer	6	-0.04	12	-0.02	20	-0.03	29	-0.01
Depth of roots	3	-0.44	4	-0.19	3	-0.62	3	-0.26
Wet weight crop yield of fruit, grain and non-leafy vegetables	20	0.02	28	0.01	42	0.01	47	0.00
Weathering removal constant of all vegetation	14	0.03	22	0.01	68	0.00	68	0.00
Wet foliar interception fraction of leafy vegetables	21	0.02	29	0.01	29	0.02	38	0.01
Kd of Pu-238 in Contaminated Zone	46	0.01	52	0.00	32	-0.02	40	-0.01
Kd of Pu-238 in Unsaturated Zone 1	23	0.02	32	0.01	12	-0.04	21	-0.01
Kd of Pu-238 in Saturated Zone	66	0.00	67	0.00	13	0.03	22	0.01
Kd of Pb-210 in Contaminated Zone	13	0.03	21	0.01	27	0.02	36	0.01
Kd of Pb-210 in Unsaturated Zone 1	52	0.01	56	0.00	36	-0.01	43	0.00
Kd of Pb-210 in Saturated Zone	54	-0.01	58	0.00	24	0.02	33	0.01
Kd of Po-210 in Contaminated Zone	45	-0.01	51	0.00	39	-0.01	45	0.00
Kd of Po-210 in Unsaturated Zone 1	41	-0.01	47	0.00	60	-0.01	61	0.00
Kd of Po-210 in Saturated Zone	62	0.00	63	0.00	6	-0.06	14	-0.02
Kd of Ra-226 in Contaminated Zone	16	-0.03	24	-0.01	46	-0.01	51	0.00
Kd of Ra-226 in Unsaturated Zone 1	39	-0.01	45	0.00	9	0.05	17	0.02
Kd of Ra-226 in Saturated Zone	44	-0.01	50	0.00	47	0.01	52	0.00
Kd of Th-230 in Contaminated Zone	30	0.02	37	0.01	64	0.01	64	0.00
Kd of Th-230 in Unsaturated Zone 1	53	0.01	57	0.00	65	-0.01	65	0.00
Kd of Th-230 in Saturated Zone	7	-0.04	13	-0.02	26	0.02	35	0.01
Kd of U-234 in Contaminated Zone	12	0.03	19	0.01	43	0.01	48	0.00
Kd of U-234 in Unsaturated Zone 1	58	0.00	61	0.00	35	-0.01	42	0.00
Kd of U-234 in Saturated Zone	59	0.00	62	0.00	19	0.03	28	0.01
Plant transfer factor for Pu	1	0.92	1	0.86	1	0.92	1	0.80
Meat transfer factor for Pu	22	0.02	30	0.01	17	0.03	26	0.01
Milk transfer factor for Pu	69	0.00	69	0.00	53	-0.01	55	0.00
Fish transfer factor for Pu	24	-0.02	33	-0.01	4	-0.06	12	-0.02
Plant transfer factor for Pb	25	0.02	34	0.01	56	0.01	58	0.00
Meat transfer factor for Pb	31	0.02	38	0.01	28	-0.02	37	-0.01
Milk transfer factor for Pb	55	0.01	59	0.00	21	0.02	30	0.01
Fish transfer factor for Pb	40	0.01	46	0.00	16	0.03	25	0.01
Plant transfer factor for Po	15	-0.03	23	-0.01	69	0.00	69	0.00
Meat transfer factor for Po	36	-0.02	43	-0.01	62	0.01	63	0.00
Milk transfer factor for Po	68	0.00	68	0.00	51	-0.01	54	0.00
Fish transfer factor for Po	11	-0.03	18	-0.01	67	0.00	67	0.00
Plant transfer factor for Ra	8	-0.03	15	-0.01	58	0.01	59	0.00
Meat transfer factor for Ra	4	0.06	10	0.02	25	0.02	34	0.01
Milk transfer factor for Ra	5	0.05	11	0.02	18	0.03	27	0.01
Fish transfer factor for Ra	56	-0.01	60	0.00	44	0.01	49	0.00
Plant transfer factor for Th	42	-0.01	48	0.00	66	0.00	66	0.00
Meat transfer factor for Th	70	0.00	70	0.00	45	0.01	50	0.00
Milk transfer factor for Th	19	-0.02	27	-0.01	50	0.01	53	0.00
Fish transfer factor for Th	65	0.00	66	0.00	70	0.00	70	0.00
Plant transfer factor for U	27	-0.02	36	-0.01	5	-0.06	13	-0.02
Meat transfer factor for U	34	-0.02	42	-0.01	61	-0.01	62	0.00
Milk transfer factor for U	34	-0.02	40	-0.01	34	-0.01	41	0.00
Fish transfer factor for U	35	0.02	41	0.01	23	0.02	32	0.01
R-SQUARE		0.86		0.86		0.89		0.89

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

Pu-239 Results:

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Probabilistic results summary : HB sensitivity analysis_soil_Pu239
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Probabilistic Input

Number of Sample Runs: 2000

Number	Name	Distribution	Parameters						
AAAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA
1	THICK0	UNIFORM	.15	3.51					
2	DENSCZ	BOUNDED NORMAL	1.5635	.2385	.827	2.3			
3	TPCZ	BOUNDED NORMAL	.41	.09	.1319	.6881			
4	HCCZ	BOUNDED LOGNORMAL-N	1.36	2.17	.00478	3190			
5	BCZ	BOUNDED LOGNORMAL-N	1.73	.323	2.08	15.3			
6	EVAPTR	UNIFORM	.5	.75					
7	RI	UNIFORM	.36	.76					
8	DENSAQ	BOUNDED NORMAL	1.5105	.1855	.937	2.084			
9	TPSZ	BOUNDED NORMAL	.43	.0699	.214	.646			
10	EPSZ	BOUNDED NORMAL	.342	.0705	.124	.56			
11	HCSZ	BOUNDED LOGNORMAL-N	.362	1.59	.0106	195			
12	BSZ	BOUNDED LOGNORMAL-N	1.96	.265	3.02	15.5			
13	DWIBWT	TRIANGULAR	6	10	30				
14	UW	UNIFORM	1173	1973					
15	H(1)	UNIFORM	0	8.08					
16	DENSUZ(1)	BOUNDED NORMAL	1.5635	.2385	.827	2.3			
17	TPUZ(1)	BOUNDED NORMAL	.41	.09	.1319	.6881			
18	EPUZ(1)	BOUNDED NORMAL	.315	.0905	.0349	.594			
19	HCUZ(1)	BOUNDED LOGNORMAL-N	1.36	2.17	.00478	3190			
20	BUZ(1)	BOUNDED LOGNORMAL-N	1.73	.323	2.08	15.3			
21	MLINH	CONTINUOUS LINEAR	8	0	0	.000008	.0151	.000016	.1365
.00003	.8119	.00004	.9495	.00006	.9937	.000076	.9983	.0001	1
22	SHF3	UNIFORM	.15	.95					
23	SHF1	BOUNDED LOGNORMAL-N	-1.3	.59	.044	1			
24	DM	TRIANGULAR	0	.15	.6				
25	DROOT	UNIFORM	.3	.4					
26	YV(1)	TRUNCATED LOGNORMAL-N	.56	.48	.001	.999			
27	WLAM	TRIANGULAR	5.1	18	.84				
28	RWET(2)	TRIANGULAR	.06	.67	.95				
29	DCACTC(3)	TRUNCATED LOGNORMAL-N	6.86	1.89	.001	.999			
30	DCACTU1(3)	TRUNCATED LOGNORMAL-N	6.86	1.89	.001	.999			
31	DCACTS(3)	TRUNCATED LOGNORMAL-N	6.86	1.89	.001	.999			
32	DCACTC(1)	TRUNCATED LOGNORMAL-N	6.72	3.22	.001	.999			
33	DCACTU1(1)	TRUNCATED LOGNORMAL-N	6.72	3.22	.001	.999			
34	DCACTS(1)	TRUNCATED LOGNORMAL-N	6.72	3.22	.001	.999			
35	DCACTC(2)	TRUNCATED LOGNORMAL-N	5.94	3.22	.001	.999			
36	DCACTU1(2)	TRUNCATED LOGNORMAL-N	5.94	3.22	.001	.999			
37	DCACTS(2)	TRUNCATED LOGNORMAL-N	5.94	3.22	.001	.999			
38	DCACTC(4)	TRUNCATED LOGNORMAL-N	4.84	3.13	.001	.999			
39	DCACTU1(4)	TRUNCATED LOGNORMAL-N	4.84	3.13	.001	.999			
40	DCACTS(4)	TRUNCATED LOGNORMAL-N	4.84	3.13	.001	.999			
41	BRTF(94,1)	TRUNCATED LOGNORMAL-N	-6.91	.9	.001	.999			
42	BRTF(94,2)	TRUNCATED LOGNORMAL-N	-9.21	.2	.001	.999			
43	BRTF(94,3)	TRUNCATED LOGNORMAL-N	-13.82	.5	.001	.999			
44	BBIO(94,1)	LOGNORMAL-N	3.4	1.1					
45	BRTF(89,1)	TRUNCATED LOGNORMAL-N	-6.91	1.12	.001	.999			
46	BRTF(89,2)	TRUNCATED LOGNORMAL-N	-10.82	1	.001	.999			
47	BRTF(89,3)	TRUNCATED LOGNORMAL-N	-13.12	.9	.001	.999			
48	BBIO(89,1)	LOGNORMAL-N	2.7	1.1					
49	BRTF(91,1)	TRUNCATED LOGNORMAL-N	-4.61	1.1	.001	.999			
50	BRTF(91,2)	TRUNCATED LOGNORMAL-N	-12.21	1	.001	.999			
51	BRTF(91,3)	TRUNCATED LOGNORMAL-N	-12.21	.9	.001	.999			
52	BBIO(91,1)	LOGNORMAL-N	2.3	1.1					
53	BRTF(92,1)	TRUNCATED LOGNORMAL-N	-6.21	.9	.001	.999			
54	BRTF(92,2)	TRUNCATED LOGNORMAL-N	-7.13	.7	.001	.999			
55	BRTF(92,3)	TRUNCATED LOGNORMAL-N	-7.82	.6	.001	.999			
56	BBIO(92,1)	LOGNORMAL-N	2.3	1.1					

RESRAD Regression and Correlation output 11/07/11 11:54 Page: Coef 1
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Description of Probabilistic Variable	PCC 1		SRC 1		PRCC 1		SRRC 1	
	Sig	Coeff	Sig	Coeff	Sig	Coeff	Sig	Coeff
Thickness of contaminated zone	2	0.54	7	0.27	2	0.79	2	0.42
Density of contaminated zone	48	-0.01	18	-0.02	37	-0.01	8	-0.03
Contaminated zone total porosity	51	0.00	35	-0.01	39	-0.01	10	-0.02
Contaminated zone hydraulic conductivity	31	0.02	33	0.01	5	-0.06	13	-0.02
Contaminated zone b parameter	6	-0.05	14	-0.02	8	-0.04	17	-0.01
Evapotranspiration coefficient	45	-0.01	47	0.00	16	-0.03	26	-0.01
Irrigation	30	-0.02	10	-0.03	25	-0.02	12	-0.02
Density of saturated zone	8	-0.04	2	-0.64	54	0.00	11	-0.02
Saturated zone total porosity	7	-0.04	4	-0.33	46	-0.01	7	-0.03
Saturated zone effective porosity	10	-0.04	5	-0.32	53	0.00	20	0.01
Saturated zone hydraulic conductivity	27	0.02	30	0.01	22	0.02	29	0.01
Saturated zone b parameter	16	0.03	20	0.01	23	0.02	30	0.01
Well pump intake depth	29	-0.02	32	-0.01	52	0.00	54	0.00
Well pumping rate	36	0.01	13	0.02	31	0.01	15	0.02
Thickness of Unsaturated zone 1	32	0.02	34	0.01	51	0.00	53	0.00
Density of Unsaturated zone 1	14	0.04	3	0.53	18	0.03	3	0.27
Total Porosity of Unsaturated zone 1	17	0.03	8	0.25	20	0.02	6	0.13
Effective Porosity of Unsaturated zone 1	13	0.04	6	0.29	17	0.03	5	0.15
Hydraulic Conductivity of Unsaturated zone 1	22	-0.03	25	-0.01	33	-0.01	38	0.00
b Parameter of Unsaturated zone 1	33	0.02	36	0.01	13	0.03	22	0.01
Mass loading for inhalation	40	0.01	42	0.00	4	0.08	9	0.03
Indoor dust filtration factor	41	0.01	43	0.00	6	0.06	14	0.02
External gamma shielding factor	24	-0.02	28	-0.01	7	-0.05	16	-0.01
Depth of soil mixing layer	18	-0.03	21	-0.01	40	-0.01	43	0.00
Depth of roots	3	-0.39	9	-0.18	3	-0.60	4	-0.24
wet weight crop yield of fruit, grain and non-leafy vegetables	23	-0.02	26	-0.01	27	-0.02	33	-0.01
weathering removal constant of all vegetation	35	-0.02	38	-0.01	24	-0.02	31	-0.01
wet foliar interception fraction of leafy vegetables	4	-0.06	11	-0.02	9	-0.04	18	-0.01
Kd of Pu-239 in Contaminated Zone	9	0.04	15	0.02	19	-0.03	27	-0.01
Kd of Pu-239 in Unsaturated Zone 1	19	0.03	22	0.01	36	-0.01	41	0.00
Kd of Pu-239 in Saturated Zone	21	0.03	24	0.01	47	0.00	49	0.00
Kd of Ac-227 in Contaminated Zone	43	0.01	44	0.00	15	-0.03	25	-0.01
Kd of Ac-227 in Unsaturated Zone 1	55	0.00	55	0.00	48	0.00	50	0.00
Kd of Ac-227 in Saturated Zone	53	0.00	53	0.00	28	0.02	34	0.01
Kd of Pa-231 in Contaminated Zone	37	-0.01	39	-0.01	34	-0.01	39	0.00
Kd of Pa-231 in Unsaturated Zone 1	12	-0.04	16	-0.02	44	0.01	47	0.00
Kd of Pa-231 in Saturated Zone	28	0.02	31	0.01	21	0.02	28	0.01
Kd of U-235 in Contaminated Zone	34	0.02	37	0.01	32	-0.01	37	0.00
Kd of U-235 in Unsaturated Zone 1	44	-0.01	46	0.00	14	-0.03	24	-0.01
Kd of U-235 in Saturated Zone	52	0.00	52	0.00	45	-0.01	48	0.00
Plant transfer factor for Pu	1	0.90	1	0.85	1	0.93	1	0.81
Meat transfer factor for Pu	54	0.00	54	0.00	12	0.03	23	0.01
Milk transfer factor for Pu	46	-0.01	48	0.00	38	0.01	42	0.00
Fish transfer factor for Pu	20	0.03	23	0.01	50	0.00	52	0.00
Plant transfer factor for Ac	50	0.00	51	0.00	43	-0.01	46	0.00
Meat transfer factor for Ac	49	0.00	50	0.00	55	0.00	55	0.00
Milk transfer factor for Ac	5	-0.06	12	-0.02	30	-0.01	36	0.00
Fish transfer factor for Ac	39	-0.01	41	0.00	41	0.01	44	0.00
Plant transfer factor for Pa	11	0.04	17	0.02	29	0.01	35	0.00
Meat transfer factor for Pa	42	0.01	45	0.00	35	-0.01	40	0.00
Milk transfer factor for Pa	56	0.00	56	0.00	26	-0.02	32	-0.01
Fish transfer factor for Pa	47	-0.01	49	0.00	56	0.00	56	0.00
Plant transfer factor for U	38	0.01	40	0.01	42	0.01	45	0.00
Meat transfer factor for U	25	0.02	27	0.01	10	-0.04	19	-0.01
Milk transfer factor for U	15	-0.04	19	-0.02	11	-0.04	21	-0.01
Fish transfer factor for U								
R-SQUARE		0.83		0.83		0.89		0.89

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

RESRAD, Version 6.5 T« Limit = 30 days 11/07/2011 12:00 Page 1
Probabilistic results summary : HB sensitivity analysis_soil_Pu240
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\PU240\HB SOIL SA_PU240-1.RAD

RESRAD, Version 6.5 T« Limit = 30 days 11/07/2011 12:00 Page 2
Probabilistic results summary : HB sensitivity analysis_soil_Pu240
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\PU240\HB SOIL SA_PU240-1.RAD

Probabilistic Input
Number of Sample Runs: 2000

Number	Name	Distribution	Parameters
AAAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAA
1	THICK0	UNIFORM	.15 3.51
2	DENSCZ	BOUNDED NORMAL	1.5635 .2385 .827 2.3
3	TPCZ	BOUNDED NORMAL	.41 .09 .1319 .6881
4	HCCZ	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
5	BCZ	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
6	EVAPTR	UNIFORM	.5 .75
7	RI	UNIFORM	.36 .76
8	DENSAQ	BOUNDED NORMAL	1.5105 .1855 .937 2.084
9	TPSZ	BOUNDED NORMAL	.43 .0699 .214 .646
10	EPSZ	BOUNDED NORMAL	.342 .0705 .124 .56
11	HCSZ	BOUNDED LOGNORMAL-N	.362 1.59 .0106 195
12	BSZ	BOUNDED LOGNORMAL-N	1.96 .265 3.02 15.5
13	DWIBWT	TRIANGULAR	6 10 30
14	UW	UNIFORM	1173 1973
15	H(1)	UNIFORM	0 8.08
16	DENSUZ(1)	BOUNDED NORMAL	1.5635 .2385 .827 2.3
17	TPUZ(1)	BOUNDED NORMAL	.41 .09 .1319 .6881
18	EPUZ(1)	BOUNDED NORMAL	.315 .0905 .0349 .594
19	HCUZ(1)	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
20	BUZ(1)	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
21	MLTNH	CONTINUOUS LINEAR	8 0 0 .000008 .0151 .000016 .1365
.00003	.8119 .00004 .9495	.00006 .9937	.000076 .9983 .0001 1
22	SHF3	UNIFORM	.15 .95
23	SHF1	BOUNDED LOGNORMAL-N	-1.3 .59 .044 1
24	DM	TRIANGULAR	0 .15 .6
25	DROOT	UNIFORM	.3 4
26	YV(1)	TRUNCATED LOGNORMAL-N	.56 .48 .001 .999
27	WLAM	TRIANGULAR	5.1 18 84
28	RWET(2)	TRIANGULAR	.06 .67 .95
29	DCACTC(1)	TRUNCATED LOGNORMAL-N	6.86 1.89 .001 .999
30	DCACTU1(1)	TRUNCATED LOGNORMAL	6.86 1.89 .001 .999
31	DCACTS(1)	TRUNCATED LOGNORMAL-N	6.86 1.89 .001 .999
32	DCACTC(3)	TRUNCATED LOGNORMAL-N	8.17 1.7 .001 .999
33	DCACTU1(3)	TRUNCATED LOGNORMAL-N	8.17 1.7 .001 .999
34	DCACTS(3)	TRUNCATED LOGNORMAL-N	8.17 1.7 .001 .999
35	DCACTC(4)	TRUNCATED LOGNORMAL-N	8.68 3.62 .001 .999
36	DCACTU1(4)	TRUNCATED LOGNORMAL-N	8.68 3.62 .001 .999
37	DCACTS(4)	TRUNCATED LOGNORMAL-N	8.68 3.62 .001 .999
38	DCACTC(5)	TRUNCATED LOGNORMAL-N	8.68 3.63 .001 .999
39	DCACTU1(5)	TRUNCATED LOGNORMAL-N	8.68 3.62 .001 .999
40	DCACTS(5)	TRUNCATED LOGNORMAL-N	8.68 3.62 .001 .999
41	DCACTC(6)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999
42	DCACTU1(6)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999
43	DCACTS(6)	TRUNCATED LOGNORMAL-N	4.84 3.13 .001 .999
44	BRTF(94,1)	TRUNCATED LOGNORMAL-N	-6.91 .9 .001 .999
45	BRTF(94,2)	TRUNCATED LOGNORMAL-N	-9.21 .2 .001 .999
46	BRTF(94,3)	TRUNCATED LOGNORMAL-N	-13.82 .5 .001 .999
47	BBIO(94,1)	LOGNORMAL-N	3.4 1.1
48	BRTF(88,1)	TRUNCATED LOGNORMAL-N	-3.22 .9 .001 .999
49	BRTF(88,2)	TRUNCATED LOGNORMAL-N	-6.91 .7 .001 .999
50	BRTF(88,3)	TRUNCATED LOGNORMAL-N	-6.91 .5 .001 .999
51	BBIO(88,1)	LOGNORMAL-N	3.9 1.1
52	BRTF(90,1)	TRUNCATED LOGNORMAL-N	-6.91 .9 .001 .999
53	BRTF(90,2)	TRUNCATED LOGNORMAL-N	-9.21 1 .001 .999
54	BRTF(90,3)	TRUNCATED LOGNORMAL-N	-12.21 .9 .001 .999
55	BBIO(90,1)	LOGNORMAL-N	4.6 1.1
56	BRTF(92,1)	TRUNCATED LOGNORMAL-N	-6.21 .9 .001 .999
57	BRTF(92,2)	TRUNCATED LOGNORMAL-N	-7.13 .7 .001 .999
58	BRTF(92,3)	TRUNCATED LOGNORMAL-N	-7.82 .6 .001 .999
59	BBIO(92,1)	LOGNORMAL-N	2.3 1.1

RESRAD Regression and Correlation output 11/07/11 12:05 Page: Coef 1
Title : HB sensitivity analysis_soil_Pu240
Input File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\PU240\HB SOIL_SA_PU240-1.RAD

Coefficients for peak of mean dose time Dose
Coefficient =
Repetition =

Description of Probabilistic Variable	PCC 1		SRC 1		PRCC 1		SRRC 1	
	Sig	Coeff	Sig	Coeff	Sig	Coeff	Sig	Coeff
Thickness of contaminated zone	2	0.57	4	0.26	2	0.79	2	0.43
Density of contaminated zone	27	-0.02	10	-0.05	49	-0.01	13	-0.02
Contaminated zone total porosity	23	-0.02	8	-0.06	43	-0.01	10	-0.03
Contaminated zone hydraulic conductivity	45	-0.01	47	0.00	21	0.02	25	0.01
Contaminated zone b parameter	44	-0.01	46	0.00	53	0.01	53	0.00
Evapotranspiration coefficient	43	0.01	45	0.00	47	-0.01	48	0.00
Irrigation	9	0.04	9	0.06	44	0.01	15	0.01
Density of saturated zone	59	0.00	59	0.00	11	0.03	3	0.35
Saturated zone total porosity	51	0.00	12	0.03	14	0.03	8	0.16
Saturated zone effective porosity	46	-0.01	11	-0.04	8	0.03	7	0.19
Saturated zone hydraulic conductivity	37	-0.01	39	0.00	18	0.02	22	0.01
Saturated zone b parameter	29	-0.01	31	-0.01	34	0.01	37	0.00
well pump intake depth	58	0.00	58	0.00	20	0.02	24	0.01
well pumping rate	4	-0.05	7	-0.06	29	-0.02	11	-0.02
Thickness of Unsaturated zone 1	11	0.04	17	0.01	9	0.03	17	0.01
Density of Unsaturated zone 1	18	0.03	2	0.39	13	0.03	4	0.33
Total Porosity of Unsaturated zone 1	10	0.04	3	0.26	7	0.04	6	0.21
Effective Porosity of Unsaturated zone 1	24	0.02	6	0.14	17	0.02	9	0.14
Hydraulic Conductivity of Unsaturated zone 1	14	0.03	20	0.01	37	0.01	40	0.00
b Parameter of Unsaturated zone 1	52	0.00	52	0.00	38	-0.01	41	0.00
Mass loading for inhalation	15	0.03	21	0.01	16	0.03	21	0.01
Indoor dust filtration factor	30	0.01	32	0.01	5	0.05	14	0.02
External gamma shielding factor	8	-0.04	16	-0.02	31	-0.01	34	0.00
Depth of soil mixing layer	12	-0.04	18	-0.01	4	-0.06	12	-0.02
Depth of roots	3	0.40	5	-0.16	3	-0.60	5	-0.26
wet weight crop yield of fruit, grain and non-leafy vegetables	22	-0.02	27	-0.01	54	0.01	54	0.00
weathering removal constant of all vegetation	6	0.04	15	0.02	33	0.01	36	0.00
wet foliar interception fraction of leafy vegetables	50	0.00	51	0.00	36	-0.01	39	0.00
Kd of Pu-240 in Contaminated Zone	32	0.01	34	0.00	25	0.02	29	0.01
Kd of Pu-240 in Unsaturated Zone 1	42	-0.01	44	0.00	58	0.00	58	0.00
Kd of Pu-240 in Saturated Zone	19	0.03	24	0.01	56	0.00	56	0.00
Kd of Ra-228 in Contaminated Zone	49	0.01	49	0.00	55	0.00	55	0.00
Kd of Ra-228 in Unsaturated Zone 1	31	-0.01	33	-0.01	32	0.01	35	0.00
Kd of Ra-228 in Saturated Zone	7	0.04	14	0.02	23	0.02	27	0.01
Kd of Th-228 in Contaminated Zone	54	0.00	54	0.00	50	0.01	50	0.00
Kd of Th-228 in Unsaturated Zone 1	26	0.02	28	0.01	45	0.01	46	0.00
Kd of Th-228 in Saturated Zone	53	0.00	53	0.00	15	-0.03	20	-0.01
Kd of Th-232 in Contaminated Zone	33	-0.01	35	0.00	19	0.02	23	0.01
Kd of Th-232 in Unsaturated Zone 1	47	-0.01	48	0.00	12	-0.03	19	-0.01
Kd of Th-232 in Saturated Zone	25	0.02	29	0.01	30	-0.02	33	-0.01
Kd of U-236 in Contaminated Zone	35	-0.01	37	0.00	10	0.03	18	0.01
Kd of U-236 in Unsaturated Zone 1	56	0.00	56	0.00	51	0.01	51	0.00
Kd of U-236 in Saturated Zone	36	-0.01	38	0.00	40	-0.01	43	0.00
Plant transfer factor for Pu	1	0.92	1	0.87	1	0.92	1	0.80
Meat transfer factor for Pu	20	0.03	25	0.01	46	-0.01	47	0.00
Milk transfer factor for Pu	38	-0.01	40	0.00	6	-0.04	16	-0.01
Fish transfer factor for Pu	40	-0.01	42	0.00	24	-0.02	28	-0.01
Plant transfer factor for Ra	5	0.05	13	0.02	57	0.00	57	0.00
Meat transfer factor for Ra	21	-0.02	26	-0.01	35	-0.01	38	0.00
Milk transfer factor for Ra	17	0.03	23	0.01	27	0.02	31	0.01
Fish transfer factor for Ra	16	-0.03	22	-0.01	26	-0.02	30	-0.01
Plant transfer factor for Th	55	0.00	55	0.00	48	-0.01	49	0.00
Meat transfer factor for Th	34	-0.01	36	0.00	22	-0.02	26	-0.01
Milk transfer factor for Th	28	0.01	30	0.01	39	-0.01	42	0.00
Fish transfer factor for Th	57	0.00	57	0.00	52	-0.01	52	0.00
Plant transfer factor for U	13	-0.04	19	-0.01	41	0.01	44	0.00
Meat transfer factor for U	39	0.01	41	0.00	42	0.01	45	0.00
Milk transfer factor for U	41	-0.01	43	0.00	59	0.00	59	0.00
Fish transfer factor for U	48	0.01	50	0.00	28	0.02	32	0.01
R-SQUARE		0.86		0.86		0.89		0.89

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

RESRAD Regression and Correlation output 10/19/11 19:06 Page: Coef 1
Title : HB sensitivity analysis_soil_Pu241
Input File : C:\RESRAD_FAMILY\RESRAD\6.5\HB SOIL SA_PU241.RAD

Coefficients for peak of mean dose time Dose
Coefficient =
Repetition =

Description of Probabilistic Variable	PCC 1		SRC 1		PRCC 1		SRRC 1	
	Sig	Coeff	Sig	Coeff	Sig	Coeff	Sig	Coeff
Thickness of contaminated zone	2	0.58	3	0.33	2	0.75	4	0.50
Density of contaminated zone	16	-0.03	10	-0.10	46	0.01	14	0.02
Contaminated zone total porosity	14	-0.03	9	-0.11	55	0.00	33	-0.01
Contaminated zone hydraulic conductivity	25	0.02	30	0.01	53	0.00	54	0.00
Contaminated zone b parameter	30	0.02	34	0.01	32	0.02	34	0.01
Evapotranspiration coefficient	43	0.01	44	0.00	33	0.02	35	0.01
Irrigation	31	0.02	17	0.02	13	0.04	13	0.06
Density of saturated zone	39	0.01	7	0.17	9	0.04	3	0.59
Saturated zone total porosity	34	0.01	8	0.11	10	0.04	7	0.30
Saturated zone effective porosity	49	0.01	12	0.05	14	0.04	8	0.28
Saturated zone hydraulic conductivity	28	-0.02	32	-0.01	44	0.01	46	0.00
Saturated zone b parameter	53	0.00	53	0.00	42	-0.01	44	0.00
Well pump intake depth	51	-0.01	51	0.00	25	-0.03	26	-0.01
Well pumping rate	27	-0.02	13	-0.03	12	-0.04	12	-0.06
Thickness of Unsaturated zone 1	23	-0.02	28	-0.01	48	0.00	49	0.00
Density of Unsaturated zone 1	18	0.03	2	0.43	6	0.05	1	0.71
Total Porosity of Unsaturated zone 1	20	0.02	5	0.20	8	0.05	6	0.34
Effective Porosity of Unsaturated zone 1	19	0.03	4	0.22	7	0.05	5	0.37
Hydraulic Conductivity of Unsaturated zone 1	52	0.01	52	0.00	18	-0.03	19	-0.01
b Parameter of Unsaturated zone 1	57	0.00	57	0.00	19	-0.03	20	-0.01
Mass loading for inhalation	44	-0.01	45	0.00	22	-0.03	23	-0.01
Indoor dust filtration factor	5	0.06	14	0.03	51	0.00	52	0.00
External gamma shielding factor	9	0.05	19	0.02	15	0.04	16	0.02
Depth of soil mixing layer	40	-0.01	42	0.00	20	-0.03	21	-0.01
Depth of roots	3	-0.38	6	-0.19	3	-0.50	9	-0.26
wet weight crop yield of fruit, grain and non-leafy vegetables	22	0.02	27	0.01	60	0.00	60	0.00
weathering removal constant of all vegetation	12	0.03	22	0.02	26	-0.03	27	-0.01
wet foliar interception fraction of leafy vegetables	54	0.00	54	0.00	50	0.00	51	0.00
Kd of Pu-241 in Contaminated Zone	50	0.01	50	0.00	17	0.03	17	0.02
Kd of Pu-241 in Unsaturated Zone 1	59	0.00	59	0.00	37	0.01	39	0.01
Kd of Pu-241 in Saturated Zone	29	0.02	33	0.01	54	0.00	55	0.00
Kd of Am-241 in Contaminated Zone	7	0.05	16	0.03	4	0.25	10	0.12
Kd of Am-241 in Unsaturated Zone 1	37	-0.01	38	-0.01	30	-0.02	31	-0.01
Kd of Am-241 in Saturated Zone	46	-0.01	47	0.00	47	0.01	48	0.00
Kd of Np-237 in Contaminated Zone	26	-0.02	31	-0.01	16	-0.03	18	-0.02
Kd of Np-237 in Unsaturated Zone 1	41	-0.01	41	0.00	52	0.00	53	0.00
Kd of Np-237 in Saturated Zone	36	0.01	39	0.01	40	0.01	42	0.00
Kd of U-233 in Contaminated Zone	8	0.05	18	0.02	56	0.00	56	0.00
Kd of U-233 in Unsaturated Zone 1	10	0.04	20	0.02	29	0.02	30	0.01
Kd of U-233 in Saturated Zone	24	0.02	29	0.01	34	0.02	36	0.01
Plant transfer factor for Pu	4	0.16	11	0.07	5	0.23	11	0.10
Meat transfer factor for Pu	6	0.06	15	0.03	23	0.03	25	0.01
Milk transfer factor for Pu	55	0.00	55	0.00	21	-0.03	22	-0.01
Fish transfer factor for Pu	15	-0.03	24	-0.01	39	-0.01	41	0.00
Plant transfer factor for Am	1	0.86	1	0.79	1	0.84	2	0.68
Meat transfer factor for Am	21	0.02	26	0.01	11	0.04	15	0.02
Milk transfer factor for Am	32	-0.01	35	-0.01	31	-0.02	32	-0.01
Fish transfer factor for Am	60	0.00	60	0.00	43	0.01	45	0.00
Plant transfer factor for Np	47	0.01	48	0.00	41	-0.01	43	0.00
Meat transfer factor for Np	11	-0.04	21	-0.02	57	0.00	57	0.00
Milk transfer factor for Np	33	0.01	36	0.01	27	0.03	28	0.01
Fish transfer factor for Np	17	-0.03	25	-0.01	59	0.00	59	0.00
Plant transfer factor for Th	42	0.01	43	0.00	38	-0.01	40	-0.01
Meat transfer factor for Th	38	-0.01	40	-0.01	36	-0.01	38	-0.01
Milk transfer factor for Th	35	-0.01	37	-0.01	28	-0.03	29	-0.01
Fish transfer factor for Th	58	0.00	58	0.00	58	0.00	58	0.00
Plant transfer factor for U	48	0.01	49	0.00	45	0.01	47	0.00
Meat transfer factor for U	45	0.01	46	0.00	24	-0.03	24	-0.01
Milk transfer factor for U	13	-0.03	23	-0.02	49	0.00	50	0.00
Fish transfer factor for U	56	0.00	56	0.00	35	0.01	37	0.01

R-SQUARE

0.79 0.79 0.81 0.81

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

Sr-90 Results:

RESRAD, Version 6.5 T« Limit = 30 days 11/07/2011 08:22 Page 1
Probabilistic results summary : HB sensitivity analysis_soil_Sr-90
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\SR90\HB SOIL SA_SR90-1.RAD

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Probabilistic results summary : HB sensitivity analysis_soil_Sr-90
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\SR90\HB SOIL SA_SR90-1.RAD

Probabilistic Input

Number of Sample Runs: 2000

Number	Name	Distribution	Parameters
1	THICK0	UNIFORM	.15 3.51
2	DENS0Z	BOUNDED NORMAL	1.5635 .2385 .827 2.3
3	TPCZ	BOUNDED NORMAL	.41 .09 .1319 .6881
4	HCCZ	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
5	BCZ	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
6	EVAPTR	UNIFORM	.5 .75
7	RI	UNIFORM	.36 .76
8	DENSAQ	BOUNDED NORMAL	1.5105 .1855 .937 2.084
9	TPSZ	BOUNDED NORMAL	.43 .0699 .214 .646
10	EPSZ	BOUNDED NORMAL	.342 .0705 .124 .56
11	HCSZ	BOUNDED LOGNORMAL-N	.362 1.59 .0106 195
12	BSZ	BOUNDED LOGNORMAL-N	1.96 .265 3.02 15.5
13	DWIBWT	TRIANGULAR	6 10 30
14	UW	UNIFORM	1173 1973
15	H(1)	UNIFORM	0 8.08
16	DENSUZ(1)	BOUNDED NORMAL	1.5635 .2385 .827 2.3
17	TPUZ(1)	BOUNDED NORMAL	.41 .09 .1319 .6881
18	EPUZ(1)	BOUNDED NORMAL	.315 .0905 .0349 .594
19	HCUZ(1)	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190
20	BUZ(1)	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3
21	MUINH	CONTINUOUS LINEAR	8 0 .000008 .0151 .000016 .1365
.00003	.8119 .00004 .9495 .00006 .9937 .000076 .9983 .0001 1		
22	SHF3	UNIFORM	.15 .95
23	SHF1	BOUNDED LOGNORMAL-N	-1.3 .59 .044 1
24	DM	TRIANGULAR	0 .15 .6
25	DROOT	UNIFORM	.3 4
26	YV(1)	TRUNCATED LOGNORMAL-N	.56 .48 .001 .999
27	WLAM	TRIANGULAR	5.1 18 84
28	RWET(2)	TRIANGULAR	.06 .67 .95
29	DCACTC(1)	TRUNCATED LOGNORMAL-N	3.45 2.12 .001 .999
30	DCACTU1(1)	TRUNCATED LOGNORMAL-N	3.45 2.12 .001 .999
31	DCACT5(1)	TRUNCATED LOGNORMAL-N	3.45 2.12 .001 .999
32	BRTF(38,1)	TRUNCATED LOGNORMAL-N	-1.2 1 .001 .999
33	BRTF(38,2)	TRUNCATED LOGNORMAL-N	-4.61 .4 .001 .999
34	BRTF(38,3)	TRUNCATED LOGNORMAL-N	-6.21 .5 .001 .999
35	BBIO(38,1)	LOGNORMAL-N	4.1 1.1

RESRAD Regression and Correlation output 11/07/11 08:22 Page: Coef 1
Title : HB sensitivity analysis_soil_Sr-90
Input File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\SR90\HB SOIL SA_SR90-1.RAD

Coefficients for peak of mean dose time Dose					PCC	SRC	PRCC	SRRC
Coefficient =					1	1	1	1
Repetition =								
Description of Probabilistic Variable	Sig	Coeff	Sig	Coeff	Sig	Coeff	Sig	Coeff
Thickness of contaminated zone	2	0.49	5	0.23	2	0.78	2	0.39
Density of contaminated zone	19	-0.02	11	-0.06	6	-0.05	6	-0.11
Contaminated zone total porosity	18	-0.02	10	-0.06	7	-0.05	7	-0.10
Contaminated zone hydraulic conductivity	15	0.02	22	0.01	32	0.00	32	0.00
Contaminated zone b parameter	33	0.00	33	0.00	26	-0.01	28	0.00
Evapotranspiration coefficient	12	0.03	19	0.01	24	0.01	26	0.00
Irrigation	22	-0.01	15	-0.02	14	0.03	13	0.04
Density of saturated zone	24	-0.01	6	-0.18	29	0.00	14	0.04
Saturated zone total porosity	32	-0.01	12	-0.05	22	0.01	10	0.07
Saturated zone effective porosity	21	-0.02	8	-0.12	28	0.00	15	-0.02
Saturated zone hydraulic conductivity	23	0.01	26	0.01	27	0.01	29	0.00
Saturated zone b parameter	26	-0.01	28	0.00	12	-0.04	19	-0.01
well pump intake depth	20	-0.02	25	-0.01	20	-0.02	23	-0.01
well pumping rate	27	0.01	17	0.02	11	-0.04	12	-0.04
Thickness of Unsaturated zone 1	29	0.01	30	0.00	23	0.01	25	0.00
Density of Unsaturated zone 1	8	-0.04	2	-0.54	16	0.03	3	0.27
Total Porosity of Unsaturated zone 1	10	-0.04	4	-0.24	13	0.04	5	0.18
Effective Porosity of Unsaturated zone 1	7	-0.04	3	-0.29	19	0.02	8	0.10
Hydraulic Conductivity of Unsaturated zone 1	28	0.01	29	0.00	8	0.04	16	0.01
b Parameter of Unsaturated zone 1	13	0.03	20	0.01	35	0.00	35	0.00
Mass loading for inhalation	9	-0.04	16	-0.02	25	-0.01	27	0.00
Indoor dust filtration factor	14	0.02	21	0.01	18	-0.02	22	-0.01
External gamma shielding factor	30	0.01	32	0.00	17	0.02	21	0.01
Depth of soil mixing layer	35	0.00	35	0.00	33	0.00	33	0.00
Depth of roots	3	-0.35	7	-0.15	3	-0.58	4	-0.23
wet weight crop yield of fruit, grain and non-leafy vegetables	17	-0.02	24	-0.01	34	0.00	34	0.00
weathering removal constant of all vegetation	34	0.00	34	0.00	9	0.04	17	0.01
wet foliar interception fraction of leafy vegetables	11	-0.03	18	-0.01	15	0.03	20	0.01
Kd of Sr-90 in Contaminated Zone	6	-0.06	14	-0.02	21	0.02	24	0.01
Kd of Sr-90 in Unsaturated Zone 1	31	0.01	31	0.00	10	0.04	18	0.01
Kd of Sr-90 in Saturated Zone	25	0.01	27	0.00	31	0.00	31	0.00
Plant transfer factor for Sr	1	0.91	1	0.87	1	0.93	1	0.83
Meat transfer factor for Sr	5	0.09	13	0.04	5	0.16	11	0.05
Milk transfer factor for Sr	4	0.18	9	0.07	4	0.22	9	0.07
Fish transfer factor for Sr	16	-0.02	23	-0.01	30	0.00	30	0.00
R-SQUARE		0.84		0.84		0.90		0.90

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.

Tc-99 Results:

RESRAD, Version 6.5 T« Limit = 30 days 11/07/2011 08:24 Page 1
Probabilistic results summary : HB sensitivity analysis_soil_Tc-99
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\TC99\HB SOIL SA_TC99-1.RAD

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RESRAD, Version 6.5 T« Limit = 30 days 11/07/2011 08:24 Page 2
Probabilistic results summary : HB sensitivity analysis_soil_Tc-99
File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\TC99\HB SOIL SA_TC99-1.RAD

Probabilistic Input
Number of Sample Runs: 2000

Number	Name	Distribution	Parameters	AA			
1	THICK0	UNIFORM	.15 3.51	AA			
2	DENSCH	BOUNDED NORMAL	1.5635 .2385 .827 2.3				
3	TPCZ	BOUNDED NORMAL	.41 .09 .1319 .6881				
4	HCCZ	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190				
5	BCZ	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3				
6	EVAPTR	UNIFORM	.5 .75				
7	RI	UNIFORM	.36 .76				
8	DENSAQ	BOUNDED NORMAL	1.5105 .1855 .937 2.084				
9	TPSZ	BOUNDED NORMAL	.43 .0699 .214 .646				
10	EPSZ	BOUNDED NORMAL	.342 .0705 .124 .56				
11	HCSZ	BOUNDED LOGNORMAL-N	1.362 1.59 .0106 195				
12	BSZ	BOUNDED LOGNORMAL-N	1.96 .265 3.02 15.5				
13	DWIBWT	TRIANGULAR	6 10 30				
14	UW	UNIFORM	1173 1973				
15	H(1)	UNIFORM	0 8.08				
16	DENSUZ(1)	BOUNDED NORMAL	1.5635 .2385 .827 2.3				
17	TPUZ(1)	BOUNDED NORMAL	.41 .09 .1319 .6881				
18	EPUZ(1)	BOUNDED NORMAL	.315 .0905 .0349 .594				
19	HCUZ(1)	BOUNDED LOGNORMAL-N	1.36 2.17 .00478 3190				
20	BUZ(1)	BOUNDED LOGNORMAL-N	1.73 .323 2.08 15.3				
21	MLINH	CONTINUOUS LINEAR	8 0 0 .000008 .0151 .000016 .1365				
.00003	.8119 .00004 .9495	.00006 .9937	.000076 .9983 .0001 1				
22	SHF3	UNIFORM	.15 .95				
23	SHF1	BOUNDED LOGNORMAL-N	-1.3 .59 .044 1				
24	DM	TRIANGULAR	0 .15 .6				
25	DROOT	UNIFORM	.3 4				
26	YV(1)	TRUNCATED LOGNORMAL-N	.56 .48 .001 .999				
27	WLAM	TRIANGULAR	5.1 18 84				
28	RWET(2)	TRIANGULAR	.06 .67 .95				
29	DCACTC(1)	TRUNCATED LOGNORMAL-N	-.67 3.16 .001 .999				
30	DCACTU(1)	TRUNCATED LOGNORMAL-N	-.67 3.16 .001 .999				
31	DCACTS(1)	TRUNCATED LOGNORMAL-N	-.67 3.16 .001 .999				
32	BRTF(43,1)	TRUNCATED LOGNORMAL-N	1.61 .9 .001 .999				
33	BRTF(43,2)	TRUNCATED LOGNORMAL-N	-9.21 .7 .001 .999				
34	BRTF(43,3)	TRUNCATED LOGNORMAL-N	-6.91 .7 .001 .999				
35	BBIO(43,1)	LOGNORMAL-N	3 1.1				

RESRAD Regression and Correlation output 11/07/11 08:25 Page: Coef 1
Title : HB sensitivity analysis_soil_Tc-99
Input File : C:\RESRAD_FAMILY\RESRAD\6.5\USERFILES\TC99\HB SOIL SA_TC99-1.RAD

Coefficients for peak of mean dose time Dose
Coefficient =
Repetition =

Description of Probabilistic Variable	PCC 1		SRC 1		PRCC 1		SRRC 1	
	Sig	Coeff	Sig	Coeff	Sig	Coeff	Sig	Coeff
Thickness of contaminated zone	2	0.55	4	0.29	2	0.80	2	0.47
Density of contaminated zone	32	0.00	20	-0.01	11	-0.04	8	-0.09
Contaminated zone total porosity	34	0.00	32	0.00	16	-0.03	11	-0.07
Contaminated zone hydraulic conductivity	15	0.02	19	0.01	19	-0.02	22	-0.01
Contaminated zone b parameter	21	0.01	26	0.00	33	0.00	34	0.00
Evapotranspiration coefficient	5	0.05	10	0.02	6	0.06	15	0.02
Irrigation	17	-0.01	11	-0.02	17	0.03	14	0.03
Density of saturated zone	33	0.00	14	-0.02	27	0.01	10	0.08
Saturated zone total porosity	28	0.01	9	0.04	24	0.01	9	0.08
Saturated zone effective porosity	26	-0.01	8	-0.05	34	0.00	21	0.01
Saturated zone hydraulic conductivity	22	0.01	27	0.00	31	0.00	32	0.00
Saturated zone b parameter	25	-0.01	30	0.00	13	-0.03	18	-0.01
well pump intake depth	30	0.00	33	0.00	23	-0.01	26	0.00
well pumping rate	29	0.00	22	0.01	9	-0.04	13	-0.05
Thickness of Unsaturated zone 1	24	0.01	29	0.00	21	0.02	24	0.01
Density of Unsaturated zone 1	7	-0.04	2	-0.60	12	0.03	3	0.36
Total Porosity of Unsaturated zone 1	10	-0.04	5	-0.28	10	0.04	4	0.23
Effective Porosity of Unsaturated zone 1	6	-0.04	3	-0.32	18	0.02	6	0.14
Hydraulic Conductivity of Unsaturated zone 1	19	0.01	24	0.00	8	0.04	17	0.02
b Parameter of Unsaturated zone 1	12	0.03	16	0.01	28	0.00	29	0.00
Mass loading for inhalation	8	-0.04	12	-0.02	35	0.00	35	0.00
Indoor dust filtration factor	11	0.03	15	0.01	25	-0.01	27	0.00
External gamma shielding factor	27	0.01	31	0.00	20	0.02	23	0.01
Depth of soil mixing layer	31	0.00	34	0.00	29	0.00	30	0.00
Depth of roots	3	-0.33	6	-0.16	3	-0.54	5	-0.22
wet weight crop yield of fruit, grain and non-leafy vegetables	20	-0.01	25	0.00	30	0.00	31	0.00
weathering removal constant of all vegetation	35	0.00	35	0.00	14	0.03	19	0.01
wet foliar interception fraction of leafy vegetables	9	-0.04	13	-0.02	22	0.01	25	0.00
Kd of Tc-99 in Contaminated Zone	13	-0.02	17	-0.01	4	0.26	7	0.10
Kd of Tc-99 in Unsaturated Zone 1	23	-0.01	28	0.00	15	0.03	20	0.01
Kd of Tc-99 in Saturated Zone	18	0.01	23	0.00	26	0.01	28	0.00
Plant transfer factor for Tc	1	0.88	1	0.83	1	0.91	1	0.77
Meat transfer factor for Tc	16	0.02	21	0.01	7	0.05	16	0.02
Milk transfer factor for Tc	4	0.18	7	0.08	5	0.19	12	0.07
Fish transfer factor for Tc	14	-0.02	18	-0.01	32	0.00	33	0.00
R-SQUARE		0.81		0.81		0.88		0.88

-Rank is set to zero if the dose is zero or the correlation matrix is singular.
-R-SQUARE varies between 0 and 1 and is called the coefficient of determination; it provides a measure of the variation in the dependent variable (Dose) explained by regression on the independent variables.