

Sensitivity Analysis Results for the Clive DU PA

Clive DU PA Model v1.4

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Summary

This appendix presents tabular summaries of the sensitivity analysis results for each of the 13 endpoints considered within the Clive DU Performance Assessment (PA) Version 1.4 (November 2015). As described in the Sensitivity Analysis (SA) methods White Paper, for each endpoint, every explanatory variable (input parameter) in the PA model is included in the SA. The SA calculates a sensitivity index (SI) for each explanatory variable. Each SI represents the portion of total statistical variance in the output that is attributed to the corresponding explanatory variable for a specific model output of interest. This global SA approach essentially allows all input parameters to be varied simultaneously to find the input parameters that explain most of the output parameter variance and, hence, are identified as the most important, or sensitive, predictors of the model output.

In effect, the simulated data are treated as observations of the explanatory variables (input parameters) and the dependent variables (model output – dose or concentration). The SA performs a regression analysis of the input on the output, but does so in a way that accommodates the non-linear and non-monotonic aspects of this complex model. All explanatory variables are included in this “regression”. The specific statistical, non-linear regression-based, approach taken to SA is explained in the SA methods White Paper. It relies on a gradient boosting machines (GBM) method that utilizes boosting of binary recursive partitioning algorithms that deconstruct a model output, or response, into the relative influence from a given set of explanatory variables (input parameters).

A table of SIs is presented for each model endpoint (Tables 1 – 22). For a given endpoint, the sum of the SIs across the explanatory variables is 100%. The diagnostic goodness-of-fit statistic R-squared is used to indicate goodness-of-fit of the SA model. If R-squared is near 100% then the SA model explains nearly all of the variation in the model output, and only a very small portion is unexplained by the input parameters. In general, this suggests that the SA provides a good fit for the model output, which provides greater confidence in the results of the SA.

The underlying concept is that only a few input parameters are likely to explain most of the output variance. In general, it is rare that more than 4 or 5 input parameters can be classed as sensitive. It is difficult to share 100% variation across many more parameters and still have a reasonably predictive model. The goal of the global SA is to identify those few sensitive input parameters. If uncertainty needs to be reduced to support decision making, then reduction in uncertainty in the sensitive input parameters is likely to prove most beneficial.

The identification of important explanatory variables is done within the context of the ability of the GBM model to explain the observed variance in the endpoint of interest from the GoldSim model. If the R-squared of regressing the observed values on the predictions is close to 100%, indicating a good fit, then experience suggests that a SI of 5% is a reasonable threshold for identification of a sensitive parameter. For example, the endpoint ‘Peak Groundwater Well Concentrations within 500 years - Tc99’ has a GBM model with the R-squared of the linear model regressing the observed values on the GBM predictions very close to one (99% – Table 3). Consequently, any of the explanatory variables with a SI less than 5% suggest random noise rather than a predictive input parameter.

Table 1: Peak Groundwater Well Concentrations within 500 years – I129**R-squared = 99%**

Explanatory Variable	Sensitivity Index
Unit 4 ET Layers log of van Genuchten's α	35.78
Molecular Diffusivity in Water (cm ² /s)	30.15
Kd Sand for I (mL/g)	17.86
Unit 4 ET Layers log of van Genuchten's n	6.22
Saturated Zone Water Table Gradient	1.95
Federal DU Cell Unsaturated Zone Thickness (m)	0.63
Surface Atmosphere Diffusion Length (m)	0.48
Unit 2 Porosity	0.33
Kd Sand for Pu (mL/g)	0.31
Unit 3 Bubbling Pressure Head (cm)	0.21
Beef Transfer Factor for Np (day/kg)	0.17
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.17
Random Gully Selector	0.15
Unit 2 Saturated Hyd Cond (cm/s)	0.15
Saturated Zone Thickness (m)	0.12
Unit 4 Compacted Residual Water Content	0.12
Kd Silt for Np (mL/g)	0.11
Surface Atmosphere Thickness (m)	0.10
Kd Silt for Ac (mL/g)	0.10
Beef Transfer Factor for Pu (day/kg)	0.09
Beef Transfer Factor for Cs (day/kg)	0.08
Plant.Soil Conc Ratio for Cs	0.07
Saltwater Solubility for Th (mol/L)	0.07
Beef Transfer Factor for Tc (day/kg)	0.07
Tortuosity Water Content Exponent	0.07
Surface Wind Speed (m/s)	0.07
Mammal Mound Density - Plot 1 (1/ha)	0.07
Plant.Soil Conc Ratio for Pu	0.07
Plant.Soil Conc Ratio for Ra	0.07
Fine CobbleMix Porosity	0.07
Water Ingestion Rate for Antelope (kg/day)	0.06
Greasewood Root Shape Parameter b	0.06
Ant Colony Density - Plot 4 (1/ha)	0.06
Forage Ingestion Rate for Cattle (kg/day)	0.06
Soil Ingestion Rate for Antelope (kg/day)	0.06
Intermediate Lake Depth (m)	0.06
Ant Nest Volume (m ³)	0.06
Ant Nest Shape Parameter b	0.06
Saltwater Solubility for U3O8 (mol/L)	0.05
Kd Sand for U (mL/g)	0.05

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Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.05
Plant Fresh Weight Conversion	0.05
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	0.05
Water Ingestion Rate for Cattle (kg/day)	0.05
Kd Sand for Ac (mL/g)	0.05
Mammal Mound Density - Plot 3 (1/ha)	0.04
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	0.04
DCF Alpha REF	0.04
Mammal Burrow Shape Parameter b	0.04
Site Dispersal Area (km2)	0.04
Activity Conc in SRS DU Waste: Np237 (pCi/g)	0.04
Unit 3 Saturated Hyd Cond (cm/s)	0.04
Saltwater Solubility for Am (mol/L)	0.04
Saltwater Solubility for UO3 (mol/L)	0.04
Activity Conc in SRS DU Waste: U233 (pCi/g)	0.04
Deep Time DCF Photon 2 REF	0.04
Deep Time Deep Lake End (yr)	0.04
Beef Transfer Factor for Am (day/kg)	0.04
Plant.Soil Conc Ratio for Ac	0.04
Kd Silt for U (mL/g)	0.04
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.03
Mammal Mound Density - Plot 4 (1/ha)	0.03
Silt Sand Gravel BulkDensity (g/cm3)	0.03
Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.03
Resuspension Flux (kg.m2-yr)	0.03
DCF Photon1 REF	0.03
Kd Silt for Th (mL/g)	0.03
Unit 3 Residual Water Content	0.03
Silt Sand Gravel Porosity	0.03
RipRap Bulk Density (g/cm3)	0.03
Saltwater Solubility for Ra (mol/L)	0.03
Plant.Soil Conc Ratio for Tc	0.03
Saltwater Solubility for Pb (mol/L)	0.03
Saltwater Solubility for Tc (mol/L)	0.03
Kd Silt for Am (mL/g)	0.03
Deep Time Diffusion Length (m)	0.03
Mammal Mound Density - Plot 2 (1/ha)	0.03
Beef Transfer Factor for Ra (day/kg)	0.03
DCF Photon2 REF	0.03
Kd Clay for U (mL/g)	0.03
Plant.Soil Conc Ratio for Pb	0.03
Saltwater Solubility for Cs (mol/L)	0.03
Shrub Root Shape Parameter b	0.03

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Kd Sand for Sr (mL/g)	0.03
Fine Gravel Mix Porosity	0.03
Kd Silt for Pb (mL/g)	0.03
Beef Transfer Factor for Th (day/kg)	0.03
DCF Beta REF	0.03
Meat Preparation Loss	0.03
Mammal Mound Density - Plot 5 (1/ha)	0.03
Kd Sand for Am (mL/g)	0.03
Kd Clay for Sr (mL/g)	0.03
Unit 3 Porosity	0.03
Ant Colony Density - Plot 1 (1/ha)	0.03
Activity Conc in SRS DU Waste: Am241 (pCi/g)	0.03
Deep Time Aeolian Correlation	0.03
Greasewood Root.Shoot Ratio	0.03
Liner Clay Saturated Hyd Cond (cm/s)	0.03
Deep Time Aeolian Deposition Age (yr)	0.03
Kd Silt for Cs (mL/g)	0.03
Kd Clay for Pa (mL/g)	0.03
Kd Sand for Np (mL/g)	0.02
Beef Transfer Factor for Pb (day/kg)	0.02
Deep Time DCF Photon 1 REF	0.02
Kd Clay for Th (mL/g)	0.02
Kd Clay for Am (mL/g)	0.02
RipRap Porosity	0.02
Kd Sand for Cs (mL/g)	0.02
Saltwater Solubility for Pa (mol/L)	0.02
Mammal Burrow Excavation Rate (m3/yr)	0.02
Radon Escape.Production Ratio for Waste	0.02
Saltwater Solubility for I (mol/L)	0.02
Activity Conc in SRS DU Waste: U238 (pCi/g)	0.02
Deep Time DCF Alpha REF	0.02
Deep Lake Depth (m)	0.02
Beef Transfer Factor for Ac (day/kg)	0.02
Kd Silt for Sr (mL/g)	0.02
Saltwater Solubility for Ac (mol/L)	0.02
Biomass % Cover Selector	0.02
Beef Transfer Factor for Sr (day/kg)	0.02
Unit 4 ET Layers Porosity	0.02
Shrub Root.Shoot Ratio	0.02
Tree Root.Shoot Ratio	0.02
Fine Gravel Mix BulkDensity (g/cm3)	0.02
Deep Time Receptor Area (ac)	0.02
Kd Sand for Pb (mL/g)	0.02

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Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	0.02
Grass Root Shape Parameter b	0.02
Kd Clay for Ac (mL/g)	0.02
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	0.02
Unit 4 Compacted Porosity	0.02
Unit 4 Compacted Bulk Density (g/cm ³)	0.02
Unit 4 ET Layers Bulk Density (g/cm ³)	0.02
Intermediate Lake Sed Thickness (m)	0.02
Kd Sand for Tc (mL/g)	0.02
Tortuosity Porosity Exponent	0.02
Fine Cobble Mix BulkDensity (g/cm ³)	0.02
Deep Time Intermediate Lake Duration (yr)	0.02
Plant.Soil Conc Ratio for Np	0.02
Grass Root.Shoot Ratio	0.02
Beef Transfer Factor for I (day/kg)	0.02
Saltwater Solubility for Rn (mol/L)	0.02
Deep Time Aeolian Deposition Depth (m)	0.02
Unit 4 Compacted Hb (cm)	0.02
Resuspended Particle Fraction	0.02
Plant.Soil Conc Ratio for Pa	0.02
Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.02
Plant.Soil Conc Ratio for Am	0.02
Receptor Area (ha)	0.02
Saltwater Solubility for Sr (mol/L)	0.02
Saltwater Solubility for Pu (mol/L)	0.02
Kd Sand for Pa (mL/g)	0.02
Meat Post-Cooking Loss	0.02
Ant Colony Density - Plot 3 (1/ha)	0.01
Plant.Soil Conc Ratio for Sr	0.01
Kd Clay for Np (mL/g)	0.01
Deep Time Lake Start (yr)	0.01
Unit 3 Bulk Density (g/cm ³)	0.01
OHV Dust Adjustment	0.01
Kd Clay for Pu (mL/g)	0.01
Kd Sand for Th (mL/g)	0.01
Kd Silt for Ra (mL/g)	0.01
Kd Silt for Pa (mL/g)	0.01
Deep Time DCF Beta REF	0.01
Kd Clay for Pb (mL/g)	0.01
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.01
Soil Ingestion Rate for Cattle (kg/day)	0.01
Body Weight Factor for Antelope	0.01
Plant.Soil Conc Ratio for U	0.01

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Ant Colony Density - Plot 5 (1/ha)	0.01
Biomass Production Rate (kg.ha.yr)	0.01
Soil Temperature (°C)	0.01
Kd Clay for Cs (mL/g)	0.01
Tree Root Shape Parameter b	0.01
Contaminated Fraction of GDP DU	0.01
Ant Colony Density - Plot 2 (1/ha)	0.01
Activity Conc in SRS DU Waste: U234 (pCi/g)	0.01
Antelope Range Area (acre)	0.01
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.01
Kd Sand for Ra (mL/g)	0.01
Beef Transfer Factor for U (day/kg)	0.01
Kd Clay for Ra (mL/g)	0.01
Saltwater Solubility for Np (mol/L)	0.01
Activity Conc in SRS DU Waste: U236 (pCi/g)	0.01
Ant Colony Lifespan (yr)	0.01
Plant.Soil Conc Ratio for I	0.01
Plant.Soil Conc Ratio for Th	0.01
Kd Silt for Pu (mL/g)	0.01
Activity Conc in SRS DU Waste: Cs137 (pCi/g)	0.01
Beef Transfer Factor for Pa (day/kg)	0.01
GDP DU Inventory Storage Dead Space (m2)	0.01
Unit 2 Bulk Density (g/cm3)	0.01
Forb Root Shape Parameter b	0.01
Unit 3 Brooks-Corey Fractal Dimension	0.01
Forb Root.Shoot Ratio	0.01
Vegetation Association Selector	0.01
Soil Ingestion Tracer Element	0.00

Table 2: Peak Groundwater Well Concentrations within 500 years – Np237**R-squared = 99%**

Explanatory Variable	Sensitivity Index
Plant.Soil Conc Ratio for Tc	19.05
Kd Sand for Ra (mL/g)	9.87
Kd Clay for Np (mL/g)	2.27
Molecular Diffusivity in Water (cm ² /s)	1.46
Silt Sand Gravel Porosity	1.10
Fine Gravel Mix BulkDensity (g/cm ³)	1.07
Fine Cobble Mix BulkDensity (g/cm ³)	1.05
Kd Silt for Cs (mL/g)	0.94
Mammal Burrow Excavation Rate (m ³ /yr)	0.94
Unit 4 Compacted Hb (cm)	0.90
Unit 4 Compacted Residual Water Content	0.90
Unit 3 Residual Water Content	0.90
Saltwater Solubility for Ra (mol/L)	0.88
Unit 4 ET Layers Bulk Density (g/cm ³)	0.87
Saltwater Solubility for U ₃ O ₈ (mol/L)	0.84
Saltwater Solubility for UO ₃ (mol/L)	0.80
Unit 2 Saturated Hyd Cond (cm/s)	0.80
Plant.Soil Conc Ratio for U	0.80
Unit 3 Porosity	0.80
Saltwater Solubility for Tc (mol/L)	0.78
Unit 4 ET Layers Porosity	0.78
Unit 3 Bubbling Pressure Head (cm)	0.76
Kd Clay for Pu (mL/g)	0.76
Saltwater Solubility for Am (mol/L)	0.74
Kd Sand for Th (mL/g)	0.74
Fine Gravel Mix Porosity	0.74
Unit 4 Compacted Porosity	0.70
Silt Sand Gravel BulkDensity (g/cm ³)	0.68
Ant Colony Density - Plot 3 (1/ha)	0.67
Kd Silt for Np (mL/g)	0.67
Unit 3 Saturated Hyd Cond (cm/s)	0.67
Kd Clay for Sr (mL/g)	0.66
Saltwater Solubility for Pb (mol/L)	0.64
Unit 4 ET Layers log of van Genuchten's α	0.64
Saturated Zone Water Table Gradient	0.61
Saltwater Solubility for Cs (mol/L)	0.60
Saltwater Solubility for Np (mol/L)	0.58
Mammal Mound Density - Plot 4 (1/ha)	0.58
Kd Sand for U (mL/g)	0.58
RipRap Porosity	0.57

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Fine CobbleMix Porosity	0.56
Kd Sand for Cs (mL/g)	0.55
Tree Root.Shoot Ratio	0.55
Mammal Mound Density - Plot 3 (1/ha)	0.53
Ant Colony Density - Plot 4 (1/ha)	0.53
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.52
Kd Sand for Np (mL/g)	0.52
Kd Clay for Th (mL/g)	0.50
Federal DU Cell Unsaturated Zone Thickness (m)	0.50
Saltwater Solubility for Ac (mol/L)	0.50
RipRap Bulk Density (g/cm ³)	0.50
Beef Transfer Factor for Tc (day/kg)	0.49
Plant.Soil Conc Ratio for Np	0.49
Saltwater Solubility for Pa (mol/L)	0.49
Deep Lake Depth (m)	0.48
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.47
Ant Nest Volume (m ³)	0.47
Kd Clay for U (mL/g)	0.46
Saltwater Solubility for Rn (mol/L)	0.46
Mammal Mound Density - Plot 5 (1/ha)	0.46
Plant.Soil Conc Ratio for Ac	0.45
Ant Colony Lifespan (yr)	0.45
DCF Photon1 REF	0.45
Unit 4 ET Layers log of van Genuchten's n	0.45
Soil Temperature (Â°C)	0.45
Deep Time DCF Photon 2 REF	0.44
Kd Clay for Am (mL/g)	0.43
Beef Transfer Factor for Am (day/kg)	0.43
Deep Time Lake Start (yr)	0.43
Soil Ingestion Rate for Antelope (kg/day)	0.43
Plant.Soil Conc Ratio for Pb	0.43
OHV Dust Adjustment	0.43
Kd Silt for Pa (mL/g)	0.42
Beef Transfer Factor for Cs (day/kg)	0.42
Kd Clay for Cs (mL/g)	0.42
Plant.Soil Conc Ratio for Pu	0.42
Plant.Soil Conc Ratio for Sr	0.41
Saltwater Solubility for Th (mol/L)	0.40
Unit 2 Bulk Density (g/cm ³)	0.40
Kd Clay for Ra (mL/g)	0.40
Unit 4 Compacted Bulk Density (g/cm ³)	0.40
Grass Root.Shoot Ratio	0.40
Kd Silt for U (mL/g)	0.40

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Surface Atmosphere Diffusion Length (m)	0.38
Plant.Soil Conc Ratio for Am	0.37
Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	0.37
Plant.Soil Conc Ratio for Th	0.37
Kd Silt for Ra (mL/g)	0.36
Unit 3 Brooks-Corey Fractal Dimension	0.36
Shrub Root Shape Parameter b	0.35
Mammal Burrow Shape Parameter b	0.35
Receptor Area (ha)	0.35
Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.34
Surface Atmosphere Thickness (m)	0.34
Saturated Zone Thickness (m)	0.34
Unit 3 Bulk Density (g/cm ³)	0.34
Plant.Soil Conc Ratio for Ra	0.33
Kd Silt for Pu (mL/g)	0.33
Kd Sand for Sr (mL/g)	0.33
Kd Clay for Pa (mL/g)	0.32
Activity Conc in SRS DU Waste: Am241 (pCi/g)	0.32
Saltwater Solubility for Sr (mol/L)	0.32
Kd Sand for Pb (mL/g)	0.31
Kd Silt for Pb (mL/g)	0.31
Beef Transfer Factor for Sr (day/kg)	0.30
Body Weight Factor for Antelope	0.29
Resuspended Particle Fraction	0.28
Radon Escape.Production Ratio for Waste	0.28
Unit 2 Porosity	0.27
Activity Conc in SRS DU Waste: U233 (pCi/g)	0.27
Beef Transfer Factor for I (day/kg)	0.27
Grass Root Shape Parameter b	0.26
Plant Fresh Weight Conversion	0.25
Activity Conc in SRS DU Waste: U236 (pCi/g)	0.25
Meat Post-Cooking Loss	0.24
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.23
Kd Sand for Pa (mL/g)	0.23
Beef Transfer Factor for Pu (day/kg)	0.23
Greasewood Root.Shoot Ratio	0.23
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.23
Tortuosity Water Content Exponent	0.22
Deep Time Diffusion Length (m)	0.22
Saltwater Solubility for Pu (mol/L)	0.22
Activity Conc in SRS DU Waste: Cs137 (pCi/g)	0.22
Kd Sand for Am (mL/g)	0.22
Beef Transfer Factor for U (day/kg)	0.21

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Kd Silt for Sr (mL/g)	0.21
Ant Colony Density - Plot 5 (1/ha)	0.20
Plant.Soil Conc Ratio for I	0.19
Mammal Mound Density - Plot 1 (1/ha)	0.19
Forb Root.Shoot Ratio	0.18
Vegetation Association Selector	0.18
Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.18
Plant.Soil Conc Ratio for Cs	0.18
Beef Transfer Factor for Th (day/kg)	0.18
Biomass % Cover Selector	0.18
DCF Alpha REF	0.17
Saltwater Solubility for I (mol/L)	0.17
Meat Preparation Loss	0.16
Kd Silt for Am (mL/g)	0.16
Kd Clay for Ac (mL/g)	0.15
Kd Sand for I (mL/g)	0.15
Kd Sand for Pu (mL/g)	0.15
Kd Sand for Ac (mL/g)	0.14
Beef Transfer Factor for Pb (day/kg)	0.14
Site Dispersal Area (km ²)	0.14
Surface Wind Speed (m/s)	0.13
Deep Time DCF Photon 1 REF	0.13
Intermediate Lake Sed Thickness (m)	0.13
Kd Clay for Pb (mL/g)	0.13
Greasewood Root Shape Parameter b	0.12
DCF Beta REF	0.12
Activity Conc in SRS DU Waste: U238 (pCi/g)	0.12
Tree Root Shape Parameter b	0.12
Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.12
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	0.12
Resuspension Flux (kg.m ² -yr)	0.12
Activity Conc in SRS DU Waste: Np237 (pCi/g)	0.12
Kd Silt for Th (mL/g)	0.11
Mammal Mound Density - Plot 2 (1/ha)	0.10
Soil Ingestion Rate for Cattle (kg/day)	0.10
Soil Ingestion Tracer Element	0.10
Forb Root Shape Parameter b	0.10
Liner Clay Saturated Hyd Cond (cm/s)	0.09
Beef Transfer Factor for Ra (day/kg)	0.09
Deep Time Deep Lake End (yr)	0.09
Deep Time Aeolian Deposition Depth (m)	0.08
Deep Time Aeolian Correlation	0.08
Random Gully Selector	0.08

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Activity Conc in SRS DU Waste: U234 (pCi/g)	0.08
Ant Nest Shape Parameter b	0.07
Kd Silt for Ac (mL/g)	0.07
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	0.07
Deep Time Aeolian Deposition Age (yr)	0.07
Shrub Root.Shoot Ratio	0.07
Deep Time DCF Beta REF	0.07
Intermediate Lake Depth (m)	0.06
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	0.06
Tortuosity Porosity Exponent	0.06
Ant Colony Density - Plot 1 (1/ha)	0.05
Forage Ingestion Rate for Cattle (kg/day)	0.05
Plant.Soil Conc Ratio for Pa	0.05
Ant Colony Density - Plot 2 (1/ha)	0.05
Deep Time Receptor Area (ac)	0.04
Beef Transfer Factor for Np (day/kg)	0.04
Kd Sand for Tc (mL/g)	0.04
Contaminated Fraction of GDP DU	0.04
GDP DU Inventory Storage Dead Space (m2)	0.04
Beef Transfer Factor for Ac (day/kg)	0.03
Water Ingestion Rate for Antelope (kg/day)	0.03
Deep Time DCF Alpha REF	0.03
Antelope Range Area (acre)	0.03
Deep Time Intermediate Lake Duration (yr)	0.02
Biomass Production Rate (kg.ha.yr)	0.02
Water Ingestion Rate for Cattle (kg/day)	0.02
DCF Photon2 REF	0.01
Beef Transfer Factor for Pa (day/kg)	0.01
Plant.Soil Conc Ratio for Tc	19.05
Kd Sand for Ra (mL/g)	9.87
Kd Clay for Np (mL/g)	2.27
Molecular Diffusivity in Water (cm2/s)	1.46

Table 3: Peak Groundwater Well Concentrations within 500 years - Tc99**R-squared = 99%**

Explanatory Variable	Sensitivity Index
Unit 4 ET Layers log of van Genuchten's α	31.97
Molecular Diffusivity in Water (cm ² /s)	24.96
Kd Sand for Tc (mL/g)	13.97
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	10.59
Unit 4 ET Layers log of van Genuchten's n	3.83
GDP DU Inventory Storage Dead Space (m ²)	1.26
Saturated Zone Water Table Gradient	1.20
OHV Dust Adjustment	0.55
Unit 2 Saturated Hyd Cond (cm/s)	0.38
Federal DU Cell Unsaturated Zone Thickness (m)	0.34
Saltwater Solubility for Ra (mol/L)	0.34
Fine CobbleMix Porosity	0.28
Plant.Soil Conc Ratio for Cs	0.26
Kd Silt for Ra (mL/g)	0.22
Surface Atmosphere Thickness (m)	0.21
Unit 4 Compacted Hb (cm)	0.20
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.20
Beef Transfer Factor for Th (day/kg)	0.19
Kd Silt for U (mL/g)	0.17
Plant.Soil Conc Ratio for Th	0.17
Activity Conc in SRS DU Waste: U233 (pCi/g)	0.16
Kd Clay for Sr (mL/g)	0.15
Unit 3 Bubbling Pressure Head (cm)	0.14
Kd Sand for Ac (mL/g)	0.14
Kd Clay for Ra (mL/g)	0.13
Forb Root Shape Parameter b	0.13
Plant.Soil Conc Ratio for Pa	0.12
Mammal Mound Density - Plot 4 (1/ha)	0.12
Kd Silt for Cs (mL/g)	0.11
Unit 4 Compacted Porosity	0.11
Fine Gravel Mix BulkDensity (g/cm ³)	0.11
Liner Clay Saturated Hyd Cond (cm/s)	0.11
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	0.11
Unit 2 Porosity	0.10
Plant.Soil Conc Ratio for Ac	0.10
Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.10
Shrub Root.Shoot Ratio	0.10
Saltwater Solubility for I (mol/L)	0.10
Saltwater Solubility for Rn (mol/L)	0.10
Grass Root.Shoot Ratio	0.09

Sensitivity Analysis Results for the Clive DU PA

Shrub Root Shape Parameter b	0.09
Unit 4 Compacted Residual Water Content	0.09
Intermediate Lake Sed Thickness (m)	0.09
Activity Conc in SRS DU Waste: U236 (pCi/g)	0.09
Unit 3 Bulk Density (g/cm ³)	0.09
Activity Conc in SRS DU Waste: Cs137 (pCi/g)	0.08
Deep Time DCF Alpha REF	0.08
Fine Cobble Mix BulkDensity (g/cm ³)	0.08
Plant.Soil Conc Ratio for Pu	0.08
Saturated Zone Thickness (m)	0.08
Kd Sand for Am (mL/g)	0.08
Saltwater Solubility for Pa (mol/L)	0.07
Kd Silt for Sr (mL/g)	0.07
RipRap Bulk Density (g/cm ³)	0.07
Kd Clay for Cs (mL/g)	0.07
Deep Time DCF Photon 2 REF	0.07
Ant Colony Density - Plot 1 (1/ha)	0.07
Kd Clay for Ac (mL/g)	0.07
Unit 3 Residual Water Content	0.07
Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	0.07
Deep Time Lake Start (yr)	0.07
Saltwater Solubility for Pu (mol/L)	0.06
Saltwater Solubility for UO ₃ (mol/L)	0.06
Grass Root Shape Parameter b	0.06
Ant Nest Volume (m ³)	0.06
Saltwater Solubility for Tc (mol/L)	0.06
Soil Ingestion Rate for Cattle (kg/day)	0.06
Ant Nest Shape Parameter b	0.06
Beef Transfer Factor for Pu (day/kg)	0.06
Beef Transfer Factor for Ra (day/kg)	0.06
Beef Transfer Factor for Np (day/kg)	0.06
Beef Transfer Factor for Tc (day/kg)	0.06
Deep Time DCF Photon 1 REF	0.05
Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.05
Fine Gravel Mix Porosity	0.05
RipRap Porosity	0.05
Unit 3 Saturated Hyd Cond (cm/s)	0.05
Unit 2 Bulk Density (g/cm ³)	0.05
Vegetation Association Selector	0.05
Plant.Soil Conc Ratio for U	0.05
Surface Wind Speed (m/s)	0.05
Soil Ingestion Tracer Element	0.05
Tortuosity Water Content Exponent	0.05

Sensitivity Analysis Results for the Clive DU PA

Intermediate Lake Depth (m)	0.05
Kd Sand for Pa (mL/g)	0.05
Unit 3 Porosity	0.05
Ant Colony Density - Plot 5 (1/ha)	0.05
Forage Ingestion Rate for Cattle (kg/day)	0.05
Kd Silt for Th (mL/g)	0.05
Kd Sand for U (mL/g)	0.05
Saltwater Solubility for Sr (mol/L)	0.05
Kd Clay for Am (mL/g)	0.05
Site Dispersal Area (km ²)	0.05
Unit 4 Compacted Bulk Density (g/cm ³)	0.05
Random Gully Selector	0.04
Kd Sand for Th (mL/g)	0.04
Antelope Range Area (acre)	0.04
Kd Clay for Pu (mL/g)	0.04
Unit 4 ET Layers Bulk Density (g/cm ³)	0.04
Kd Sand for Np (mL/g)	0.04
Tortuosity Porosity Exponent	0.04
Ant Colony Lifespan (yr)	0.04
Plant Fresh Weight Conversion	0.04
Biomass Production Rate (kg.ha.yr)	0.04
Meat Post-Cooking Loss	0.04
Kd Sand for Cs (mL/g)	0.04
Saltwater Solubility for Am (mol/L)	0.04
Body Weight Factor for Antelope	0.04
Kd Silt for Pa (mL/g)	0.04
Plant.Soil Conc Ratio for Tc	0.04
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.04
Kd Sand for Ra (mL/g)	0.04
Kd Silt for Np (mL/g)	0.04
Kd Clay for Pb (mL/g)	0.04
Ant Colony Density - Plot 3 (1/ha)	0.04
Receptor Area (ha)	0.04
Beef Transfer Factor for Am (day/kg)	0.04
DCF Alpha REF	0.04
Biomass % Cover Selector	0.04
Activity Conc in SRS DU Waste: U238 (pCi/g)	0.04
Unit 4 ET Layers Porosity	0.04
Deep Time Aeolian Correlation	0.04
Ant Colony Density - Plot 4 (1/ha)	0.04
Plant.Soil Conc Ratio for I	0.04
Kd Sand for Pu (mL/g)	0.04
Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.03

Sensitivity Analysis Results for the Clive DU PA

DCF Beta REF	0.03
Radon Escape.Production Ratio for Waste	0.03
Beef Transfer Factor for U (day/kg)	0.03
Mammal Burrow Shape Parameter b	0.03
Forb Root.Shoot Ratio	0.03
Saltwater Solubility for Np (mol/L)	0.03
Water Ingestion Rate for Cattle (kg/day)	0.03
Deep Time Aeolian Deposition Depth (m)	0.03
Kd Silt for Am (mL/g)	0.03
Deep Time DCF Beta REF	0.03
Beef Transfer Factor for Sr (day/kg)	0.03
DCF Photon1 REF	0.03
Silt Sand Gravel BulkDensity (g/cm3)	0.03
Deep Time Aeolian Deposition Age (yr)	0.03
Unit 3 Brooks-Corey Fractal Dimension	0.03
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	0.03
Kd Clay for Pa (mL/g)	0.03
Resuspension Flux (kg.m2-yr)	0.03
Beef Transfer Factor for I (day/kg)	0.03
Soil Ingestion Rate for Antelope (kg/day)	0.03
Saltwater Solubility for Th (mol/L)	0.03
Water Ingestion Rate for Antelope (kg/day)	0.03
Mammal Mound Density - Plot 1 (1/ha)	0.03
Plant.Soil Conc Ratio for Np	0.03
Saltwater Solubility for U3O8 (mol/L)	0.03
Kd Silt for Ac (mL/g)	0.03
Saltwater Solubility for Cs (mol/L)	0.03
Activity Conc in SRS DU Waste: Np237 (pCi/g)	0.03
Beef Transfer Factor for Cs (day/kg)	0.03
Saltwater Solubility for Pb (mol/L)	0.03
Tree Root.Shoot Ratio	0.03
Plant.Soil Conc Ratio for Sr	0.03
Kd Silt for Pu (mL/g)	0.03
Deep Time Diffusion Length (m)	0.02
Deep Time Deep Lake End (yr)	0.02
Silt Sand Gravel Porosity	0.02
Deep Lake Depth (m)	0.02
Resuspended Particle Fraction	0.02
Mammal Mound Density - Plot 3 (1/ha)	0.02
Saltwater Solubility for Ac (mol/L)	0.02
Surface Atmosphere Diffusion Length (m)	0.02
Activity Conc in SRS DU Waste: Am241 (pCi/g)	0.02
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.02

Sensitivity Analysis Results for the Clive DU PA

Kd Sand for Sr (mL/g)	0.02
Mammal Burrow Excavation Rate (m3/yr)	0.02
Beef Transfer Factor for Pb (day/kg)	0.02
Kd Clay for Th (mL/g)	0.02
Soil Temperature (Å°C)	0.02
Deep Time Intermediate Lake Duration (yr)	0.02
Plant.Soil Conc Ratio for Ra	0.02
Meat Preparation Loss	0.02
Kd Sand for Pb (mL/g)	0.02
Mammal Mound Density - Plot 2 (1/ha)	0.02
Plant.Soil Conc Ratio for Am	0.02
DCF Photon2 REF	0.02
Kd Silt for Pb (mL/g)	0.02
Greasewood Root.Shoot Ratio	0.02
Activity Conc in SRS DU Waste: U234 (pCi/g)	0.02
Greasewood Root Shape Parameter b	0.02
Plant.Soil Conc Ratio for Pb	0.02
Kd Sand for I (mL/g)	0.02
Beef Transfer Factor for Pa (day/kg)	0.01
Contaminated Fraction of GDP DU	0.01
Mammal Mound Density - Plot 5 (1/ha)	0.01
Kd Clay for Np (mL/g)	0.01
Ant Colony Density - Plot 2 (1/ha)	0.01
Tree Root Shape Parameter b	0.01
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.01
Kd Clay for U (mL/g)	0.01
Beef Transfer Factor for Ac (day/kg)	0.01
Deep Time Receptor Area (ac)	0.01

Table 4: Peak Groundwater Well Concentrations within 500 years – Th230**R-squared = 99%**

Explanatory Variable	Sensitivity Index
Kd Sand for U (mL/g)	6.82
DCF Beta REF	6.30
Ant Nest Volume (m3)	3.38
Activity Conc in SRS DU Waste: U234 (pCi/g)	3.30
Activity Conc in SRS DU Waste: U238 (pCi/g)	3.28
DCF Photon1 REF	3.12
Kd Silt for Np (mL/g)	2.65
Kd Clay for Pb (mL/g)	2.65
Mammal Mound Density - Plot 4 (1/ha)	2.61
Deep Time Diffusion Length (m)	2.56
Kd Sand for Pa (mL/g)	2.49
Resuspension Flux (kg.m2-yr)	2.49
Meat Preparation Loss	2.45
Grass Root.Shoot Ratio	2.36
Kd Clay for U (mL/g)	2.36
Meat Post-Cooking Loss	2.35
Beef Transfer Factor for Am (day/kg)	2.25
Beef Transfer Factor for Cs (day/kg)	2.16
Saltwater Solubility for U3O8 (mol/L)	2.09
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	1.99
Unit 4 Compacted Residual Water Content	1.97
Saltwater Solubility for I (mol/L)	1.77
Plant Fresh Weight Conversion	1.70
Ant Colony Density - Plot 3 (1/ha)	1.61
Forb Root.Shoot Ratio	1.56
Plant.Soil Conc Ratio for U	1.52
Plant.Soil Conc Ratio for Pu	1.52
Silt Sand Gravel BulkDensity (g/cm3)	1.49
Unit 2 Saturated Hyd Cond (cm/s)	1.49
Unit 2 Bulk Density (g/cm3)	1.49
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	1.40
Plant.Soil Conc Ratio for Tc	1.40
Activity Conc in SRS DU Waste: Cs137 (pCi/g)	1.32
Plant.Soil Conc Ratio for I	1.13
RipRap Bulk Density (g/cm3)	1.12
Kd Clay for Th (mL/g)	1.09
Surface Atmosphere Thickness (m)	0.99
Saltwater Solubility for Pb (mol/L)	0.91
Surface Atmosphere Diffusion Length (m)	0.89
Saltwater Solubility for UO3 (mol/L)	0.88

Sensitivity Analysis Results for the Clive DU PA

Greasewood Root.Shoot Ratio	0.78
Deep Lake Depth (m)	0.77
Kd Sand for Np (mL/g)	0.68
Plant.Soil Conc Ratio for Pa	0.63
Kd Clay for Am (mL/g)	0.62
Forb Root Shape Parameter b	0.55
Unit 4 Compacted Bulk Density (g/cm ³)	0.54
Radon Escape.Production Ratio for Waste	0.52
Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.47
Unit 3 Bulk Density (g/cm ³)	0.47
Kd Sand for Ac (mL/g)	0.45
Beef Transfer Factor for Pa (day/kg)	0.44
Receptor Area (ha)	0.40
OHV Dust Adjustment	0.37
Mammal Mound Density - Plot 1 (1/ha)	0.36
Saturated Zone Water Table Gradient	0.30
Saltwater Solubility for Cs (mol/L)	0.24
Surface Wind Speed (m/s)	0.21
Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.20
Deep Time Aeolian Correlation	0.19
Beef Transfer Factor for Ra (day/kg)	0.18
Deep Time Aeolian Deposition Age (yr)	0.16
Ant Colony Density - Plot 1 (1/ha)	0.16
Molecular Diffusivity in Water (cm ² /s)	0.16
Kd Sand for Th (mL/g)	0.15
Plant.Soil Conc Ratio for Sr	0.13
Mammal Burrow Excavation Rate (m ³ /yr)	0.13
Activity Conc in SRS DU Waste: U236 (pCi/g)	0.13
Tortuosity Water Content Exponent	0.13
Vegetation Association Selector	0.11
Kd Clay for Pa (mL/g)	0.11
Unit 3 Bubbling Pressure Head (cm)	0.08
Unit 4 ET Layers log of van Genuchten's α	0.08
Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	0.08
Mammal Burrow Shape Parameter b	0.07
RipRap Porosity	0.07
Unit 3 Residual Water Content	0.07
Unit 4 ET Layers Bulk Density (g/cm ³)	0.07
Fine Cobble Mix BulkDensity (g/cm ³)	0.07
Fine Gravel Mix Porosity	0.06
Saltwater Solubility for Tc (mol/L)	0.06
Kd Silt for U (mL/g)	0.05
Saltwater Solubility for Sr (mol/L)	0.04

Sensitivity Analysis Results for the Clive DU PA

Unit 4 ET Layers Porosity	0.04
Forage Ingestion Rate for Cattle (kg/day)	0.04
Fine Gravel Mix BulkDensity (g/cm ³)	0.04
Beef Transfer Factor for Th (day/kg)	0.04
Unit 3 Porosity	0.04
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.03
Saltwater Solubility for Pa (mol/L)	0.03
Ant Colony Lifespan (yr)	0.03
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.03
Saltwater Solubility for Am (mol/L)	0.03
Unit 2 Porosity	0.03
Unit 4 Compacted Hb (cm)	0.03
Silt Sand Gravel Porosity	0.03
Unit 3 Saturated Hyd Cond (cm/s)	0.03
Saltwater Solubility for Ra (mol/L)	0.03
Saltwater Solubility for Np (mol/L)	0.03
Kd Silt for Ra (mL/g)	0.03
Saltwater Solubility for Ac (mol/L)	0.03
Kd Clay for Ac (mL/g)	0.03
Kd Clay for Sr (mL/g)	0.03
Intermediate Lake Sed Thickness (m)	0.03
Fine CobbleMix Porosity	0.02
Random Gully Selector	0.02
Unit 4 Compacted Porosity	0.02
Tree Root.Shoot Ratio	0.02
Saltwater Solubility for Th (mol/L)	0.02
Kd Silt for Am (mL/g)	0.02
Intermediate Lake Depth (m)	0.02
Kd Silt for Th (mL/g)	0.02
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	0.02
Water Ingestion Rate for Antelope (kg/day)	0.02
Resuspended Particle Fraction	0.02
Ant Colony Density - Plot 4 (1/ha)	0.02
Biomass Production Rate (kg.ha.yr)	0.02
Unit 4 ET Layers log of van Genuchten's n	0.02
Unit 3 Brooks-Corey Fractal Dimension	0.02
Kd Silt for Sr (mL/g)	0.02
Kd Silt for Ac (mL/g)	0.02
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.02
Site Dispersal Area (km ²)	0.02
Beef Transfer Factor for Ac (day/kg)	0.01
Saltwater Solubility for Pu (mol/L)	0.01
Saturated Zone Thickness (m)	0.01

Sensitivity Analysis Results for the Clive DU PA

Kd Sand for Am (mL/g)	0.01
Beef Transfer Factor for Np (day/kg)	0.01
Soil Temperature (°C)	0.01
Federal DU Cell Unsaturated Zone Thickness (m)	0.01
Beef Transfer Factor for U (day/kg)	0.01
Beef Transfer Factor for Sr (day/kg)	0.01
Activity Conc in SRS DU Waste: Am241 (pCi/g)	0.01
Kd Silt for Pu (mL/g)	0.01
Biomass % Cover Selector	0.01
Kd Sand for Cs (mL/g)	0.01
Tortuosity Porosity Exponent	0.01
Deep Time Deep Lake End (yr)	0.01
Saltwater Solubility for Rn (mol/L)	0.01
Kd Silt for Cs (mL/g)	0.01
Plant.Soil Conc Ratio for Ac	0.01
Soil Ingestion Rate for Antelope (kg/day)	0.01
Kd Clay for Np (mL/g)	0.01
Kd Sand for Pb (mL/g)	0.01
Shrub Root.Shoot Ratio	0.01
Kd Sand for Sr (mL/g)	0.01
Kd Sand for Ra (mL/g)	0.01
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.01
Plant.Soil Conc Ratio for Am	0.01
Kd Clay for Pu (mL/g)	0.01
Greasewood Root Shape Parameter b	0.01
Grass Root Shape Parameter b	0.01
Plant.Soil Conc Ratio for Ra	0.01
Ant Nest Shape Parameter b	0.01
Plant.Soil Conc Ratio for Cs	0.01
Deep Time Aeolian Deposition Depth (m)	0.01
Tree Root Shape Parameter b	0.01
Kd Clay for Ra (mL/g)	0.01
Deep Time Lake Start (yr)	0.01
Kd Clay for Cs (mL/g)	0.01
Kd Silt for Pa (mL/g)	0.01
Ant Colony Density - Plot 2 (1/ha)	0.01
Beef Transfer Factor for Pb (day/kg)	0.01
GDP DU Inventory Storage Dead Space (m2)	0.01
Deep Time Receptor Area (ac)	0.01
Body Weight Factor for Antelope	0.01
Deep Time Intermediate Lake Duration (yr)	0.01
Plant.Soil Conc Ratio for Th	0.01
Mammal Mound Density - Plot 3 (1/ha)	0.01

Sensitivity Analysis Results for the Clive DU PA

Mammal Mound Density - Plot 5 (1/ha)	0.01
Plant.Soil Conc Ratio for Np	0.01
Beef Transfer Factor for I (day/kg)	0.01
Antelope Range Area (acre)	0.00
Beef Transfer Factor for Tc (day/kg)	0.00
Deep Time DCF Photon 1 REF	0.00
Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.00
Deep Time DCF Photon 2 REF	0.00
Liner Clay Saturated Hyd Cond (cm/s)	0.00
Ant Colony Density - Plot 5 (1/ha)	0.00
Deep Time DCF Alpha REF	0.00
Kd Sand for Pu (mL/g)	0.00
Kd Silt for Pb (mL/g)	0.00
Soil Ingestion Rate for Cattle (kg/day)	0.00
Activity Conc in SRS DU Waste: Np237 (pCi/g)	0.00
DCF Photon2 REF	0.00
Contaminated Fraction of GDP DU	0.00
Deep Time DCF Beta REF	0.00
Kd Sand for I (mL/g)	0.00
Activity Conc in SRS DU Waste: U233 (pCi/g)	0.00
DCF Alpha REF	0.00
Mammal Mound Density - Plot 2 (1/ha)	0.00
Plant.Soil Conc Ratio for Pb	0.00
Soil Ingestion Tracer Element	0.00
Beef Transfer Factor for Pu (day/kg)	0.00
Kd Sand for Tc (mL/g)	0.00
Shrub Root Shape Parameter b	0.00
Water Ingestion Rate for Cattle (kg/day)	0.00

Table 5: Peak Groundwater Well Concentrations within 500 years – Th232**R-squared = 99%**

Explanatory Variable	Sensitivity Index
DCF Beta REF	15.55
Kd Sand for U (mL/g)	5.77
Kd Clay for Pb (mL/g)	3.28
Activity Conc in SRS DU Waste: U238 (pCi/g)	2.93
Ant Nest Volume (m3)	2.93
Activity Conc in SRS DU Waste: U234 (pCi/g)	2.83
DCF Photon1 REF	2.43
Deep Time Diffusion Length (m)	2.27
Kd Sand for Pa (mL/g)	2.20
Mammal Mound Density - Plot 4 (1/ha)	2.14
Kd Silt for Np (mL/g)	2.07
Beef Transfer Factor for Cs (day/kg)	2.07
Kd Clay for U (mL/g)	2.05
Grass Root.Shoot Ratio	1.91
Meat Post-Cooking Loss	1.91
Meat Preparation Loss	1.83
Resuspension Flux (kg.m2-yr)	1.80
Plant Fresh Weight Conversion	1.78
Saltwater Solubility for U3O8 (mol/L)	1.74
Unit 2 Bulk Density (g/cm3)	1.61
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	1.61
Saltwater Solubility for I (mol/L)	1.54
Beef Transfer Factor for Am (day/kg)	1.51
Unit 4 Compacted Residual Water Content	1.47
Plant.Soil Conc Ratio for U	1.40
Activity Conc in SRS DU Waste: Cs137 (pCi/g)	1.36
Unit 2 Saturated Hyd Cond (cm/s)	1.36
Plant.Soil Conc Ratio for Tc	1.29
Forb Root.Shoot Ratio	1.27
Silt Sand Gravel BulkDensity (g/cm3)	1.26
RipRap Bulk Density (g/cm3)	1.23
Ant Colony Density - Plot 3 (1/ha)	1.17
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	1.16
Saltwater Solubility for Pb (mol/L)	1.06
Plant.Soil Conc Ratio for Pu	1.03
Kd Clay for Th (mL/g)	1.02
Plant.Soil Conc Ratio for I	0.93
Surface Atmosphere Thickness (m)	0.91
Greasewood Root.Shoot Ratio	0.91
Saltwater Solubility for UO3 (mol/L)	0.88

Sensitivity Analysis Results for the Clive DU PA

Kd Sand for Np (mL/g)	0.66
Surface Atmosphere Diffusion Length (m)	0.66
Deep Lake Depth (m)	0.63
Kd Sand for Ac (mL/g)	0.58
Unit 4 Compacted Bulk Density (g/cm ³)	0.57
Kd Clay for Am (mL/g)	0.56
Radon Escape.Production Ratio for Waste	0.52
Unit 3 Bulk Density (g/cm ³)	0.51
Molecular Diffusivity in Water (cm ² /s)	0.37
Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.36
Forb Root Shape Parameter b	0.34
Plant.Soil Conc Ratio for Pa	0.34
Saturated Zone Water Table Gradient	0.31
OHV Dust Adjustment	0.29
Receptor Area (ha)	0.29
Beef Transfer Factor for Pa (day/kg)	0.29
Unit 4 ET Layers log of van Genuchten's α	0.28
Fine Gravel Mix Porosity	0.26
Unit 3 Bubbling Pressure Head (cm)	0.25
Fine Cobble Mix BulkDensity (g/cm ³)	0.25
Ant Colony Density - Plot 1 (1/ha)	0.24
Unit 4 ET Layers Bulk Density (g/cm ³)	0.24
RipRap Porosity	0.23
Unit 3 Residual Water Content	0.23
Saltwater Solubility for Cs (mol/L)	0.23
Mammal Mound Density - Plot 1 (1/ha)	0.22
Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.21
Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	0.19
Deep Time Aeolian Deposition Age (yr)	0.18
Beef Transfer Factor for Ra (day/kg)	0.18
Mammal Burrow Excavation Rate (m ³ /yr)	0.18
Surface Wind Speed (m/s)	0.17
Saltwater Solubility for Am (mol/L)	0.16
Unit 4 ET Layers Porosity	0.15
Fine Gravel Mix BulkDensity (g/cm ³)	0.14
Unit 3 Saturated Hyd Cond (cm/s)	0.13
Unit 3 Porosity	0.13
Tortuosity Water Content Exponent	0.13
Saltwater Solubility for Tc (mol/L)	0.11
Deep Time Aeolian Correlation	0.09
Fine CobbleMix Porosity	0.09
Unit 3 Brooks-Corey Fractal Dimension	0.09
Unit 4 Compacted Porosity	0.08

Sensitivity Analysis Results for the Clive DU PA

Saltwater Solubility for Ra (mol/L)	0.08
Unit 4 Compacted Hb (cm)	0.07
Unit 2 Porosity	0.07
Silt Sand Gravel Porosity	0.07
Saltwater Solubility for Sr (mol/L)	0.06
Beef Transfer Factor for Th (day/kg)	0.06
Kd Sand for Th (mL/g)	0.06
Deep Time DCF Beta REF	0.06
Liner Clay Saturated Hyd Cond (cm/s)	0.06
Vegetation Association Selector	0.06
Unit 4 ET Layers log of van Genuchten's n	0.06
Saltwater Solubility for Pu (mol/L)	0.05
Saltwater Solubility for Ac (mol/L)	0.05
Plant.Soil Conc Ratio for Sr	0.05
Kd Clay for Pa (mL/g)	0.04
Saltwater Solubility for Th (mol/L)	0.04
Kd Sand for Am (mL/g)	0.04
Saltwater Solubility for Rn (mol/L)	0.04
Activity Conc in SRS DU Waste: U236 (pCi/g)	0.04
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.04
Kd Silt for Ra (mL/g)	0.04
Intermediate Lake Sed Thickness (m)	0.04
Kd Sand for Cs (mL/g)	0.04
Kd Silt for Sr (mL/g)	0.04
Kd Silt for Pu (mL/g)	0.04
Kd Silt for Ac (mL/g)	0.03
Kd Silt for Cs (mL/g)	0.03
Saltwater Solubility for Pa (mol/L)	0.03
Kd Sand for Pu (mL/g)	0.03
Plant.Soil Conc Ratio for Ac	0.03
Kd Silt for Th (mL/g)	0.03
Forage Ingestion Rate for Cattle (kg/day)	0.03
Mammal Burrow Shape Parameter b	0.03
Saltwater Solubility for Np (mol/L)	0.03
Kd Clay for Sr (mL/g)	0.03
Kd Clay for Ac (mL/g)	0.03
Kd Silt for U (mL/g)	0.03
Kd Sand for Ra (mL/g)	0.03
Biomass Production Rate (kg.ha.yr)	0.03
Kd Silt for Am (mL/g)	0.03
Kd Sand for Sr (mL/g)	0.02
Ant Colony Density - Plot 2 (1/ha)	0.02
Kd Sand for Pb (mL/g)	0.02

Sensitivity Analysis Results for the Clive DU PA

Ant Colony Lifespan (yr)	0.02
Kd Clay for Cs (mL/g)	0.02
Shrub Root.Shoot Ratio	0.02
Plant.Soil Conc Ratio for Th	0.02
Kd Clay for Ra (mL/g)	0.02
Ant Nest Shape Parameter b	0.02
Mammal Mound Density - Plot 5 (1/ha)	0.02
Kd Clay for Pu (mL/g)	0.02
Grass Root Shape Parameter b	0.02
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	0.02
Ant Colony Density - Plot 4 (1/ha)	0.02
Tree Root.Shoot Ratio	0.02
Soil Temperature (Â°C)	0.01
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.01
Tortuosity Porosity Exponent	0.01
Site Dispersal Area (km2)	0.01
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.01
Resuspended Particle Fraction	0.01
Plant.Soil Conc Ratio for Cs	0.01
Body Weight Factor for Antelope	0.01
Water Ingestion Rate for Antelope (kg/day)	0.01
Beef Transfer Factor for Pb (day/kg)	0.01
Deep Time DCF Photon 2 REF	0.01
Beef Transfer Factor for Np (day/kg)	0.01
GDP DU Inventory Storage Dead Space (m2)	0.01
Biomass % Cover Selector	0.01
Random Gully Selector	0.01
Deep Time Aeolian Deposition Depth (m)	0.01
Mammal Mound Density - Plot 3 (1/ha)	0.01
Ant Colony Density - Plot 5 (1/ha)	0.01
Saturated Zone Thickness (m)	0.01
Intermediate Lake Depth (m)	0.01
Kd Silt for Pa (mL/g)	0.01
Deep Time Receptor Area (ac)	0.01
Deep Time Deep Lake End (yr)	0.01
Activity Conc in SRS DU Waste: Np237 (pCi/g)	0.01
Water Ingestion Rate for Cattle (kg/day)	0.01
Plant.Soil Conc Ratio for Ra	0.01
Kd Silt for Pb (mL/g)	0.01
Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.01
Tree Root Shape Parameter b	0.01
Beef Transfer Factor for I (day/kg)	0.01
Plant.Soil Conc Ratio for Np	0.01

Sensitivity Analysis Results for the Clive DU PA

Activity Conc in SRS DU Waste: Am241 (pCi/g)	0.01
DCF Photon2 REF	0.01
Kd Clay for Np (mL/g)	0.01
Plant.Soil Conc Ratio for Pb	0.01
Deep Time DCF Alpha REF	0.01
Beef Transfer Factor for Sr (day/kg)	0.01
Plant.Soil Conc Ratio for Am	0.01
Beef Transfer Factor for Tc (day/kg)	0.01
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.01
Beef Transfer Factor for Ac (day/kg)	0.01
Deep Time Lake Start (yr)	0.01
Deep Time DCF Photon 1 REF	0.00
Antelope Range Area (acre)	0.00
Greasewood Root Shape Parameter b	0.00
Deep Time Intermediate Lake Duration (yr)	0.00
Soil Ingestion Rate for Cattle (kg/day)	0.00
Beef Transfer Factor for U (day/kg)	0.00
Contaminated Fraction of GDP DU	0.00
Federal DU Cell Unsaturated Zone Thickness (m)	0.00
Shrub Root Shape Parameter b	0.00
Beef Transfer Factor for Pu (day/kg)	0.00
Soil Ingestion Rate for Antelope (kg/day)	0.00
Activity Conc in SRS DU Waste: U233 (pCi/g)	0.00
Kd Sand for I (mL/g)	0.00
Mammal Mound Density - Plot 2 (1/ha)	0.00
Soil Ingestion Tracer Element	0.00
DCF Alpha REF	0.00
Kd Sand for Tc (mL/g)	0.00

Table 6: Peak Groundwater Well Concentrations within 500 years – U233**R-squared = 99%**

Explanatory Variable	Sensitivity Index
DCF Photon1 REF	18.86
Plant.Soil Conc Ratio for Tc	5.50
Grass Root.Shoot Ratio	5.38
Ant Nest Volume (m3)	3.02
Kd Clay for Cs (mL/g)	2.85
Kd Sand for Ra (mL/g)	2.46
Kd Sand for U (mL/g)	2.45
DCF Beta REF	2.38
Kd Clay for Pb (mL/g)	1.86
Kd Clay for U (mL/g)	1.66
Unit 2 Saturated Hyd Cond (cm/s)	1.64
Activity Conc in SRS DU Waste: U238 (pCi/g)	1.54
Saltwater Solubility for UO3 (mol/L)	1.50
Molecular Diffusivity in Water (cm2/s)	1.03
Mammal Mound Density - Plot 4 (1/ha)	0.99
Kd Silt for Np (mL/g)	0.99
Plant Fresh Weight Conversion	0.96
Saltwater Solubility for Pb (mol/L)	0.95
Activity Conc in SRS DU Waste: U234 (pCi/g)	0.88
Mammal Burrow Excavation Rate (m3/yr)	0.82
Saltwater Solubility for U3O8 (mol/L)	0.80
Kd Sand for Pa (mL/g)	0.78
Kd Sand for Np (mL/g)	0.76
Deep Time Diffusion Length (m)	0.76
Unit 2 Bulk Density (g/cm3)	0.74
Unit 4 Compacted Residual Water Content	0.72
Ant Colony Density - Plot 3 (1/ha)	0.70
Saltwater Solubility for I (mol/L)	0.70
Beef Transfer Factor for Cs (day/kg)	0.68
Plant.Soil Conc Ratio for Pu	0.66
Beef Transfer Factor for Am (day/kg)	0.64
Greasewood Root.Shoot Ratio	0.60
Plant.Soil Conc Ratio for U	0.60
Resuspension Flux (kg.m2-yr)	0.58
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	0.56
Silt Sand Gravel BulkDensity (g/cm3)	0.55
Forb Root.Shoot Ratio	0.55
Meat Post-Cooking Loss	0.54
Activity Conc in SRS DU Waste: Cs137 (pCi/g)	0.53
Kd Clay for Np (mL/g)	0.52

Sensitivity Analysis Results for the Clive DU PA

Unit 4 ET Layers Porosity	0.52
Saltwater Solubility for Am (mol/L)	0.48
Kd Clay for Th (mL/g)	0.48
Kd Silt for Cs (mL/g)	0.44
Fine Cobble Mix BulkDensity (g/cm3)	0.44
Plant.Soil Conc Ratio for I	0.44
Saltwater Solubility for Pa (mol/L)	0.43
Fine Gravel Mix BulkDensity (g/cm3)	0.43
RipRap Bulk Density (g/cm3)	0.42
Fine Gravel Mix Porosity	0.41
Saltwater Solubility for Tc (mol/L)	0.40
Silt Sand Gravel Porosity	0.40
Unit 4 Compacted Porosity	0.39
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	0.39
Kd Sand for Ac (mL/g)	0.39
Meat Preparation Loss	0.38
Unit 4 ET Layers Bulk Density (g/cm3)	0.38
Tortuosity Porosity Exponent	0.38
Saturated Zone Water Table Gradient	0.38
Unit 4 ET Layers log of van Genuchten's n	0.36
Surface Atmosphere Thickness (m)	0.36
Unit 4 ET Layers log of van Genuchten's α	0.36
Kd Silt for Am (mL/g)	0.36
Unit 3 Porosity	0.35
RipRap Porosity	0.34
Saltwater Solubility for Ra (mol/L)	0.32
Kd Sand for Sr (mL/g)	0.32
Unit 3 Bubbling Pressure Head (cm)	0.32
Beef Transfer Factor for Pa (day/kg)	0.31
Unit 4 Compacted Bulk Density (g/cm3)	0.30
Saltwater Solubility for Cs (mol/L)	0.30
Surface Atmosphere Diffusion Length (m)	0.29
Unit 3 Bulk Density (g/cm3)	0.29
Unit 4 Compacted Hb (cm)	0.29
Radon Escape.Production Ratio for Waste	0.29
Saltwater Solubility for Pu (mol/L)	0.29
Deep Lake Depth (m)	0.27
Kd Silt for Pu (mL/g)	0.27
Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.27
Receptor Area (ha)	0.26
Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	0.25
Saltwater Solubility for Th (mol/L)	0.25
Kd Clay for Pu (mL/g)	0.24

Sensitivity Analysis Results for the Clive DU PA

Unit 3 Residual Water Content	0.24
OHV Dust Adjustment	0.24
Unit 2 Porosity	0.24
Forb Root Shape Parameter b	0.23
Deep Time Aeolian Deposition Age (yr)	0.23
Unit 3 Saturated Hyd Cond (cm/s)	0.23
Kd Sand for Am (mL/g)	0.22
Kd Silt for Pa (mL/g)	0.22
Kd Clay for Am (mL/g)	0.22
Kd Silt for U (mL/g)	0.21
Kd Clay for Sr (mL/g)	0.21
Plant.Soil Conc Ratio for Pa	0.21
Saltwater Solubility for Ac (mol/L)	0.20
Kd Sand for Th (mL/g)	0.20
Saltwater Solubility for Np (mol/L)	0.20
Plant.Soil Conc Ratio for Am	0.20
Mammal Mound Density - Plot 3 (1/ha)	0.20
Kd Sand for Cs (mL/g)	0.20
Unit 3 Brooks-Corey Fractal Dimension	0.19
Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.19
Tree Root.Shoot Ratio	0.19
Saltwater Solubility for Sr (mol/L)	0.18
Plant.Soil Conc Ratio for Ac	0.18
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.18
Body Weight Factor for Antelope	0.18
Fine CobbleMix Porosity	0.18
Activity Conc in SRS DU Waste: Am241 (pCi/g)	0.18
Beef Transfer Factor for U (day/kg)	0.17
Biomass % Cover Selector	0.17
Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.17
Liner Clay Saturated Hyd Cond (cm/s)	0.17
Kd Clay for Ra (mL/g)	0.17
Tree Root Shape Parameter b	0.17
Saltwater Solubility for Rn (mol/L)	0.17
Plant.Soil Conc Ratio for Ra	0.16
Mammal Burrow Shape Parameter b	0.16
Beef Transfer Factor for Pu (day/kg)	0.16
Ant Colony Density - Plot 4 (1/ha)	0.16
Tortuosity Water Content Exponent	0.16
Ant Colony Density - Plot 5 (1/ha)	0.16
Kd Silt for Ra (mL/g)	0.15
Plant.Soil Conc Ratio for Cs	0.15
Plant.Soil Conc Ratio for Np	0.15

Sensitivity Analysis Results for the Clive DU PA

Random Gully Selector	0.15
Intermediate Lake Sed Thickness (m)	0.15
Federal DU Cell Unsaturated Zone Thickness (m)	0.15
Kd Sand for Pb (mL/g)	0.15
Ant Colony Lifespan (yr)	0.14
Soil Temperature (°C)	0.14
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	0.14
Plant.Soil Conc Ratio for Sr	0.13
Surface Wind Speed (m/s)	0.13
Soil Ingestion Rate for Antelope (kg/day)	0.13
Beef Transfer Factor for I (day/kg)	0.13
Activity Conc in SRS DU Waste: U233 (pCi/g)	0.13
Deep Time DCF Photon 2 REF	0.13
Deep Time Lake Start (yr)	0.12
Mammal Mound Density - Plot 1 (1/ha)	0.12
Saturated Zone Thickness (m)	0.12
Activity Conc in SRS DU Waste: U236 (pCi/g)	0.12
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.11
Plant.Soil Conc Ratio for Pb	0.11
Forage Ingestion Rate for Cattle (kg/day)	0.11
Shrub Root Shape Parameter b	0.11
Mammal Mound Density - Plot 5 (1/ha)	0.10
Ant Colony Density - Plot 1 (1/ha)	0.10
Beef Transfer Factor for Sr (day/kg)	0.10
DCF Photon2 REF	0.09
Mammal Mound Density - Plot 2 (1/ha)	0.09
Beef Transfer Factor for Pb (day/kg)	0.09
Kd Silt for Pb (mL/g)	0.09
Kd Clay for Pa (mL/g)	0.09
DCF Alpha REF	0.09
Deep Time DCF Photon 1 REF	0.09
Deep Time Intermediate Lake Duration (yr)	0.08
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.08
Vegetation Association Selector	0.08
Kd Silt for Th (mL/g)	0.08
Resuspended Particle Fraction	0.08
Deep Time Deep Lake End (yr)	0.08
Greasewood Root Shape Parameter b	0.08
Beef Transfer Factor for Ac (day/kg)	0.07
Beef Transfer Factor for Tc (day/kg)	0.07
Ant Nest Shape Parameter b	0.07
Kd Silt for Ac (mL/g)	0.07
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.07

Sensitivity Analysis Results for the Clive DU PA

Deep Time Aeolian Correlation	0.07
Antelope Range Area (acre)	0.07
Kd Sand for Tc (mL/g)	0.07
Plant.Soil Conc Ratio for Th	0.07
Site Dispersal Area (km ²)	0.06
Soil Ingestion Tracer Element	0.06
Deep Time DCF Alpha REF	0.06
Activity Conc in SRS DU Waste: Np237 (pCi/g)	0.06
Grass Root Shape Parameter b	0.06
Beef Transfer Factor for Th (day/kg)	0.06
Kd Sand for I (mL/g)	0.06
Beef Transfer Factor for Ra (day/kg)	0.06
Kd Sand for Pu (mL/g)	0.06
Kd Silt for Sr (mL/g)	0.05
Biomass Production Rate (kg.ha.yr)	0.04
Ant Colony Density - Plot 2 (1/ha)	0.04
GDP DU Inventory Storage Dead Space (m ²)	0.04
Kd Clay for Ac (mL/g)	0.04
Shrub Root.Shoot Ratio	0.03
Water Ingestion Rate for Antelope (kg/day)	0.03
Deep Time Aeolian Deposition Depth (m)	0.03
Deep Time Receptor Area (ac)	0.03
Intermediate Lake Depth (m)	0.03
Water Ingestion Rate for Cattle (kg/day)	0.03
Soil Ingestion Rate for Cattle (kg/day)	0.03
Contaminated Fraction of GDP DU	0.02
Beef Transfer Factor for Np (day/kg)	0.02
Deep Time DCF Beta REF	0.02

Table 7: Peak Groundwater Well Concentrations within 500 years – U234**R-squared = 99%**

Explanatory Variable	Sensitivity Index
Kd Sand for U (mL/g)	6.29
DCF Beta REF	5.38
Activity Conc in SRS DU Waste: U238 (pCi/g)	4.25
Kd Clay for Pb (mL/g)	4.05
Activity Conc in SRS DU Waste: U234 (pCi/g)	3.22
Ant Nest Volume (m3)	3.05
DCF Photon1 REF	2.97
Kd Clay for U (mL/g)	2.88
Kd Silt for Np (mL/g)	2.58
Plant Fresh Weight Conversion	2.33
Mammal Mound Density - Plot 4 (1/ha)	2.27
Kd Sand for Pa (mL/g)	2.27
Deep Time Diffusion Length (m)	2.26
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	2.26
Meat Post-Cooking Loss	2.21
Beef Transfer Factor for Cs (day/kg)	2.16
Grass Root.Shoot Ratio	2.00
Meat Preparation Loss	1.95
Resuspension Flux (kg.m2-yr)	1.89
Unit 2 Bulk Density (g/cm3)	1.84
Saltwater Solubility for I (mol/L)	1.76
Saltwater Solubility for U3O8 (mol/L)	1.75
Unit 4 Compacted Residual Water Content	1.66
Beef Transfer Factor for Am (day/kg)	1.60
Ant Colony Density - Plot 3 (1/ha)	1.56
Forb Root.Shoot Ratio	1.51
Activity Conc in SRS DU Waste: Cs137 (pCi/g)	1.49
Unit 2 Saturated Hyd Cond (cm/s)	1.38
Saltwater Solubility for Pb (mol/L)	1.35
Plant.Soil Conc Ratio for U	1.35
Plant.Soil Conc Ratio for Pu	1.35
Plant.Soil Conc Ratio for Tc	1.29
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	1.22
Silt Sand Gravel BulkDensity (g/cm3)	1.20
Kd Clay for Th (mL/g)	1.17
Plant.Soil Conc Ratio for I	1.11
Saltwater Solubility for UO3 (mol/L)	1.08
RipRap Bulk Density (g/cm3)	1.02
Kd Sand for Np (mL/g)	0.98
Beef Transfer Factor for Pa (day/kg)	0.92

Sensitivity Analysis Results for the Clive DU PA

Surface Atmosphere Diffusion Length (m)	0.91
Surface Atmosphere Thickness (m)	0.89
Greasewood Root.Shoot Ratio	0.88
Deep Lake Depth (m)	0.84
Kd Sand for Ac (mL/g)	0.76
Unit 4 Compacted Bulk Density (g/cm ³)	0.62
Saturated Zone Water Table Gradient	0.61
Kd Clay for Am (mL/g)	0.54
Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.51
Saltwater Solubility for Am (mol/L)	0.49
Unit 3 Bulk Density (g/cm ³)	0.48
Radon Escape.Production Ratio for Waste	0.48
Plant.Soil Conc Ratio for Pa	0.47
Forb Root Shape Parameter b	0.46
Mammal Burrow Excavation Rate (m ³ /yr)	0.39
Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.32
OHV Dust Adjustment	0.31
Mammal Mound Density - Plot 1 (1/ha)	0.30
Tortuosity Water Content Exponent	0.26
Molecular Diffusivity in Water (cm ² /s)	0.20
Unit 4 ET Layers log of van Genuchten's α	0.17
Deep Time Aeolian Deposition Age (yr)	0.17
Receptor Area (ha)	0.17
Beef Transfer Factor for Ra (day/kg)	0.16
Surface Wind Speed (m/s)	0.14
Deep Time Deep Lake End (yr)	0.13
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.13
Ant Colony Density - Plot 1 (1/ha)	0.12
Deep Time Aeolian Correlation	0.10
Unit 3 Bubbling Pressure Head (cm)	0.10
RipRap Porosity	0.09
Activity Conc in SRS DU Waste: U236 (pCi/g)	0.09
Ant Colony Lifespan (yr)	0.08
Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	0.08
Unit 3 Residual Water Content	0.08
Saltwater Solubility for Cs (mol/L)	0.08
Intermediate Lake Sed Thickness (m)	0.07
Fine Cobble Mix BulkDensity (g/cm ³)	0.07
Saltwater Solubility for Sr (mol/L)	0.07
Fine Gravel Mix Porosity	0.07
Unit 4 ET Layers Porosity	0.07
Unit 3 Porosity	0.06
Unit 4 ET Layers Bulk Density (g/cm ³)	0.06

Sensitivity Analysis Results for the Clive DU PA

Kd Silt for Ra (mL/g)	0.06
Saltwater Solubility for Tc (mol/L)	0.06
Fine Gravel Mix BulkDensity (g/cm ³)	0.05
Unit 4 Compacted Porosity	0.05
Plant.Soil Conc Ratio for Ac	0.05
Kd Clay for Pa (mL/g)	0.05
Saltwater Solubility for Pa (mol/L)	0.05
Fine CobbleMix Porosity	0.05
Tree Root.Shoot Ratio	0.05
Kd Sand for Th (mL/g)	0.04
Unit 2 Porosity	0.04
Kd Clay for Pu (mL/g)	0.04
Saltwater Solubility for Ac (mol/L)	0.04
Unit 4 Compacted Hb (cm)	0.04
Saltwater Solubility for Ra (mol/L)	0.04
Unit 3 Saturated Hyd Cond (cm/s)	0.04
Silt Sand Gravel Porosity	0.04
Unit 4 ET Layers log of van Genuchten's n	0.04
Mammal Burrow Shape Parameter b	0.03
Ant Nest Shape Parameter b	0.03
Kd Silt for Sr (mL/g)	0.03
Unit 3 Brooks-Corey Fractal Dimension	0.03
Shrub Root.Shoot Ratio	0.03
Body Weight Factor for Antelope	0.03
Kd Silt for Am (mL/g)	0.03
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.03
Saltwater Solubility for Np (mol/L)	0.02
Resuspended Particle Fraction	0.02
Saltwater Solubility for Th (mol/L)	0.02
Vegetation Association Selector	0.02
Kd Silt for Pu (mL/g)	0.02
Forage Ingestion Rate for Cattle (kg/day)	0.02
Kd Silt for Cs (mL/g)	0.02
Kd Silt for Th (mL/g)	0.02
Soil Temperature (°C)	0.02
Beef Transfer Factor for Tc (day/kg)	0.02
Liner Clay Saturated Hyd Cond (cm/s)	0.02
Kd Silt for Ac (mL/g)	0.02
Saltwater Solubility for Rn (mol/L)	0.02
Plant.Soil Conc Ratio for Am	0.02
Kd Sand for Am (mL/g)	0.02
Saltwater Solubility for Pu (mol/L)	0.02
Kd Sand for Cs (mL/g)	0.02

Sensitivity Analysis Results for the Clive DU PA

Kd Clay for Ac (mL/g)	0.02
Saturated Zone Thickness (m)	0.02
Kd Clay for Ra (mL/g)	0.02
Plant.Soil Conc Ratio for Th	0.02
Beef Transfer Factor for Th (day/kg)	0.02
Deep Time DCF Photon 2 REF	0.02
Kd Clay for Sr (mL/g)	0.02
Kd Sand for Ra (mL/g)	0.02
Beef Transfer Factor for Pb (day/kg)	0.01
Water Ingestion Rate for Antelope (kg/day)	0.01
Deep Time Lake Start (yr)	0.01
Kd Silt for Pb (mL/g)	0.01
Plant.Soil Conc Ratio for Sr	0.01
Kd Sand for Sr (mL/g)	0.01
DCF Photon2 REF	0.01
Random Gully Selector	0.01
Kd Clay for Cs (mL/g)	0.01
Kd Silt for U (mL/g)	0.01
Grass Root Shape Parameter b	0.01
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	0.01
Plant.Soil Conc Ratio for Cs	0.01
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.01
Kd Sand for Pu (mL/g)	0.01
Biomass Production Rate (kg.ha.yr)	0.01
Ant Colony Density - Plot 4 (1/ha)	0.01
Ant Colony Density - Plot 2 (1/ha)	0.01
Deep Time Intermediate Lake Duration (yr)	0.01
Plant.Soil Conc Ratio for Np	0.01
Beef Transfer Factor for Np (day/kg)	0.01
Intermediate Lake Depth (m)	0.01
Activity Conc in SRS DU Waste: Np237 (pCi/g)	0.01
Beef Transfer Factor for Ac (day/kg)	0.01
Contaminated Fraction of GDP DU	0.01
Deep Time Aeolian Deposition Depth (m)	0.01
Plant.Soil Conc Ratio for Ra	0.01
Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.01
Tortuosity Porosity Exponent	0.01
Kd Silt for Pa (mL/g)	0.01
Kd Sand for Pb (mL/g)	0.01
Mammal Mound Density - Plot 2 (1/ha)	0.01
Federal DU Cell Unsaturated Zone Thickness (m)	0.01
Beef Transfer Factor for I (day/kg)	0.01
Mammal Mound Density - Plot 5 (1/ha)	0.01

Sensitivity Analysis Results for the Clive DU PA

Greasewood Root Shape Parameter b	0.01
Activity Conc in SRS DU Waste: U233 (pCi/g)	0.01
Soil Ingestion Rate for Antelope (kg/day)	0.01
Activity Conc in SRS DU Waste: Am241 (pCi/g)	0.01
Site Dispersal Area (km ²)	0.01
Deep Time DCF Photon 1 REF	0.01
Kd Clay for Np (mL/g)	0.01
Tree Root Shape Parameter b	0.01
Kd Sand for Tc (mL/g)	0.01
Biomass % Cover Selector	0.01
GDP DU Inventory Storage Dead Space (m ²)	0.01
Beef Transfer Factor for U (day/kg)	0.01
Ant Colony Density - Plot 5 (1/ha)	0.01
Deep Time DCF Beta REF	0.01
Beef Transfer Factor for Pu (day/kg)	0.01
Deep Time DCF Alpha REF	0.01
Plant.Soil Conc Ratio for Pb	0.01
Water Ingestion Rate for Cattle (kg/day)	0.01
Antelope Range Area (acre)	0.01
Deep Time Receptor Area (ac)	0.01
Soil Ingestion Rate for Cattle (kg/day)	0.01
Mammal Mound Density - Plot 3 (1/ha)	0.00
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.00
Beef Transfer Factor for Sr (day/kg)	0.00
Shrub Root Shape Parameter b	0.00
Kd Sand for I (mL/g)	0.00
DCF Alpha REF	0.00
Soil Ingestion Tracer Element	0.00

Table 8: Peak Groundwater Well Concentrations within 500 years – U235**R-squared = 99%**

Explanatory Variable	Sensitivity Index
Kd Sand for U (mL/g)	6.13
DCF Beta REF	5.90
Kd Clay for Pb (mL/g)	5.36
Activity Conc in SRS DU Waste: U238 (pCi/g)	4.91
Kd Clay for U (mL/g)	4.21
Plant Fresh Weight Conversion	2.88
Mammal Mound Density - Plot 4 (1/ha)	2.73
DCF Photon1 REF	2.65
Activity Conc in SRS DU Waste: U234 (pCi/g)	2.63
Ant Nest Volume (m3)	2.55
Deep Time Diffusion Length (m)	2.18
Unit 2 Bulk Density (g/cm3)	2.13
Meat Post-Cooking Loss	2.05
Kd Silt for Np (mL/g)	2.02
Kd Sand for Pa (mL/g)	1.94
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	1.88
Resuspension Flux (kg.m2-yr)	1.81
Saltwater Solubility for U3O8 (mol/L)	1.75
Grass Root.Shoot Ratio	1.71
Beef Transfer Factor for Cs (day/kg)	1.66
Meat Preparation Loss	1.53
Plant.Soil Conc Ratio for Pu	1.51
Forb Root.Shoot Ratio	1.48
Beef Transfer Factor for Am (day/kg)	1.41
Saltwater Solubility for I (mol/L)	1.40
Unit 2 Saturated Hyd Cond (cm/s)	1.31
Unit 4 Compacted Residual Water Content	1.30
Saltwater Solubility for Pb (mol/L)	1.25
Beef Transfer Factor for Pa (day/kg)	1.24
Ant Colony Density - Plot 3 (1/ha)	1.23
Greasewood Root.Shoot Ratio	1.18
Plant.Soil Conc Ratio for U	1.14
Activity Conc in SRS DU Waste: Cs137 (pCi/g)	1.14
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	1.11
Saltwater Solubility for UO3 (mol/L)	1.09
Plant.Soil Conc Ratio for Tc	1.03
Plant.Soil Conc Ratio for I	1.02
Kd Clay for Th (mL/g)	0.93
RipRap Bulk Density (g/cm3)	0.88
Silt Sand Gravel BulkDensity (g/cm3)	0.85

Sensitivity Analysis Results for the Clive DU PA

Kd Sand for Np (mL/g)	0.84
Surface Atmosphere Thickness (m)	0.77
Saturated Zone Water Table Gradient	0.67
Forb Root Shape Parameter b	0.66
Mammal Burrow Excavation Rate (m ³ /yr)	0.66
Deep Lake Depth (m)	0.65
Surface Atmosphere Diffusion Length (m)	0.65
Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.63
Saltwater Solubility for Am (mol/L)	0.61
Kd Sand for Ac (mL/g)	0.56
Radon Escape.Production Ratio for Waste	0.51
Unit 3 Bulk Density (g/cm ³)	0.44
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.44
Plant.Soil Conc Ratio for Pa	0.39
Kd Clay for Am (mL/g)	0.37
Unit 4 Compacted Bulk Density (g/cm ³)	0.35
Unit 4 ET Layers log of van Genuchten's α	0.32
Molecular Diffusivity in Water (cm ² /s)	0.31
OHV Dust Adjustment	0.30
Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.24
Deep Time Aeolian Deposition Age (yr)	0.24
Ant Colony Density - Plot 1 (1/ha)	0.24
Tortuosity Water Content Exponent	0.23
Mammal Mound Density - Plot 1 (1/ha)	0.19
Ant Colony Lifespan (yr)	0.17
Deep Time Aeolian Correlation	0.16
Beef Transfer Factor for Ra (day/kg)	0.16
Intermediate Lake Sed Thickness (m)	0.16
Saltwater Solubility for Cs (mol/L)	0.16
Unit 3 Bubbling Pressure Head (cm)	0.15
Receptor Area (ha)	0.15
Deep Time Deep Lake End (yr)	0.13
Unit 4 ET Layers Bulk Density (g/cm ³)	0.13
Plant.Soil Conc Ratio for Sr	0.12
RipRap Porosity	0.12
Activity Conc in SRS DU Waste: U236 (pCi/g)	0.11
Saltwater Solubility for Sr (mol/L)	0.10
Unit 4 Compacted Porosity	0.10
Tree Root.Shoot Ratio	0.10
Fine Gravel Mix Porosity	0.09
Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	0.09
Fine Cobble Mix BulkDensity (g/cm ³)	0.09
Fine CobbleMix Porosity	0.09

Sensitivity Analysis Results for the Clive DU PA

Unit 3 Porosity	0.09
Unit 3 Residual Water Content	0.09
Kd Silt for Ra (mL/g)	0.09
Kd Clay for Pa (mL/g)	0.09
Surface Wind Speed (m/s)	0.09
Unit 4 ET Layers Porosity	0.08
Saltwater Solubility for Pa (mol/L)	0.08
Unit 2 Porosity	0.07
Plant.Soil Conc Ratio for Ac	0.07
Saltwater Solubility for Ac (mol/L)	0.07
Unit 4 Compacted Hb (cm)	0.06
Body Weight Factor for Antelope	0.06
Kd Silt for U (mL/g)	0.06
Shrub Root.Shoot Ratio	0.06
Plant.Soil Conc Ratio for Am	0.06
Fine Gravel Mix BulkDensity (g/cm ³)	0.06
Unit 4 ET Layers log of van Genuchten's n	0.05
Saltwater Solubility for Tc (mol/L)	0.05
Vegetation Association Selector	0.05
Forage Ingestion Rate for Cattle (kg/day)	0.05
Silt Sand Gravel Porosity	0.04
Unit 3 Saturated Hyd Cond (cm/s)	0.04
Plant.Soil Conc Ratio for Th	0.04
Kd Sand for Pb (mL/g)	0.04
Kd Sand for Th (mL/g)	0.04
Kd Silt for Sr (mL/g)	0.04
Saltwater Solubility for Ra (mol/L)	0.04
Kd Sand for Cs (mL/g)	0.04
Saltwater Solubility for Np (mol/L)	0.04
Unit 3 Brooks-Corey Fractal Dimension	0.04
Saltwater Solubility for Rn (mol/L)	0.04
Kd Silt for Cs (mL/g)	0.04
Kd Silt for Am (mL/g)	0.04
Kd Clay for Pu (mL/g)	0.03
Saltwater Solubility for Th (mol/L)	0.03
Resuspended Particle Fraction	0.03
Kd Silt for Th (mL/g)	0.03
Kd Silt for Pu (mL/g)	0.03
Deep Time DCF Photon 2 REF	0.03
Saturated Zone Thickness (m)	0.03
Kd Clay for Ac (mL/g)	0.03
Kd Sand for Sr (mL/g)	0.03
Beef Transfer Factor for Tc (day/kg)	0.03

Sensitivity Analysis Results for the Clive DU PA

Soil Temperature (Â°C)	0.03
Liner Clay Saturated Hyd Cond (cm/s)	0.03
Plant.Soil Conc Ratio for Np	0.03
Kd Sand for Am (mL/g)	0.03
Deep Time Lake Start (yr)	0.03
Kd Silt for Ac (mL/g)	0.02
Saltwater Solubility for Pu (mol/L)	0.02
Random Gully Selector	0.02
Deep Time Receptor Area (ac)	0.02
Beef Transfer Factor for Pb (day/kg)	0.02
Water Ingestion Rate for Antelope (kg/day)	0.02
Kd Clay for Cs (mL/g)	0.02
Kd Sand for Ra (mL/g)	0.02
Kd Silt for Pa (mL/g)	0.02
Mammal Burrow Shape Parameter b	0.02
Beef Transfer Factor for Th (day/kg)	0.02
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.02
Deep Time DCF Photon 1 REF	0.02
Ant Colony Density - Plot 2 (1/ha)	0.02
Ant Nest Shape Parameter b	0.02
Kd Clay for Sr (mL/g)	0.02
Greasewood Root Shape Parameter b	0.02
Kd Sand for Pu (mL/g)	0.02
Kd Clay for Ra (mL/g)	0.02
Kd Silt for Pb (mL/g)	0.02
Biomass Production Rate (kg.ha.yr)	0.02
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.02
Contaminated Fraction of GDP DU	0.02
Plant.Soil Conc Ratio for Ra	0.02
Activity Conc in SRS DU Waste: Am241 (pCi/g)	0.01
Mammal Mound Density - Plot 5 (1/ha)	0.01
GDP DU Inventory Storage Dead Space (m2)	0.01
Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.01
Tortuosity Porosity Exponent	0.01
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	0.01
Beef Transfer Factor for U (day/kg)	0.01
Beef Transfer Factor for I (day/kg)	0.01
Deep Time Aeolian Deposition Depth (m)	0.01
Plant.Soil Conc Ratio for Pb	0.01
Grass Root Shape Parameter b	0.01
Plant.Soil Conc Ratio for Cs	0.01
Deep Time Intermediate Lake Duration (yr)	0.01
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.01

Sensitivity Analysis Results for the Clive DU PA

Deep Time DCF Beta REF	0.01
Ant Colony Density - Plot 4 (1/ha)	0.01
Beef Transfer Factor for Pu (day/kg)	0.01
DCF Photon2 REF	0.01
Soil Ingestion Rate for Antelope (kg/day)	0.01
Site Dispersal Area (km ²)	0.01
Beef Transfer Factor for Ac (day/kg)	0.01
Ant Colony Density - Plot 5 (1/ha)	0.01
Beef Transfer Factor for Np (day/kg)	0.01
Kd Clay for Np (mL/g)	0.01
Intermediate Lake Depth (m)	0.01
Activity Conc in SRS DU Waste: Np237 (pCi/g)	0.01
Activity Conc in SRS DU Waste: U233 (pCi/g)	0.01
Biomass % Cover Selector	0.01
Soil Ingestion Rate for Cattle (kg/day)	0.01
Water Ingestion Rate for Cattle (kg/day)	0.01
Shrub Root Shape Parameter b	0.01
Beef Transfer Factor for Sr (day/kg)	0.01
Deep Time DCF Alpha REF	0.01
Tree Root Shape Parameter b	0.01
Federal DU Cell Unsaturated Zone Thickness (m)	0.01
DCF Alpha REF	0.01
Kd Sand for Tc (mL/g)	0.01
Mammal Mound Density - Plot 3 (1/ha)	0.01
Antelope Range Area (acre)	0.01
Kd Sand for I (mL/g)	0.00
Soil Ingestion Tracer Element	0.00
Mammal Mound Density - Plot 2 (1/ha)	0.00

Table 9: Peak Groundwater Well Concentrations within 500 years – U236**R-squared = 99%**

Explanatory Variable	Sensitivity Index
DCF Beta REF	12.79
Kd Clay for U (mL/g)	5.66
Kd Sand for U (mL/g)	5.15
Kd Clay for Pb (mL/g)	4.26
Activity Conc in SRS DU Waste: U238 (pCi/g)	4.20
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	2.57
DCF Photon1 REF	2.47
Activity Conc in SRS DU Waste: U234 (pCi/g)	2.41
Mammal Mound Density - Plot 4 (1/ha)	2.26
Ant Nest Volume (m3)	2.15
Deep Time Diffusion Length (m)	1.93
Plant Fresh Weight Conversion	1.91
Saltwater Solubility for Am (mol/L)	1.78
Unit 2 Bulk Density (g/cm3)	1.77
Kd Silt for Np (mL/g)	1.69
Grass Root.Shoot Ratio	1.66
Kd Sand for Pa (mL/g)	1.66
Beef Transfer Factor for Cs (day/kg)	1.53
Saltwater Solubility for U3O8 (mol/L)	1.44
Resuspension Flux (kg.m2-yr)	1.40
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	1.39
Saltwater Solubility for I (mol/L)	1.37
Beef Transfer Factor for Am (day/kg)	1.32
Saltwater Solubility for Pb (mol/L)	1.32
Unit 4 Compacted Residual Water Content	1.26
Greasewood Root.Shoot Ratio	1.18
Meat Post-Cooking Loss	1.16
Meat Preparation Loss	1.12
Plant.Soil Conc Ratio for U	1.11
Silt Sand Gravel BulkDensity (g/cm3)	1.07
RipRap Bulk Density (g/cm3)	1.06
Ant Colony Density - Plot 3 (1/ha)	1.01
Forb Root.Shoot Ratio	1.00
Plant.Soil Conc Ratio for Tc	0.97
Unit 2 Saturated Hyd Cond (cm/s)	0.96
Plant.Soil Conc Ratio for Pu	0.95
Activity Conc in SRS DU Waste: Cs137 (pCi/g)	0.85
Plant.Soil Conc Ratio for I	0.84
Saltwater Solubility for UO3 (mol/L)	0.82
Surface Atmosphere Diffusion Length (m)	0.75

Sensitivity Analysis Results for the Clive DU PA

Kd Clay for Th (mL/g)	0.71
Surface Atmosphere Thickness (m)	0.70
Kd Sand for Np (mL/g)	0.66
Saturated Zone Water Table Gradient	0.63
Beef Transfer Factor for Pa (day/kg)	0.57
Kd Clay for Am (mL/g)	0.53
Unit 4 Compacted Bulk Density (g/cm ³)	0.53
Deep Lake Depth (m)	0.52
Kd Sand for Ac (mL/g)	0.47
Radon Escape.Production Ratio for Waste	0.46
Molecular Diffusivity in Water (cm ² /s)	0.45
Unit 3 Bulk Density (g/cm ³)	0.45
Unit 4 ET Layers log of van Genuchten's α	0.44
Deep Time Deep Lake End (yr)	0.33
Forb Root Shape Parameter b	0.31
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.31
Plant.Soil Conc Ratio for Pa	0.31
Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.30
RipRap Porosity	0.28
Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.28
Fine Cobble Mix BulkDensity (g/cm ³)	0.28
Activity Conc in SRS DU Waste: U236 (pCi/g)	0.27
Unit 3 Bubbling Pressure Head (cm)	0.25
Unit 4 ET Layers Porosity	0.24
Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	0.21
Unit 4 ET Layers Bulk Density (g/cm ³)	0.20
Unit 3 Porosity	0.20
Tortuosity Water Content Exponent	0.19
Unit 3 Residual Water Content	0.18
Mammal Burrow Excavation Rate (m ³ /yr)	0.18
Kd Silt for Ra (mL/g)	0.18
Fine Gravel Mix Porosity	0.18
Intermediate Lake Sed Thickness (m)	0.18
Deep Time Aeolian Deposition Age (yr)	0.17
Saltwater Solubility for Cs (mol/L)	0.17
Surface Wind Speed (m/s)	0.17
Fine Gravel Mix BulkDensity (g/cm ³)	0.16
Fine CobbleMix Porosity	0.15
Receptor Area (ha)	0.14
OHV Dust Adjustment	0.14
Saltwater Solubility for Sr (mol/L)	0.14
Unit 3 Saturated Hyd Cond (cm/s)	0.13
Ant Colony Density - Plot 1 (1/ha)	0.12

Sensitivity Analysis Results for the Clive DU PA

Unit 4 Compacted Porosity	0.12
Unit 4 Compacted Hb (cm)	0.11
Unit 3 Brooks-Corey Fractal Dimension	0.11
Unit 2 Porosity	0.11
Saltwater Solubility for Tc (mol/L)	0.10
Silt Sand Gravel Porosity	0.10
Deep Time Aeolian Correlation	0.10
Plant.Soil Conc Ratio for Ac	0.10
Kd Sand for Cs (mL/g)	0.10
Unit 4 ET Layers log of van Genuchten's n	0.09
Plant.Soil Conc Ratio for Sr	0.09
Saltwater Solubility for Ra (mol/L)	0.09
Beef Transfer Factor for Ra (day/kg)	0.08
Mammal Mound Density - Plot 1 (1/ha)	0.08
Kd Silt for Am (mL/g)	0.07
Saltwater Solubility for Ac (mol/L)	0.07
Kd Silt for Cs (mL/g)	0.07
Kd Silt for Sr (mL/g)	0.06
Plant.Soil Conc Ratio for Th	0.06
Saltwater Solubility for Pa (mol/L)	0.06
Kd Sand for Am (mL/g)	0.06
Kd Clay for Pu (mL/g)	0.05
Kd Silt for U (mL/g)	0.05
Saltwater Solubility for Np (mol/L)	0.05
Resuspended Particle Fraction	0.05
Saltwater Solubility for Th (mol/L)	0.05
Ant Colony Lifespan (yr)	0.05
Vegetation Association Selector	0.05
Kd Silt for Pu (mL/g)	0.05
Kd Clay for Ac (mL/g)	0.05
Shrub Root.Shoot Ratio	0.05
Body Weight Factor for Antelope	0.05
Liner Clay Saturated Hyd Cond (cm/s)	0.05
Kd Silt for Th (mL/g)	0.05
Saltwater Solubility for Pu (mol/L)	0.05
Saturated Zone Thickness (m)	0.05
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.04
Kd Clay for Ra (mL/g)	0.04
Kd Silt for Ac (mL/g)	0.04
Kd Sand for Pu (mL/g)	0.04
Saltwater Solubility for Rn (mol/L)	0.04
Water Ingestion Rate for Antelope (kg/day)	0.04
Kd Clay for Sr (mL/g)	0.04

Sensitivity Analysis Results for the Clive DU PA

Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.04
Kd Sand for Th (mL/g)	0.04
Kd Sand for Ra (mL/g)	0.04
Random Gully Selector	0.04
Forage Ingestion Rate for Cattle (kg/day)	0.04
Ant Colony Density - Plot 2 (1/ha)	0.03
Beef Transfer Factor for Tc (day/kg)	0.03
Kd Sand for Pb (mL/g)	0.03
Plant.Soil Conc Ratio for Np	0.03
Kd Clay for Np (mL/g)	0.03
Grass Root Shape Parameter b	0.03
Kd Clay for Cs (mL/g)	0.03
DCF Photon2 REF	0.03
Kd Clay for Pa (mL/g)	0.03
Plant.Soil Conc Ratio for Am	0.03
Kd Sand for Sr (mL/g)	0.03
Deep Time Lake Start (yr)	0.03
Tree Root.Shoot Ratio	0.03
Biomass Production Rate (kg.ha.yr)	0.03
Deep Time DCF Photon 2 REF	0.03
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.02
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	0.02
Kd Silt for Pa (mL/g)	0.02
Soil Temperature (Å°C)	0.02
Plant.Soil Conc Ratio for Ra	0.02
Kd Silt for Pb (mL/g)	0.02
Deep Time Intermediate Lake Duration (yr)	0.02
Ant Colony Density - Plot 4 (1/ha)	0.02
Tortuosity Porosity Exponent	0.02
Activity Conc in SRS DU Waste: Am241 (pCi/g)	0.02
Beef Transfer Factor for Pb (day/kg)	0.02
Site Dispersal Area (km2)	0.02
Mammal Mound Density - Plot 5 (1/ha)	0.02
Ant Colony Density - Plot 5 (1/ha)	0.02
Greasewood Root Shape Parameter b	0.02
Deep Time DCF Beta REF	0.02
Ant Nest Shape Parameter b	0.02
Activity Conc in SRS DU Waste: Np237 (pCi/g)	0.02
Plant.Soil Conc Ratio for Cs	0.02
Mammal Burrow Shape Parameter b	0.02
Kd Sand for Tc (mL/g)	0.02
Beef Transfer Factor for Pu (day/kg)	0.02
Plant.Soil Conc Ratio for Pb	0.02

Sensitivity Analysis Results for the Clive DU PA

Deep Time DCF Alpha REF	0.02
Beef Transfer Factor for Th (day/kg)	0.02
Biomass % Cover Selector	0.02
DCF Alpha REF	0.01
GDP DU Inventory Storage Dead Space (m2)	0.01
Contaminated Fraction of GDP DU	0.01
Tree Root Shape Parameter b	0.01
Soil Ingestion Rate for Cattle (kg/day)	0.01
Deep Time Receptor Area (ac)	0.01
Beef Transfer Factor for U (day/kg)	0.01
Soil Ingestion Rate for Antelope (kg/day)	0.01
Mammal Mound Density - Plot 2 (1/ha)	0.01
Activity Conc in SRS DU Waste: U233 (pCi/g)	0.01
Intermediate Lake Depth (m)	0.01
Deep Time DCF Photon 1 REF	0.01
Beef Transfer Factor for I (day/kg)	0.01
Beef Transfer Factor for Sr (day/kg)	0.01
Mammal Mound Density - Plot 3 (1/ha)	0.01
Beef Transfer Factor for Ac (day/kg)	0.01
Soil Ingestion Tracer Element	0.01
Shrub Root Shape Parameter b	0.01
Water Ingestion Rate for Cattle (kg/day)	0.01
Deep Time Aeolian Deposition Depth (m)	0.01
Beef Transfer Factor for Np (day/kg)	0.01
Federal DU Cell Unsaturated Zone Thickness (m)	0.01
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.01
Antelope Range Area (acre)	0.00
Kd Sand for I (mL/g)	0.00

Table 10: Peak Groundwater Well Concentrations within 500 years – U238**R-squared = 99%**

Explanatory Variable	Sensitivity Index
Kd Sand for U (mL/g)	6.34
DCF Beta REF	6.13
Activity Conc in SRS DU Waste: U238 (pCi/g)	4.19
Kd Clay for Pb (mL/g)	3.95
Activity Conc in SRS DU Waste: U234 (pCi/g)	3.17
Kd Clay for U (mL/g)	3.08
Ant Nest Volume (m3)	3.00
DCF Photon1 REF	2.75
Mammal Mound Density - Plot 4 (1/ha)	2.44
Kd Silt for Np (mL/g)	2.38
Deep Time Diffusion Length (m)	2.21
Grass Root.Shoot Ratio	2.17
Beef Transfer Factor for Cs (day/kg)	2.09
Plant Fresh Weight Conversion	2.08
Meat Preparation Loss	2.02
Kd Sand for Pa (mL/g)	2.00
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	1.96
Meat Post-Cooking Loss	1.94
Resuspension Flux (kg.m2-yr)	1.83
Saltwater Solubility for U3O8 (mol/L)	1.80
Unit 2 Bulk Density (g/cm3)	1.68
Beef Transfer Factor for Am (day/kg)	1.60
Unit 4 Compacted Residual Water Content	1.57
Saltwater Solubility for I (mol/L)	1.56
Ant Colony Density - Plot 3 (1/ha)	1.54
Forb Root.Shoot Ratio	1.53
Activity Conc in SRS DU Waste: Cs137 (pCi/g)	1.45
Plant.Soil Conc Ratio for Pu	1.45
Unit 2 Saturated Hyd Cond (cm/s)	1.39
Saltwater Solubility for Pb (mol/L)	1.38
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	1.37
Plant.Soil Conc Ratio for Tc	1.33
Silt Sand Gravel BulkDensity (g/cm3)	1.23
Plant.Soil Conc Ratio for U	1.11
Plant.Soil Conc Ratio for I	1.11
Kd Clay for Th (mL/g)	1.03
Surface Atmosphere Diffusion Length (m)	1.03
Greasewood Root.Shoot Ratio	1.02
Saltwater Solubility for UO3 (mol/L)	1.02
Kd Sand for Np (mL/g)	0.88

Sensitivity Analysis Results for the Clive DU PA

RipRap Bulk Density (g/cm ³)	0.86
Surface Atmosphere Thickness (m)	0.84
Beef Transfer Factor for Pa (day/kg)	0.75
Kd Sand for Ac (mL/g)	0.70
Deep Lake Depth (m)	0.68
Saltwater Solubility for Am (mol/L)	0.67
Kd Clay for Am (mL/g)	0.61
Radon Escape.Production Ratio for Waste	0.60
OHV Dust Adjustment	0.58
Unit 4 Compacted Bulk Density (g/cm ³)	0.57
Saturated Zone Water Table Gradient	0.50
Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.50
Mammal Burrow Excavation Rate (m ³ /yr)	0.42
Unit 3 Bulk Density (g/cm ³)	0.39
Forb Root Shape Parameter b	0.37
Plant.Soil Conc Ratio for Pa	0.36
Deep Time Aeolian Deposition Age (yr)	0.29
Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.28
Tortuosity Water Content Exponent	0.26
Unit 4 ET Layers log of van Genuchten's α	0.24
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.23
Beef Transfer Factor for Ra (day/kg)	0.22
Molecular Diffusivity in Water (cm ² /s)	0.22
Receptor Area (ha)	0.19
Deep Time Deep Lake End (yr)	0.17
Unit 3 Bubbling Pressure Head (cm)	0.16
Mammal Mound Density - Plot 1 (1/ha)	0.16
Activity Conc in SRS DU Waste: U236 (pCi/g)	0.15
Saltwater Solubility for Cs (mol/L)	0.13
Intermediate Lake Sed Thickness (m)	0.13
Deep Time Aeolian Correlation	0.12
Ant Colony Density - Plot 1 (1/ha)	0.11
RipRap Porosity	0.10
Ant Colony Lifespan (yr)	0.10
Kd Clay for Pa (mL/g)	0.10
Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	0.09
Unit 4 Compacted Porosity	0.09
Fine Cobble Mix BulkDensity (g/cm ³)	0.09
Unit 4 ET Layers Bulk Density (g/cm ³)	0.08
Plant.Soil Conc Ratio for Ac	0.08
Kd Silt for Ra (mL/g)	0.08
Fine Gravel Mix Porosity	0.08
Saltwater Solubility for Sr (mol/L)	0.08

Sensitivity Analysis Results for the Clive DU PA

Unit 3 Residual Water Content	0.08
Surface Wind Speed (m/s)	0.08
Unit 3 Porosity	0.07
Kd Sand for Pb (mL/g)	0.07
Saltwater Solubility for Pa (mol/L)	0.07
Fine Gravel Mix BulkDensity (g/cm ³)	0.06
Tree Root.Shoot Ratio	0.06
Unit 4 ET Layers Porosity	0.06
Fine CobbleMix Porosity	0.06
Kd Silt for Am (mL/g)	0.06
Kd Silt for U (mL/g)	0.06
Saltwater Solubility for Tc (mol/L)	0.06
Saltwater Solubility for Ac (mol/L)	0.05
Unit 3 Saturated Hyd Cond (cm/s)	0.05
Unit 2 Porosity	0.05
Kd Sand for Th (mL/g)	0.05
Unit 4 Compacted Hb (cm)	0.05
Plant.Soil Conc Ratio for Sr	0.05
Body Weight Factor for Antelope	0.05
Unit 4 ET Layers log of van Genuchten's n	0.05
Beef Transfer Factor for Th (day/kg)	0.04
Silt Sand Gravel Porosity	0.04
Unit 3 Brooks-Corey Fractal Dimension	0.04
Saltwater Solubility for Ra (mol/L)	0.04
Vegetation Association Selector	0.04
Shrub Root.Shoot Ratio	0.03
Kd Clay for Pu (mL/g)	0.03
Kd Silt for Sr (mL/g)	0.03
Kd Sand for Cs (mL/g)	0.03
Plant.Soil Conc Ratio for Am	0.03
Saltwater Solubility for Th (mol/L)	0.03
Beef Transfer Factor for Tc (day/kg)	0.03
Kd Sand for Am (mL/g)	0.03
Soil Temperature (°C)	0.03
Kd Silt for Cs (mL/g)	0.02
Plant.Soil Conc Ratio for Th	0.02
Saltwater Solubility for Rn (mol/L)	0.02
Saltwater Solubility for Np (mol/L)	0.02
Saltwater Solubility for Pu (mol/L)	0.02
Kd Silt for Pu (mL/g)	0.02
Kd Silt for Pb (mL/g)	0.02
Saturated Zone Thickness (m)	0.02
Kd Silt for Th (mL/g)	0.02

Sensitivity Analysis Results for the Clive DU PA

Mammal Burrow Shape Parameter b	0.02
Kd Sand for Ra (mL/g)	0.02
Grass Root Shape Parameter b	0.02
Liner Clay Saturated Hyd Cond (cm/s)	0.02
Water Ingestion Rate for Antelope (kg/day)	0.02
Forage Ingestion Rate for Cattle (kg/day)	0.02
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	0.02
Resuspended Particle Fraction	0.02
Kd Clay for Sr (mL/g)	0.02
Plant.Soil Conc Ratio for Cs	0.02
Kd Clay for Cs (mL/g)	0.02
Kd Sand for Pu (mL/g)	0.02
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.02
Random Gully Selector	0.02
Plant.Soil Conc Ratio for Np	0.02
DCF Photon2 REF	0.02
Deep Time DCF Photon 2 REF	0.02
Kd Clay for Ra (mL/g)	0.02
Kd Silt for Ac (mL/g)	0.02
Ant Colony Density - Plot 2 (1/ha)	0.02
Kd Sand for Sr (mL/g)	0.02
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.02
Deep Time DCF Beta REF	0.02
Ant Nest Shape Parameter b	0.01
Soil Ingestion Rate for Antelope (kg/day)	0.01
Kd Clay for Ac (mL/g)	0.01
Beef Transfer Factor for Pb (day/kg)	0.01
Ant Colony Density - Plot 4 (1/ha)	0.01
Kd Silt for Pa (mL/g)	0.01
Deep Time Receptor Area (ac)	0.01
Plant.Soil Conc Ratio for Ra	0.01
Deep Time Lake Start (yr)	0.01
Greasewood Root Shape Parameter b	0.01
Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.01
Deep Time Intermediate Lake Duration (yr)	0.01
Biomass Production Rate (kg.ha.yr)	0.01
Beef Transfer Factor for I (day/kg)	0.01
Beef Transfer Factor for Np (day/kg)	0.01
Activity Conc in SRS DU Waste: Am241 (pCi/g)	0.01
GDP DU Inventory Storage Dead Space (m2)	0.01
Intermediate Lake Depth (m)	0.01
Biomass % Cover Selector	0.01
Tortuosity Porosity Exponent	0.01

Sensitivity Analysis Results for the Clive DU PA

Activity Conc in SRS DU Waste: Np237 (pCi/g)	0.01
Beef Transfer Factor for U (day/kg)	0.01
Mammal Mound Density - Plot 2 (1/ha)	0.01
Soil Ingestion Rate for Cattle (kg/day)	0.01
Tree Root Shape Parameter b	0.01
Contaminated Fraction of GDP DU	0.01
Mammal Mound Density - Plot 5 (1/ha)	0.01
Kd Sand for Tc (mL/g)	0.01
Plant.Soil Conc Ratio for Pb	0.01
Site Dispersal Area (km2)	0.01
DCF Alpha REF	0.01
Activity Conc in SRS DU Waste: U233 (pCi/g)	0.01
Beef Transfer Factor for Sr (day/kg)	0.01
Ant Colony Density - Plot 5 (1/ha)	0.01
Federal DU Cell Unsaturated Zone Thickness (m)	0.01
Beef Transfer Factor for Ac (day/kg)	0.01
Mammal Mound Density - Plot 3 (1/ha)	0.01
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.01
Kd Clay for Np (mL/g)	0.01
Antelope Range Area (acre)	0.01
Water Ingestion Rate for Cattle (kg/day)	0.01
Deep Time Aeolian Deposition Depth (m)	0.01
Shrub Root Shape Parameter b	0.01
Deep Time DCF Photon 1 REF	0.01
Deep Time DCF Alpha REF	0.01
Beef Transfer Factor for Pu (day/kg)	0.01
Kd Sand for I (mL/g)	0.01
Soil Ingestion Tracer Element	0.00

Table 11: Dose summed over 10,000 years - Population**R-squared = 99%**

Explanatory Variable	Sensitivity Index
Radon Escape.Production Ratio for Waste	80.28
Kd Sand for Ra (mL/g)	9.63
Molecular Diffusivity in Water (cm ² /s)	4.60
Unit 4 ET Layers log of van Genuchten's α	1.23
Activity Conc in SRS DU Waste: U234 (pCi/g)	1.12
Saltwater Solubility for Ra (mol/L)	0.48
Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	0.35
Unit 4 ET Layers Porosity	0.33
Unit 4 Compacted Porosity	0.33
Unit 3 Residual Water Content	0.25
Unit 3 Porosity	0.23
Resuspension Flux (kg.m ² -yr)	0.22
Unit 4 ET Layers log of van Genuchten's n	0.10
Unit 3 Bubbling Pressure Head (cm)	0.10
Unit 3 Bulk Density (g/cm ³)	0.08
Unit 3 Brooks-Corey Fractal Dimension	0.05
Unit 3 Saturated Hyd Cond (cm/s)	0.03
Resuspended Particle Fraction	0.02
Unit 2 Porosity	0.02
Soil Ingestion Rate for Cattle (kg/day)	0.02
Saltwater Solubility for Rn (mol/L)	0.01
Kd Sand for Pb (mL/g)	0.01
Deep Time Lake Start (yr)	0.01
Kd Clay for Sr (mL/g)	0.01
Beef Transfer Factor for Pa (day/kg)	0.01
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.01
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.01
RipRap Bulk Density (g/cm ³)	0.01
Grass Root.Shoot Ratio	0.01
Beef Transfer Factor for U (day/kg)	0.01
RipRap Porosity	0.01
Ant Colony Density - Plot 3 (1/ha)	0.01
Kd Silt for Cs (mL/g)	0.01
Biomass % Cover Selector	0.01
Activity Conc in SRS DU Waste: Cs137 (pCi/g)	0.01
Contaminated Fraction of GDP DU	0.01
Deep Time DCF Beta REF	0.01
Tortuosity Water Content Exponent	0.01
Kd Sand for Np (mL/g)	0.01
DCF Photon2 REF	0.01

Sensitivity Analysis Results for the Clive DU PA

Surface Atmosphere Diffusion Length (m)	0.01
Plant.Soil Conc Ratio for Tc	0.01
Kd Silt for Ra (mL/g)	0.01
Plant.Soil Conc Ratio for Pu	0.01
Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.01
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.01
Biomass Production Rate (kg.ha.yr)	0.01
Shrub Root.Shoot Ratio	0.01
Deep Time DCF Photon 2 REF	0.00
Kd Clay for Pu (mL/g)	0.00
Kd Clay for U (mL/g)	0.00
Kd Sand for Tc (mL/g)	0.00
Kd Silt for Ac (mL/g)	0.00
Saturated Zone Water Table Gradient	0.00
Plant.Soil Conc Ratio for Th	0.00
Kd Silt for Pa (mL/g)	0.00
Saltwater Solubility for I (mol/L)	0.00
Meat Post-Cooking Loss	0.00
Plant.Soil Conc Ratio for I	0.00
Deep Lake Depth (m)	0.00
Deep Time DCF Alpha REF	0.00
Saltwater Solubility for Pb (mol/L)	0.00
Plant.Soil Conc Ratio for Am	0.00
Silt Sand Gravel Porosity	0.00
Tortuosity Porosity Exponent	0.00
GDP DU Inventory Storage Dead Space (m2)	0.00
Kd Silt for Sr (mL/g)	0.00
Soil Temperature (°C)	0.00
Surface Atmosphere Thickness (m)	0.00
Beef Transfer Factor for Tc (day/kg)	0.00
OHV Dust Adjustment	0.00
Kd Sand for Th (mL/g)	0.00
Beef Transfer Factor for I (day/kg)	0.00
Plant.Soil Conc Ratio for Cs	0.00
Deep Time Receptor Area (ac)	0.00
Ant Nest Shape Parameter b	0.00
Mammal Mound Density - Plot 4 (1/ha)	0.00
Meat Preparation Loss	0.00
Kd Clay for Pb (mL/g)	0.00
Tree Root.Shoot Ratio	0.00
Kd Sand for Pa (mL/g)	0.00
Ant Colony Density - Plot 2 (1/ha)	0.00
Unit 4 Compacted Bulk Density (g/cm3)	0.00

Sensitivity Analysis Results for the Clive DU PA

Mammal Mound Density - Plot 5 (1/ha)	0.00
Body Weight Factor for Antelope	0.00
Kd Silt for Pb (mL/g)	0.00
Mammal Burrow Shape Parameter b	0.00
Kd Sand for Am (mL/g)	0.00
Fine CobbleMix Porosity	0.00
Plant.Soil Conc Ratio for U	0.00
Kd Sand for Cs (mL/g)	0.00
Plant.Soil Conc Ratio for Ra	0.00
Kd Silt for Np (mL/g)	0.00
Beef Transfer Factor for Ac (day/kg)	0.00
Federal DU Cell Unsaturated Zone Thickness (m)	0.00
Kd Silt for Pu (mL/g)	0.00
Unit 4 Compacted Hb (cm)	0.00
Activity Conc in SRS DU Waste: Am241 (pCi/g)	0.00
Beef Transfer Factor for Am (day/kg)	0.00
Kd Silt for U (mL/g)	0.00
Water Ingestion Rate for Cattle (kg/day)	0.00
Saltwater Solubility for Np (mol/L)	0.00
Silt Sand Gravel BulkDensity (g/cm3)	0.00
Saltwater Solubility for U3O8 (mol/L)	0.00
Shrub Root Shape Parameter b	0.00
Deep Time DCF Photon 1 REF	0.00
Plant.Soil Conc Ratio for Pb	0.00
Plant.Soil Conc Ratio for Pa	0.00
Plant.Soil Conc Ratio for Sr	0.00
Receptor Area (ha)	0.00
Deep Time Aeolian Correlation	0.00
Antelope Range Area (acre)	0.00
DCF Beta REF	0.00
Fine Gravel Mix Porosity	0.00
Plant Fresh Weight Conversion	0.00
Random Gully Selector	0.00
Ant Colony Lifespan (yr)	0.00
Kd Clay for Ac (mL/g)	0.00
Soil Ingestion Rate for Antelope (kg/day)	0.00
Deep Time Intermediate Lake Duration (yr)	0.00
Beef Transfer Factor for Pu (day/kg)	0.00
Beef Transfer Factor for Cs (day/kg)	0.00
Saltwater Solubility for Sr (mol/L)	0.00
Mammal Burrow Excavation Rate (m3/yr)	0.00
Unit 4 ET Layers Bulk Density (g/cm3)	0.00
Plant.Soil Conc Ratio for Np	0.00

Sensitivity Analysis Results for the Clive DU PA

DCF Alpha REF	0.00
Saturated Zone Thickness (m)	0.00
Beef Transfer Factor for Sr (day/kg)	0.00
Ant Nest Volume (m3)	0.00
Kd Silt for Th (mL/g)	0.00
Mammal Mound Density - Plot 3 (1/ha)	0.00
Saltwater Solubility for Pu (mol/L)	0.00
Kd Clay for Cs (mL/g)	0.00
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	0.00
Kd Clay for Ra (mL/g)	0.00
Fine Cobble Mix BulkDensity (g/cm3)	0.00
Activity Conc in SRS DU Waste: Np237 (pCi/g)	0.00
Kd Sand for Ac (mL/g)	0.00
Saltwater Solubility for Cs (mol/L)	0.00
Saltwater Solubility for Ac (mol/L)	0.00
Activity Conc in SRS DU Waste: U236 (pCi/g)	0.00
Ant Colony Density - Plot 4 (1/ha)	0.00
Kd Sand for Sr (mL/g)	0.00
Unit 2 Saturated Hyd Cond (cm/s)	0.00
Kd Sand for I (mL/g)	0.00
Beef Transfer Factor for Np (day/kg)	0.00
Forb Root Shape Parameter b	0.00
Kd Sand for U (mL/g)	0.00
Saltwater Solubility for Th (mol/L)	0.00
Surface Wind Speed (m/s)	0.00
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.00
Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.00
Saltwater Solubility for UO3 (mol/L)	0.00
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	0.00
Kd Clay for Am (mL/g)	0.00
Unit 4 Compacted Residual Water Content	0.00
Kd Silt for Am (mL/g)	0.00
Kd Clay for Th (mL/g)	0.00
Water Ingestion Rate for Antelope (kg/day)	0.00
Deep Time Diffusion Length (m)	0.00
Intermediate Lake Depth (m)	0.00
Saltwater Solubility for Am (mol/L)	0.00
Kd Clay for Pa (mL/g)	0.00
Beef Transfer Factor for Ra (day/kg)	0.00
Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.00
Unit 2 Bulk Density (g/cm3)	0.00
Deep Time Aeolian Deposition Age (yr)	0.00
Saltwater Solubility for Tc (mol/L)	0.00

Sensitivity Analysis Results for the Clive DU PA

Intermediate Lake Sed Thickness (m)	0.00
Saltwater Solubility for Pa (mol/L)	0.00
Forage Ingestion Rate for Cattle (kg/day)	0.00
Vegetation Association Selector	0.00
Fine Gravel Mix BulkDensity (g/cm ³)	0.00
Forb Root.Shoot Ratio	0.00
Greasewood Root.Shoot Ratio	0.00
Activity Conc in SRS DU Waste: U238 (pCi/g)	0.00
Kd Sand for Pu (mL/g)	0.00
Deep Time Aeolian Deposition Depth (m)	0.00
Plant.Soil Conc Ratio for Ac	0.00
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	0.00
Mammal Mound Density - Plot 1 (1/ha)	0.00
Beef Transfer Factor for Pb (day/kg)	0.00
Kd Clay for Np (mL/g)	0.00
Site Dispersal Area (km ²)	0.00
Grass Root Shape Parameter b	0.00
Deep Time Deep Lake End (yr)	0.00
Activity Conc in SRS DU Waste: U233 (pCi/g)	0.00
DCF Photon1 REF	0.00
Tree Root Shape Parameter b	0.00
Liner Clay Saturated Hyd Cond (cm/s)	0.00
Ant Colony Density - Plot 5 (1/ha)	0.00
Mammal Mound Density - Plot 2 (1/ha)	0.00
Beef Transfer Factor for Th (day/kg)	0.00
Ant Colony Density - Plot 1 (1/ha)	0.00
Greasewood Root Shape Parameter b	0.00
Soil Ingestion Tracer Element	0.00

Table 12: Peak Dose within 10,000 years - Hunter**R-squared = 93%**

Explanatory Variable	Sensitivity Index
Radon Escape.Production Ratio for Waste	60.78
Kd Sand for Ra (mL/g)	9.93
Molecular Diffusivity in Water (cm ² /s)	5.89
Resuspension Flux (kg.m ² -yr)	4.50
Unit 4 ET Layers log of van Genuchten's α	1.31
Activity Conc in SRS DU Waste: U234 (pCi/g)	1.11
Saltwater Solubility for Ra (mol/L)	1.01
Unit 2 Porosity	0.63
Plant.Soil Conc Ratio for Tc	0.51
Unit 4 ET Layers Porosity	0.36
Unit 3 Porosity	0.36
Unit 3 Residual Water Content	0.35
Unit 4 Compacted Porosity	0.34
Kd Sand for Np (mL/g)	0.33
Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	0.29
Saltwater Solubility for Rn (mol/L)	0.22
Unit 4 Compacted Bulk Density (g/cm ³)	0.18
Silt Sand Gravel Porosity	0.18
Unit 3 Bubbling Pressure Head (cm)	0.16
Unit 4 ET Layers log of van Genuchten's n	0.16
Kd Silt for Np (mL/g)	0.13
Saltwater Solubility for UO ₃ (mol/L)	0.13
Beef Transfer Factor for U (day/kg)	0.12
Kd Sand for Pu (mL/g)	0.12
Unit 3 Bulk Density (g/cm ³)	0.12
DCF Photon2 REF	0.12
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.12
Deep Time Lake Start (yr)	0.11
Plant.Soil Conc Ratio for Np	0.11
Unit 4 ET Layers Bulk Density (g/cm ³)	0.10
Kd Sand for Sr (mL/g)	0.10
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.10
Deep Time DCF Photon 1 REF	0.10
Contaminated Fraction of GDP DU	0.10
Kd Sand for Pa (mL/g)	0.10
Kd Sand for Pb (mL/g)	0.10
Plant.Soil Conc Ratio for Pu	0.10
Kd Sand for Ac (mL/g)	0.10
Grass Root.Shoot Ratio	0.10
Mammal Burrow Excavation Rate (m ³ /yr)	0.09

Sensitivity Analysis Results for the Clive DU PA

Activity Conc in SRS DU Waste: U238 (pCi/g)	0.09
Beef Transfer Factor for I (day/kg)	0.09
Beef Transfer Factor for Pu (day/kg)	0.09
Forb Root.Shoot Ratio	0.09
Unit 3 Saturated Hyd Cond (cm/s)	0.09
Saltwater Solubility for Sr (mol/L)	0.09
Deep Time Receptor Area (ac)	0.08
RipRap Porosity	0.08
Saltwater Solubility for Tc (mol/L)	0.08
Kd Sand for Cs (mL/g)	0.08
Ant Colony Density - Plot 4 (1/ha)	0.08
Greasewood Root Shape Parameter b	0.08
Mammal Mound Density - Plot 4 (1/ha)	0.08
Plant.Soil Conc Ratio for Cs	0.08
Saltwater Solubility for Am (mol/L)	0.08
Surface Atmosphere Thickness (m)	0.08
Kd Sand for Tc (mL/g)	0.08
Kd Silt for Pu (mL/g)	0.08
Kd Silt for Pa (mL/g)	0.08
Deep Lake Depth (m)	0.08
Plant.Soil Conc Ratio for Pb	0.08
Fine CobbleMix Porosity	0.08
Ant Colony Lifespan (yr)	0.08
Kd Silt for Ra (mL/g)	0.08
Random Gully Selector	0.08
Kd Clay for Pb (mL/g)	0.07
Mammal Mound Density - Plot 3 (1/ha)	0.07
Beef Transfer Factor for Ac (day/kg)	0.07
GDP DU Inventory Storage Dead Space (m2)	0.07
Plant.Soil Conc Ratio for Pa	0.07
Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.07
Saltwater Solubility for Pb (mol/L)	0.07
Kd Silt for Am (mL/g)	0.07
Kd Clay for Ac (mL/g)	0.07
Mammal Burrow Shape Parameter b	0.07
Soil Ingestion Rate for Cattle (kg/day)	0.07
RipRap Bulk Density (g/cm3)	0.07
Surface Atmosphere Diffusion Length (m)	0.07
Kd Sand for U (mL/g)	0.07
Activity Conc in SRS DU Waste: Am241 (pCi/g)	0.07
Beef Transfer Factor for Pa (day/kg)	0.07
Receptor Area (ha)	0.07
Saltwater Solubility for Th (mol/L)	0.07

Sensitivity Analysis Results for the Clive DU PA

Deep Time Aeolian Deposition Depth (m)	0.07
Beef Transfer Factor for Ra (day/kg)	0.07
Saltwater Solubility for Pa (mol/L)	0.07
Kd Sand for Th (mL/g)	0.07
Tortuosity Porosity Exponent	0.07
Kd Clay for Th (mL/g)	0.07
Ant Colony Density - Plot 2 (1/ha)	0.07
Kd Silt for Pb (mL/g)	0.07
Plant.Soil Conc Ratio for Ac	0.07
Silt Sand Gravel BulkDensity (g/cm3)	0.07
Antelope Range Area (acre)	0.07
Meat Post-Cooking Loss	0.07
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	0.06
Plant.Soil Conc Ratio for U	0.06
Forage Ingestion Rate for Cattle (kg/day)	0.06
Kd Silt for Sr (mL/g)	0.06
Saltwater Solubility for Pu (mol/L)	0.06
Saltwater Solubility for I (mol/L)	0.06
Plant.Soil Conc Ratio for Ra	0.06
Activity Conc in SRS DU Waste: U236 (pCi/g)	0.06
Activity Conc in SRS DU Waste: U233 (pCi/g)	0.06
Beef Transfer Factor for Sr (day/kg)	0.06
Ant Colony Density - Plot 3 (1/ha)	0.06
Deep Time Diffusion Length (m)	0.06
Saturated Zone Water Table Gradient	0.06
Plant.Soil Conc Ratio for Th	0.06
Saltwater Solubility for Cs (mol/L)	0.06
Kd Clay for Pa (mL/g)	0.06
Plant.Soil Conc Ratio for Am	0.06
Ant Nest Volume (m3)	0.06
Greasewood Root.Shoot Ratio	0.06
Plant.Soil Conc Ratio for I	0.06
Beef Transfer Factor for Th (day/kg)	0.06
Fine Cobble Mix BulkDensity (g/cm3)	0.06
DCF Beta REF	0.06
Shrub Root Shape Parameter b	0.06
DCF Photon1 REF	0.06
Kd Silt for Th (mL/g)	0.06
Deep Time Aeolian Deposition Age (yr)	0.06
Beef Transfer Factor for Np (day/kg)	0.06
Resuspended Particle Fraction	0.06
Unit 2 Bulk Density (g/cm3)	0.06
Deep Time Intermediate Lake Duration (yr)	0.06

Sensitivity Analysis Results for the Clive DU PA

Kd Clay for Np (mL/g)	0.06
Deep Time Aeolian Correlation	0.05
Site Dispersal Area (km ²)	0.05
Deep Time DCF Photon 2 REF	0.05
Fine Gravel Mix Porosity	0.05
Intermediate Lake Sed Thickness (m)	0.05
Plant.Soil Conc Ratio for Sr	0.05
Federal DU Cell Unsaturated Zone Thickness (m)	0.05
Kd Clay for Ra (mL/g)	0.05
Deep Time DCF Beta REF	0.05
Tree Root.Shoot Ratio	0.05
Unit 4 Compacted Residual Water Content	0.05
Biomass Production Rate (kg.ha.yr)	0.05
Kd Clay for Am (mL/g)	0.05
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	0.05
Kd Sand for Am (mL/g)	0.05
Unit 2 Saturated Hyd Cond (cm/s)	0.05
Kd Silt for Cs (mL/g)	0.05
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.05
Surface Wind Speed (m/s)	0.05
Soil Temperature (°C)	0.05
Saltwater Solubility for U3O8 (mol/L)	0.05
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	0.05
Ant Nest Shape Parameter b	0.05
Ant Colony Density - Plot 1 (1/ha)	0.05
Activity Conc in SRS DU Waste: Np237 (pCi/g)	0.05
Beef Transfer Factor for Pb (day/kg)	0.05
Deep Time Deep Lake End (yr)	0.05
Mammal Mound Density - Plot 5 (1/ha)	0.05
OHV Dust Adjustment	0.05
Body Weight Factor for Antelope	0.05
Beef Transfer Factor for Tc (day/kg)	0.05
Kd Clay for U (mL/g)	0.05
Unit 4 Compacted Hb (cm)	0.05
Beef Transfer Factor for Am (day/kg)	0.05
Deep Time DCF Alpha REF	0.05
Liner Clay Saturated Hyd Cond (cm/s)	0.05
DCF Alpha REF	0.05
Meat Preparation Loss	0.05
Saturated Zone Thickness (m)	0.05
Kd Clay for Pu (mL/g)	0.04
Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.04
Activity Conc in SRS DU Waste: Cs137 (pCi/g)	0.04

Sensitivity Analysis Results for the Clive DU PA

Beef Transfer Factor for Cs (day/kg)	0.04
Shrub Root.Shoot Ratio	0.04
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.04
Forb Root Shape Parameter b	0.04
Grass Root Shape Parameter b	0.04
Tortuosity Water Content Exponent	0.04
Ant Colony Density - Plot 5 (1/ha)	0.04
Kd Sand for I (mL/g)	0.04
Mammal Mound Density - Plot 1 (1/ha)	0.04
Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.04
Fine Gravel Mix BulkDensity (g/cm3)	0.04
Soil Ingestion Rate for Antelope (kg/day)	0.04
Water Ingestion Rate for Cattle (kg/day)	0.04
Kd Silt for U (mL/g)	0.04
Saltwater Solubility for Ac (mol/L)	0.04
Kd Clay for Sr (mL/g)	0.04
Saltwater Solubility for Np (mol/L)	0.04
Water Ingestion Rate for Antelope (kg/day)	0.04
Biomass % Cover Selector	0.04
Plant Fresh Weight Conversion	0.04
Tree Root Shape Parameter b	0.04
Kd Silt for Ac (mL/g)	0.03
Intermediate Lake Depth (m)	0.03
Vegetation Association Selector	0.03
Kd Clay for Cs (mL/g)	0.03
Unit 3 Brooks-Corey Fractal Dimension	0.03
Mammal Mound Density - Plot 2 (1/ha)	0.02
Soil Ingestion Tracer Element	0.01

Table 13: Peak Dose within 10,000 years – I-80**R-squared = 81%**

Explanatory Variable	Sensitivity Index
Radon Escape.Production Ratio for Waste	37.73
Kd Sand for Ra (mL/g)	6.84
Molecular Diffusivity in Water (cm ² /s)	3.53
Activity Conc in SRS DU Waste: U234 (pCi/g)	1.49
Saltwater Solubility for Ra (mol/L)	1.02
Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	1.02
Unit 4 ET Layers log of van Genuchten's α	1.01
Unit 3 Porosity	0.80
RipRap Bulk Density (g/cm ³)	0.65
Beef Transfer Factor for U (day/kg)	0.62
Activity Conc in SRS DU Waste: U233 (pCi/g)	0.54
Kd Silt for Pu (mL/g)	0.54
Unit 3 Residual Water Content	0.54
GDP DU Inventory Storage Dead Space (m ²)	0.52
Unit 4 ET Layers Porosity	0.49
Saltwater Solubility for Sr (mol/L)	0.49
Saltwater Solubility for Pb (mol/L)	0.47
Unit 4 ET Layers Bulk Density (g/cm ³)	0.46
Unit 4 Compacted Porosity	0.45
Deep Time Receptor Area (ac)	0.44
Fine Cobble Mix BulkDensity (g/cm ³)	0.44
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.43
Saltwater Solubility for Np (mol/L)	0.43
Saturated Zone Thickness (m)	0.41
Shrub Root.Shoot Ratio	0.41
Ant Colony Density - Plot 3 (1/ha)	0.41
RipRap Porosity	0.40
Ant Nest Shape Parameter b	0.39
Kd Sand for Th (mL/g)	0.39
Fine CobbleMix Porosity	0.39
Unit 3 Bulk Density (g/cm ³)	0.39
Biomass Production Rate (kg.ha.yr)	0.38
Surface Atmosphere Thickness (m)	0.38
Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.36
Soil Ingestion Rate for Cattle (kg/day)	0.36
Kd Silt for Pa (mL/g)	0.36
Kd Clay for Pb (mL/g)	0.35
Plant Fresh Weight Conversion	0.34
Activity Conc in SRS DU Waste: Am241 (pCi/g)	0.34
Kd Silt for Cs (mL/g)	0.34

Sensitivity Analysis Results for the Clive DU PA

Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.33
Plant.Soil Conc Ratio for Cs	0.33
Kd Sand for U (mL/g)	0.33
Grass Root.Shoot Ratio	0.32
Plant.Soil Conc Ratio for Ra	0.32
Beef Transfer Factor for Th (day/kg)	0.32
Forage Ingestion Rate for Cattle (kg/day)	0.31
Saltwater Solubility for Cs (mol/L)	0.31
Unit 4 Compacted Hb (cm)	0.29
Ant Nest Volume (m3)	0.29
Kd Sand for Cs (mL/g)	0.28
Kd Clay for Cs (mL/g)	0.28
Mammal Mound Density - Plot 3 (1/ha)	0.28
Saltwater Solubility for U3O8 (mol/L)	0.28
Kd Clay for Ra (mL/g)	0.28
Saltwater Solubility for Th (mol/L)	0.28
Kd Sand for Pa (mL/g)	0.27
Surface Wind Speed (m/s)	0.27
Kd Clay for Pu (mL/g)	0.27
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	0.27
Kd Sand for Am (mL/g)	0.27
OHV Dust Adjustment	0.27
Plant.Soil Conc Ratio for Np	0.27
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	0.27
Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.26
DCF Photon1 REF	0.26
Beef Transfer Factor for Pb (day/kg)	0.26
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.26
Mammal Mound Density - Plot 5 (1/ha)	0.26
Deep Time DCF Photon 2 REF	0.26
Kd Sand for Ac (mL/g)	0.26
Kd Clay for Np (mL/g)	0.26
Unit 3 Bubbling Pressure Head (cm)	0.26
Beef Transfer Factor for Tc (day/kg)	0.25
Plant.Soil Conc Ratio for Tc	0.25
Saltwater Solubility for Pa (mol/L)	0.25
Liner Clay Saturated Hyd Cond (cm/s)	0.25
Receptor Area (ha)	0.25
Saltwater Solubility for Ac (mol/L)	0.25
Random Gully Selector	0.25
Resuspension Flux (kg.m2-yr)	0.25
Kd Clay for Pa (mL/g)	0.25
Deep Time DCF Alpha REF	0.24

Sensitivity Analysis Results for the Clive DU PA

Meat Post-Cooking Loss	0.24
DCF Photon2 REF	0.24
Kd Silt for Np (mL/g)	0.24
Forb Root Shape Parameter b	0.24
Kd Sand for Sr (mL/g)	0.24
Deep Time Deep Lake End (yr)	0.24
Federal DU Cell Unsaturated Zone Thickness (m)	0.24
Mammal Burrow Shape Parameter b	0.24
Meat Preparation Loss	0.23
Kd Silt for Sr (mL/g)	0.23
Greasewood Root.Shoot Ratio	0.23
Unit 4 ET Layers log of van Genuchten's n	0.23
Saltwater Solubility for Am (mol/L)	0.23
Kd Clay for Am (mL/g)	0.23
Surface Atmosphere Diffusion Length (m)	0.23
Kd Silt for Ac (mL/g)	0.22
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	0.22
Unit 4 Compacted Bulk Density (g/cm3)	0.22
Plant.Soil Conc Ratio for Sr	0.22
Kd Sand for Np (mL/g)	0.22
Beef Transfer Factor for Ra (day/kg)	0.22
Activity Conc in SRS DU Waste: U238 (pCi/g)	0.22
Deep Time DCF Beta REF	0.22
Deep Time Aeolian Deposition Age (yr)	0.21
Activity Conc in SRS DU Waste: U236 (pCi/g)	0.21
Intermediate Lake Depth (m)	0.21
Kd Silt for Th (mL/g)	0.21
Kd Silt for Pb (mL/g)	0.21
Unit 2 Porosity	0.21
Beef Transfer Factor for Pa (day/kg)	0.21
Biomass % Cover Selector	0.21
Beef Transfer Factor for Sr (day/kg)	0.21
Deep Lake Depth (m)	0.21
Plant.Soil Conc Ratio for Am	0.21
Deep Time Lake Start (yr)	0.21
Kd Clay for Ac (mL/g)	0.21
Deep Time Intermediate Lake Duration (yr)	0.21
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.20
Plant.Soil Conc Ratio for Pu	0.20
Unit 4 Compacted Residual Water Content	0.20
Kd Sand for Tc (mL/g)	0.20
Mammal Burrow Excavation Rate (m3/yr)	0.20
Site Dispersal Area (km2)	0.20

Sensitivity Analysis Results for the Clive DU PA

Activity Conc in SRS DU Waste: Np237 (pCi/g)	0.20
Intermediate Lake Sed Thickness (m)	0.20
Beef Transfer Factor for Ac (day/kg)	0.20
Kd Silt for Ra (mL/g)	0.19
Tree Root.Shoot Ratio	0.19
Activity Conc in SRS DU Waste: Cs137 (pCi/g)	0.19
Kd Clay for Sr (mL/g)	0.19
Ant Colony Density - Plot 5 (1/ha)	0.19
Soil Ingestion Rate for Antelope (kg/day)	0.19
Body Weight Factor for Antelope	0.19
Ant Colony Lifespan (yr)	0.19
Deep Time Aeolian Deposition Depth (m)	0.19
Grass Root Shape Parameter b	0.19
Kd Clay for U (mL/g)	0.19
Plant.Soil Conc Ratio for Pa	0.19
Plant.Soil Conc Ratio for Pb	0.19
Contaminated Fraction of GDP DU	0.19
DCF Alpha REF	0.19
Plant.Soil Conc Ratio for I	0.19
Beef Transfer Factor for Np (day/kg)	0.18
Saltwater Solubility for UO3 (mol/L)	0.18
Shrub Root Shape Parameter b	0.18
Deep Time DCF Photon 1 REF	0.18
Kd Silt for Am (mL/g)	0.18
Saltwater Solubility for Tc (mol/L)	0.18
Soil Temperature (Å°C)	0.18
Saltwater Solubility for Rn (mol/L)	0.18
Kd Silt for U (mL/g)	0.17
Resuspended Particle Fraction	0.17
Unit 2 Bulk Density (g/cm3)	0.17
Tortuosity Porosity Exponent	0.17
Saltwater Solubility for I (mol/L)	0.17
Kd Sand for Pb (mL/g)	0.17
DCF Beta REF	0.17
Tortuosity Water Content Exponent	0.17
Fine Gravel Mix Porosity	0.17
Silt Sand Gravel Porosity	0.16
Antelope Range Area (acre)	0.16
Deep Time Diffusion Length (m)	0.16
Beef Transfer Factor for Pu (day/kg)	0.16
Beef Transfer Factor for I (day/kg)	0.16
Unit 2 Saturated Hyd Cond (cm/s)	0.16
Plant.Soil Conc Ratio for Th	0.16

Sensitivity Analysis Results for the Clive DU PA

Saturated Zone Water Table Gradient	0.16
Unit 3 Saturated Hyd Cond (cm/s)	0.16
Beef Transfer Factor for Am (day/kg)	0.16
Mammal Mound Density - Plot 1 (1/ha)	0.16
Ant Colony Density - Plot 1 (1/ha)	0.16
Plant.Soil Conc Ratio for Ac	0.16
Saltwater Solubility for Pu (mol/L)	0.15
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.15
Kd Clay for Th (mL/g)	0.15
Kd Sand for Pu (mL/g)	0.15
Deep Time Aeolian Correlation	0.15
Ant Colony Density - Plot 2 (1/ha)	0.15
Water Ingestion Rate for Cattle (kg/day)	0.15
Mammal Mound Density - Plot 2 (1/ha)	0.14
Mammal Mound Density - Plot 4 (1/ha)	0.14
Water Ingestion Rate for Antelope (kg/day)	0.14
Fine Gravel Mix BulkDensity (g/cm ³)	0.13
Greasewood Root Shape Parameter b	0.13
Forb Root.Shoot Ratio	0.12
Ant Colony Density - Plot 4 (1/ha)	0.12
Silt Sand Gravel BulkDensity (g/cm ³)	0.12
Kd Sand for I (mL/g)	0.12
Vegetation Association Selector	0.12
Plant.Soil Conc Ratio for U	0.11
Beef Transfer Factor for Cs (day/kg)	0.11
Unit 3 Brooks-Corey Fractal Dimension	0.10
Tree Root Shape Parameter b	0.06
Soil Ingestion Tracer Element	0.02

Table 14: Peak Dose within 10,000 years – Knolls**R-squared = 74%**

Explanatory Variable	Sensitivity Index
Radon Escape.Production Ratio for Waste	10.20
Plant.Soil Conc Ratio for Th	2.65
Biomass % Cover Selector	2.64
Unit 3 Porosity	1.52
Activity Conc in SRS DU Waste: U236 (pCi/g)	1.50
Kd Sand for Ra (mL/g)	1.35
Kd Sand for Th (mL/g)	1.23
Kd Silt for Np (mL/g)	1.23
Deep Time Aeolian Deposition Depth (m)	1.12
Activity Conc in SRS DU Waste: Am241 (pCi/g)	1.09
Deep Time DCF Alpha REF	1.07
Kd Clay for Cs (mL/g)	0.96
Intermediate Lake Sed Thickness (m)	0.96
Unit 4 ET Layers Porosity	0.94
Kd Silt for Ac (mL/g)	0.93
Kd Sand for Tc (mL/g)	0.93
Kd Sand for U (mL/g)	0.91
Kd Clay for Pu (mL/g)	0.91
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.89
Kd Sand for Am (mL/g)	0.87
RipRap Bulk Density (g/cm ³)	0.86
Meat Preparation Loss	0.85
Surface Atmosphere Diffusion Length (m)	0.80
Kd Silt for Pa (mL/g)	0.80
Saltwater Solubility for Sr (mol/L)	0.78
Beef Transfer Factor for Pb (day/kg)	0.74
Plant.Soil Conc Ratio for Tc	0.72
Unit 2 Saturated Hyd Cond (cm/s)	0.70
Unit 4 Compacted Bulk Density (g/cm ³)	0.70
Forb Root.Shoot Ratio	0.70
RipRap Porosity	0.67
Unit 3 Residual Water Content	0.67
Saltwater Solubility for Np (mol/L)	0.64
Beef Transfer Factor for Pu (day/kg)	0.64
Plant.Soil Conc Ratio for I	0.64
Antelope Range Area (acre)	0.64
Deep Time Deep Lake End (yr)	0.63
DCF Beta REF	0.62
Saltwater Solubility for Ac (mol/L)	0.61
Beef Transfer Factor for Np (day/kg)	0.59

Sensitivity Analysis Results for the Clive DU PA

Beef Transfer Factor for U (day/kg)	0.59
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.59
Unit 4 ET Layers log of van Genuchten's α	0.59
Molecular Diffusivity in Water (cm ² /s)	0.57
Kd Silt for Th (mL/g)	0.56
Kd Silt for Pu (mL/g)	0.56
Plant.Soil Conc Ratio for Ra	0.55
Liner Clay Saturated Hyd Cond (cm/s)	0.55
Plant.Soil Conc Ratio for Am	0.54
Tree Root.Shoot Ratio	0.53
Saltwater Solubility for Cs (mol/L)	0.53
Deep Time DCF Photon 1 REF	0.53
Kd Clay for Pa (mL/g)	0.51
Unit 4 ET Layers log of van Genuchten's n	0.51
Kd Clay for Ac (mL/g)	0.50
Saltwater Solubility for Pb (mol/L)	0.50
Deep Lake Depth (m)	0.49
Kd Silt for Cs (mL/g)	0.49
Ant Colony Density - Plot 2 (1/ha)	0.49
OHV Dust Adjustment	0.48
Kd Clay for Am (mL/g)	0.48
Contaminated Fraction of GDP DU	0.48
Saltwater Solubility for Pu (mol/L)	0.48
Unit 4 ET Layers Bulk Density (g/cm ³)	0.47
Fine Gravel Mix Porosity	0.47
Mammal Burrow Shape Parameter b	0.47
Plant.Soil Conc Ratio for Pu	0.47
Surface Atmosphere Thickness (m)	0.46
Kd Clay for Pb (mL/g)	0.46
Kd Sand for Pu (mL/g)	0.46
Kd Clay for Th (mL/g)	0.45
Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	0.45
Silt Sand Gravel BulkDensity (g/cm ³)	0.45
Fine Cobble Mix BulkDensity (g/cm ³)	0.45
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	0.45
Silt Sand Gravel Porosity	0.44
Unit 3 Bubbling Pressure Head (cm)	0.44
Unit 4 Compacted Porosity	0.43
Saltwater Solubility for Am (mol/L)	0.42
Soil Ingestion Rate for Cattle (kg/day)	0.42
Saltwater Solubility for Ra (mol/L)	0.42
Kd Sand for Sr (mL/g)	0.41
GDP DU Inventory Storage Dead Space (m ²)	0.41

Sensitivity Analysis Results for the Clive DU PA

Water Ingestion Rate for Cattle (kg/day)	0.41
Kd Silt for U (mL/g)	0.40
Plant.Soil Conc Ratio for Pa	0.40
Kd Sand for Cs (mL/g)	0.40
Saturated Zone Thickness (m)	0.40
Shrub Root Shape Parameter b	0.39
Greasewood Root Shape Parameter b	0.38
Activity Conc in SRS DU Waste: Np237 (pCi/g)	0.38
DCF Photon2 REF	0.38
Plant.Soil Conc Ratio for Ac	0.38
Deep Time Receptor Area (ac)	0.38
Kd Sand for Pa (mL/g)	0.37
Soil Ingestion Rate for Antelope (kg/day)	0.37
Plant.Soil Conc Ratio for Np	0.37
Unit 3 Saturated Hyd Cond (cm/s)	0.36
Unit 3 Bulk Density (g/cm3)	0.36
Fine CobbleMix Porosity	0.36
Unit 4 Compacted Hb (cm)	0.36
Unit 2 Bulk Density (g/cm3)	0.36
Biomass Production Rate (kg.ha.yr)	0.35
Fine Gravel Mix BulkDensity (g/cm3)	0.35
Kd Silt for Pb (mL/g)	0.35
Water Ingestion Rate for Antelope (kg/day)	0.35
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.34
Surface Wind Speed (m/s)	0.34
Forage Ingestion Rate for Cattle (kg/day)	0.34
Forb Root Shape Parameter b	0.34
Kd Silt for Am (mL/g)	0.33
Resuspended Particle Fraction	0.33
Saltwater Solubility for Tc (mol/L)	0.33
Plant Fresh Weight Conversion	0.33
Activity Conc in SRS DU Waste: Cs137 (pCi/g)	0.32
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	0.32
Saltwater Solubility for U3O8 (mol/L)	0.32
Saltwater Solubility for Pa (mol/L)	0.32
Unit 4 Compacted Residual Water Content	0.31
Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.31
Beef Transfer Factor for Sr (day/kg)	0.31
Saltwater Solubility for Th (mol/L)	0.31
Kd Silt for Sr (mL/g)	0.30
Kd Clay for Sr (mL/g)	0.30
Ant Nest Volume (m3)	0.30
Plant.Soil Conc Ratio for U	0.30

Sensitivity Analysis Results for the Clive DU PA

Saltwater Solubility for Rn (mol/L)	0.30
Kd Clay for Ra (mL/g)	0.30
Mammal Mound Density - Plot 5 (1/ha)	0.29
Saltwater Solubility for UO3 (mol/L)	0.29
Unit 2 Porosity	0.29
Kd Sand for Ac (mL/g)	0.29
Plant.Soil Conc Ratio for Cs	0.29
Saltwater Solubility for I (mol/L)	0.29
Activity Conc in SRS DU Waste: U234 (pCi/g)	0.29
Site Dispersal Area (km2)	0.29
Shrub Root.Shoot Ratio	0.29
Receptor Area (ha)	0.29
DCF Alpha REF	0.28
Mammal Mound Density - Plot 4 (1/ha)	0.28
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.28
Kd Sand for Pb (mL/g)	0.28
Deep Time Diffusion Length (m)	0.27
Soil Temperature (Â°C)	0.27
Beef Transfer Factor for Ra (day/kg)	0.26
Kd Sand for Np (mL/g)	0.26
Ant Nest Shape Parameter b	0.26
Grass Root.Shoot Ratio	0.26
Tortuosity Water Content Exponent	0.25
Kd Silt for Ra (mL/g)	0.25
Grass Root Shape Parameter b	0.25
Ant Colony Density - Plot 4 (1/ha)	0.25
Mammal Burrow Excavation Rate (m3/yr)	0.24
Beef Transfer Factor for Ac (day/kg)	0.24
Mammal Mound Density - Plot 3 (1/ha)	0.24
Ant Colony Density - Plot 1 (1/ha)	0.24
Beef Transfer Factor for Th (day/kg)	0.23
Random Gully Selector	0.23
Deep Time DCF Beta REF	0.23
Deep Time DCF Photon 2 REF	0.23
Plant.Soil Conc Ratio for Sr	0.23
Beef Transfer Factor for Tc (day/kg)	0.22
Deep Time Intermediate Lake Duration (yr)	0.22
Mammal Mound Density - Plot 1 (1/ha)	0.22
Deep Time Lake Start (yr)	0.22
Federal DU Cell Unsaturated Zone Thickness (m)	0.22
Activity Conc in SRS DU Waste: U238 (pCi/g)	0.22
Beef Transfer Factor for I (day/kg)	0.22
Tree Root Shape Parameter b	0.21

Sensitivity Analysis Results for the Clive DU PA

Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.21
DCF Photon1 REF	0.21
Kd Clay for U (mL/g)	0.21
Ant Colony Density - Plot 5 (1/ha)	0.21
Unit 3 Brooks-Corey Fractal Dimension	0.21
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	0.21
Kd Clay for Np (mL/g)	0.20
Ant Colony Density - Plot 3 (1/ha)	0.20
Deep Time Aeolian Correlation	0.20
Kd Sand for I (mL/g)	0.20
Vegetation Association Selector	0.20
Ant Colony Lifespan (yr)	0.20
Intermediate Lake Depth (m)	0.19
Body Weight Factor for Antelope	0.19
Mammal Mound Density - Plot 2 (1/ha)	0.19
Saturated Zone Water Table Gradient	0.18
Beef Transfer Factor for Cs (day/kg)	0.18
Plant.Soil Conc Ratio for Pb	0.18
Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.18
Meat Post-Cooking Loss	0.18
Deep Time Aeolian Deposition Age (yr)	0.17
Beef Transfer Factor for Pa (day/kg)	0.17
Tortuosity Porosity Exponent	0.16
Beef Transfer Factor for Am (day/kg)	0.15
Activity Conc in SRS DU Waste: U233 (pCi/g)	0.14
Greasewood Root.Shoot Ratio	0.13
Resuspension Flux (kg.m2-yr)	0.13
Soil Ingestion Tracer Element	0.03

Table 15: Peak Dose within 10,000 years – Railroad**R-squared = 81%**

Explanatory Variable	Sensitivity Index
Radon Escape.Production Ratio for Waste	37.73
Kd Sand for Ra (mL/g)	6.82
Molecular Diffusivity in Water (cm ² /s)	3.53
Activity Conc in SRS DU Waste: U234 (pCi/g)	1.47
Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	1.02
Saltwater Solubility for Ra (mol/L)	1.02
Unit 4 ET Layers log of van Genuchten's α	1.00
Unit 3 Porosity	0.76
RipRap Bulk Density (g/cm ³)	0.64
Beef Transfer Factor for U (day/kg)	0.63
GDP DU Inventory Storage Dead Space (m ²)	0.57
Unit 3 Residual Water Content	0.54
Activity Conc in SRS DU Waste: U233 (pCi/g)	0.54
Kd Silt for Pu (mL/g)	0.50
Saltwater Solubility for Sr (mol/L)	0.49
Unit 4 ET Layers Porosity	0.48
Saltwater Solubility for Pb (mol/L)	0.46
Deep Time Receptor Area (ac)	0.46
Unit 4 Compacted Porosity	0.45
Shrub Root.Shoot Ratio	0.45
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.45
Unit 4 ET Layers Bulk Density (g/cm ³)	0.44
Saltwater Solubility for Np (mol/L)	0.42
Ant Nest Shape Parameter b	0.40
Kd Sand for Th (mL/g)	0.40
Fine Cobble Mix BulkDensity (g/cm ³)	0.40
Unit 3 Bulk Density (g/cm ³)	0.39
Biomass Production Rate (kg.ha.yr)	0.39
Fine CobbleMix Porosity	0.39
Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.39
Ant Colony Density - Plot 3 (1/ha)	0.39
Surface Atmosphere Thickness (m)	0.38
Saturated Zone Thickness (m)	0.38
Soil Ingestion Rate for Cattle (kg/day)	0.38
RipRap Porosity	0.36
Kd Silt for Pa (mL/g)	0.35
Kd Clay for Pb (mL/g)	0.35
Kd Silt for Cs (mL/g)	0.34
Plant Fresh Weight Conversion	0.34
Plant.Soil Conc Ratio for Cs	0.33

Sensitivity Analysis Results for the Clive DU PA

Beef Transfer Factor for Th (day/kg)	0.33
Ant Nest Volume (m3)	0.33
Plant.Soil Conc Ratio for Ra	0.33
Grass Root.Shoot Ratio	0.33
Activity Conc in SRS DU Waste: Am241 (pCi/g)	0.32
Forage Ingestion Rate for Cattle (kg/day)	0.32
Kd Sand for U (mL/g)	0.31
Kd Sand for Cs (mL/g)	0.31
Saltwater Solubility for Th (mol/L)	0.30
Saltwater Solubility for Cs (mol/L)	0.30
Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.30
Unit 4 Compacted Hb (cm)	0.29
Mammal Mound Density - Plot 3 (1/ha)	0.29
Kd Sand for Am (mL/g)	0.28
Plant.Soil Conc Ratio for Np	0.28
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	0.28
Plant.Soil Conc Ratio for Tc	0.28
Kd Clay for Pu (mL/g)	0.27
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.27
Kd Clay for Ra (mL/g)	0.27
Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.27
Kd Sand for Pa (mL/g)	0.27
Mammal Mound Density - Plot 5 (1/ha)	0.27
Kd Sand for Ac (mL/g)	0.27
Liner Clay Saturated Hyd Cond (cm/s)	0.26
Surface Wind Speed (m/s)	0.26
Saltwater Solubility for U3O8 (mol/L)	0.26
DCF Photon1 REF	0.26
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	0.26
Saltwater Solubility for Pa (mol/L)	0.26
Unit 3 Bubbling Pressure Head (cm)	0.26
Federal DU Cell Unsaturated Zone Thickness (m)	0.26
OHV Dust Adjustment	0.26
Beef Transfer Factor for Pb (day/kg)	0.26
Kd Silt for Np (mL/g)	0.26
Receptor Area (ha)	0.25
Deep Time DCF Alpha REF	0.25
Random Gully Selector	0.25
Beef Transfer Factor for Tc (day/kg)	0.25
Kd Clay for Cs (mL/g)	0.25
Kd Sand for Sr (mL/g)	0.25
Surface Atmosphere Diffusion Length (m)	0.25
Deep Time DCF Photon 2 REF	0.25

Sensitivity Analysis Results for the Clive DU PA

Resuspension Flux (kg.m2-yr)	0.24
Kd Clay for Np (mL/g)	0.24
Plant.Soil Conc Ratio for Sr	0.24
Meat Preparation Loss	0.24
Meat Post-Cooking Loss	0.24
Unit 4 ET Layers log of van Genuchten's n	0.24
DCF Photon2 REF	0.24
Intermediate Lake Depth (m)	0.23
Beef Transfer Factor for Ra (day/kg)	0.23
Kd Silt for Sr (mL/g)	0.23
Kd Sand for Np (mL/g)	0.23
Deep Time DCF Beta REF	0.23
Deep Lake Depth (m)	0.23
Saltwater Solubility for Ac (mol/L)	0.23
Deep Time Intermediate Lake Duration (yr)	0.23
Forb Root Shape Parameter b	0.23
Deep Time Deep Lake End (yr)	0.23
Kd Silt for Ac (mL/g)	0.23
Mammal Burrow Shape Parameter b	0.22
Beef Transfer Factor for Sr (day/kg)	0.22
Unit 2 Porosity	0.22
Activity Conc in SRS DU Waste: U236 (pCi/g)	0.22
Saltwater Solubility for Am (mol/L)	0.22
Ant Colony Density - Plot 5 (1/ha)	0.22
Kd Silt for Pb (mL/g)	0.22
Beef Transfer Factor for Ac (day/kg)	0.21
Kd Clay for Ac (mL/g)	0.21
Kd Clay for Pa (mL/g)	0.21
Deep Time Lake Start (yr)	0.21
Activity Conc in SRS DU Waste: Cs137 (pCi/g)	0.21
Kd Clay for U (mL/g)	0.21
Greasewood Root.Shoot Ratio	0.21
Kd Silt for Th (mL/g)	0.21
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	0.21
Unit 4 Compacted Bulk Density (g/cm3)	0.21
Plant.Soil Conc Ratio for Pu	0.21
Plant.Soil Conc Ratio for Am	0.21
Kd Silt for Ra (mL/g)	0.21
Body Weight Factor for Antelope	0.20
Kd Clay for Am (mL/g)	0.20
Beef Transfer Factor for Pa (day/kg)	0.20
Deep Time Aeolian Deposition Depth (m)	0.20
Kd Clay for Sr (mL/g)	0.20

Sensitivity Analysis Results for the Clive DU PA

Soil Ingestion Rate for Antelope (kg/day)	0.20
Tree Root.Shoot Ratio	0.20
Plant.Soil Conc Ratio for Pa	0.20
Mammal Burrow Excavation Rate (m3/yr)	0.20
Biomass % Cover Selector	0.20
Plant.Soil Conc Ratio for Pb	0.20
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.20
Activity Conc in SRS DU Waste: U238 (pCi/g)	0.20
Unit 4 Compacted Residual Water Content	0.19
Contaminated Fraction of GDP DU	0.19
Activity Conc in SRS DU Waste: Np237 (pCi/g)	0.19
Deep Time Aeolian Deposition Age (yr)	0.19
Kd Sand for Tc (mL/g)	0.19
Intermediate Lake Sed Thickness (m)	0.19
Site Dispersal Area (km2)	0.19
DCF Alpha REF	0.19
Deep Time DCF Photon 1 REF	0.19
Ant Colony Lifespan (yr)	0.19
Saltwater Solubility for UO3 (mol/L)	0.18
Plant.Soil Conc Ratio for I	0.18
Silt Sand Gravel Porosity	0.18
Saltwater Solubility for Tc (mol/L)	0.18
Shrub Root Shape Parameter b	0.18
Saltwater Solubility for Rn (mol/L)	0.18
Kd Silt for Am (mL/g)	0.18
Beef Transfer Factor for Pu (day/kg)	0.18
Tortuosity Water Content Exponent	0.17
Tortuosity Porosity Exponent	0.17
Kd Sand for Pb (mL/g)	0.17
Ant Colony Density - Plot 1 (1/ha)	0.17
Saturated Zone Water Table Gradient	0.17
Beef Transfer Factor for Np (day/kg)	0.17
Unit 2 Bulk Density (g/cm3)	0.17
Mammal Mound Density - Plot 1 (1/ha)	0.17
DCF Beta REF	0.17
Saltwater Solubility for I (mol/L)	0.17
Antelope Range Area (acre)	0.16
Beef Transfer Factor for I (day/kg)	0.16
Resuspended Particle Fraction	0.16
Unit 2 Saturated Hyd Cond (cm/s)	0.16
Ant Colony Density - Plot 2 (1/ha)	0.16
Kd Silt for U (mL/g)	0.16
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.16

Sensitivity Analysis Results for the Clive DU PA

Kd Sand for Pu (mL/g)	0.16
Saltwater Solubility for Pu (mol/L)	0.16
Soil Temperature (°C)	0.16
Grass Root Shape Parameter b	0.15
Water Ingestion Rate for Cattle (kg/day)	0.15
Plant.Soil Conc Ratio for Th	0.15
Deep Time Diffusion Length (m)	0.15
Deep Time Aeolian Correlation	0.15
Fine Gravel Mix Porosity	0.15
Mammal Mound Density - Plot 2 (1/ha)	0.15
Greasewood Root Shape Parameter b	0.15
Beef Transfer Factor for Am (day/kg)	0.14
Unit 3 Saturated Hyd Cond (cm/s)	0.14
Kd Clay for Th (mL/g)	0.14
Plant.Soil Conc Ratio for Ac	0.14
Water Ingestion Rate for Antelope (kg/day)	0.14
Ant Colony Density - Plot 4 (1/ha)	0.13
Forb Root.Shoot Ratio	0.13
Mammal Mound Density - Plot 4 (1/ha)	0.13
Silt Sand Gravel BulkDensity (g/cm ³)	0.12
Fine Gravel Mix BulkDensity (g/cm ³)	0.12
Beef Transfer Factor for Cs (day/kg)	0.12
Kd Sand for I (mL/g)	0.12
Plant.Soil Conc Ratio for U	0.11
Vegetation Association Selector	0.11
Unit 3 Brooks-Corey Fractal Dimension	0.09
Tree Root Shape Parameter b	0.08
Soil Ingestion Tracer Element	0.02

Table 16: Peak Dose within 10,000 years – Rest Area**R-squared = 87%**

Explanatory Variable	Sensitivity Index
Radon Escape.Production Ratio for Waste	49.19
Kd Sand for Ra (mL/g)	7.80
Molecular Diffusivity in Water (cm ² /s)	3.89
Activity Conc in SRS DU Waste: U234 (pCi/g)	1.63
Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	1.19
Surface Atmosphere Thickness (m)	1.08
Unit 4 ET Layers log of van Genuchten's α	1.02
Saltwater Solubility for Ra (mol/L)	0.98
Unit 3 Porosity	0.61
Unit 4 Compacted Porosity	0.44
Mammal Burrow Shape Parameter b	0.43
Unit 3 Residual Water Content	0.41
Greasewood Root Shape Parameter b	0.38
Unit 4 ET Layers Porosity	0.38
RipRap Bulk Density (g/cm ³)	0.37
Beef Transfer Factor for U (day/kg)	0.35
Ant Colony Density - Plot 3 (1/ha)	0.35
Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.33
Biomass Production Rate (kg.ha.yr)	0.33
Shrub Root.Shoot Ratio	0.33
Saturated Zone Thickness (m)	0.32
Beef Transfer Factor for Sr (day/kg)	0.30
Plant.Soil Conc Ratio for Am	0.30
Kd Clay for Am (mL/g)	0.30
Unit 4 ET Layers log of van Genuchten's n	0.28
Saltwater Solubility for Sr (mol/L)	0.28
Soil Ingestion Rate for Cattle (kg/day)	0.27
Fine Cobble Mix BulkDensity (g/cm ³)	0.26
Kd Clay for Np (mL/g)	0.26
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.26
Kd Clay for Ra (mL/g)	0.25
Surface Wind Speed (m/s)	0.25
GDP DU Inventory Storage Dead Space (m ²)	0.25
Greasewood Root.Shoot Ratio	0.25
Plant.Soil Conc Ratio for Cs	0.24
Fine CobbleMix Porosity	0.24
Forage Ingestion Rate for Cattle (kg/day)	0.24
Kd Silt for Np (mL/g)	0.24
Ant Nest Shape Parameter b	0.24
Kd Silt for Ra (mL/g)	0.24

Sensitivity Analysis Results for the Clive DU PA

Ant Nest Volume (m3)	0.23
Unit 3 Bulk Density (g/cm3)	0.23
Kd Sand for U (mL/g)	0.23
Plant.Soil Conc Ratio for Ra	0.23
Kd Sand for Th (mL/g)	0.23
RipRap Porosity	0.23
Activity Conc in SRS DU Waste: U236 (pCi/g)	0.23
Activity Conc in SRS DU Waste: Am241 (pCi/g)	0.23
Activity Conc in SRS DU Waste: Np237 (pCi/g)	0.22
Kd Clay for Pb (mL/g)	0.22
Unit 4 Compacted Hb (cm)	0.22
Saltwater Solubility for Pb (mol/L)	0.22
Plant.Soil Conc Ratio for Pu	0.22
Federal DU Cell Unsaturated Zone Thickness (m)	0.22
Unit 3 Bubbling Pressure Head (cm)	0.21
Kd Silt for Pu (mL/g)	0.21
Activity Conc in SRS DU Waste: U233 (pCi/g)	0.21
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	0.21
Kd Sand for Am (mL/g)	0.21
Saltwater Solubility for U3O8 (mol/L)	0.21
Saltwater Solubility for Th (mol/L)	0.20
Kd Clay for Pa (mL/g)	0.20
Saltwater Solubility for Pa (mol/L)	0.20
Plant Fresh Weight Conversion	0.20
Plant.Soil Conc Ratio for Sr	0.20
Plant.Soil Conc Ratio for Np	0.20
Kd Silt for Th (mL/g)	0.20
Mammal Burrow Excavation Rate (m3/yr)	0.20
Kd Sand for Cs (mL/g)	0.19
Unit 2 Porosity	0.19
Grass Root Shape Parameter b	0.19
Saltwater Solubility for Tc (mol/L)	0.19
Beef Transfer Factor for Pb (day/kg)	0.19
DCF Photon1 REF	0.19
Kd Silt for Pa (mL/g)	0.19
Kd Silt for Ac (mL/g)	0.18
Beef Transfer Factor for Ac (day/kg)	0.18
Intermediate Lake Depth (m)	0.18
Soil Temperature (°C)	0.18
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	0.18
Meat Post-Cooking Loss	0.18
Intermediate Lake Sed Thickness (m)	0.18
Saltwater Solubility for Ac (mol/L)	0.18

Sensitivity Analysis Results for the Clive DU PA

Saltwater Solubility for UO3 (mol/L)	0.17
Surface Atmosphere Diffusion Length (m)	0.17
Ant Colony Density - Plot 5 (1/ha)	0.17
Soil Ingestion Rate for Antelope (kg/day)	0.17
Receptor Area (ha)	0.17
Kd Silt for Cs (mL/g)	0.17
Kd Clay for Cs (mL/g)	0.17
Kd Sand for Sr (mL/g)	0.17
Plant.Soil Conc Ratio for Th	0.17
Resuspended Particle Fraction	0.17
Deep Time DCF Alpha REF	0.17
Resuspension Flux (kg.m2-yr)	0.17
Saltwater Solubility for Np (mol/L)	0.17
Kd Sand for Ac (mL/g)	0.16
Deep Time Receptor Area (ac)	0.16
Plant.Soil Conc Ratio for I	0.16
Beef Transfer Factor for I (day/kg)	0.16
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	0.16
Activity Conc in SRS DU Waste: Cs137 (pCi/g)	0.16
Deep Time DCF Photon 1 REF	0.16
Plant.Soil Conc Ratio for U	0.16
Kd Clay for Pu (mL/g)	0.15
Water Ingestion Rate for Antelope (kg/day)	0.15
Kd Sand for Np (mL/g)	0.15
Deep Time DCF Photon 2 REF	0.15
Beef Transfer Factor for Th (day/kg)	0.15
Kd Silt for U (mL/g)	0.15
Tree Root.Shoot Ratio	0.15
Saltwater Solubility for Cs (mol/L)	0.15
Activity Conc in SRS DU Waste: U238 (pCi/g)	0.15
Meat Preparation Loss	0.15
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.15
Site Dispersal Area (km2)	0.15
Mammal Mound Density - Plot 5 (1/ha)	0.15
Plant.Soil Conc Ratio for Tc	0.14
DCF Alpha REF	0.14
Grass Root.Shoot Ratio	0.14
Beef Transfer Factor for Ra (day/kg)	0.14
Unit 4 ET Layers Bulk Density (g/cm3)	0.14
Deep Time DCF Beta REF	0.14
Kd Silt for Pb (mL/g)	0.14
Mammal Mound Density - Plot 3 (1/ha)	0.14
Unit 4 Compacted Bulk Density (g/cm3)	0.14

Sensitivity Analysis Results for the Clive DU PA

Deep Time Lake Start (yr)	0.14
Deep Time Aeolian Deposition Age (yr)	0.14
Mammal Mound Density - Plot 2 (1/ha)	0.14
DCF Beta REF	0.13
Deep Time Diffusion Length (m)	0.13
Saltwater Solubility for Rn (mol/L)	0.13
Silt Sand Gravel BulkDensity (g/cm ³)	0.13
Kd Sand for Pa (mL/g)	0.13
Ant Colony Lifespan (yr)	0.13
Random Gully Selector	0.13
Saltwater Solubility for I (mol/L)	0.13
Unit 4 Compacted Residual Water Content	0.13
OHV Dust Adjustment	0.13
Plant.Soil Conc Ratio for Pb	0.13
Body Weight Factor for Antelope	0.13
Beef Transfer Factor for Pa (day/kg)	0.13
Deep Time Aeolian Deposition Depth (m)	0.13
Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.13
DCF Photon2 REF	0.12
Ant Colony Density - Plot 2 (1/ha)	0.12
Forb Root Shape Parameter b	0.12
Kd Clay for U (mL/g)	0.12
Shrub Root Shape Parameter b	0.12
Kd Clay for Ac (mL/g)	0.12
Plant.Soil Conc Ratio for Pa	0.12
Kd Clay for Sr (mL/g)	0.12
Plant.Soil Conc Ratio for Ac	0.12
Deep Time Deep Lake End (yr)	0.12
Liner Clay Saturated Hyd Cond (cm/s)	0.12
Fine Gravel Mix Porosity	0.12
Kd Silt for Am (mL/g)	0.12
Deep Time Aeolian Correlation	0.11
Tortuosity Porosity Exponent	0.11
Saturated Zone Water Table Gradient	0.11
Kd Sand for Tc (mL/g)	0.11
Biomass % Cover Selector	0.11
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.11
Ant Colony Density - Plot 4 (1/ha)	0.11
Unit 2 Bulk Density (g/cm ³)	0.11
Beef Transfer Factor for Tc (day/kg)	0.11
Ant Colony Density - Plot 1 (1/ha)	0.11
Kd Sand for Pb (mL/g)	0.11
Kd Clay for Th (mL/g)	0.11

Sensitivity Analysis Results for the Clive DU PA

Silt Sand Gravel Porosity	0.11
Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.10
Contaminated Fraction of GDP DU	0.10
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.10
Mammal Mound Density - Plot 4 (1/ha)	0.10
Saltwater Solubility for Pu (mol/L)	0.10
Kd Sand for I (mL/g)	0.10
Beef Transfer Factor for Np (day/kg)	0.10
Forb Root.Shoot Ratio	0.10
Saltwater Solubility for Am (mol/L)	0.10
Water Ingestion Rate for Cattle (kg/day)	0.10
Unit 3 Saturated Hyd Cond (cm/s)	0.10
Unit 2 Saturated Hyd Cond (cm/s)	0.10
Beef Transfer Factor for Pu (day/kg)	0.10
Deep Time Intermediate Lake Duration (yr)	0.09
Fine Gravel Mix BulkDensity (g/cm3)	0.09
Deep Lake Depth (m)	0.09
Mammal Mound Density - Plot 1 (1/ha)	0.09
Antelope Range Area (acre)	0.09
Beef Transfer Factor for Am (day/kg)	0.08
Beef Transfer Factor for Cs (day/kg)	0.08
Tortuosity Water Content Exponent	0.08
Kd Sand for Pu (mL/g)	0.08
Kd Silt for Sr (mL/g)	0.08
Tree Root Shape Parameter b	0.05
Vegetation Association Selector	0.05
Unit 3 Brooks-Corey Fractal Dimension	0.04
Soil Ingestion Tracer Element	0.02

Table 17: Peak Dose within 10,000 years – Sport OHV**R-squared = 97%**

Explanatory Variable	Sensitivity Index
Radon Escape.Production Ratio for Waste	68.90
Kd Sand for Ra (mL/g)	11.81
Molecular Diffusivity in Water (cm ² /s)	6.86
Unit 4 ET Layers log of van Genuchten's α	1.44
Saltwater Solubility for Ra (mol/L)	1.24
Activity Conc in SRS DU Waste: U234 (pCi/g)	1.19
Unit 4 Compacted Porosity	0.35
Resuspension Flux (kg.m ² -yr)	0.35
Unit 4 ET Layers Porosity	0.32
Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	0.30
Unit 3 Residual Water Content	0.29
Unit 3 Porosity	0.29
Saltwater Solubility for Rn (mol/L)	0.19
Unit 3 Bulk Density (g/cm ³)	0.18
Shrub Root.Shoot Ratio	0.17
Resuspended Particle Fraction	0.14
Unit 4 ET Layers log of van Genuchten's n	0.13
Unit 3 Bubbling Pressure Head (cm)	0.11
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.10
Kd Sand for Pb (mL/g)	0.10
Biomass % Cover Selector	0.09
Unit 2 Porosity	0.09
RipRap Bulk Density (g/cm ³)	0.08
Soil Ingestion Rate for Cattle (kg/day)	0.08
Kd Clay for Sr (mL/g)	0.08
Saturated Zone Water Table Gradient	0.06
Kd Silt for Th (mL/g)	0.06
Unit 2 Saturated Hyd Cond (cm/s)	0.06
Mammal Burrow Excavation Rate (m ³ /yr)	0.06
Kd Clay for Pu (mL/g)	0.06
Beef Transfer Factor for Ac (day/kg)	0.06
Deep Time DCF Beta REF	0.05
Soil Temperature (°C)	0.05
Ant Colony Density - Plot 2 (1/ha)	0.05
Unit 3 Saturated Hyd Cond (cm/s)	0.05
Biomass Production Rate (kg.ha.yr)	0.05
Saltwater Solubility for I (mol/L)	0.05
Kd Clay for Am (mL/g)	0.05
Activity Conc in SRS DU Waste: Cs137 (pCi/g)	0.05
Beef Transfer Factor for Am (day/kg)	0.05

Sensitivity Analysis Results for the Clive DU PA

Plant.Soil Conc Ratio for Pu	0.04
Deep Time Lake Start (yr)	0.04
Deep Time DCF Photon 1 REF	0.04
Kd Sand for Pa (mL/g)	0.04
Kd Silt for Pb (mL/g)	0.04
Deep Time DCF Alpha REF	0.04
Ant Colony Density - Plot 3 (1/ha)	0.04
Kd Sand for Np (mL/g)	0.04
Surface Atmosphere Diffusion Length (m)	0.04
Plant.Soil Conc Ratio for Am	0.04
Kd Clay for Ra (mL/g)	0.04
Plant.Soil Conc Ratio for Sr	0.04
Contaminated Fraction of GDP DU	0.04
RipRap Porosity	0.04
Water Ingestion Rate for Cattle (kg/day)	0.04
Meat Post-Cooking Loss	0.04
Beef Transfer Factor for Pa (day/kg)	0.04
Intermediate Lake Depth (m)	0.04
Deep Time Aeolian Correlation	0.04
DCF Beta REF	0.04
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.04
Plant.Soil Conc Ratio for I	0.04
Saltwater Solubility for U3O8 (mol/L)	0.04
Kd Silt for Ra (mL/g)	0.04
Saltwater Solubility for Sr (mol/L)	0.04
Meat Preparation Loss	0.04
GDP DU Inventory Storage Dead Space (m2)	0.04
Saltwater Solubility for Pb (mol/L)	0.04
OHV Dust Adjustment	0.04
Beef Transfer Factor for Tc (day/kg)	0.03
Grass Root.Shoot Ratio	0.03
Kd Silt for Pa (mL/g)	0.03
Saltwater Solubility for Np (mol/L)	0.03
Deep Time DCF Photon 2 REF	0.03
Tree Root.Shoot Ratio	0.03
Beef Transfer Factor for Np (day/kg)	0.03
Kd Silt for Ac (mL/g)	0.03
Deep Time Receptor Area (ac)	0.03
Saturated Zone Thickness (m)	0.03
Mammal Mound Density - Plot 5 (1/ha)	0.03
Kd Sand for Tc (mL/g)	0.03
DCF Photon1 REF	0.03
Saltwater Solubility for Ac (mol/L)	0.03

Sensitivity Analysis Results for the Clive DU PA

Plant.Soil Conc Ratio for Tc	0.03
Kd Clay for Pb (mL/g)	0.03
Activity Conc in SRS DU Waste: U233 (pCi/g)	0.03
Beef Transfer Factor for Pu (day/kg)	0.03
Kd Sand for Am (mL/g)	0.03
Plant.Soil Conc Ratio for Th	0.03
DCF Alpha REF	0.03
Ant Colony Density - Plot 1 (1/ha)	0.03
Activity Conc in SRS DU Waste: Np237 (pCi/g)	0.03
Saltwater Solubility for Th (mol/L)	0.03
Liner Clay Saturated Hyd Cond (cm/s)	0.03
Kd Clay for Cs (mL/g)	0.03
Silt Sand Gravel BulkDensity (g/cm3)	0.03
Surface Wind Speed (m/s)	0.03
Kd Sand for Cs (mL/g)	0.03
Kd Clay for U (mL/g)	0.03
Unit 4 Compacted Bulk Density (g/cm3)	0.03
Plant.Soil Conc Ratio for Pa	0.03
Vegetation Association Selector	0.03
Body Weight Factor for Antelope	0.03
Beef Transfer Factor for Th (day/kg)	0.03
Forb Root Shape Parameter b	0.03
Ant Nest Shape Parameter b	0.03
Shrub Root Shape Parameter b	0.03
Surface Atmosphere Thickness (m)	0.03
Kd Sand for U (mL/g)	0.03
Kd Silt for Np (mL/g)	0.03
Plant.Soil Conc Ratio for Ra	0.03
Kd Silt for Pu (mL/g)	0.03
Kd Silt for Cs (mL/g)	0.03
Receptor Area (ha)	0.03
Mammal Burrow Shape Parameter b	0.03
Activity Conc in SRS DU Waste: Am241 (pCi/g)	0.03
Fine Cobble Mix BulkDensity (g/cm3)	0.03
Plant.Soil Conc Ratio for U	0.03
Plant.Soil Conc Ratio for Pb	0.03
Saltwater Solubility for Pu (mol/L)	0.03
Deep Time Deep Lake End (yr)	0.03
Soil Ingestion Rate for Antelope (kg/day)	0.03
Beef Transfer Factor for Sr (day/kg)	0.03
Saltwater Solubility for Tc (mol/L)	0.03
Kd Clay for Pa (mL/g)	0.03
Kd Silt for Sr (mL/g)	0.03

Sensitivity Analysis Results for the Clive DU PA

Kd Silt for Am (mL/g)	0.03
Federal DU Cell Unsaturated Zone Thickness (m)	0.03
Deep Time Aeolian Deposition Depth (m)	0.03
Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.03
Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.02
Activity Conc in SRS DU Waste: U238 (pCi/g)	0.02
Saltwater Solubility for UO3 (mol/L)	0.02
Kd Sand for Pu (mL/g)	0.02
Kd Clay for Np (mL/g)	0.02
DCF Photon2 REF	0.02
Deep Lake Depth (m)	0.02
Site Dispersal Area (km2)	0.02
Kd Sand for Th (mL/g)	0.02
Ant Colony Density - Plot 4 (1/ha)	0.02
Greasewood Root Shape Parameter b	0.02
Tortuosity Water Content Exponent	0.02
Ant Colony Lifespan (yr)	0.02
Saltwater Solubility for Pa (mol/L)	0.02
Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.02
Kd Sand for Sr (mL/g)	0.02
Fine CobbleMix Porosity	0.02
Unit 3 Brooks-Corey Fractal Dimension	0.02
Intermediate Lake Sed Thickness (m)	0.02
Mammal Mound Density - Plot 4 (1/ha)	0.02
Random Gully Selector	0.02
Forage Ingestion Rate for Cattle (kg/day)	0.02
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	0.02
Plant.Soil Conc Ratio for Cs	0.02
Activity Conc in SRS DU Waste: U236 (pCi/g)	0.02
Greasewood Root.Shoot Ratio	0.02
Antelope Range Area (acre)	0.02
Silt Sand Gravel Porosity	0.02
Beef Transfer Factor for U (day/kg)	0.02
Unit 4 ET Layers Bulk Density (g/cm3)	0.02
Unit 2 Bulk Density (g/cm3)	0.02
Deep Time Intermediate Lake Duration (yr)	0.02
Saltwater Solubility for Am (mol/L)	0.02
Ant Nest Volume (m3)	0.02
Kd Clay for Th (mL/g)	0.02
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	0.02
Kd Silt for U (mL/g)	0.02
Beef Transfer Factor for I (day/kg)	0.02
Plant Fresh Weight Conversion	0.02

Sensitivity Analysis Results for the Clive DU PA

Fine Gravel Mix Porosity	0.02
Grass Root Shape Parameter b	0.02
Kd Sand for Ac (mL/g)	0.02
Mammal Mound Density - Plot 1 (1/ha)	0.02
Plant.Soil Conc Ratio for Np	0.02
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.02
Kd Sand for I (mL/g)	0.02
Mammal Mound Density - Plot 3 (1/ha)	0.02
Saltwater Solubility for Cs (mol/L)	0.02
Deep Time Diffusion Length (m)	0.02
Beef Transfer Factor for Ra (day/kg)	0.02
Beef Transfer Factor for Pb (day/kg)	0.02
Unit 4 Compacted Residual Water Content	0.02
Forb Root.Shoot Ratio	0.02
Unit 4 Compacted Hb (cm)	0.02
Water Ingestion Rate for Antelope (kg/day)	0.02
Plant.Soil Conc Ratio for Ac	0.02
Tortuosity Porosity Exponent	0.02
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.02
Mammal Mound Density - Plot 2 (1/ha)	0.02
Ant Colony Density - Plot 5 (1/ha)	0.02
Kd Clay for Ac (mL/g)	0.02
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	0.02
Fine Gravel Mix BulkDensity (g/cm ³)	0.02
Beef Transfer Factor for Cs (day/kg)	0.01
Tree Root Shape Parameter b	0.01
Deep Time Aeolian Deposition Age (yr)	0.01
Soil Ingestion Tracer Element	0.01

Table 18: Peak Dose within 10,000 years – UTTR Dose**R-squared = 85%**

Explanatory Variable	Sensitivity Index
Radon Escape.Production Ratio for Waste	44.58
Kd Sand for Ra (mL/g)	7.08
Molecular Diffusivity in Water (cm ² /s)	3.32
Activity Conc in SRS DU Waste: U234 (pCi/g)	1.76
Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	1.08
Unit 4 ET Layers log of van Genuchten's α	1.03
Surface Atmosphere Thickness (m)	0.91
Soil Ingestion Rate for Cattle (kg/day)	0.80
Saltwater Solubility for Ra (mol/L)	0.77
Unit 3 Porosity	0.76
RipRap Bulk Density (g/cm ³)	0.62
Beef Transfer Factor for U (day/kg)	0.54
Unit 3 Residual Water Content	0.43
Unit 4 Compacted Porosity	0.43
Surface Wind Speed (m/s)	0.41
Biomass Production Rate (kg.ha.yr)	0.39
Shrub Root.Shoot Ratio	0.39
Kd Sand for U (mL/g)	0.39
Forage Ingestion Rate for Cattle (kg/day)	0.37
Unit 4 ET Layers Porosity	0.37
Saltwater Solubility for Sr (mol/L)	0.37
Activity Conc in SRS DU Waste: Np237 (pCi/g)	0.36
Fine CobbleMix Porosity	0.35
Activity Conc in SRS DU Waste: U233 (pCi/g)	0.34
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.34
Kd Clay for Am (mL/g)	0.34
Fine Cobble Mix BulkDensity (g/cm ³)	0.33
Kd Silt for Np (mL/g)	0.33
Ant Colony Density - Plot 3 (1/ha)	0.33
Kd Sand for Np (mL/g)	0.33
Intermediate Lake Depth (m)	0.32
Plant.Soil Conc Ratio for Pu	0.31
Unit 3 Bulk Density (g/cm ³)	0.31
Plant.Soil Conc Ratio for Cs	0.30
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	0.30
Beef Transfer Factor for Pb (day/kg)	0.29
Kd Silt for Th (mL/g)	0.29
Saltwater Solubility for Pb (mol/L)	0.28
Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.28
Kd Sand for Am (mL/g)	0.28

Sensitivity Analysis Results for the Clive DU PA

Soil Temperature (Â°C)	0.28
Kd Clay for Np (mL/g)	0.27
Saltwater Solubility for Pa (mol/L)	0.27
Ant Nest Volume (m3)	0.26
Plant.Soil Conc Ratio for Sr	0.26
Activity Conc in SRS DU Waste: U236 (pCi/g)	0.26
Saturated Zone Thickness (m)	0.25
Saltwater Solubility for Tc (mol/L)	0.25
Plant.Soil Conc Ratio for Tc	0.24
Kd Clay for Pb (mL/g)	0.24
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	0.24
Ant Colony Density - Plot 5 (1/ha)	0.24
Unit 4 ET Layers log of van Genuchten's n	0.24
Unit 4 Compacted Hb (cm)	0.24
Kd Silt for Pb (mL/g)	0.24
Ant Nest Shape Parameter b	0.23
DCF Alpha REF	0.23
Unit 4 Compacted Bulk Density (g/cm3)	0.23
Greasewood Root Shape Parameter b	0.23
Kd Silt for Pa (mL/g)	0.23
Kd Clay for Pa (mL/g)	0.23
Beef Transfer Factor for Sr (day/kg)	0.23
Saltwater Solubility for Cs (mol/L)	0.23
Resuspension Flux (kg.m2-yr)	0.23
Saltwater Solubility for Th (mol/L)	0.23
Plant Fresh Weight Conversion	0.23
GDP DU Inventory Storage Dead Space (m2)	0.23
Plant.Soil Conc Ratio for Ra	0.22
DCF Photon1 REF	0.22
Activity Conc in SRS DU Waste: U238 (pCi/g)	0.22
Kd Silt for Ac (mL/g)	0.22
Deep Time Lake Start (yr)	0.22
Plant.Soil Conc Ratio for I	0.22
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	0.22
Resuspended Particle Fraction	0.22
RipRap Porosity	0.22
Saltwater Solubility for UO3 (mol/L)	0.22
Kd Sand for Th (mL/g)	0.22
Plant.Soil Conc Ratio for Th	0.22
Kd Silt for Ra (mL/g)	0.21
Mammal Burrow Shape Parameter b	0.21
Beef Transfer Factor for Pa (day/kg)	0.21
Kd Silt for Cs (mL/g)	0.21

Sensitivity Analysis Results for the Clive DU PA

Beef Transfer Factor for Tc (day/kg)	0.21
Plant.Soil Conc Ratio for Am	0.21
Kd Silt for U (mL/g)	0.21
Unit 2 Porosity	0.20
Intermediate Lake Sed Thickness (m)	0.20
Surface Atmosphere Diffusion Length (m)	0.20
Beef Transfer Factor for I (day/kg)	0.20
Random Gully Selector	0.20
Kd Sand for Cs (mL/g)	0.20
Kd Silt for Pu (mL/g)	0.20
Saltwater Solubility for U3O8 (mol/L)	0.20
Deep Time Aeolian Deposition Age (yr)	0.20
Federal DU Cell Unsaturated Zone Thickness (m)	0.20
Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.19
Kd Clay for Ra (mL/g)	0.19
Activity Conc in SRS DU Waste: Am241 (pCi/g)	0.19
Meat Post-Cooking Loss	0.19
Unit 3 Bubbling Pressure Head (cm)	0.19
Mammal Mound Density - Plot 3 (1/ha)	0.19
Site Dispersal Area (km ²)	0.19
Kd Sand for Pa (mL/g)	0.19
Deep Time DCF Photon 2 REF	0.19
Silt Sand Gravel Porosity	0.19
Deep Time Aeolian Deposition Depth (m)	0.19
Meat Preparation Loss	0.18
Beef Transfer Factor for Ac (day/kg)	0.18
Saltwater Solubility for Np (mol/L)	0.18
Saltwater Solubility for Ac (mol/L)	0.18
Ant Colony Lifespan (yr)	0.18
Mammal Burrow Excavation Rate (m ³ /yr)	0.18
Greasewood Root.Shoot Ratio	0.18
Unit 4 ET Layers Bulk Density (g/cm ³)	0.18
Water Ingestion Rate for Cattle (kg/day)	0.18
Kd Sand for Sr (mL/g)	0.17
Kd Clay for Cs (mL/g)	0.17
Kd Clay for Pu (mL/g)	0.17
Forb Root.Shoot Ratio	0.17
Beef Transfer Factor for Ra (day/kg)	0.17
Activity Conc in SRS DU Waste: Cs137 (pCi/g)	0.17
Plant.Soil Conc Ratio for Ac	0.17
Mammal Mound Density - Plot 5 (1/ha)	0.17
Grass Root.Shoot Ratio	0.16
Beef Transfer Factor for Th (day/kg)	0.16

Sensitivity Analysis Results for the Clive DU PA

Deep Time Deep Lake End (yr)	0.16
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.16
Shrub Root Shape Parameter b	0.16
Kd Sand for I (mL/g)	0.16
Receptor Area (ha)	0.16
Deep Time Diffusion Length (m)	0.16
Plant.Soil Conc Ratio for U	0.16
Deep Time DCF Alpha REF	0.16
Unit 4 Compacted Residual Water Content	0.16
Fine Gravel Mix Porosity	0.16
Deep Time DCF Photon 1 REF	0.16
Ant Colony Density - Plot 4 (1/ha)	0.15
Plant.Soil Conc Ratio for Pb	0.15
Water Ingestion Rate for Antelope (kg/day)	0.15
Body Weight Factor for Antelope	0.15
Grass Root Shape Parameter b	0.15
Kd Sand for Pb (mL/g)	0.15
Plant.Soil Conc Ratio for Np	0.15
Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.15
Mammal Mound Density - Plot 2 (1/ha)	0.14
Kd Clay for Ac (mL/g)	0.14
Biomass % Cover Selector	0.14
Beef Transfer Factor for Np (day/kg)	0.14
Deep Time Receptor Area (ac)	0.14
Saltwater Solubility for Am (mol/L)	0.14
Soil Ingestion Rate for Antelope (kg/day)	0.14
Kd Clay for U (mL/g)	0.14
Beef Transfer Factor for Am (day/kg)	0.14
Beef Transfer Factor for Pu (day/kg)	0.14
Tree Root.Shoot Ratio	0.14
Kd Sand for Ac (mL/g)	0.14
Saltwater Solubility for Rn (mol/L)	0.14
Mammal Mound Density - Plot 4 (1/ha)	0.14
DCF Beta REF	0.14
Deep Time DCF Beta REF	0.14
Liner Clay Saturated Hyd Cond (cm/s)	0.14
Kd Sand for Pu (mL/g)	0.14
Kd Clay for Sr (mL/g)	0.14
Deep Time Aeolian Correlation	0.13
Unit 2 Bulk Density (g/cm ³)	0.13
Saltwater Solubility for I (mol/L)	0.13
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.13
Forb Root Shape Parameter b	0.13

Sensitivity Analysis Results for the Clive DU PA

OHV Dust Adjustment	0.13
Plant.Soil Conc Ratio for Pa	0.13
Deep Time Intermediate Lake Duration (yr)	0.12
DCF Photon2 REF	0.12
Unit 3 Saturated Hyd Cond (cm/s)	0.12
Silt Sand Gravel BulkDensity (g/cm ³)	0.12
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.12
Fine Gravel Mix BulkDensity (g/cm ³)	0.12
Beef Transfer Factor for Cs (day/kg)	0.12
Saltwater Solubility for Pu (mol/L)	0.12
Kd Silt for Am (mL/g)	0.11
Kd Silt for Sr (mL/g)	0.11
Kd Sand for Tc (mL/g)	0.11
Saturated Zone Water Table Gradient	0.11
Deep Lake Depth (m)	0.11
Tortuosity Porosity Exponent	0.11
Antelope Range Area (acre)	0.11
Unit 2 Saturated Hyd Cond (cm/s)	0.11
Tortuosity Water Content Exponent	0.11
Ant Colony Density - Plot 1 (1/ha)	0.11
Ant Colony Density - Plot 2 (1/ha)	0.11
Kd Clay for Th (mL/g)	0.10
Contaminated Fraction of GDP DU	0.10
Mammal Mound Density - Plot 1 (1/ha)	0.08
Vegetation Association Selector	0.08
Tree Root Shape Parameter b	0.05
Unit 3 Brooks-Corey Fractal Dimension	0.05
Soil Ingestion Tracer Element	0.02

Table 19: Peak Dose within 10,000 years – Rancher**R-squared = 85%**

Explanatory Variable	Sensitivity Index
Radon Escape.Production Ratio for Waste	43.78
Kd Sand for Ra (mL/g)	7.92
Molecular Diffusivity in Water (cm ² /s)	4.08
Unit 4 ET Layers log of van Genuchten's α	1.19
Activity Conc in SRS DU Waste: U234 (pCi/g)	0.95
Unit 4 Compacted Porosity	0.84
Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	0.74
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.71
Saltwater Solubility for Ra (mol/L)	0.70
Unit 3 Porosity	0.68
Unit 3 Residual Water Content	0.67
Greasewood Root Shape Parameter b	0.63
Kd Clay for Sr (mL/g)	0.57
Kd Sand for Pa (mL/g)	0.55
Kd Sand for Pb (mL/g)	0.53
Kd Silt for Pu (mL/g)	0.52
Kd Clay for Am (mL/g)	0.43
Unit 4 ET Layers Porosity	0.43
Intermediate Lake Depth (m)	0.42
Saltwater Solubility for Rn (mol/L)	0.42
Kd Silt for Pa (mL/g)	0.40
Grass Root Shape Parameter b	0.39
Unit 3 Bulk Density (g/cm ³)	0.39
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.38
Meat Preparation Loss	0.38
Deep Time Receptor Area (ac)	0.36
Soil Ingestion Rate for Antelope (kg/day)	0.33
Deep Time Aeolian Deposition Age (yr)	0.33
Resuspension Flux (kg.m ² -yr)	0.32
Unit 2 Saturated Hyd Cond (cm/s)	0.32
Plant.Soil Conc Ratio for Th	0.32
Deep Time Lake Start (yr)	0.31
Saltwater Solubility for Tc (mol/L)	0.31
Federal DU Cell Unsaturated Zone Thickness (m)	0.30
Forb Root Shape Parameter b	0.30
Unit 4 ET Layers Bulk Density (g/cm ³)	0.30
Beef Transfer Factor for Am (day/kg)	0.30
Surface Atmosphere Diffusion Length (m)	0.29
Activity Conc in SRS DU Waste: Cs137 (pCi/g)	0.29
Beef Transfer Factor for Pa (day/kg)	0.29

Sensitivity Analysis Results for the Clive DU PA

Plant.Soil Conc Ratio for I	0.28
Contaminated Fraction of GDP DU	0.28
Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.28
Kd Silt for Np (mL/g)	0.28
Deep Time Diffusion Length (m)	0.28
Ant Nest Volume (m3)	0.27
Tree Root.Shoot Ratio	0.27
Plant.Soil Conc Ratio for Am	0.27
Soil Ingestion Rate for Cattle (kg/day)	0.27
DCF Photon2 REF	0.26
Unit 3 Saturated Hyd Cond (cm/s)	0.26
Surface Atmosphere Thickness (m)	0.26
Kd Silt for Pb (mL/g)	0.25
Saltwater Solubility for Pb (mol/L)	0.25
Forage Ingestion Rate for Cattle (kg/day)	0.24
Deep Time Aeolian Deposition Depth (m)	0.24
RipRap Bulk Density (g/cm3)	0.24
Kd Silt for Sr (mL/g)	0.24
Unit 2 Porosity	0.24
Kd Sand for Ac (mL/g)	0.24
RipRap Porosity	0.23
Kd Silt for Cs (mL/g)	0.23
Saltwater Solubility for U3O8 (mol/L)	0.23
Intermediate Lake Sed Thickness (m)	0.23
Kd Silt for Ac (mL/g)	0.23
Kd Clay for Pu (mL/g)	0.22
Mammal Mound Density - Plot 4 (1/ha)	0.22
Kd Sand for Pu (mL/g)	0.22
Surface Wind Speed (m/s)	0.22
Grass Root.Shoot Ratio	0.22
Unit 4 ET Layers log of van Genuchten's n	0.22
Unit 3 Bubbling Pressure Head (cm)	0.22
Mammal Mound Density - Plot 3 (1/ha)	0.22
Mammal Burrow Shape Parameter b	0.21
Deep Time DCF Photon 1 REF	0.21
Plant.Soil Conc Ratio for Sr	0.21
Kd Clay for U (mL/g)	0.21
Plant.Soil Conc Ratio for U	0.21
Mammal Mound Density - Plot 5 (1/ha)	0.21
Plant.Soil Conc Ratio for Pu	0.21
Saltwater Solubility for Am (mol/L)	0.21
Biomass Production Rate (kg.ha.yr)	0.20
Ant Colony Density - Plot 3 (1/ha)	0.20

Sensitivity Analysis Results for the Clive DU PA

Saltwater Solubility for UO3 (mol/L)	0.20
Kd Clay for Cs (mL/g)	0.20
Activity Conc in SRS DU Waste: Np237 (pCi/g)	0.20
Deep Lake Depth (m)	0.20
Kd Silt for Am (mL/g)	0.19
Saltwater Solubility for Pu (mol/L)	0.19
Deep Time DCF Photon 2 REF	0.19
Beef Transfer Factor for Pb (day/kg)	0.19
Kd Sand for Sr (mL/g)	0.19
Kd Sand for Tc (mL/g)	0.19
Saturated Zone Water Table Gradient	0.19
Ant Colony Density - Plot 5 (1/ha)	0.18
Plant.Soil Conc Ratio for Cs	0.18
Kd Sand for Cs (mL/g)	0.18
Ant Colony Density - Plot 2 (1/ha)	0.18
Saltwater Solubility for Pa (mol/L)	0.18
Ant Colony Density - Plot 4 (1/ha)	0.18
Mammal Burrow Excavation Rate (m3/yr)	0.18
Kd Silt for Th (mL/g)	0.18
Soil Temperature (°C)	0.18
Deep Time DCF Alpha REF	0.18
Kd Silt for Ra (mL/g)	0.18
Ant Colony Lifespan (yr)	0.18
OHV Dust Adjustment	0.18
Saltwater Solubility for Np (mol/L)	0.18
Shrub Root Shape Parameter b	0.17
Activity Conc in SRS DU Waste: U236 (pCi/g)	0.17
Beef Transfer Factor for I (day/kg)	0.17
Saltwater Solubility for I (mol/L)	0.17
Resuspended Particle Fraction	0.17
Shrub Root.Shoot Ratio	0.17
Tortuosity Porosity Exponent	0.17
Beef Transfer Factor for Ac (day/kg)	0.17
Plant.Soil Conc Ratio for Ra	0.17
Saltwater Solubility for Th (mol/L)	0.17
Activity Conc in SRS DU Waste: U233 (pCi/g)	0.16
Plant Fresh Weight Conversion	0.16
Tortuosity Water Content Exponent	0.16
Liner Clay Saturated Hyd Cond (cm/s)	0.16
Ant Nest Shape Parameter b	0.16
Kd Sand for Np (mL/g)	0.16
Beef Transfer Factor for Ra (day/kg)	0.16
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	0.16

Sensitivity Analysis Results for the Clive DU PA

Body Weight Factor for Antelope	0.16
Plant.Soil Conc Ratio for Ac	0.16
Site Dispersal Area (km2)	0.16
Meat Post-Cooking Loss	0.16
Ant Colony Density - Plot 1 (1/ha)	0.16
Greasewood Root.Shoot Ratio	0.16
Kd Clay for Pb (mL/g)	0.16
Beef Transfer Factor for U (day/kg)	0.15
Plant.Soil Conc Ratio for Tc	0.15
DCF Beta REF	0.15
Saltwater Solubility for Cs (mol/L)	0.15
Silt Sand Gravel Porosity	0.15
Water Ingestion Rate for Cattle (kg/day)	0.15
Plant.Soil Conc Ratio for Np	0.15
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.15
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.15
Saltwater Solubility for Sr (mol/L)	0.15
Random Gully Selector	0.15
Activity Conc in SRS DU Waste: Am241 (pCi/g)	0.15
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	0.15
Kd Silt for U (mL/g)	0.14
Beef Transfer Factor for Th (day/kg)	0.14
Deep Time Intermediate Lake Duration (yr)	0.14
Saltwater Solubility for Ac (mol/L)	0.14
Deep Time Deep Lake End (yr)	0.14
Biomass % Cover Selector	0.14
Water Ingestion Rate for Antelope (kg/day)	0.14
Fine CobbleMix Porosity	0.14
Kd Clay for Np (mL/g)	0.14
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	0.14
Fine Gravel Mix Porosity	0.14
Kd Clay for Ra (mL/g)	0.13
Deep Time DCF Beta REF	0.13
Unit 4 Compacted Bulk Density (g/cm3)	0.13
Saturated Zone Thickness (m)	0.13
Beef Transfer Factor for Np (day/kg)	0.13
Beef Transfer Factor for Cs (day/kg)	0.13
Kd Sand for U (mL/g)	0.13
DCF Photon1 REF	0.13
Plant.Soil Conc Ratio for Pb	0.13
Fine Gravel Mix BulkDensity (g/cm3)	0.12
Mammal Mound Density - Plot 2 (1/ha)	0.12
Kd Clay for Th (mL/g)	0.12

Sensitivity Analysis Results for the Clive DU PA

Kd Clay for Ac (mL/g)	0.12
Mammal Mound Density - Plot 1 (1/ha)	0.12
Plant.Soil Conc Ratio for Pa	0.12
Silt Sand Gravel BulkDensity (g/cm3)	0.11
Beef Transfer Factor for Sr (day/kg)	0.11
Kd Sand for Th (mL/g)	0.11
Unit 4 Compacted Hb (cm)	0.11
Unit 2 Bulk Density (g/cm3)	0.11
Kd Clay for Pa (mL/g)	0.11
Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.11
Beef Transfer Factor for Pu (day/kg)	0.10
Activity Conc in SRS DU Waste: U238 (pCi/g)	0.10
Fine Cobble Mix BulkDensity (g/cm3)	0.10
Forb Root.Shoot Ratio	0.10
GDP DU Inventory Storage Dead Space (m2)	0.10
DCF Alpha REF	0.10
Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.10
Beef Transfer Factor for Tc (day/kg)	0.09
Receptor Area (ha)	0.09
Vegetation Association Selector	0.09
Kd Sand for Am (mL/g)	0.09
Tree Root Shape Parameter b	0.09
Unit 4 Compacted Residual Water Content	0.09
Antelope Range Area (acre)	0.08
Deep Time Aeolian Correlation	0.08
Unit 3 Brooks-Corey Fractal Dimension	0.07
Kd Sand for I (mL/g)	0.06
Soil Ingestion Tracer Element	0.02

Table 20: Peak Uranium Hazard within 10,000 years - Hunter**R-squared = 96%**

Explanatory Variable	Sensitivity Index
Unit 3 Porosity	8.65
Contaminated Fraction of GDP DU	8.55
Mammal Burrow Excavation Rate (m3/yr)	7.42
Tree Root.Shoot Ratio	7.07
Beef Transfer Factor for Tc (day/kg)	3.32
Kd Sand for U (mL/g)	2.49
Kd Sand for Am (mL/g)	2.21
Unit 3 Residual Water Content	1.72
Molecular Diffusivity in Water (cm2/s)	1.66
Beef Transfer Factor for I (day/kg)	1.59
Saltwater Solubility for UO3 (mol/L)	1.53
DCF Alpha REF	1.47
Beef Transfer Factor for Ra (day/kg)	1.45
Shrub Root Shape Parameter b	1.17
Unit 4 ET Layers Bulk Density (g/cm3)	1.16
Beef Transfer Factor for Np (day/kg)	1.00
Deep Time Deep Lake End (yr)	0.87
Saturated Zone Thickness (m)	0.85
Mammal Mound Density - Plot 3 (1/ha)	0.84
Plant.Soil Conc Ratio for Ac	0.83
Kd Sand for Tc (mL/g)	0.82
Soil Ingestion Rate for Cattle (kg/day)	0.79
Grass Root Shape Parameter b	0.74
Saltwater Solubility for Pu (mol/L)	0.73
Unit 4 Compacted Porosity	0.72
DCF Beta REF	0.70
Plant.Soil Conc Ratio for Pu	0.69
Saltwater Solubility for Pa (mol/L)	0.68
Unit 4 ET Layers log of van Genuchten's α	0.67
Activity Conc in SRS DU Waste: U234 (pCi/g)	0.67
Biomass % Cover Selector	0.66
Vegetation Association Selector	0.64
Unit 4 Compacted Bulk Density (g/cm3)	0.59
Kd Sand for Sr (mL/g)	0.59
Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.57
Beef Transfer Factor for Am (day/kg)	0.57
Kd Sand for Ra (mL/g)	0.57
Soil Temperature (°C)	0.56
Kd Silt for U (mL/g)	0.56
Kd Silt for Pa (mL/g)	0.56

Sensitivity Analysis Results for the Clive DU PA

Silt Sand Gravel BulkDensity (g/cm ³)	0.55
Mammal Mound Density - Plot 5 (1/ha)	0.55
Kd Clay for Am (mL/g)	0.53
Unit 4 ET Layers log of van Genuchten's n	0.52
Kd Sand for Ac (mL/g)	0.52
Plant.Soil Conc Ratio for Ra	0.51
Mammal Mound Density - Plot 4 (1/ha)	0.50
Kd Silt for Th (mL/g)	0.50
Plant.Soil Conc Ratio for Np	0.49
Kd Clay for Np (mL/g)	0.48
Beef Transfer Factor for Pb (day/kg)	0.48
Biomass Production Rate (kg.ha.yr)	0.48
Beef Transfer Factor for Ac (day/kg)	0.48
Ant Colony Density - Plot 3 (1/ha)	0.48
Unit 4 ET Layers Porosity	0.46
Greasewood Root Shape Parameter b	0.45
Plant.Soil Conc Ratio for Sr	0.44
Fine CobbleMix Porosity	0.43
Deep Time DCF Photon 1 REF	0.43
Deep Time DCF Beta REF	0.43
Kd Silt for Cs (mL/g)	0.42
Kd Silt for Am (mL/g)	0.41
Surface Wind Speed (m/s)	0.41
Unit 4 Compacted Residual Water Content	0.40
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.40
Deep Time Lake Start (yr)	0.40
Activity Conc in SRS DU Waste: U236 (pCi/g)	0.40
Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.39
Kd Silt for Sr (mL/g)	0.39
Saltwater Solubility for Rn (mol/L)	0.38
Plant.Soil Conc Ratio for Am	0.37
Intermediate Lake Depth (m)	0.37
Kd Sand for Pb (mL/g)	0.37
Resuspension Flux (kg.m ² -yr)	0.36
Surface Atmosphere Thickness (m)	0.36
Beef Transfer Factor for Th (day/kg)	0.36
Site Dispersal Area (km ²)	0.36
Deep Time Receptor Area (ac)	0.35
Kd Silt for Pu (mL/g)	0.35
Forage Ingestion Rate for Cattle (kg/day)	0.35
Unit 4 Compacted Hb (cm)	0.35
RipRap Bulk Density (g/cm ³)	0.35
Soil Ingestion Tracer Element	0.34

Sensitivity Analysis Results for the Clive DU PA

Plant.Soil Conc Ratio for I	0.33
Kd Sand for Np (mL/g)	0.33
Beef Transfer Factor for Pu (day/kg)	0.32
Kd Clay for Pu (mL/g)	0.31
Soil Ingestion Rate for Antelope (kg/day)	0.30
Deep Time Diffusion Length (m)	0.29
Deep Time Intermediate Lake Duration (yr)	0.29
Kd Sand for I (mL/g)	0.28
Kd Silt for Ra (mL/g)	0.28
Ant Nest Shape Parameter b	0.27
RipRap Porosity	0.26
Saltwater Solubility for Ra (mol/L)	0.26
Unit 3 Brooks-Corey Fractal Dimension	0.25
Water Ingestion Rate for Cattle (kg/day)	0.24
Saltwater Solubility for Cs (mol/L)	0.23
Federal DU Cell Unsaturated Zone Thickness (m)	0.22
Tortuosity Porosity Exponent	0.22
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.22
Saltwater Solubility for I (mol/L)	0.21
Kd Clay for Ra (mL/g)	0.21
Silt Sand Gravel Porosity	0.21
Unit 3 Saturated Hyd Cond (cm/s)	0.21
Forb Root Shape Parameter b	0.21
Forb Root.Shoot Ratio	0.20
Plant.Soil Conc Ratio for Pa	0.20
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.19
Radon Escape.Production Ratio for Waste	0.18
Mammal Mound Density - Plot 1 (1/ha)	0.18
Unit 2 Bulk Density (g/cm ³)	0.17
Saltwater Solubility for Th (mol/L)	0.16
Antelope Range Area (acre)	0.16
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	0.15
Saltwater Solubility for Ac (mol/L)	0.15
Ant Nest Volume (m ³)	0.15
Plant.Soil Conc Ratio for U	0.15
Saltwater Solubility for Am (mol/L)	0.14
Kd Silt for Pb (mL/g)	0.14
Beef Transfer Factor for Pa (day/kg)	0.13
Kd Clay for Pa (mL/g)	0.12
Kd Clay for Sr (mL/g)	0.12
Tortuosity Water Content Exponent	0.12
Ant Colony Density - Plot 4 (1/ha)	0.12
Intermediate Lake Sed Thickness (m)	0.12

Sensitivity Analysis Results for the Clive DU PA

OHV Dust Adjustment	0.12
Meat Post-Cooking Loss	0.12
Kd Silt for Np (mL/g)	0.11
Random Gully Selector	0.11
Unit 2 Saturated Hyd Cond (cm/s)	0.11
Saltwater Solubility for Pb (mol/L)	0.10
Ant Colony Density - Plot 1 (1/ha)	0.09
Mammal Burrow Shape Parameter b	0.09
Deep Lake Depth (m)	0.09
Activity Conc in SRS DU Waste: U238 (pCi/g)	0.09
Kd Sand for Th (mL/g)	0.09
Water Ingestion Rate for Antelope (kg/day)	0.09
Grass Root.Shoot Ratio	0.09
DCF Photon1 REF	0.08
Surface Atmosphere Diffusion Length (m)	0.08
Fine Gravel Mix BulkDensity (g/cm3)	0.08
Greasewood Root.Shoot Ratio	0.07
Tree Root Shape Parameter b	0.07
Kd Silt for Ac (mL/g)	0.07
Kd Clay for Pb (mL/g)	0.07
Meat Preparation Loss	0.07
Saltwater Solubility for U3O8 (mol/L)	0.07
Plant.Soil Conc Ratio for Th	0.07
Unit 3 Bubbling Pressure Head (cm)	0.06
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.06
Unit 3 Bulk Density (g/cm3)	0.06
Saltwater Solubility for Np (mol/L)	0.06
Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	0.06
Activity Conc in SRS DU Waste: Am241 (pCi/g)	0.06
Unit 2 Porosity	0.06
Deep Time DCF Alpha REF	0.06
Activity Conc in SRS DU Waste: Np237 (pCi/g)	0.06
Saltwater Solubility for Sr (mol/L)	0.05
Fine Cobble Mix BulkDensity (g/cm3)	0.05
Kd Sand for Pa (mL/g)	0.05
Kd Sand for Pu (mL/g)	0.05
Fine Gravel Mix Porosity	0.05
Liner Clay Saturated Hyd Cond (cm/s)	0.05
Receptor Area (ha)	0.05
Kd Clay for Cs (mL/g)	0.05
Plant.Soil Conc Ratio for Pb	0.05
DCF Photon2 REF	0.04
Deep Time Aeolian Deposition Age (yr)	0.04

Sensitivity Analysis Results for the Clive DU PA

Resuspended Particle Fraction	0.04
Kd Clay for U (mL/g)	0.04
Kd Sand for Cs (mL/g)	0.04
Saturated Zone Water Table Gradient	0.04
Activity Conc in SRS DU Waste: Cs137 (pCi/g)	0.04
Mammal Mound Density - Plot 2 (1/ha)	0.04
Ant Colony Density - Plot 2 (1/ha)	0.04
Ant Colony Lifespan (yr)	0.03
Deep Time Aeolian Deposition Depth (m)	0.03
Kd Clay for Th (mL/g)	0.02
Saltwater Solubility for Tc (mol/L)	0.02
Shrub Root.Shoot Ratio	0.02
Deep Time Aeolian Correlation	0.02
Activity Conc in SRS DU Waste: U233 (pCi/g)	0.02
Plant Fresh Weight Conversion	0.02
Beef Transfer Factor for Cs (day/kg)	0.02
Kd Clay for Ac (mL/g)	0.02
Plant.Soil Conc Ratio for Cs	0.01
Beef Transfer Factor for Sr (day/kg)	0.01
Deep Time DCF Photon 2 REF	0.01
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	0.01
Beef Transfer Factor for U (day/kg)	0.01
Plant.Soil Conc Ratio for Tc	0.01
Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.01
Body Weight Factor for Antelope	0.01
Ant Colony Density - Plot 5 (1/ha)	0.01
GDP DU Inventory Storage Dead Space (m2)	0.01
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	0.00

Table 21: Peak Uranium Hazard within 10,000 years - Rancher**R-squared = 94%**

Explanatory Variable	Sensitivity Index
Beef Transfer Factor for Tc (day/kg)	44.11
Unit 4 ET Layers Bulk Density (g/cm ³)	6.68
Kd Sand for U (mL/g)	2.86
Unit 3 Residual Water Content	2.47
Ant Nest Shape Parameter b	2.08
DCF Alpha REF	1.95
Saltwater Solubility for I (mol/L)	1.83
Saltwater Solubility for UO ₃ (mol/L)	1.79
Molecular Diffusivity in Water (cm ² /s)	1.39
Contaminated Fraction of GDP DU	1.38
Mammal Burrow Excavation Rate (m ³ /yr)	1.37
Saturated Zone Thickness (m)	0.92
Soil Temperature (Å°C)	0.86
Saltwater Solubility for Pu (mol/L)	0.85
Soil Ingestion Rate for Cattle (kg/day)	0.71
Beef Transfer Factor for Ra (day/kg)	0.66
Deep Time DCF Photon 2 REF	0.58
Deep Time Diffusion Length (m)	0.57
Unit 4 ET Layers log of van Genuchten's α	0.50
Unit 4 ET Layers Porosity	0.47
Unit 4 ET Layers log of van Genuchten's n	0.46
Kd Sand for Am (mL/g)	0.46
Tree Root.Shoot Ratio	0.45
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	0.44
Kd Silt for U (mL/g)	0.44
Silt Sand Gravel Porosity	0.43
Kd Silt for Ra (mL/g)	0.43
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.42
Unit 4 Compacted Porosity	0.39
Kd Sand for Cs (mL/g)	0.38
Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	0.38
Fine CobbleMix Porosity	0.38
Kd Sand for Ra (mL/g)	0.37
DCF Photon1 REF	0.36
Kd Silt for Th (mL/g)	0.35
Tortuosity Water Content Exponent	0.35
Saltwater Solubility for Ac (mol/L)	0.33
Ant Colony Lifespan (yr)	0.33
Kd Sand for Np (mL/g)	0.31
Plant.Soil Conc Ratio for Pu	0.30

Sensitivity Analysis Results for the Clive DU PA

Mammal Mound Density - Plot 5 (1/ha)	0.30
Saltwater Solubility for Am (mol/L)	0.29
Unit 4 Compacted Bulk Density (g/cm ³)	0.29
Saltwater Solubility for U3O8 (mol/L)	0.29
Saltwater Solubility for Pb (mol/L)	0.29
Activity Conc in SRS DU Waste: U236 (pCi/g)	0.29
Resuspension Flux (kg.m ² -yr)	0.28
Forage Ingestion Rate for Cattle (kg/day)	0.28
Kd Sand for Pu (mL/g)	0.26
Silt Sand Gravel BulkDensity (g/cm ³)	0.26
Plant.Soil Conc Ratio for U	0.25
Fine Gravel Mix BulkDensity (g/cm ³)	0.24
Saltwater Solubility for Cs (mol/L)	0.24
Kd Sand for Sr (mL/g)	0.24
Mammal Burrow Shape Parameter b	0.24
Deep Time DCF Alpha REF	0.24
Kd Clay for Cs (mL/g)	0.23
Unit 2 Bulk Density (g/cm ³)	0.22
Saltwater Solubility for Sr (mol/L)	0.21
Unit 4 Compacted Residual Water Content	0.20
OHV Dust Adjustment	0.20
Activity Conc in SRS DU Waste: U233 (pCi/g)	0.19
Unit 3 Porosity	0.19
Fine Gravel Mix Porosity	0.19
Greasewood Root Shape Parameter b	0.19
RipRap Bulk Density (g/cm ³)	0.19
Kd Silt for Sr (mL/g)	0.19
Saltwater Solubility for Tc (mol/L)	0.19
Plant.Soil Conc Ratio for Ac	0.18
Saltwater Solubility for Pa (mol/L)	0.18
Deep Time DCF Photon 1 REF	0.18
Surface Atmosphere Thickness (m)	0.18
Kd Sand for Pb (mL/g)	0.17
Saltwater Solubility for Np (mol/L)	0.17
RipRap Porosity	0.17
Kd Clay for Am (mL/g)	0.16
Ant Colony Density - Plot 1 (1/ha)	0.16
Plant.Soil Conc Ratio for Ra	0.16
Intermediate Lake Sed Thickness (m)	0.16
Ant Colony Density - Plot 2 (1/ha)	0.16
Kd Sand for Pa (mL/g)	0.16
Ant Colony Density - Plot 3 (1/ha)	0.15
Kd Sand for Ac (mL/g)	0.15

Sensitivity Analysis Results for the Clive DU PA

Kd Clay for Pa (mL/g)	0.15
Biomass % Cover Selector	0.15
Kd Silt for Ac (mL/g)	0.14
Beef Transfer Factor for Ac (day/kg)	0.14
Plant.Soil Conc Ratio for Cs	0.14
Deep Time Aeolian Deposition Age (yr)	0.14
Saltwater Solubility for Rn (mol/L)	0.14
Fine Cobble Mix BulkDensity (g/cm ³)	0.14
Plant.Soil Conc Ratio for I	0.14
Unit 2 Saturated Hyd Cond (cm/s)	0.14
Ant Colony Density - Plot 4 (1/ha)	0.13
Kd Silt for Am (mL/g)	0.13
Federal DU Cell Unsaturated Zone Thickness (m)	0.13
Greasewood Root.Shoot Ratio	0.13
Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.13
Plant.Soil Conc Ratio for Pa	0.13
Unit 4 Compacted Hb (cm)	0.13
Mammal Mound Density - Plot 2 (1/ha)	0.13
Saltwater Solubility for Th (mol/L)	0.13
Saltwater Solubility for Ra (mol/L)	0.13
Mammal Mound Density - Plot 3 (1/ha)	0.13
Beef Transfer Factor for Pu (day/kg)	0.12
Kd Clay for Pb (mL/g)	0.12
Surface Wind Speed (m/s)	0.12
Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.12
Ant Nest Volume (m ³)	0.12
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.11
Beef Transfer Factor for Pa (day/kg)	0.11
Unit 3 Bubbling Pressure Head (cm)	0.11
Deep Time Lake Start (yr)	0.11
Meat Preparation Loss	0.11
Unit 3 Saturated Hyd Cond (cm/s)	0.11
Kd Sand for Th (mL/g)	0.11
Plant.Soil Conc Ratio for Am	0.11
Beef Transfer Factor for I (day/kg)	0.11
Activity Conc in SRS DU Waste: Np237 (pCi/g)	0.10
Resuspended Particle Fraction	0.10
Kd Silt for Np (mL/g)	0.10
Plant.Soil Conc Ratio for Sr	0.10
Activity Conc in SRS DU Waste: U238 (pCi/g)	0.10
Kd Clay for Pu (mL/g)	0.10
Activity Conc in SRS DU Waste: U234 (pCi/g)	0.10
Shrub Root.Shoot Ratio	0.10

Sensitivity Analysis Results for the Clive DU PA

Unit 3 Bulk Density (g/cm ³)	0.10
Tree Root Shape Parameter b	0.10
Kd Silt for Pa (mL/g)	0.09
Kd Silt for Pb (mL/g)	0.09
Kd Clay for Np (mL/g)	0.09
Surface Atmosphere Diffusion Length (m)	0.09
Kd Clay for Ac (mL/g)	0.09
Soil Ingestion Tracer Element	0.09
Radon Escape.Production Ratio for Waste	0.09
Unit 2 Porosity	0.09
Beef Transfer Factor for Np (day/kg)	0.09
Mammal Mound Density - Plot 4 (1/ha)	0.09
Antelope Range Area (acre)	0.08
Tortuosity Porosity Exponent	0.08
Ant Colony Density - Plot 5 (1/ha)	0.08
Deep Lake Depth (m)	0.08
Grass Root Shape Parameter b	0.08
Site Dispersal Area (km ²)	0.08
Kd Silt for Cs (mL/g)	0.08
Activity Conc in SRS DU Waste: Am241 (pCi/g)	0.08
Vegetation Association Selector	0.08
Kd Clay for U (mL/g)	0.08
Beef Transfer Factor for Pb (day/kg)	0.07
Liner Clay Saturated Hyd Cond (cm/s)	0.07
Biomass Production Rate (kg.ha.yr)	0.07
Deep Time Receptor Area (ac)	0.07
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.06
Grass Root.Shoot Ratio	0.06
Unit 3 Brooks-Corey Fractal Dimension	0.06
Activity Conc in SRS DU Waste: Cs137 (pCi/g)	0.06
Random Gully Selector	0.06
Deep Time Deep Lake End (yr)	0.05
Saturated Zone Water Table Gradient	0.05
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	0.05
Kd Silt for Pu (mL/g)	0.05
Intermediate Lake Depth (m)	0.05
Kd Clay for Sr (mL/g)	0.05
Soil Ingestion Rate for Antelope (kg/day)	0.05
Shrub Root Shape Parameter b	0.05
Beef Transfer Factor for Cs (day/kg)	0.05
DCF Beta REF	0.05
Kd Clay for Ra (mL/g)	0.04
Plant.Soil Conc Ratio for Pb	0.04

Sensitivity Analysis Results for the Clive DU PA

GDP DU Inventory Storage Dead Space (m2)	0.04
Forb Root Shape Parameter b	0.04
Deep Time Aeolian Deposition Depth (m)	0.04
Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.04
Deep Time Intermediate Lake Duration (yr)	0.04
Beef Transfer Factor for Sr (day/kg)	0.04
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	0.04
Plant.Soil Conc Ratio for Np	0.03
Water Ingestion Rate for Cattle (kg/day)	0.03
Kd Clay for Th (mL/g)	0.03
Forb Root.Shoot Ratio	0.03
Plant.Soil Conc Ratio for Th	0.03
Beef Transfer Factor for U (day/kg)	0.03
Plant.Soil Conc Ratio for Tc	0.03
Mammal Mound Density - Plot 1 (1/ha)	0.02
Deep Time Aeolian Correlation	0.02
Kd Sand for Tc (mL/g)	0.02
Plant Fresh Weight Conversion	0.02
Kd Sand for I (mL/g)	0.02
Meat Post-Cooking Loss	0.02
Deep Time DCF Beta REF	0.02
Body Weight Factor for Antelope	0.02
Beef Transfer Factor for Th (day/kg)	0.02
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.01
Receptor Area (ha)	0.01
Beef Transfer Factor for Am (day/kg)	0.01
Water Ingestion Rate for Antelope (kg/day)	0.01
DCF Photon2 REF	0.00

Table 22: Peak Uranium Hazard within 10,000 years – Sport OHV**R-squared = 96%**

Explanatory Variable	Sensitivity Index
Contaminated Fraction of GDP DU	13.40
Mammal Burrow Excavation Rate (m3/yr)	11.80
Tree Root.Shoot Ratio	5.93
Unit 3 Porosity	4.09
Beef Transfer Factor for I (day/kg)	3.06
Kd Sand for U (mL/g)	2.63
Kd Sand for Am (mL/g)	2.06
Unit 3 Residual Water Content	1.93
Saltwater Solubility for UO3 (mol/L)	1.92
Molecular Diffusivity in Water (cm2/s)	1.85
Unit 4 ET Layers Bulk Density (g/cm3)	1.76
DCF Alpha REF	1.14
Beef Transfer Factor for Ra (day/kg)	1.14
Shrub Root Shape Parameter b	0.96
Beef Transfer Factor for Tc (day/kg)	0.96
Plant.Soil Conc Ratio for Pu	0.88
Beef Transfer Factor for Np (day/kg)	0.88
Mammal Mound Density - Plot 3 (1/ha)	0.83
Plant.Soil Conc Ratio for Ac	0.80
Soil Ingestion Rate for Cattle (kg/day)	0.78
Kd Sand for Tc (mL/g)	0.73
Unit 4 ET Layers log of van Genuchten's α	0.71
Saturated Zone Thickness (m)	0.69
Activity Conc in SRS DU Waste: U234 (pCi/g)	0.68
Unit 4 Compacted Porosity	0.67
Biomass % Cover Selector	0.66
Unit 4 Compacted Bulk Density (g/cm3)	0.63
Unit 4 ET Layers Porosity	0.63
Saltwater Solubility for Pu (mol/L)	0.61
Kd Silt for Pb (mL/g)	0.60
DCF Beta REF	0.59
Kd Silt for U (mL/g)	0.59
Mammal Mound Density - Plot 5 (1/ha)	0.57
Grass Root Shape Parameter b	0.55
Unit 4 ET Layers log of van Genuchten's n	0.55
Deep Time Deep Lake End (yr)	0.53
Kd Silt for Th (mL/g)	0.53
Vegetation Association Selector	0.52
Kd Sand for Sr (mL/g)	0.52
Kd Sand for Ra (mL/g)	0.51

Sensitivity Analysis Results for the Clive DU PA

Beef Transfer Factor for Pu (day/kg)	0.51
Saltwater Solubility for Pa (mol/L)	0.51
Silt Sand Gravel BulkDensity (g/cm3)	0.51
Ant Colony Density - Plot 3 (1/ha)	0.50
Kd Clay for Np (mL/g)	0.48
Kd Sand for Pb (mL/g)	0.46
Mammal Mound Density - Plot 4 (1/ha)	0.45
Kd Clay for Am (mL/g)	0.45
Kd Sand for Ac (mL/g)	0.45
Kd Silt for Pa (mL/g)	0.44
Biomass Production Rate (kg.ha.yr)	0.43
Forage Ingestion Rate for Cattle (kg/day)	0.42
Kd Silt for Sr (mL/g)	0.42
Soil Temperature (°C)	0.41
Surface Wind Speed (m/s)	0.41
Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.41
Deep Time Lake Start (yr)	0.40
Kd Sand for Np (mL/g)	0.40
Saltwater Solubility for Ra (mol/L)	0.39
Plant.Soil Conc Ratio for Sr	0.39
Intermediate Lake Depth (m)	0.39
Greasewood Root Shape Parameter b	0.38
Deep Time DCF Beta REF	0.38
Beef Transfer Factor for Am (day/kg)	0.37
Plant.Soil Conc Ratio for Am	0.37
Surface Atmosphere Thickness (m)	0.36
Saltwater Solubility for Rn (mol/L)	0.35
Resuspension Flux (kg.m2-yr)	0.35
Fine CobbleMix Porosity	0.34
Kd Silt for Cs (mL/g)	0.34
Plant.Soil Conc Ratio for Ra	0.34
Beef Transfer Factor for Ac (day/kg)	0.32
Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.32
Site Dispersal Area (km2)	0.32
Ant Nest Shape Parameter b	0.31
RipRap Bulk Density (g/cm3)	0.31
Beef Transfer Factor for Pb (day/kg)	0.30
Deep Time DCF Photon 1 REF	0.30
Unit 4 Compacted Hb (cm)	0.30
Plant.Soil Conc Ratio for Np	0.30
Plant.Soil Conc Ratio for I	0.29
Soil Ingestion Tracer Element	0.29
Kd Silt for Pu (mL/g)	0.28

Sensitivity Analysis Results for the Clive DU PA

Deep Time Intermediate Lake Duration (yr)	0.28
RipRap Porosity	0.26
Water Ingestion Rate for Cattle (kg/day)	0.26
Kd Clay for Sr (mL/g)	0.26
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.25
Kd Silt for Np (mL/g)	0.25
Forb Root Shape Parameter b	0.25
Federal DU Cell Unsaturated Zone Thickness (m)	0.24
Unit 2 Bulk Density (g/cm ³)	0.24
Deep Time Receptor Area (ac)	0.24
Activity Conc in SRS DU Waste: U236 (pCi/g)	0.24
Plant.Soil Conc Ratio for Pa	0.23
Unit 4 Compacted Residual Water Content	0.23
Unit 3 Brooks-Corey Fractal Dimension	0.23
Kd Clay for Pu (mL/g)	0.22
Forb Root.Shoot Ratio	0.22
Kd Silt for Am (mL/g)	0.21
Beef Transfer Factor for Th (day/kg)	0.21
Unit 3 Saturated Hyd Cond (cm/s)	0.21
Deep Time Diffusion Length (m)	0.21
Saltwater Solubility for Ac (mol/L)	0.21
Saltwater Solubility for Cs (mol/L)	0.21
Silt Sand Gravel Porosity	0.20
Tortuosity Porosity Exponent	0.20
Kd Clay for Pa (mL/g)	0.19
Saltwater Solubility for Np (mol/L)	0.19
Random Gully Selector	0.19
Beef Transfer Factor for Pa (day/kg)	0.19
Ant Colony Density - Plot 4 (1/ha)	0.19
Kd Clay for Ra (mL/g)	0.17
Ant Colony Density - Plot 1 (1/ha)	0.17
Kd Silt for Ra (mL/g)	0.17
Saltwater Solubility for Th (mol/L)	0.16
Saltwater Solubility for I (mol/L)	0.15
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	0.15
Kd Sand for I (mL/g)	0.15
Unit 2 Saturated Hyd Cond (cm/s)	0.15
Saltwater Solubility for Pb (mol/L)	0.14
Radon Escape.Production Ratio for Waste	0.14
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.13
Intermediate Lake Sed Thickness (m)	0.13
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.13
Plant.Soil Conc Ratio for U	0.13

Sensitivity Analysis Results for the Clive DU PA

Antelope Range Area (acre)	0.12
Unit 3 Bulk Density (g/cm ³)	0.11
Tortuosity Water Content Exponent	0.11
Mammal Mound Density - Plot 1 (1/ha)	0.11
Saltwater Solubility for U3O8 (mol/L)	0.11
Saltwater Solubility for Am (mol/L)	0.11
Grass Root.Shoot Ratio	0.11
OHV Dust Adjustment	0.10
Kd Sand for Pa (mL/g)	0.10
Unit 2 Porosity	0.10
Meat Post-Cooking Loss	0.09
DCF Photon1 REF	0.09
Fine Gravel Mix Porosity	0.09
Fine Gravel Mix BulkDensity (g/cm ³)	0.09
Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	0.09
Deep Lake Depth (m)	0.09
Fine Cobble Mix BulkDensity (g/cm ³)	0.09
Plant.Soil Conc Ratio for Th	0.08
Liner Clay Saturated Hyd Cond (cm/s)	0.08
Meat Preparation Loss	0.08
Receptor Area (ha)	0.08
Unit 3 Bubbling Pressure Head (cm)	0.08
Soil Ingestion Rate for Antelope (kg/day)	0.08
Kd Clay for U (mL/g)	0.08
Kd Sand for Cs (mL/g)	0.08
Ant Nest Volume (m ³)	0.08
Mammal Burrow Shape Parameter b	0.07
Kd Sand for Th (mL/g)	0.07
Surface Atmosphere Diffusion Length (m)	0.07
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.07
Deep Time DCF Alpha REF	0.07
Greasewood Root.Shoot Ratio	0.07
Ant Colony Density - Plot 2 (1/ha)	0.07
Kd Clay for Cs (mL/g)	0.06
Saltwater Solubility for Tc (mol/L)	0.06
Plant.Soil Conc Ratio for Pb	0.06
Kd Sand for Pu (mL/g)	0.05
Kd Silt for Ac (mL/g)	0.05
Activity Conc in SRS DU Waste: Np237 (pCi/g)	0.05
Saltwater Solubility for Sr (mol/L)	0.05
Activity Conc in SRS DU Waste: U238 (pCi/g)	0.05
Activity Conc in SRS DU Waste: U233 (pCi/g)	0.05
Activity Conc in SRS DU Waste: Am241 (pCi/g)	0.05

Sensitivity Analysis Results for the Clive DU PA

Activity Conc in SRS DU Waste: Cs137 (pCi/g)	0.05
Kd Clay for Pb (mL/g)	0.05
Beef Transfer Factor for U (day/kg)	0.04
Deep Time Aeolian Deposition Depth (m)	0.04
Kd Clay for Th (mL/g)	0.03
Ant Colony Lifespan (yr)	0.03
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	0.03
Kd Clay for Ac (mL/g)	0.03
Beef Transfer Factor for Sr (day/kg)	0.03
Body Weight Factor for Antelope	0.03
DCF Photon2 REF	0.03
Plant.Soil Conc Ratio for Cs	0.02
Deep Time Aeolian Correlation	0.02
Resuspended Particle Fraction	0.02
Saturated Zone Water Table Gradient	0.02
Tree Root Shape Parameter b	0.02
Deep Time DCF Photon 2 REF	0.02
Shrub Root.Shoot Ratio	0.02
Water Ingestion Rate for Antelope (kg/day)	0.02
Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.02
Mammal Mound Density - Plot 2 (1/ha)	0.02
Deep Time Aeolian Deposition Age (yr)	0.02
GDP DU Inventory Storage Dead Space (m2)	0.02
Beef Transfer Factor for Cs (day/kg)	0.02
Plant Fresh Weight Conversion	0.02
Plant.Soil Conc Ratio for Tc	0.01
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	0.01
Ant Colony Density - Plot 5 (1/ha)	0.01

Table 23: Benson Peak Groundwater Well Concentrations within 500 years –Tc99**R-squared = %**

Explanatory Variable	Sensitivity Index
Kd Sand for Tc (mL/g)	42.71
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	15.8
Molecular Diffusivity in Water (cm ² /s)	13.92
VG_n_Benson	5.42
Porosity_Benson	1.79
Saturated Zone Water Table Gradient	1.6
Activity Conc in SRS DU Waste: Am241 (pCi/g)	0.73
Resuspension Flux (kg.m ² -yr)	0.59
Unit 2 Saturated Hyd Cond (cm/s)	0.5
alpha_Benson	0.42
Deep Time DCF Photon 1 REF	0.35
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	0.32
Beef Transfer Factor for Am (day/kg)	0.29
Federal DU Cell Unsaturated Zone Thickness (m)	0.28
Activity Conc in SRS DU Waste: Cs137 (pCi/g)	0.26
Unit 3 Porosity	0.25
Kd Sand for Ra (mL/g)	0.25
Saltwater Solubility for Cs (mol/L)	0.24
Activity Conc in SRS DU Waste: U238 (pCi/g)	0.23
Fine Cobble Mix BulkDensity (g/cm ³)	0.22
Unit 4 Compacted Bulk Density (g/cm ³)	0.2
Beef Transfer Factor for U (day/kg)	0.19
Kd Sand for U (mL/g)	0.18
Meat Post-Cooking Loss	0.18
Kd Clay for Ac (mL/g)	0.18
Ks_Benson	0.17
Antelope Range Area (acre)	0.17
OHV Dust Adjustment	0.17
Kd Sand for Th (mL/g)	0.16
Saltwater Solubility for Np (mol/L)	0.15
Deep Time Receptor Area (ac)	0.13
Tortuosity Porosity Exponent	0.13
Tortuosity Water Content Exponent	0.13
Kd Sand for Cs (mL/g)	0.13
Kd Clay for Th (mL/g)	0.13
Unit 4 ET Layers Bulk Density (g/cm ³)	0.13
Unit 3 Bubbling Pressure Head (cm)	0.13
Deep Time Aeolian Correlation	0.13
Grass Root Shape Parameter b	0.12
Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.12

Sensitivity Analysis Results for the Clive DU PA

DCF Photon2 REF	0.12
Beef Transfer Factor for Pb (day/kg)	0.12
Deep Time Intermediate Lake Duration (yr)	0.12
Unit 2 Porosity	0.12
Plant.Soil Conc Ratio for I	0.12
Ant Colony Density - Plot 1 (1/ha)	0.12
Beef Transfer Factor for Np (day/kg)	0.12
Deep Time DCF Beta REF	0.11
Kd Silt for Pa (mL/g)	0.11
Mammal Mound Density - Plot 3 (1/ha)	0.11
Beef Transfer Factor for Ac (day/kg)	0.11
Kd Silt for Am (mL/g)	0.11
Kd Sand for Pb (mL/g)	0.11
Deep Time Diffusion Length (m)	0.11
Tree Root.Shoot Ratio	0.11
Kd Silt for Np (mL/g)	0.11
Unit 3 Bulk Density (g/cm3)	0.1
Plant.Soil Conc Ratio for Am	0.1
Beef Transfer Factor for Pa (day/kg)	0.1
Kd Sand for Am (mL/g)	0.1
Beef Transfer Factor for Tc (day/kg)	0.1
Kd Clay for Np (mL/g)	0.1
Beef Transfer Factor for Ra (day/kg)	0.1
Soil Temperature (Å°C)	0.1
Kd Sand for Sr (mL/g)	0.1
Kd Sand for Pa (mL/g)	0.1
Kd Sand for Pu (mL/g)	0.1
Kd Clay for U (mL/g)	0.09
Greasewood Root Shape Parameter b	0.09
Plant.Soil Conc Ratio for Cs	0.09
Deep Time Lake Start (yr)	0.09
Site Dispersal Area (km2)	0.09
Ant Nest Shape Parameter b	0.09
Surface Atmosphere Thickness (m)	0.09
Ant Colony Density - Plot 3 (1/ha)	0.09
Kd Silt for Cs (mL/g)	0.09
Saltwater Solubility for Ra (mol/L)	0.09
Deep Time DCF Alpha REF	0.09
Kd Silt for Ra (mL/g)	0.09
Plant.Soil Conc Ratio for Tc	0.09
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.09
Saltwater Solubility for Th (mol/L)	0.09
Radon Escape.Production Ratio for Waste	0.08

Sensitivity Analysis Results for the Clive DU PA

Saltwater Solubility for UO3 (mol/L)	0.08
Resuspended Particle Fraction	0.08
Fine CobbleMix Porosity	0.08
Kd Sand for Ac (mL/g)	0.08
Saltwater Solubility for Sr (mol/L)	0.08
Kd Silt for Pu (mL/g)	0.08
RipRap Porosity	0.08
Beef Transfer Factor for Sr (day/kg)	0.08
Meat Preparation Loss	0.08
Unit 4 Compacted Residual Water Content	0.08
RipRap Bulk Density (g/cm ³)	0.08
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.08
Beef Transfer Factor for I (day/kg)	0.08
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.08
Plant.Soil Conc Ratio for Pb	0.07
Ant Colony Density - Plot 2 (1/ha)	0.07
Water Ingestion Rate for Cattle (kg/day)	0.07
Silt Sand Gravel BulkDensity (g/cm ³)	0.07
Saltwater Solubility for Rn (mol/L)	0.07
Plant Fresh Weight Conversion	0.07
Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.07
Kd Clay for Ra (mL/g)	0.07
Greasewood Root.Shoot Ratio	0.07
Shrub Root.Shoot Ratio	0.07
Kd Clay for Pa (mL/g)	0.07
Saltwater Solubility for Pa (mol/L)	0.07
Mammal Mound Density - Plot 5 (1/ha)	0.07
DCF Photon1 REF	0.07
Intermediate Lake Sed Thickness (m)	0.07
Plant.Soil Conc Ratio for Np	0.07
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	0.07
Saltwater Solubility for I (mol/L)	0.07
Saturated Zone Thickness (m)	0.06
Silt Sand Gravel Porosity	0.06
Plant.Soil Conc Ratio for Pu	0.06
Kd Clay for Pu (mL/g)	0.06
Saltwater Solubility for U3O8 (mol/L)	0.06
Unit 4 ET Layers log of van Genuchten's α	0.06
Biomass Production Rate (kg.ha.yr)	0.06
Kd Clay for Am (mL/g)	0.06
Fine Gravel Mix Porosity	0.06
Surface Atmosphere Diffusion Length (m)	0.06
Saltwater Solubility for Ac (mol/L)	0.06

Sensitivity Analysis Results for the Clive DU PA

Water Ingestion Rate for Antelope (kg/day)	0.06
Liner Clay Saturated Hyd Cond (cm/s)	0.06
Unit 4 Compacted Porosity	0.06
Kd Silt for Sr (mL/g)	0.06
Kd Silt for U (mL/g)	0.06
Unit 3 Saturated Hyd Cond (cm/s)	0.06
Ant Nest Volume (m3)	0.06
Beef Transfer Factor for Cs (day/kg)	0.06
Deep Lake Depth (m)	0.06
Ant Colony Lifespan (yr)	0.06
Contaminated Fraction of GDP DU	0.06
Beef Transfer Factor for Th (day/kg)	0.06
Activity Conc in SRS DU Waste: U234 (pCi/g)	0.05
Shrub Root Shape Parameter b	0.05
Saltwater Solubility for Tc (mol/L)	0.05
Unit 4 ET Layers log of van Genuchten's n	0.05
Surface Wind Speed (m/s)	0.05
Mammal Burrow Excavation Rate (m3/yr)	0.05
Kd Silt for Pb (mL/g)	0.05
Saltwater Solubility for Pu (mol/L)	0.05
Saltwater Solubility for Am (mol/L)	0.05
Mammal Mound Density - Plot 1 (1/ha)	0.05
Deep Time Aeolian Deposition Depth (m)	0.05
Beef Transfer Factor for Pu (day/kg)	0.05
Deep Time Deep Lake End (yr)	0.05
Deep Time Aeolian Deposition Age (yr)	0.05
Activity Conc in SRS DU Waste: U236 (pCi/g)	0.05
Unit 3 Residual Water Content	0.05
Mammal Mound Density - Plot 2 (1/ha)	0.05
Kd Sand for Np (mL/g)	0.05
Plant.Soil Conc Ratio for Pa	0.05
Plant.Soil Conc Ratio for Ra	0.05
Kd Clay for Sr (mL/g)	0.05
Grass Root.Shoot Ratio	0.05
Unit 2 Bulk Density (g/cm3)	0.05
Kd Clay for Pb (mL/g)	0.04
Biomass % Cover Selector	0.04
Soil Ingestion Rate for Cattle (kg/day)	0.04
Activity Conc in SRS DU Waste: U233 (pCi/g)	0.04
Tree Root Shape Parameter b	0.04
Plant.Soil Conc Ratio for Ac	0.04
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.04
GDP DU Inventory Storage Dead Space (m2)	0.04

Sensitivity Analysis Results for the Clive DU PA

Fine Gravel Mix BulkDensity (g/cm ³)	0.04
Saltwater Solubility for Pb (mol/L)	0.04
Unit 4 ET Layers Porosity	0.04
Intermediate Lake Depth (m)	0.04
Mammal Burrow Shape Parameter b	0.04
DCF Beta REF	0.04
Soil Ingestion Rate for Antelope (kg/day)	0.04
Activity Conc in SRS DU Waste: Np237 (pCi/g)	0.04
Vegetation Association Selector	0.04
DCF Alpha REF	0.04
Plant.Soil Conc Ratio for Th	0.04
Kd Sand for I (mL/g)	0.04
Unit 4 Compacted Hb (cm)	0.04
Random Gully Selector	0.04
Deep Time DCF Photon 2 REF	0.04
Kd Silt for Th (mL/g)	0.04
Kd Clay for Cs (mL/g)	0.04
Kd Silt for Ac (mL/g)	0.04
Forb Root Shape Parameter b	0.04
Receptor Area (ha)	0.04
Plant.Soil Conc Ratio for U	0.04
Body Weight Factor for Antelope	0.04
Plant.Soil Conc Ratio for Sr	0.04
Forb Root.Shoot Ratio	0.03
Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	0.03
Ant Colony Density - Plot 4 (1/ha)	0.03
Forage Ingestion Rate for Cattle (kg/day)	0.03
Unit 3 Brooks-Corey Fractal Dimension	0.03
Mammal Mound Density - Plot 4 (1/ha)	0.03
Ant Colony Density - Plot 5 (1/ha)	0.03
Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.02
Soil Ingestion Tracer Element	0.02

Table 24: Benson Peak Dose within 10,000 years – Rancher**R-squared = 99%**

Explanatory Variable	Sensitivity Index
Radon Escape.Production Ratio for Waste	37.68
Kd Sand for Ra (mL/g)	3.61
Plant.Soil Conc Ratio for Ra	1.15
Saltwater Solubility for Ra (mol/L)	1.12
Porosity_Benson	0.79
Beef Transfer Factor for Pu (day/kg)	0.74
Kd Silt for Th (mL/g)	0.74
VG_n_Benson	0.71
Ks_Benson	0.70
Grass Root.Shoot Ratio	0.69
Soil Temperature (Â°C)	0.66
Ant Colony Density - Plot 2 (1/ha)	0.61
Kd Sand for Am (mL/g)	0.59
Deep Time DCF Photon 2 REF	0.59
Kd Clay for Ra (mL/g)	0.59
Activity Conc in SRS DU Waste: U234 (pCi/g)	0.59
Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	0.56
Activity Conc in SRS DU Waste: U238 (pCi/g)	0.54
Kd Clay for U (mL/g)	0.54
Unit 4 ET Layers log of van Genuchten's n	0.54
Saltwater Solubility for Pb (mol/L)	0.53
Mammal Mound Density - Plot 3 (1/ha)	0.53
Saltwater Solubility for Rn (mol/L)	0.52
Receptor Area (ha)	0.50
Kd Silt for Np (mL/g)	0.50
Kd Sand for Cs (mL/g)	0.50
Ant Colony Density - Plot 4 (1/ha)	0.49
Beef Transfer Factor for I (day/kg)	0.48
Deep Time Diffusion Length (m)	0.47
Liner Clay Saturated Hyd Cond (cm/s)	0.46
Fine CobbleMix Porosity	0.45
Plant.Soil Conc Ratio for U	0.45
Ant Nest Shape Parameter b	0.44
Silt Sand Gravel Porosity	0.44
Kd Silt for Cs (mL/g)	0.44
Beef Transfer Factor for U (day/kg)	0.44
Soil Ingestion Rate for Cattle (kg/day)	0.43
Unit 4 Compacted Hb (cm)	0.42
Shrub Root.Shoot Ratio	0.42
DCF Photon2 REF	0.42

Sensitivity Analysis Results for the Clive DU PA

Activity Conc in SRS DU Waste: U233 (pCi/g)	0.41
Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.40
Deep Time Intermediate Lake Duration (yr)	0.39
Silt Sand Gravel BulkDensity (g/cm3)	0.38
Antelope Range Area (acre)	0.38
Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.37
Ant Nest Volume (m3)	0.37
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	0.37
alpha_Benson	0.37
Body Weight Factor for Antelope	0.37
Kd Silt for Pu (mL/g)	0.37
Activity Conc in SRS DU Waste: Cs137 (pCi/g)	0.36
Biomass % Cover Selector	0.35
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.35
Forage Ingestion Rate for Cattle (kg/day)	0.34
Beef Transfer Factor for Sr (day/kg)	0.34
Kd Silt for U (mL/g)	0.34
Unit 2 Porosity	0.33
OHV Dust Adjustment	0.33
Kd Silt for Pb (mL/g)	0.33
Unit 4 Compacted Porosity	0.32
Plant.Soil Conc Ratio for Tc	0.32
Deep Time Lake Start (yr)	0.32
Plant Fresh Weight Conversion	0.31
Grass Root Shape Parameter b	0.31
Biomass Production Rate (kg.ha.yr)	0.31
Kd Sand for U (mL/g)	0.31
Forb Root.Shoot Ratio	0.31
Deep Time Aeolian Correlation	0.31
Deep Time Aeolian Deposition Depth (m)	0.30
Meat Preparation Loss	0.30
Kd Silt for Ra (mL/g)	0.30
Saltwater Solubility for I (mol/L)	0.30
Plant.Soil Conc Ratio for Am	0.30
Contaminated Fraction of GDP DU	0.29
Kd Clay for Pa (mL/g)	0.29
Kd Clay for Pu (mL/g)	0.29
Plant.Soil Conc Ratio for Np	0.29
Kd Sand for I (mL/g)	0.28
Fine Cobble Mix BulkDensity (g/cm3)	0.28
Plant.Soil Conc Ratio for Pb	0.28
Plant.Soil Conc Ratio for I	0.28
Kd Silt for Sr (mL/g)	0.28

Sensitivity Analysis Results for the Clive DU PA

Resuspension Flux (kg.m2-yr)	0.27
Unit 4 Compacted Residual Water Content	0.27
Kd Clay for Ac (mL/g)	0.27
Ant Colony Density - Plot 1 (1/ha)	0.27
Saltwater Solubility for UO3 (mol/L)	0.26
Ant Colony Lifespan (yr)	0.26
Intermediate Lake Depth (m)	0.26
Unit 3 Bubbling Pressure Head (cm)	0.26
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.26
Ant Colony Density - Plot 3 (1/ha)	0.26
Unit 4 ET Layers Bulk Density (g/cm3)	0.26
Molecular Diffusivity in Water (cm2/s)	0.26
Saturated Zone Thickness (m)	0.26
Water Ingestion Rate for Cattle (kg/day)	0.25
Deep Time DCF Alpha REF	0.25
Kd Clay for Cs (mL/g)	0.25
Greasewood Root.Shoot Ratio	0.25
RipRap Bulk Density (g/cm3)	0.25
Beef Transfer Factor for Pb (day/kg)	0.25
Plant.Soil Conc Ratio for Cs	0.25
Kd Sand for Pu (mL/g)	0.24
Unit 3 Residual Water Content	0.24
Fine Gravel Mix BulkDensity (g/cm3)	0.24
Meat Post-Cooking Loss	0.24
Surface Atmosphere Diffusion Length (m)	0.24
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	0.24
Saltwater Solubility for Pa (mol/L)	0.24
Unit 2 Bulk Density (g/cm3)	0.24
Plant.Soil Conc Ratio for Sr	0.23
Beef Transfer Factor for Tc (day/kg)	0.23
Shrub Root Shape Parameter b	0.23
Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.23
Beef Transfer Factor for Np (day/kg)	0.23
DCF Beta REF	0.23
Kd Silt for Pa (mL/g)	0.23
Kd Silt for Am (mL/g)	0.23
Unit 4 Compacted Bulk Density (g/cm3)	0.23
Saltwater Solubility for U3O8 (mol/L)	0.22
Saltwater Solubility for Th (mol/L)	0.22
Tree Root Shape Parameter b	0.22
Plant.Soil Conc Ratio for Pa	0.22
Unit 3 Saturated Hyd Cond (cm/s)	0.22
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.22

Sensitivity Analysis Results for the Clive DU PA

Random Gully Selector	0.22
Unit 3 Bulk Density (g/cm ³)	0.22
Kd Clay for Np (mL/g)	0.22
Kd Sand for Sr (mL/g)	0.22
Beef Transfer Factor for Pa (day/kg)	0.22
Kd Silt for Ac (mL/g)	0.21
Unit 4 ET Layers Porosity	0.21
Site Dispersal Area (km ²)	0.21
Surface Atmosphere Thickness (m)	0.21
Mammal Mound Density - Plot 4 (1/ha)	0.20
DCF Photon1 REF	0.20
Deep Time DCF Beta REF	0.20
Kd Sand for Th (mL/g)	0.20
Mammal Mound Density - Plot 5 (1/ha)	0.20
Ant Colony Density - Plot 5 (1/ha)	0.20
Resuspended Particle Fraction	0.20
Plant.Soil Conc Ratio for Pu	0.20
Fine Gravel Mix Porosity	0.20
Beef Transfer Factor for Ra (day/kg)	0.20
Saltwater Solubility for Ac (mol/L)	0.20
Kd Clay for Th (mL/g)	0.20
Beef Transfer Factor for Th (day/kg)	0.20
Forb Root Shape Parameter b	0.19
Unit 4 ET Layers log of van Genuchten's α	0.19
Deep Time Aeolian Deposition Age (yr)	0.19
Kd Sand for Np (mL/g)	0.19
Plant.Soil Conc Ratio for Ac	0.19
Beef Transfer Factor for Am (day/kg)	0.19
Plant.Soil Conc Ratio for Th	0.18
Kd Clay for Am (mL/g)	0.18
Saltwater Solubility for Pu (mol/L)	0.18
Soil Ingestion Rate for Antelope (kg/day)	0.18
Mammal Mound Density - Plot 1 (1/ha)	0.18
Mammal Burrow Shape Parameter b	0.17
Surface Wind Speed (m/s)	0.17
Saturated Zone Water Table Gradient	0.17
Vegetation Association Selector	0.17
Deep Lake Depth (m)	0.17
Kd Sand for Pb (mL/g)	0.17
Saltwater Solubility for Cs (mol/L)	0.17
Saltwater Solubility for Tc (mol/L)	0.17
Activity Conc in SRS DU Waste: Np ²³⁷ (pCi/g)	0.16
RipRap Porosity	0.16

Sensitivity Analysis Results for the Clive DU PA

Kd Clay for Pb (mL/g)	0.16
Saltwater Solubility for Np (mol/L)	0.16
GDP DU Inventory Storage Dead Space (m2)	0.16
Deep Time DCF Photon 1 REF	0.16
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	0.16
Federal DU Cell Unsaturated Zone Thickness (m)	0.15
Kd Sand for Ac (mL/g)	0.15
DCF Alpha REF	0.15
Saltwater Solubility for Am (mol/L)	0.15
Saltwater Solubility for Sr (mol/L)	0.15
Tree Root.Shoot Ratio	0.14
Mammal Mound Density - Plot 2 (1/ha)	0.14
Activity Conc in SRS DU Waste: U236 (pCi/g)	0.14
Beef Transfer Factor for Ac (day/kg)	0.14
Intermediate Lake Sed Thickness (m)	0.14
Kd Clay for Sr (mL/g)	0.14
Beef Transfer Factor for Cs (day/kg)	0.13
Deep Time Receptor Area (ac)	0.13
Kd Sand for Pa (mL/g)	0.12
Unit 3 Porosity	0.12
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.12
Mammal Burrow Excavation Rate (m3/yr)	0.12
Deep Time Deep Lake End (yr)	0.12
Unit 2 Saturated Hyd Cond (cm/s)	0.12
Unit 3 Brooks-Corey Fractal Dimension	0.11
Water Ingestion Rate for Antelope (kg/day)	0.11
Greasewood Root Shape Parameter b	0.11
Kd Sand for Tc (mL/g)	0.09
Tortuosity Water Content Exponent	0.09
Activity Conc in SRS DU Waste: Am241 (pCi/g)	0.09
Tortuosity Porosity Exponent	0.08
Soil Ingestion Tracer Element	0.03

Table 25: Benson Erosion Peak Groundwater Well Concentrations within 500 years –Tc99
R-squared = 99%

Explanatory Variable	Sensitivity Index
Kd Sand for Tc (mL/g)	42.71
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	15.80
Molecular Diffusivity in Water (cm ² /s)	13.92
VG_n_Benson	5.42
Porosity_Benson	1.79
Saturated Zone Water Table Gradient	1.60
Activity Conc in SRS DU Waste: Am241 (pCi/g)	0.73
Resuspension Flux (kg.m ² -yr)	0.59
Unit 2 Saturated Hyd Cond (cm/s)	0.50
alpha_Benson	0.42
Deep Time DCF Photon 1 REF	0.35
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	0.32
Beef Transfer Factor for Am (day/kg)	0.29
Federal DU Cell Unsaturated Zone Thickness (m)	0.28
Activity Conc in SRS DU Waste: Cs137 (pCi/g)	0.26
Unit 3 Porosity	0.25
Kd Sand for Ra (mL/g)	0.25
Saltwater Solubility for Cs (mol/L)	0.24
Activity Conc in SRS DU Waste: U238 (pCi/g)	0.23
Fine Cobble Mix BulkDensity (g/cm ³)	0.22
Unit 4 Compacted Bulk Density (g/cm ³)	0.20
Beef Transfer Factor for U (day/kg)	0.19
Kd Sand for U (mL/g)	0.18
Meat Post-Cooking Loss	0.18
Kd Clay for Ac (mL/g)	0.18
Ks_Benson	0.17
Antelope Range Area (acre)	0.17
OHV Dust Adjustment	0.17
Kd Sand for Th (mL/g)	0.16
Saltwater Solubility for Np (mol/L)	0.15
Deep Time Receptor Area (ac)	0.13
Tortuosity Porosity Exponent	0.13
Tortuosity Water Content Exponent	0.13
Kd Sand for Cs (mL/g)	0.13
Kd Clay for Th (mL/g)	0.13
Unit 4 ET Layers Bulk Density (g/cm ³)	0.13
Unit 3 Bubbling Pressure Head (cm)	0.13
Deep Time Aeolian Correlation	0.13
Grass Root Shape Parameter b	0.12
Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.12

Sensitivity Analysis Results for the Clive DU PA

DCF Photon2 REF	0.12
Beef Transfer Factor for Pb (day/kg)	0.12
Deep Time Intermediate Lake Duration (yr)	0.12
Unit 2 Porosity	0.12
Plant.Soil Conc Ratio for I	0.12
Ant Colony Density - Plot 1 (1/ha)	0.12
Beef Transfer Factor for Np (day/kg)	0.12
Deep Time DCF Beta REF	0.11
Kd Silt for Pa (mL/g)	0.11
Mammal Mound Density - Plot 3 (1/ha)	0.11
Beef Transfer Factor for Ac (day/kg)	0.11
Kd Silt for Am (mL/g)	0.11
Kd Sand for Pb (mL/g)	0.11
Deep Time Diffusion Length (m)	0.11
Tree Root.Shoot Ratio	0.11
Kd Silt for Np (mL/g)	0.11
Unit 3 Bulk Density (g/cm3)	0.10
Plant.Soil Conc Ratio for Am	0.10
Beef Transfer Factor for Pa (day/kg)	0.10
Kd Sand for Am (mL/g)	0.10
Beef Transfer Factor for Tc (day/kg)	0.10
Kd Clay for Np (mL/g)	0.10
Beef Transfer Factor for Ra (day/kg)	0.10
Soil Temperature (Å°C)	0.10
Kd Sand for Sr (mL/g)	0.10
Kd Sand for Pa (mL/g)	0.10
Kd Sand for Pu (mL/g)	0.10
Kd Clay for U (mL/g)	0.09
Greasewood Root Shape Parameter b	0.09
Plant.Soil Conc Ratio for Cs	0.09
Deep Time Lake Start (yr)	0.09
Site Dispersal Area (km2)	0.09
Ant Nest Shape Parameter b	0.09
Surface Atmosphere Thickness (m)	0.09
Ant Colony Density - Plot 3 (1/ha)	0.09
Kd Silt for Cs (mL/g)	0.09
Saltwater Solubility for Ra (mol/L)	0.09
Deep Time DCF Alpha REF	0.09
Kd Silt for Ra (mL/g)	0.09
Plant.Soil Conc Ratio for Tc	0.09
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.09
Saltwater Solubility for Th (mol/L)	0.09
Radon Escape.Production Ratio for Waste	0.08

Sensitivity Analysis Results for the Clive DU PA

Saltwater Solubility for UO3 (mol/L)	0.08
Resuspended Particle Fraction	0.08
Fine CobbleMix Porosity	0.08
Kd Sand for Ac (mL/g)	0.08
Saltwater Solubility for Sr (mol/L)	0.08
Kd Silt for Pu (mL/g)	0.08
RipRap Porosity	0.08
Beef Transfer Factor for Sr (day/kg)	0.08
Meat Preparation Loss	0.08
Unit 4 Compacted Residual Water Content	0.08
RipRap Bulk Density (g/cm ³)	0.08
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.08
Beef Transfer Factor for I (day/kg)	0.08
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.08
Plant.Soil Conc Ratio for Pb	0.07
Ant Colony Density - Plot 2 (1/ha)	0.07
Water Ingestion Rate for Cattle (kg/day)	0.07
Silt Sand Gravel BulkDensity (g/cm ³)	0.07
Saltwater Solubility for Rn (mol/L)	0.07
Plant Fresh Weight Conversion	0.07
Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.07
Kd Clay for Ra (mL/g)	0.07
Greasewood Root.Shoot Ratio	0.07
Shrub Root.Shoot Ratio	0.07
Kd Clay for Pa (mL/g)	0.07
Saltwater Solubility for Pa (mol/L)	0.07
Mammal Mound Density - Plot 5 (1/ha)	0.07
DCF Photon1 REF	0.07
Intermediate Lake Sed Thickness (m)	0.07
Plant.Soil Conc Ratio for Np	0.07
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	0.07
Saltwater Solubility for I (mol/L)	0.07
Saturated Zone Thickness (m)	0.06
Silt Sand Gravel Porosity	0.06
Plant.Soil Conc Ratio for Pu	0.06
Kd Clay for Pu (mL/g)	0.06
Saltwater Solubility for U3O8 (mol/L)	0.06
Unit 4 ET Layers log of van Genuchten's α	0.06
Biomass Production Rate (kg.ha.yr)	0.06
Kd Clay for Am (mL/g)	0.06
Fine Gravel Mix Porosity	0.06
Surface Atmosphere Diffusion Length (m)	0.06
Saltwater Solubility for Ac (mol/L)	0.06

Sensitivity Analysis Results for the Clive DU PA

Water Ingestion Rate for Antelope (kg/day)	0.06
Liner Clay Saturated Hyd Cond (cm/s)	0.06
Unit 4 Compacted Porosity	0.06
Kd Silt for Sr (mL/g)	0.06
Kd Silt for U (mL/g)	0.06
Unit 3 Saturated Hyd Cond (cm/s)	0.06
Ant Nest Volume (m3)	0.06
Beef Transfer Factor for Cs (day/kg)	0.06
Deep Lake Depth (m)	0.06
Ant Colony Lifespan (yr)	0.06
Contaminated Fraction of GDP DU	0.06
Beef Transfer Factor for Th (day/kg)	0.06
Activity Conc in SRS DU Waste: U234 (pCi/g)	0.05
Shrub Root Shape Parameter b	0.05
Saltwater Solubility for Tc (mol/L)	0.05
Unit 4 ET Layers log of van Genuchten's n	0.05
Surface Wind Speed (m/s)	0.05
Mammal Burrow Excavation Rate (m3/yr)	0.05
Kd Silt for Pb (mL/g)	0.05
Saltwater Solubility for Pu (mol/L)	0.05
Saltwater Solubility for Am (mol/L)	0.05
Mammal Mound Density - Plot 1 (1/ha)	0.05
Deep Time Aeolian Deposition Depth (m)	0.05
Beef Transfer Factor for Pu (day/kg)	0.05
Deep Time Deep Lake End (yr)	0.05
Deep Time Aeolian Deposition Age (yr)	0.05
Activity Conc in SRS DU Waste: U236 (pCi/g)	0.05
Unit 3 Residual Water Content	0.05
Mammal Mound Density - Plot 2 (1/ha)	0.05
Kd Sand for Np (mL/g)	0.05
Plant.Soil Conc Ratio for Pa	0.05
Plant.Soil Conc Ratio for Ra	0.05
Kd Clay for Sr (mL/g)	0.05
Grass Root.Shoot Ratio	0.05
Unit 2 Bulk Density (g/cm3)	0.05
Kd Clay for Pb (mL/g)	0.04
Biomass % Cover Selector	0.04
Soil Ingestion Rate for Cattle (kg/day)	0.04
Activity Conc in SRS DU Waste: U233 (pCi/g)	0.04
Tree Root Shape Parameter b	0.04
Plant.Soil Conc Ratio for Ac	0.04
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.04
GDP DU Inventory Storage Dead Space (m2)	0.04

Sensitivity Analysis Results for the Clive DU PA

Fine Gravel Mix BulkDensity (g/cm ³)	0.04
Saltwater Solubility for Pb (mol/L)	0.04
Unit 4 ET Layers Porosity	0.04
Intermediate Lake Depth (m)	0.04
Mammal Burrow Shape Parameter b	0.04
DCF Beta REF	0.04
Soil Ingestion Rate for Antelope (kg/day)	0.04
Activity Conc in SRS DU Waste: Np237 (pCi/g)	0.04
Vegetation Association Selector	0.04
DCF Alpha REF	0.04
Plant.Soil Conc Ratio for Th	0.04
Kd Sand for I (mL/g)	0.04
Unit 4 Compacted Hb (cm)	0.04
Random Gully Selector	0.04
Deep Time DCF Photon 2 REF	0.04
Kd Silt for Th (mL/g)	0.04
Kd Clay for Cs (mL/g)	0.04
Kd Silt for Ac (mL/g)	0.04
Forb Root Shape Parameter b	0.04
Receptor Area (ha)	0.04
Plant.Soil Conc Ratio for U	0.04
Body Weight Factor for Antelope	0.04
Plant.Soil Conc Ratio for Sr	0.04
Forb Root.Shoot Ratio	0.03
Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	0.03
Ant Colony Density - Plot 4 (1/ha)	0.03
Forage Ingestion Rate for Cattle (kg/day)	0.03
Unit 3 Brooks-Corey Fractal Dimension	0.03
Mammal Mound Density - Plot 4 (1/ha)	0.03
Ant Colony Density - Plot 5 (1/ha)	0.03
Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.02
Soil Ingestion Tracer Element	0.02

Table 26: Benson Erosion Peak Dose within 10,000 years – Rancher**R-squared = 99%**

Explanatory Variable	Sensitivity Index
Radon Escape.Production Ratio for Waste	39.33
Kd Sand for Ra (mL/g)	3.81
Saltwater Solubility for Ra (mol/L)	1.03
Plant.Soil Conc Ratio for Ra	0.87
Kd Silt for Th (mL/g)	0.84
Beef Transfer Factor for Pu (day/kg)	0.81
Grass Root.Shoot Ratio	0.72
Soil Temperature (Å°C)	0.66
Activity Conc in SRS DU Waste: U234 (pCi/g)	0.62
Saltwater Solubility for Pb (mol/L)	0.58
Kd Clay for Ra (mL/g)	0.58
Unit 4 ET Layers log of van Genuchten's n	0.54
Receptor Area (ha)	0.54
Ant Colony Density - Plot 2 (1/ha)	0.54
Porosity_Benson	0.54
Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	0.53
Activity Conc in SRS DU Waste: U238 (pCi/g)	0.51
Kd Silt for Cs (mL/g)	0.51
Ant Colony Density - Plot 4 (1/ha)	0.50
Ant Nest Shape Parameter b	0.50
Deep Time DCF Photon 2 REF	0.48
Plant.Soil Conc Ratio for U	0.47
Kd Sand for Cs (mL/g)	0.46
Activity Conc in SRS DU Waste: U233 (pCi/g)	0.46
Kd Sand for Am (mL/g)	0.45
Shrub Root.Shoot Ratio	0.44
Beef Transfer Factor for U (day/kg)	0.44
Kd Silt for Np (mL/g)	0.43
Soil Ingestion Rate for Cattle (kg/day)	0.43
Silt Sand Gravel BulkDensity (g/cm ³)	0.43
Beef Transfer Factor for Sr (day/kg)	0.43
Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.41
Beef Transfer Factor for I (day/kg)	0.41
Mammal Mound Density - Plot 3 (1/ha)	0.40
Silt Sand Gravel Porosity	0.40
Fine CobbleMix Porosity	0.40
Deep Time Diffusion Length (m)	0.40
DCF Photon2 REF	0.40
Activity Conc in SRS DU Waste: Cs137 (pCi/g)	0.39
Kd Clay for U (mL/g)	0.39

Sensitivity Analysis Results for the Clive DU PA

Liner Clay Saturated Hyd Cond (cm/s)	0.39
Biomass % Cover Selector	0.38
Kd Silt for Pu (mL/g)	0.37
Unit 4 Compacted Hb (cm)	0.37
Kd Sand for U (mL/g)	0.37
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.36
OHV Dust Adjustment	0.36
Kd Silt for Ra (mL/g)	0.36
Plant.Soil Conc Ratio for Tc	0.35
Body Weight Factor for Antelope	0.35
Biomass Production Rate (kg.ha.yr)	0.35
Ant Nest Volume (m3)	0.35
Forage Ingestion Rate for Cattle (kg/day)	0.35
Forb Root.Shoot Ratio	0.35
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.35
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	0.35
Meat Preparation Loss	0.34
Saltwater Solubility for Rn (mol/L)	0.34
Deep Time Lake Start (yr)	0.34
Ant Colony Density - Plot 3 (1/ha)	0.34
Unit 2 Porosity	0.33
Plant.Soil Conc Ratio for Pb	0.33
Plant Fresh Weight Conversion	0.33
Antelope Range Area (acre)	0.33
Intermediate Lake Depth (m)	0.32
Grass Root Shape Parameter b	0.32
Deep Time Intermediate Lake Duration (yr)	0.32
Kd Clay for Pa (mL/g)	0.32
Kd Sand for I (mL/g)	0.32
Contaminated Fraction of GDP DU	0.31
Kd Silt for Pb (mL/g)	0.31
Plant.Soil Conc Ratio for Am	0.31
Plant.Soil Conc Ratio for Np	0.31
Molecular Diffusivity in Water (cm ² /s)	0.30
Unit 4 Compacted Porosity	0.30
Kd Silt for U (mL/g)	0.30
Kd Clay for Cs (mL/g)	0.30
Kd Silt for Sr (mL/g)	0.30
RipRap Bulk Density (g/cm ³)	0.30
Kd Clay for Pu (mL/g)	0.29
Unit 4 Compacted Residual Water Content	0.29
Saltwater Solubility for I (mol/L)	0.29
Fine Cobble Mix BulkDensity (g/cm ³)	0.29

Sensitivity Analysis Results for the Clive DU PA

Deep Time DCF Alpha REF	0.28
Ant Colony Density - Plot 1 (1/ha)	0.28
Unit 4 ET Layers Bulk Density (g/cm ³)	0.28
Saltwater Solubility for Pa (mol/L)	0.28
Saltwater Solubility for U3O8 (mol/L)	0.28
Kd Clay for Ac (mL/g)	0.27
Greasewood Root.Shoot Ratio	0.27
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.27
Ant Colony Lifespan (yr)	0.27
Deep Time Aeolian Correlation	0.27
Deep Time DCF Beta REF	0.26
Kd Silt for Pa (mL/g)	0.26
Shrub Root Shape Parameter b	0.25
Beef Transfer Factor for Pb (day/kg)	0.25
Plant.Soil Conc Ratio for Sr	0.25
Plant.Soil Conc Ratio for Cs	0.25
Surface Atmosphere Diffusion Length (m)	0.25
Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.25
Unit 3 Residual Water Content	0.25
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	0.25
Unit 3 Saturated Hyd Cond (cm/s)	0.24
Saltwater Solubility for Th (mol/L)	0.24
Kd Sand for Pu (mL/g)	0.24
Kd Silt for Ac (mL/g)	0.24
Resuspension Flux (kg.m ² -yr)	0.24
Deep Time Aeolian Deposition Depth (m)	0.24
Surface Atmosphere Thickness (m)	0.24
Tree Root Shape Parameter b	0.24
Saltwater Solubility for UO3 (mol/L)	0.24
Meat Post-Cooking Loss	0.24
Unit 2 Bulk Density (g/cm ³)	0.24
Plant.Soil Conc Ratio for I	0.24
Kd Clay for Th (mL/g)	0.24
Fine Gravel Mix BulkDensity (g/cm ³)	0.23
Mammal Mound Density - Plot 5 (1/ha)	0.23
Kd Clay for Np (mL/g)	0.23
DCF Beta REF	0.23
Unit 4 ET Layers Porosity	0.23
Forb Root Shape Parameter b	0.23
Water Ingestion Rate for Cattle (kg/day)	0.22
Plant.Soil Conc Ratio for Pa	0.22
Saturated Zone Thickness (m)	0.22
Deep Lake Depth (m)	0.22

Sensitivity Analysis Results for the Clive DU PA

Kd Silt for Am (mL/g)	0.22
Beef Transfer Factor for Np (day/kg)	0.22
DCF Photon1 REF	0.22
Unit 3 Bubbling Pressure Head (cm)	0.22
Random Gully Selector	0.21
Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.21
Beef Transfer Factor for Pa (day/kg)	0.21
Unit 4 Compacted Bulk Density (g/cm ³)	0.21
Unit 3 Bulk Density (g/cm ³)	0.21
Beef Transfer Factor for Th (day/kg)	0.20
Beef Transfer Factor for Ra (day/kg)	0.20
Site Dispersal Area (km ²)	0.20
Mammal Mound Density - Plot 1 (1/ha)	0.20
Plant.Soil Conc Ratio for Pu	0.19
Mammal Mound Density - Plot 4 (1/ha)	0.19
Kd Sand for Np (mL/g)	0.19
Kd Sand for Th (mL/g)	0.19
Ks_Benson	0.19
Fine Gravel Mix Porosity	0.19
Resuspended Particle Fraction	0.19
Kd Sand for Pb (mL/g)	0.18
Deep Time DCF Photon 1 REF	0.18
alpha_Benson	0.18
Activity Conc in SRS DU Waste: Np237 (pCi/g)	0.18
DCF Alpha REF	0.18
Saltwater Solubility for Pu (mol/L)	0.18
Deep Time Aeolian Deposition Age (yr)	0.18
Saltwater Solubility for Ac (mol/L)	0.18
Saltwater Solubility for Cs (mol/L)	0.18
Beef Transfer Factor for Tc (day/kg)	0.18
Kd Sand for Sr (mL/g)	0.18
Mammal Burrow Shape Parameter b	0.17
Soil Ingestion Rate for Antelope (kg/day)	0.17
Intermediate Lake Sed Thickness (m)	0.17
Ant Colony Density - Plot 5 (1/ha)	0.17
Tree Root.Shoot Ratio	0.17
Kd Clay for Sr (mL/g)	0.17
Beef Transfer Factor for Am (day/kg)	0.17
Vegetation Association Selector	0.16
Saltwater Solubility for Am (mol/L)	0.16
Saturated Zone Water Table Gradient	0.16
RipRap Porosity	0.16
VG_n_Benson	0.16

Sensitivity Analysis Results for the Clive DU PA

Federal DU Cell Unsaturated Zone Thickness (m)	0.16
Plant.Soil Conc Ratio for Ac	0.16
Kd Clay for Am (mL/g)	0.16
Surface Wind Speed (m/s)	0.16
Water Ingestion Rate for Antelope (kg/day)	0.16
Unit 3 Porosity	0.15
Saltwater Solubility for Sr (mol/L)	0.15
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	0.15
Unit 4 ET Layers log of van Genuchten's α	0.15
Activity Conc in SRS DU Waste: U236 (pCi/g)	0.15
Saltwater Solubility for Tc (mol/L)	0.14
Saltwater Solubility for Np (mol/L)	0.14
Mammal Mound Density - Plot 2 (1/ha)	0.14
Plant.Soil Conc Ratio for Th	0.14
Kd Sand for Ac (mL/g)	0.14
Beef Transfer Factor for Cs (day/kg)	0.13
Unit 3 Brooks-Corey Fractal Dimension	0.13
Deep Time Receptor Area (ac)	0.13
Kd Clay for Pb (mL/g)	0.12
Beef Transfer Factor for Ac (day/kg)	0.12
Deep Time Deep Lake End (yr)	0.12
Unit 2 Saturated Hyd Cond (cm/s)	0.12
GDP DU Inventory Storage Dead Space (m2)	0.12
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.12
Kd Sand for Pa (mL/g)	0.11
Tortuosity Porosity Exponent	0.10
Mammal Burrow Excavation Rate (m3/yr)	0.10
Activity Conc in SRS DU Waste: Am241 (pCi/g)	0.10
Greasewood Root Shape Parameter b	0.09
Tortuosity Water Content Exponent	0.09
Kd Sand for Tc (mL/g)	0.08
Soil Ingestion Tracer Element	0.02

Table 27: Benson Clay Liner Peak Groundwater Well Concentrations within 500 years – Tc99**R-squared = 99%**

Explanatory Variable	Sensitivity Index
Kd Sand for Tc (mL/g)	42.60
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	15.65
Molecular Diffusivity in Water (cm ² /s)	13.33
X.Added.VG_n_Benson	5.29
X.Added.Porosity_Benson	2.06
Saturated Zone Water Table Gradient	1.59
Resuspension Flux (kg.m ² -yr)	0.74
Activity Conc in SRS DU Waste: Am241 (pCi/g)	0.71
Unit 2 Saturated Hyd Cond (cm/s)	0.50
X.Added.alpha_Benson	0.41
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	0.41
Beef Transfer Factor for Am (day/kg)	0.36
Deep Time DCF Photon 1 REF	0.36
Activity Conc in SRS DU Waste: Cs137 (pCi/g)	0.29
Activity Conc in SRS DU Waste: U238 (pCi/g)	0.28
Unit 3 Porosity	0.27
Saltwater Solubility for Cs (mol/L)	0.26
Federal DU Cell Unsaturated Zone Thickness (m)	0.26
Beef Transfer Factor for U (day/kg)	0.25
Unit 4 Compacted Bulk Density (g/cm ³)	0.22
Kd Sand for Ra (mL/g)	0.22
Meat Post-Cooking Loss	0.22
Fine Cobble Mix BulkDensity (g/cm ³)	0.19
Saltwater Solubility for Np (mol/L)	0.19
Antelope Range Area (acre)	0.18
Kd Sand for U (mL/g)	0.17
OHV Dust Adjustment	0.16
Ant Colony Density - Plot 3 (1/ha)	0.16
Deep Time Receptor Area (ac)	0.16
Kd Sand for Th (mL/g)	0.15
Kd Clay for Ac (mL/g)	0.13
X.Added.Ks_Benson	0.13
Unit 4 ET Layers Bulk Density (g/cm ³)	0.13
Kd Silt for Pa (mL/g)	0.13
Unit 3 Bubbling Pressure Head (cm)	0.12
Unit 3 Bulk Density (g/cm ³)	0.12
Site Dispersal Area (km ²)	0.12
RipRap Porosity	0.12
Beef Transfer Factor for Np (day/kg)	0.12

Sensitivity Analysis Results for the Clive DU PA

Grass Root Shape Parameter b	0.12
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.12
Beef Transfer Factor for Ac (day/kg)	0.12
Unit 2 Porosity	0.12
Kd Sand for Pa (mL/g)	0.11
Mammal Mound Density - Plot 3 (1/ha)	0.11
Deep Time Aeolian Correlation	0.11
Kd Sand for Cs (mL/g)	0.11
Kd Silt for Np (mL/g)	0.11
Kd Clay for Th (mL/g)	0.11
Deep Time Intermediate Lake Duration (yr)	0.11
Tortuosity Water Content Exponent	0.11
Tree Root.Shoot Ratio	0.11
Deep Time Lake Start (yr)	0.11
Saltwater Solubility for Sr (mol/L)	0.11
Beef Transfer Factor for Pb (day/kg)	0.11
Plant.Soil Conc Ratio for Am	0.10
Beef Transfer Factor for Tc (day/kg)	0.10
Beef Transfer Factor for Ra (day/kg)	0.10
Kd Sand for Sr (mL/g)	0.10
DCF Photon2 REF	0.10
Tortuosity Porosity Exponent	0.10
Deep Time DCF Beta REF	0.10
Plant.Soil Conc Ratio for Cs	0.10
Kd Clay for Ra (mL/g)	0.10
Kd Silt for Cs (mL/g)	0.10
Ant Colony Density - Plot 1 (1/ha)	0.10
Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.09
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.09
Silt Sand Gravel Porosity	0.09
Mammal Burrow Excavation Rate (m3/yr)	0.09
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.09
RipRap Bulk Density (g/cm3)	0.09
Kd Clay for U (mL/g)	0.09
Plant.Soil Conc Ratio for I	0.09
Shrub Root.Shoot Ratio	0.09
Kd Sand for Pu (mL/g)	0.09
Saltwater Solubility for Th (mol/L)	0.09
Kd Silt for Ra (mL/g)	0.09
Kd Sand for Pb (mL/g)	0.09
Meat Preparation Loss	0.09
Surface Atmosphere Thickness (m)	0.09
Kd Sand for Am (mL/g)	0.09

Sensitivity Analysis Results for the Clive DU PA

Saltwater Solubility for Rn (mol/L)	0.08
Kd Sand for Np (mL/g)	0.08
Beef Transfer Factor for Sr (day/kg)	0.08
Greasewood Root Shape Parameter b	0.08
Kd Sand for Ac (mL/g)	0.08
Kd Clay for Pu (mL/g)	0.08
Saltwater Solubility for Ra (mol/L)	0.08
Plant.Soil Conc Ratio for Tc	0.08
Kd Clay for Np (mL/g)	0.08
Biomass Production Rate (kg.ha.yr)	0.08
Unit 4 Compacted Porosity	0.08
Kd Silt for Sr (mL/g)	0.08
Plant Fresh Weight Conversion	0.08
Ant Colony Density - Plot 2 (1/ha)	0.08
Beef Transfer Factor for Pa (day/kg)	0.08
Kd Clay for Pa (mL/g)	0.08
Intermediate Lake Sed Thickness (m)	0.08
DCF Beta REF	0.07
Saltwater Solubility for I (mol/L)	0.07
Saltwater Solubility for Pa (mol/L)	0.07
Greasewood Root.Shoot Ratio	0.07
Water Ingestion Rate for Cattle (kg/day)	0.07
Plant.Soil Conc Ratio for Pu	0.07
Kd Silt for Am (mL/g)	0.07
Deep Time DCF Alpha REF	0.07
Unit 4 ET Layers Porosity	0.07
Fine CobbleMix Porosity	0.07
Soil Temperature (Â°C)	0.07
Resuspended Particle Fraction	0.07
Unit 3 Saturated Hyd Cond (cm/s)	0.07
Plant.Soil Conc Ratio for Pb	0.07
Vegetation Association Selector	0.07
Deep Time Aeolian Deposition Depth (m)	0.07
Silt Sand Gravel BulkDensity (g/cm3)	0.07
Surface Atmosphere Diffusion Length (m)	0.07
Saltwater Solubility for Ac (mol/L)	0.07
Kd Silt for Pu (mL/g)	0.07
Beef Transfer Factor for Pu (day/kg)	0.07
Unit 2 Bulk Density (g/cm3)	0.07
Plant.Soil Conc Ratio for Ac	0.07
Ant Nest Shape Parameter b	0.07
Fine Gravel Mix Porosity	0.07
Saltwater Solubility for Tc (mol/L)	0.07

Sensitivity Analysis Results for the Clive DU PA

Beef Transfer Factor for I (day/kg)	0.07
Soil Ingestion Rate for Antelope (kg/day)	0.07
Deep Time Deep Lake End (yr)	0.07
DCF Photon1 REF	0.07
Kd Silt for U (mL/g)	0.06
Deep Lake Depth (m)	0.06
Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.06
Kd Clay for Sr (mL/g)	0.06
Activity Conc in SRS DU Waste: U236 (pCi/g)	0.06
Ant Colony Lifespan (yr)	0.06
Contaminated Fraction of GDP DU	0.06
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	0.06
Fine Gravel Mix BulkDensity (g/cm3)	0.06
Unit 4 ET Layers log of van Genuchten's n	0.06
Kd Clay for Am (mL/g)	0.06
Mammal Burrow Shape Parameter b	0.06
Saltwater Solubility for Am (mol/L)	0.06
Radon Escape.Production Ratio for Waste	0.06
Saltwater Solubility for UO3 (mol/L)	0.06
Deep Time Diffusion Length (m)	0.06
Mammal Mound Density - Plot 2 (1/ha)	0.06
Saltwater Solubility for Pu (mol/L)	0.06
DCF Alpha REF	0.06
Beef Transfer Factor for Th (day/kg)	0.06
Mammal Mound Density - Plot 1 (1/ha)	0.06
Saltwater Solubility for U3O8 (mol/L)	0.05
Mammal Mound Density - Plot 5 (1/ha)	0.05
Water Ingestion Rate for Antelope (kg/day)	0.05
Activity Conc in SRS DU Waste: Np237 (pCi/g)	0.05
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.05
Shrub Root Shape Parameter b	0.05
Kd Silt for Pb (mL/g)	0.05
Saturated Zone Thickness (m)	0.05
Surface Wind Speed (m/s)	0.05
Plant.Soil Conc Ratio for Ra	0.05
Ant Nest Volume (m3)	0.05
Plant.Soil Conc Ratio for U	0.05
Activity Conc in SRS DU Waste: U234 (pCi/g)	0.05
Ant Colony Density - Plot 4 (1/ha)	0.05
Mammal Mound Density - Plot 4 (1/ha)	0.05
Deep Time Aeolian Deposition Age (yr)	0.05
Unit 4 Compacted Residual Water Content	0.05
Forb Root.Shoot Ratio	0.05

Sensitivity Analysis Results for the Clive DU PA

GDP DU Inventory Storage Dead Space (m2)	0.05
Ant Colony Density - Plot 5 (1/ha)	0.05
Activity Conc in SRS DU Waste: U233 (pCi/g)	0.05
Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	0.05
Grass Root.Shoot Ratio	0.05
Kd Silt for Th (mL/g)	0.04
Plant.Soil Conc Ratio for Pa	0.04
Saltwater Solubility for Pb (mol/L)	0.04
Plant.Soil Conc Ratio for Np	0.04
Kd Clay for Pb (mL/g)	0.04
Unit 4 ET Layers log of van Genuchten's α	0.04
Biomass % Cover Selector	0.04
Deep Time DCF Photon 2 REF	0.04
Soil Ingestion Rate for Cattle (kg/day)	0.04
Unit 4 Compacted Hb (cm)	0.04
Unit 3 Residual Water Content	0.04
Unit 3 Brooks-Corey Fractal Dimension	0.04
Tree Root Shape Parameter b	0.04
Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.04
Kd Clay for Cs (mL/g)	0.04
Body Weight Factor for Antelope	0.04
Forb Root Shape Parameter b	0.04
Forage Ingestion Rate for Cattle (kg/day)	0.04
Kd Sand for I (mL/g)	0.04
Intermediate Lake Depth (m)	0.03
Receptor Area (ha)	0.03
Beef Transfer Factor for Cs (day/kg)	0.03
Kd Silt for Ac (mL/g)	0.03
Plant.Soil Conc Ratio for Th	0.03
Plant.Soil Conc Ratio for Sr	0.02
Random Gully Selector	0.02
Soil Ingestion Tracer Element	0.02

Table 28: Benson Clay Liner Peak Dose within 10,000 years – Rancher**R-squared = 99%**

Explanatory Variable	Sensitivity Index
Radon Escape.Production Ratio for Waste	37.67
Kd Sand for Ra (mL/g)	3.57
Plant.Soil Conc Ratio for Ra	1.18
Saltwater Solubility for Ra (mol/L)	1.09
X.Added.Porosity_Benson	0.75
Kd Silt for Th (mL/g)	0.74
Beef Transfer Factor for Pu (day/kg)	0.73
Grass Root.Shoot Ratio	0.73
X.Added.Ks_Benson	0.72
X.Added.VG_n_Benson	0.72
Soil Temperature (Â°C)	0.66
Ant Colony Density - Plot 2 (1/ha)	0.64
Activity Conc in SRS DU Waste: U234 (pCi/g)	0.61
Kd Sand for Am (mL/g)	0.61
Saltwater Solubility for Pb (mol/L)	0.58
Kd Clay for Ra (mL/g)	0.58
Deep Time DCF Photon 2 REF	0.56
Natural Rn Barrier Clay Sat Hyd Cond (cm/s)	0.55
Receptor Area (ha)	0.53
Ant Colony Density - Plot 4 (1/ha)	0.53
Unit 4 ET Layers log of van Genuchten's n	0.53
Mammal Mound Density - Plot 3 (1/ha)	0.52
Kd Silt for Np (mL/g)	0.52
Kd Sand for Cs (mL/g)	0.51
Saltwater Solubility for Rn (mol/L)	0.50
Beef Transfer Factor for I (day/kg)	0.50
Kd Clay for U (mL/g)	0.49
Activity Conc in SRS DU Waste: U238 (pCi/g)	0.46
Plant.Soil Conc Ratio for U	0.46
Silt Sand Gravel Porosity	0.45
Kd Silt for Cs (mL/g)	0.45
Unit 4 Compacted Hb (cm)	0.44
Fine CobbleMix Porosity	0.43
Deep Time Diffusion Length (m)	0.43
Ant Nest Volume (m3)	0.43
Ant Nest Shape Parameter b	0.43
Activity Conc in SRS DU Waste: Pu238 (pCi/g)	0.42
Soil Ingestion Rate for Cattle (kg/day)	0.41
Beef Transfer Factor for U (day/kg)	0.41
Silt Sand Gravel BulkDensity (g/cm3)	0.41

Sensitivity Analysis Results for the Clive DU PA

DCF Photon2 REF	0.40
Antelope Range Area (acre)	0.40
Activity Conc in SRS DU Waste: U233 (pCi/g)	0.39
Activity Conc in SRS DU Waste: Tc99 (pCi/g)	0.39
Shrub Root.Shoot Ratio	0.38
Activity Conc in SRS DU Waste: Cs137 (pCi/g)	0.38
Body Weight Factor for Antelope	0.37
OHV Dust Adjustment	0.37
Deep Time Intermediate Lake Duration (yr)	0.37
Kd Silt for Pu (mL/g)	0.36
Activity Conc in SRS DU Waste: Pu241 (pCi/g)	0.35
Plant.Soil Conc Ratio for Pb	0.35
Forage Ingestion Rate for Cattle (kg/day)	0.34
Saltwater Solubility for I (mol/L)	0.34
Biomass % Cover Selector	0.34
Contaminated Fraction of GDP DU	0.34
Kd Sand for U (mL/g)	0.34
Beef Transfer Factor for Sr (day/kg)	0.34
X.Added.alpha_Benson	0.33
Plant.Soil Conc Ratio for Am	0.33
Kd Silt for Ra (mL/g)	0.33
Kd Silt for Pb (mL/g)	0.32
Deep Time Deep Lake Sedimentation Rate (m/yr)	0.32
Plant.Soil Conc Ratio for Tc	0.32
Unit 2 Porosity	0.32
Plant Fresh Weight Conversion	0.32
Deep Time Lake Start (yr)	0.32
Forb Root.Shoot Ratio	0.31
Deep Time Aeolian Correlation	0.31
Kd Silt for U (mL/g)	0.31
Kd Clay for Pa (mL/g)	0.30
Grass Root Shape Parameter b	0.30
Unit 4 Compacted Residual Water Content	0.30
Deep Time Aeolian Deposition Depth (m)	0.29
Meat Preparation Loss	0.29
Ant Colony Lifespan (yr)	0.29
Beef Transfer Factor for Pb (day/kg)	0.29
Activity Conc in SRS DU Waste: U235 (pCi/g)	0.28
Unit 3 Bubbling Pressure Head (cm)	0.28
Kd Clay for Pu (mL/g)	0.28
Kd Sand for I (mL/g)	0.28
Saltwater Solubility for UO3 (mol/L)	0.28
Plant.Soil Conc Ratio for Cs	0.27

Sensitivity Analysis Results for the Clive DU PA

Fine Cobble Mix BulkDensity (g/cm3)	0.27
Unit 3 Saturated Hyd Cond (cm/s)	0.27
Ant Colony Density - Plot 3 (1/ha)	0.27
RipRap Bulk Density (g/cm3)	0.27
Kd Clay for Ac (mL/g)	0.27
Ant Colony Density - Plot 1 (1/ha)	0.27
Unit 4 ET Layers Bulk Density (g/cm3)	0.27
Biomass Production Rate (kg.ha.yr)	0.27
Plant.Soil Conc Ratio for Sr	0.27
Deep Time DCF Alpha REF	0.27
Kd Clay for Cs (mL/g)	0.27
Intermediate Lake Depth (m)	0.27
Plant.Soil Conc Ratio for I	0.26
Unit 4 Compacted Porosity	0.26
Surface Atmosphere Diffusion Length (m)	0.26
Kd Silt for Sr (mL/g)	0.26
Saltwater Solubility for Pa (mol/L)	0.26
Unit 4 Compacted Bulk Density (g/cm3)	0.26
Deep Time DCF Beta REF	0.26
Plant.Soil Conc Ratio for Np	0.26
Shrub Root Shape Parameter b	0.26
Unit 3 Residual Water Content	0.25
Greasewood Root.Shoot Ratio	0.25
Activity Conc in SRS DU Waste: Pu240 (pCi/g)	0.25
Unit 2 Bulk Density (g/cm3)	0.25
Fine Gravel Mix BulkDensity (g/cm3)	0.25
Activity Conc in SRS DU Waste: Pu239 (pCi/g)	0.25
Plant.Soil Conc Ratio for Pa	0.25
Molecular Diffusivity in Water (cm2/s)	0.24
Unit 3 Bulk Density (g/cm3)	0.24
Saltwater Solubility for U3O8 (mol/L)	0.24
Water Ingestion Rate for Cattle (kg/day)	0.24
Saturated Zone Thickness (m)	0.23
Kd Silt for Pa (mL/g)	0.23
DCF Photon1 REF	0.23
Saltwater Solubility for Th (mol/L)	0.23
Kd Silt for Ac (mL/g)	0.23
Fine Gravel Mix Porosity	0.23
Beef Transfer Factor for Tc (day/kg)	0.23
Resuspension Flux (kg.m2-yr)	0.23
Kd Silt for Am (mL/g)	0.23
Beef Transfer Factor for Pa (day/kg)	0.23
Beef Transfer Factor for Ra (day/kg)	0.23

Sensitivity Analysis Results for the Clive DU PA

Kd Sand for Pu (mL/g)	0.22
Meat Post-Cooking Loss	0.22
Random Gully Selector	0.22
Site Dispersal Area (km ²)	0.22
Unit 4 ET Layers Porosity	0.21
Beef Transfer Factor for Np (day/kg)	0.21
Kd Clay for Np (mL/g)	0.21
Plant.Soil Conc Ratio for Pu	0.21
Kd Sand for Sr (mL/g)	0.21
Activity Conc in SRS DU Waste: I129 (pCi/g)	0.21
Forb Root Shape Parameter b	0.21
Kd Sand for Np (mL/g)	0.21
Saltwater Solubility for Pu (mol/L)	0.20
Kd Sand for Th (mL/g)	0.20
DCF Beta REF	0.20
Deep Lake Depth (m)	0.20
Ant Colony Density - Plot 5 (1/ha)	0.20
Tree Root Shape Parameter b	0.20
Mammal Mound Density - Plot 4 (1/ha)	0.20
Kd Clay for Th (mL/g)	0.20
Plant.Soil Conc Ratio for Ac	0.20
Soil Ingestion Rate for Antelope (kg/day)	0.19
Kd Sand for Pb (mL/g)	0.19
Surface Atmosphere Thickness (m)	0.19
Plant.Soil Conc Ratio for Th	0.19
Mammal Mound Density - Plot 5 (1/ha)	0.19
Beef Transfer Factor for Th (day/kg)	0.19
Deep Time Aeolian Deposition Age (yr)	0.18
Beef Transfer Factor for Am (day/kg)	0.18
Saltwater Solubility for Ac (mol/L)	0.18
Vegetation Association Selector	0.18
Activity Conc in SRS DU Waste: Np237 (pCi/g)	0.17
Mammal Burrow Shape Parameter b	0.17
Kd Clay for Am (mL/g)	0.17
Saltwater Solubility for Cs (mol/L)	0.17
Tree Root.Shoot Ratio	0.17
Unit 4 ET Layers log of van Genuchten's α	0.17
Resuspended Particle Fraction	0.17
Mammal Mound Density - Plot 2 (1/ha)	0.16
Mammal Mound Density - Plot 1 (1/ha)	0.16
Saltwater Solubility for Am (mol/L)	0.16
Surface Wind Speed (m/s)	0.16
Activity Conc in SRS DU Waste: U236 (pCi/g)	0.16

Sensitivity Analysis Results for the Clive DU PA

RipRap Porosity	0.16
Saltwater Solubility for Tc (mol/L)	0.16
Saltwater Solubility for Sr (mol/L)	0.15
DCF Alpha REF	0.15
Kd Clay for Pb (mL/g)	0.15
Kd Clay for Sr (mL/g)	0.15
Federal DU Cell Unsaturated Zone Thickness (m)	0.15
Saturated Zone Water Table Gradient	0.15
Activity Conc in SRS DU Waste: Sr90 (pCi/g)	0.15
GDP DU Inventory Storage Dead Space (m2)	0.15
Kd Sand for Ac (mL/g)	0.15
Beef Transfer Factor for Cs (day/kg)	0.14
Beef Transfer Factor for Ac (day/kg)	0.14
Deep Time DCF Photon 1 REF	0.13
Deep Time Deep Lake End (yr)	0.13
Water Ingestion Rate for Antelope (kg/day)	0.13
Activity Conc in SRS DU Waste: Ra226 (pCi/g)	0.13
Kd Sand for Pa (mL/g)	0.13
Unit 2 Saturated Hyd Cond (cm/s)	0.13
Intermediate Lake Sed Thickness (m)	0.12
Saltwater Solubility for Np (mol/L)	0.12
Deep Time Receptor Area (ac)	0.12
Activity Conc in SRS DU Waste: Am241 (pCi/g)	0.11
Unit 3 Porosity	0.11
Mammal Burrow Excavation Rate (m3/yr)	0.10
Greasewood Root Shape Parameter b	0.10
Tortuosity Water Content Exponent	0.09
Tortuosity Porosity Exponent	0.09
Kd Sand for Tc (mL/g)	0.08
Unit 3 Brooks-Corey Fractal Dimension	0.08
Soil Ingestion Tracer Element	0.03